PLANNING BOARD
PORTSMOUTH, NEW HAMPSHIRE

EILEEN DONDERO FOLEY COUNCIL CHAMBERS
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

7:00 PM **August 18, 2022**

AGENDA

I. BOARD DISCUSSION OF REGULATORY AMENDMENTS AND MASTER PLAN UPDATE

II. CITY COUNCIL REFERRALS

A. Hold a Public Hearing and consider a recommendation to the City Council for Zoning Ordinance Amendments to Building Height standards.

III. APPROVAL OF MINUTES

A. Approval of July 21, 2022 meeting minutes.

IV. DETERMINATIONS OF COMPLETENESS

SUBDIVISION REVIEW

A. The request of **Christopher H. Garrett Revocable Trust of 2007 (Owner and Applicant),** for property located at **1299 Islington Street** requesting Preliminary and Final Subdivision approval to subdivide one (1) existing lot into two (2) lots.

SITE PLAN REVIEW

A. The request of **HCA Realty Inc. (Owner),** and **Portsmouth Regional Hospital (Applicant),** for property located at **444 Borthwick Avenue (Formerly 0 Borthwick Avenue)** requesting Site Plan Review Approval for the construction of a satellite parking lot.
B. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval to demolish existing buildings and construct 10 living units.
C. The request of **Road to the West, LLC (Owner and Applicant)** for property located at **140 West Road** requesting Amended Site Plan Approval to improve and install stormwater infrastructure, relocated dumpsters, install landscaping, and increase parking.

D. The request of **Lonza Biologics (Applicant)** for property located at **101 International Drive** within the Pease Development Authority requesting a Site Plan Review Approval, under Chapter 400 of the Pease Land Use Controls, for café expansion.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

A. The request of **HCA Realty Inc. (Owner),** and **Portsmouth Regional Hospital (Applicant),** for property located at **444 Borthwick Avenue (Formerly 0 Borthwick Avenue)** requesting Site Plan Review Approval for the construction of a satellite parking lot consisting of 501 spaces and associated on-site improvements to support the existing hospital facilities currently serviced by 783 parking spaces. Said property is shown on Assessor Map 234 Lot7-4A and is located in the Office Research (OR) District. (LU-22-47)

B. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single living units) and 3 existing accessory structures to be replaced with 6 single-living unit structures and 2 two-living unit structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

C. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 570 square feet of temporary buffer impacts the headwall and riprap portion of which are permanent impacts to the wetland buffer for the installation of a treated stormwater drainage outfall. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

D. The request of **Katara, LLC**, (Owner) for property located at **70 Pleasant Point Drive** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 11,472 square feet of disturbance within the wetland buffer for grading, landscaping and to demolish the existing structure and reconstruct a new structure within the 100 foot wetland buffer area. Said property is located on Assessor Map 207 Lot 15 and lies within the Single Residence B (SRB) District. (LU-22-112)

E. The request of **Lonza Biologics (Applicant)** for property located at **101 International Drive** within the Pease Development Authority requesting a Site Plan Review Approval, under Chapter 400 of the Pease Land Use Controls, for a 4,200 square foot café expansion with associated landscaping, stormwater, and infrastructure improvements.

Said property is located on Assessor Map 305 Lot 6 and lie within the Airport Business Commercial (ABC) District. (LU-22-131)

F. The request of **Road to the West, LLC (Owner and Applicant)** for property located at **140 West Road** requesting Amended Site Plan Approval to improve and install stormwater infrastructure, relocated dumpsters, install landscaping, and increase parking spaces from 102 spaces to 122 spaces where 119 are required. Said property is located on Assessor Map 252 Lot 2-13 and lies within the Industrial (I) District (LU-22-99)

G. The request of **Christopher H. Garrett Revocable Trust of 2007 (Owner and Applicant),** for property located at **1299 Islington Street** requesting Preliminary and Final Subdivision approval to subdivide one (1) existing lot with 27,366 square feet (.628 acres) of area and 199.33 feet of street frontage into two (2) lots as follows: Proposed Lot 1 with 15,000 square feet (0.344 acres) of lot area and 100 feet of street frontage, and Proposed Lot 2 with 12,366 square feet (0.284 acres) of lot area and 99.33 feet of street frontage. Said property is located on Assessor Map 233 Lot 119 and lies within the Single Residence B (SRB) district. (LU-22-33)

VI. CAPITAL IMPROVEMENT PLAN PRESENTATION

A. Receive a presentation on the Capital Improvement Plan Process and appoint a CIP Advisory Committee.

VII. OTHER BUSINESS

A. Chairman's Updates and Discussion Items

VIII. ADJOURNMENT

**Members of the public also have the option to join this meeting over Zoom. A unique meeting ID and password will be provided once you register. To register, click on the link below or copy and paste this into your web browser:*

https://us06web.zoom.us/webinar/register/WN_atIS0HRCSA2BEFzagJZ6-Q

City of Portsmouth
Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH
(603)610-7216

Memorandum

To: Planning Board
From: Beverly Mesa-Zendt, Planning Director
Stefanie L. Casella, Planner
Date: August 12, 2022
Re: Recommendations for the August 18, 2022 Planning Board Meeting

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I. BOARD DISCUSSION OF REGULATORY AMENDMENTS AND MASTER PLAN UPDATE

II. CITY COUNCIL REFERRALS

A. Hold a Public Hearing and consider a recommendation to the City Council for Zoning Ordinance Amendments to Building Height standards.

Background

On February 7, 2022, the City Council established the Land Use Committee to look at diversifying land use regulations within the City. As part of the first package of amendments, the Land Use Committee has focused on advancing the citywide housing goals identified by City Council in their 2022-2023 Goals. These objectives were refined on February 27, 2022 and include:

1. Increase diversity of housing types and price points;
2. Remove regulatory barriers for housing diversification in neighborhoods (ADUS) – context sensitive design and consideration to impacts to traffic, on street parking and other infrastructure impacts;
3. Restructure incentives to deliver greater public benefit in workforce housing construction; and
4. Identify and maximize partnerships, coalitions, and funding opportunities to deliver affordable housing.

Regulatory Amendment Work Plan

On April 9, 2022, the Land Use Committee approved transmittal of the draft 2021 Regulatory Amendment Work Plan to City Council. The work plan consists of three phases:

1. Phase 1: Code Clean-Up – Building Height Standards.

Purpose: Improve regulatory implementation and align with legislative intent. Eliminate ambiguous sections that result in unintended consequences.

2. **Phase 2: Accessory Dwelling Unit Amendments**
Purpose: Remove barriers and expand the number of eligible properties for ADUs and Senior Housing Facilities.

3. Phase 3: Incentive Amendments
Purpose: Adjust incentives to place a higher emphasis on Workforce Housing.

Phase 1 Amendments Timeline

- **April 18, 2022**. The City Council approved the work plan and transmitted proposed Phase 1 amendments to the Planning Board for review and a recommendation.
- **May 05, 2022**. The Planning Board held a work session to review proposed Phase 1 amendments. At that time, staff presented a revised document that was developed in consultation with the City Attorney's office. Public input was provided and revisions were requested by the public and the Planning Board.
- **May 19, 2022**. The Planning Board held a public hearing. Revised documents were presented, additional comments were provided, and additional clarification was requested by the Planning Board.
- **June 23, 2022.** The public hearing was continued to the August meeting with a request that staff schedule an additional work session to review the proposed amendments.
- **August 8, 2022.** Planning Board Work session to review updated draft amendments.
- **August 18, 2022.** Continue the public hearing and consider Phase 1 amendments to the Zoning Ordinance.
- **September 2022-** Transmittal to City Council to begin adoption process.

Additional Phase 1 Amendments for Consideration

The following changes are proposed as a response to input provided at the August 8, 2022 Work session.

1. **Cemeteries** – To better align with the existing use of the properties, amend the building height standards map to lower the building height standards along the cemeteries to 1 story or 20'; the lowest building height standard.
2. **Decorative Railings** - To allow for decorative railings up to 4 feet in height to be located along the roof edge, amend Section 10.10.5A43.32 (b) as follows:

*(a) All **roof appurtenances** and other features that exceed the allowed **building height** for the zoning district shall not exceed 33 percent of the total roof area of the **structure** and, except for elevators, and stair towers, and decorative railings no taller than four feet in height, shall be set back at least 10 feet from any edge of the roof.*

III. APPROVAL OF MINUTES

A. Approval of the July 21, 2022 Meeting Minutes

Planning Department Recommendation

1) Board members should determine if the draft minutes include all relevant details for the decision making process that occurred at the July 21, 2022 meeting and vote to approve meeting minutes with edits if needed.

IV. DETERMINATION OF COMPLETENESS

SUBDIVISION REVIEW

A. The request of **Christopher H. Garrett Revocable Trust of 2007 (Owner and Applicant)**, for property located at **1299 Islington Street** requesting Preliminary and Final Subdivision approval to subdivide one (1) existing lot into two (2) lots.

Planning Department Recommendations

1) Vote to determine that this application is complete according to the Subdivision Regulations, (contingent on the granting of any required waivers) and to accept the applications for consideration.

SITE PLAN REVIEW

A. The request of **HCA Realty Inc. (Owner),** and **Portsmouth Regional Hospital (Applicant),** for property located at **444 Borthwick Avenue (Formerly 0 Borthwick Avenue)** requesting Site Plan Review Approval for the construction of a satellite parking lot.

B. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval to demolish existing buildings and construct 10 living units.

C. The request of **Road to the West, LLC (Owner and Applicant)** for property located at **140 West Road** requesting Amended Site Plan Approval to improve and install stormwater infrastructure, relocated dumpsters, install landscaping, and increase parking.

D. The request of **Lonza Biologics (Applicant)** for property located at **101 International Drive** within the Pease Development Authority requesting a Site Plan Review Approval, under Chapter 400 of the Pease Land Use Controls, for café expansion.

Planning Department Recommendations

1) Vote to determine that these applications are complete according to the Site Plan Review Regulations, (contingent on the granting of any required waivers under Sections III and IV of the agenda) and to accept the application for consideration.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

A. The request of **HCA Realty Inc. (Owner),** and **Portsmouth Regional Hospital (Applicant),** for property located at **444 Borthwick Avenue (Formerly 0 Borthwick Avenue)** requesting Site Plan Review Approval for the construction of a satellite parking lot consisting of 501 spaces and associated on-site improvements to support the existing hospital facilities currently serviced by 783 parking spaces. Said property is shown on Assessor Map 234 Lot7-4A and is located in the Office Research (OR) District. (LU-22-47)

Background

The project is located at the east corner of Borthwick Avenue and Eileen Dondero Foley Avenue. The proposed project is necessary to expand Portsmouth Regional Hospital's parking in order to support the existing hospital and its services provided to the New Hampshire Seacoast region.

The existing hospital building is operating with 783 parking spaces, which is 32% less than the minimum required by the City's Zoning Ordinance. The proposed project includes the construction of a new 501 space satellite parking lot located across the street from the existing hospital. The proposed parking lot would be accessed via two new entrances, one on Borthwick Avenue and the other along Eileen Dondero Foley Avenue.

The project will consist of associated on-site improvements such as pedestrian connections, dark-sky lighting, security cameras, electric vehicle charging stations, landscaping, and stormwater management. The project will be contributing a 1,300 LF public multi-use path along Borthwick Avenue that, in the future will be part of a larger bicycle/pedestrian network connecting downtown with the NH Seacoast Greenway.

Conservation Commission Review

Different from procedural requirements for Wetland CUPs, the Conservation Commission reviews State Wetland Permits and provides comments and an overall recommendation to the State on wetland permits that fall under the state's jurisdiction. In some cases, there is an associated City Wetland Conditional Use Permit, while in others there is not. For 444 Borthwick, the applicant is only required to get a State Wetland Permit because the impacts proposed affect wetlands that are below the City's jurisdictional threshold of 10,000 square feet.

Upon review of the State Wetland Permit for this project, the Conservation Commission recommended denial of the State Wetland Permit application. This recommendation will be forwarded to NHDES to assist them in their review of the permit application. In their deliberations, the Conservation Commission raised a question about whether there was an independent review of the wetland delineation to confirm that the jurisdictional size of the wetland is below 10,000 square feet. The Conservation Commission expressed an interest in seeing this added as a stipulation to the Land Use Approval. Since this application was only reviewed as advisory by the Conservation Commission, it is staff's recommendation that the request for an independent review of the delineation be added as a stipulation. While we do not always ask for independent wetland scientists review in the planning process, this project proposes to fill a portion of one wetland listed as 4,460 square feet and the entirety of another wetland listed as 9,200 square feet. Given that the larger wetland is within 8% of the threshold, staff concurs that an independent wetland delineation would be useful to confirm the size.

Project Review, Decisions, and Recommendations

This application has been before the Technical Advisory Committee.

Technical Advisory Committee (TAC) Review

At the June, 7, 2022 TAC meeting, the Committee recommended approval to the Planning Board with the following stipulations:

Items to be addressed prior to Planning Board approval:

1) A preliminary street address and Map/Lot number are to be obtained for the property.
2) The plan set will be updated to include more details on the multiuse path including extended topography and proposed grading as well as the necessary changes to needed to complete design. Updated plans will be provided to DPW for review and approval.
3) Applicant will work with DPW to address all comments from the peer review conducted by Altus.
4) House side shields will be added to parking lot lights as necessary to prevent light pollution into Coakley Rd homes. Details are to be added to the plan.

Items 1, 2, and 3 have been resolved in the latest submission as provided to the Planning Board. Additional comments were provided by Altus Engineering Inc. (third-party reviewer) in their letter dated, August 8, 2022. Outstanding DPW comments are more fully provided in the conditions of approval below.

Planning Department Recommendation

1) Vote to grant Site Plan Approval with the following stipulations:

Conditions to be satisfied prior to commencement of any site work or construction activity:

1.1) House side shields will be added to parking lot lights as necessary to prevent light pollution into Coakley Rd homes. Details are to be added to the plan.

1.2) Remaining minor revisions to the drainage study requested by Altus Engineering Inc., in their letter dated August 8, 2022, will be reviewed by Altus Engineering Inc. to verify compliance.

1.3) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

1.4) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

1.5) Associated recording fees shall be paid to the City prior to recordation. Any changes to the plan subsequent to approval must be identified in a letter and submitted to the city with the recordable plans.

1.6) Any site development (new or redevelopment) resulting in 15,000 square feet or greater ground disturbance will require the submittal of a Land Use Development Tracking Form through the Pollutant Tracking and Accounting Program (PTAP) online portal. The Applicant or its engineer shall submit a copy of a completed Land Use Development Tracking Form using the Pollutant Tracking and Accounting Program (PTAP) online portal currently managed by the UNH Stormwater Center or similar form approved by the City. For more information visit https://www.cityofportsmouth.com/publicworks/stormwater/ptap

1.7) A wetland delineation will be undertaken by an independent wetland professional to confirm that the wetland listed as approximately 9,200 square feet is less than 10,000 square feet in area.

Conditions to be satisfied subsequent to commencement of site work and construction activity but prior to release of surety bond or certificate of occupancy:

1.8) Borthwick will be resurfaced to City standards along the stretch that is being disturbed from Eileen Foley to the end of the multi-use path.

1.9) The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance;

1.10) A stormwater inspection and maintenance report shall be completed annually and copies shall be submitted for review to the City's Stormwater Division/ Public Works Department.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

It is recommended that Item V.B and V.C be discussed together and voted on separately.

A motion is required to consider these items together.

B. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single living units) and 3 existing accessory structures to be replaced with 6 single-living unit structures and 2 two-living unit structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

C. The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 570 square feet of temporary buffer impacts the headwall and riprap portion of which are permanent impacts to the wetland buffer for the installation of a treated stormwater drainage outfall. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. (LU-21-167)

Background

This project includes removal of existing structures and the construction of a 10 unit condominium complex including two duplex style homes and six single family homes. All units have two-car garages. The development will include a private driveway with one-way traffic. The site will be served with underground elective, municipal water, and sewer.

Project Review, Decisions, and Recommendations

This application has been before the Technical Advisory Committee and the Conservation Commission. Please see below for more information.

Technical Advisory Committee

On Tuesday, June 7, 2022 the Technical Advisory Committee recommended approval to the Planning Board with the following stipulations:

Items to be addressed prior to Planning Board approval:

1) Catch basin 3 is to be relocated upgrade to the northern side of the driveway servicing 1167 Sagamore Ave.
2) Applicant will provide confirmation from the Jelly Fish system manufacturer that the proposed location is adequate for the system to properly perform its functions.
Condition Precedent:
3) The proposed culvert across Sagamore Ave will need a Wetland Conditional Use Permit and City Council approval for work on City property.
Condition Subsequent:
4) Third party inspection of stormwater, sewer, water, and sidewalk installation is required.

Items 1 and 2 have been satisfied in the updated submission as provided to the Planning Board. Item 3 has been satisfied by through the Wetland Conditional Use Permit application (see Conservation Commission Review section below). Item 4 has been carried forward as recommended condition of approval.

Conservation Commission
The Conservation Commission reviewed the application at the July 13, 2022 meeting. See below for the Staff analysis of criteria as stated in Section 10.1017.50 of the Zoning Ordinance.

1. The land is reasonably suited to the use activity or alteration.
Proposed wetland buffer impact will be from the construction of the culvert and riprap outlet area. Given the need for the sidewalk along Sagamore Avenue the culvert is a reasonable alteration to the wetland buffer. This wetland conditional use permit is located on City property to allow overflow of on-site stormwater and public sidewalk and city street overflow into a filtration device to treat all stormwater before entering a city culvert.

2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.
In order to create the outlet for the culvert given the grade of the site the location of the small on-site wetland and the proposed sidewalk the culvert is necessary in the buffer.

3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.
Along with treating the stormwater, applicant is also proposing to remove a section of invasive species within the buffer on the other side of Sagamore Avenue where the culvert outlets. Wetland health should see no adverse impacts from this proposal.

4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.

Construction impacts will be minimal within the buffer, with permanent impacts being only the outlet pipe (which will allow for grass regrowth on top) and riprap which will be a small footprint.

5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.

Given the need for the stormwater overflow from the development site and an outlet for stormwater from the new sidewalk the proposed jellyfish filter and culvert outlet should results in minimal adverse impacts.

6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.

Staff recommends in addition to the New England conservation/wildlife seed mix called for in the area designated for invasive species removal the applicant replant the disturbed area around the proposed culvert also with a New England conservation/wildlife seed mix.

The Conservation Commission voted unanimously to approve this project with two stipulations:

1) For one year the applicant will monitor the site where invasive species are to be removed in order to determine the success of the removal and the health of the new wetland plantings. The new plantings shall have a greater than 80% success rate after one year. If not applicant shall replant.

2) The applicant will follow NOFA standards for land care and only use organic land management techniques within the wetland and wetland buffer areas.

Subsequent to TAC and Conservation commission review, the jellyfish filter was relocated in response to comments from the third party drainage review. City staff have confirmed that the new location of the filter will not affect the Conservation Commission recommendation or the function of the proposed drainage system.

The above stipulations have been carried forward as recommended conditions of approval.

Planning Department Recommendation

1) Vote to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit with the following conditions:

1.1) For one year the applicant will monitor the site where invasive species are to be removed in order to determine the success of the removal and the health of the new wetland plantings. The new plantings shall have a greater than 80%

success rate after one year. If not applicant shall replant.

1.2) The applicant will follow NOFA standards for land care and only use organic land management techniques within the wetland and wetland buffer areas.

2) Vote to grant Site Plan approval with the following conditions:

<u>Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:</u>

2.1) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

2.2) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

2.3) Associated recording fees shall be paid to the City prior to recordation. Any changes to the plan subsequent to approval must be identified in a letter and submitted to the city with the recordable plans.

2.4) Any site development (new or redevelopment) resulting in 15,000 square feet or greater ground disturbance will require the submittal of a Land Use Development Tracking Form through the Pollutant Tracking and Accounting Program (PTAP) online portal. The Applicant or its engineer shall submit a copy of a completed Land Use Development Tracking Form using the Pollutant Tracking and Accounting Program (PTAP) online portal currently managed by the UNH Stormwater Center or similar form approved by the City. For more information visit https://www.cityofportsmouth.com/publicworks/stormwater/ptap.

<u>Conditions to be satisfied subsequent to commencement of site work and construction activity but prior to release of surety bond or certificate of occupancy:</u>

2.5) Third party inspection of stormwater, sewer, water, and sidewalk installation is required.

2.6) A stormwater inspection and maintenance report shall be completed annually and copies shall be submitted for review to the City's Stormwater Division/ Public Works Department.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

D. The request of **Katara, LLC**, (Owner) for property located at **70 Pleasant Point Drive** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 11,472 square feet of disturbance within the wetland buffer for grading, landscaping and to demolish the existing structure and reconstruct a new structure within the 100 foot wetland buffer area. Said property is located on Assessor Map 207 Lot 15 and lies within the Single Residence B (SRB) District. (LU-22-112)

Background

The project includes the demolition and removal of the existing home and construction of a new two-story, 2,306 SF, single family dwelling at 70 Pleasant Point Drive. The existing lot (Tax Map 207 Lot 15) is approximately .642 acres and currently contains a single-story residence with a shed and water access. The site is adjacent to the Piscataqua River.

Project Review, Decisions, and Recommendations

This application has been before the Conservation Commission. Please see below for more information.

Conservation Commission

The Conservation Commission reviewed the application at the July 13, 2022 meeting. See below for the staff analysis of criteria as stated in Section 10.1017.50 Of the Zoning Ordinance.

1. The land is reasonably suited to the use activity or alteration.

Applicant is proposing to rebuild in area that was previously developed and is proposing to build farther from shoreline.

2. There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.

The wetland buffer takes up a large amount of the already developed property, and the buildable property. The proposed project is making efforts to reduce previous stormwater impacts to the buffer and build in a reasonable manner for the site.

3. There will be no adverse impact on the wetland functional values of the site or surrounding properties.

The proposal will be removing all invasive species from buffer area and replanting with native wetland and conservation seed mix and plantings.

Previously untreated stormwater entering the river will now be treated. The project should result in an overall increase in buffer and shoreline health.

4. Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.

The applicant has extensive landscape upgrades proposed to the vegetation in the buffer which includes removing invasive species and replanting native species where appropriate.

5. The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.

Applicant's plans show they are working to move development farther from water's edge and away from the 25' vegetated buffer. The applicant is taking steps to minimize bank disturbance by removing invasive species and replanting the bank and adjacent shoreline areas. While the applicant is enhancing native vegetation and removing invasive species additional vegetation along the edge of the patio or reduction of patio width could enhance this site.

6. Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.

Applicant proposes removing invasive plants from the vegetated buffer strip and will help aid in the stabilization of the bank through the use of the Greenloxx vegetated wall & slope system.

The Conservation Commission voted unanimously to approve the project with two stipulations:

1) The applicant will plan for two years of planting monitoring to ensure the health and success of the buffer plantings. If after one year the plantings do not have at least an 80% success rate, replanting will be required.

2) Silt sock devices being used to protect the buffer area shall be made of organic materials, including the outer lining/mesh that holds the sock together in order to prevent plastic waste.

The above stipulations have been carried forward as recommended conditions of approval.

Planning Department Recommendation

1) Vote to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit with the following conditions:

Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:

1.1) The applicant will plan for two years of planting monitoring to ensure the health and success of the buffer plantings. If after one year the plantings do not have at least an 80% success rate, replanting will be required.
1.2) Silt sock devices being used to protect the buffer area shall be made of organic materials, including the outer lining/mesh that holds the sock together in order to prevent plastic waste.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

E. The request of **Lonza Biologics (Applicant)** for property located at **101 International Drive** within the Pease Development Authority requesting a Site Plan Review Approval, under Chapter 400 of the Pease Land Use Controls, for a 4,200 square foot café expansion with associated landscaping, stormwater, and infrastructure improvements. Said property is located on Assessor Map 305 Lot 6 and lie within the Airport Business Commercial (ABC) District. (LU-22-131)

Project Background

State and Local Regulatory Context

Title 1 Section 12-G:13 of New Hampshire Statutes provides the following

I. *Notwithstanding any other provision of law, any and all land use controls of the town of Newington and the city of Portsmouth shall not apply to any of the property at Pease Air Force Base transferred, conveyed, or otherwise granted to the authority by the federal government or any agency thereof.*

…

III. In adopting land use controls, the authority may adopt, in whole or in part, the land use controls of the town of Newington and/or the city of Portsmouth. If the authority opts not to adopt the land use controls of Newington and/or Portsmouth, in whole or in part, the authority shall adopt its own land use controls which are consistent with the comprehensive conversion and redevelopment plan prepared by the commission and consistent with the master plans of the town of Newington and the city of Portsmouth. This paragraph shall not apply to any division property or projects listed on the inventory required under RSA 12-G:43, I(e).

…

V (a) The authority shall delegate enforcement of the land use controls to the appropriate land use boards of the town of Newington and the city of Portsmouth for airport property within each municipality, respectively.

https://www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-I-12-G.htm

The Pease Redevelopment Authority adopted a Zoning ordinance in 1991, most recently amended in 2020. Within that ordinance the following procedural standards are established in accordance with state law.

404.02 Applications Referred to Local Municipalities for Administration

(a) For parcels located within the Industrial Zone, Business and Commercial Zone, Natural Resource Protection Zone and those portions of the Airport Industrial Zone not acquired by the Pease Development Authority pursuant to Section 13(g) of the Surplus Property Act, completed applications for site review and approval shall be referred by

the Authority to the planning board of the municipality in which the parcel is located for review and recommendation in accordance with the provisions of this Part.

…

(g) The recommendation of the planning board shall be forwarded to the Board along
with a written report detailing the reasons for any recommendation for denial or for the imposition of conditions. Recommendations may consist of:

(1) Approval recommended.
(2) Approval recommended with conditions (specified).
(3) Denial recommended.

(h) A recommendation of the applicable planning board shall be deemed a final decision of the Board upon the expiration of the fourteen (14) days from the date of notice, unless the applicant/developer or a member of the Board requests a hearing by the Board.
(i) Where a hearing has been requested, the Board shall conduct a hearing and render a final decision on the site plan within thirty (30) days.
(j) At the discretion of the Board, the time period for rendering a final decision may be extended an additional thirty (30) days or such additional time as may be consented to by the applicant.
(k) The Board may approve, conditionally approve or deny the application notwithstanding the recommendation of the applicable municipal planning board. In the case of denial of any application by the Board or where the Board elects not to follow the recommendation of the applicable municipal planning board, the ground(s) for such action shall be stated in writing.

Proposed Project

The proposed project is located at 101 International Drive which is identified as Map 305 Lot 6 on the City of Portsmouth Tax Maps. The proposed project is to expand Lonza Biologics café to support its existing workforce in the pharmaceutical and biologic industries. The proposed project includes the construction of an approximately 4,200 SF expansion to Lonza's existing café. This café expansion is necessary to support Lonza's existing workforce. The proposed expansion is directly adjacent to the existing café internal to the main building.

Project Review, Decisions, and Recommendations

This application has been before the Technical Advisory Committee. Please see below for more information.

Technical Advisory Committee Review

On Tuesday, July 5, 2022 the Technical Advisory Committee recommended

approval to the Planning Board with the following stipulations:

1) Solid material couplings must be used in connection to sewer and approved by Sewer Department prior to installation.
2.) A note is to be added to plan instructing the contractor to appropriately dispose of asbestos cement pipes should any be found during construction.

All stipulations listed above have been resolved in the updated submission as provided to the Planning Board.

Planning Department Recommendation

1) *Vote to recommend Site Plan Review approval to the Pease Development Authority as presented.*

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

F. The request of **Road to the West, LLC (Owner and Applicant)** for property located at **140 West Road** requesting Amended Site Plan Approval to improve and install stormwater infrastructure, relocated dumpsters, install landscaping, and increase parking spaces from 102 spaces to 122 spaces where 119 are required. Said property is located on Assessor Map 252 Lot 2-13 and lies within the Industrial (I) District (LU-22-99)

Project Background

The applicant, Road to the West, LLC, owns the property located at 140 West Road, former home to the Blitz trampoline park. The applicant proposes to adapt the existing structure on the site in its present configuration and convert it into a private, membership-only, indoor recreation facility featuring, among other things, golf and sport simulators, racing simulators, axe throwing, billiards, arcade games, a gym area and a lounge area. In addition, the applicant is proposing to create 3,071 square feet of office space. The applicant proposes operating the facility on a reservation system for members which will enable it to manage and coordinate crowds.

Project Review, Decisions, and Recommendations

This application has been before the Technical Advisory Committee and the Zoning Board of Adjustment. Please see below for more information.

Zoning Board of Adjustment

Conversion of the existing structure into a private indoor recreation facility requires the following: 1) A Variance from Section 10.440 Use #4.30 to allow and indoor recreation use where the use is not permitted. 2) A Variance from Section 10.1113.41 to allow parking to be located 2 feet from the front lot line where 50 feet is required.

On May 24, 2022 the Board of Adjustment granted the request as presented.

Technical Advisory Committee Review

On Tuesday, August 2, 2022 the Technical Advisory Committee recommended approval to the Planning Board with the following stipulations:

1) Plans will be updated to include treatment swale details and calculations. DPW to review and approve prior to Planning Board

consideration.

2) Catch Basin A will be changed to a manhole.

3) Sewer manhole detail, in accordance with State standard, will be added to the plans.

4) Landscape plans will be updated to include additional plantings and loam planting beds within the three landscape islands.

5) Cistern operation and maintenance details will be added to the plans. DPW to review and approve prior to Planning Board consideration.

6) All State and Federal permits as required for this project will be listed on the plans.

7) Plans will be updated to show granite curbing around entire parking lot in the vicinity of Catch Basin B for drainage.

8) Grading Plan will be adjusted to correct reduction in grade behind building. DPW to review and approve prior to Planning Board consideration.

9) Light poles will be shown on plans at least 10 feet from the overhead power lines with details that will show light temperature, cutoff shields, and mounting height. DPW to review and approve prior to Planning Board consideration.

10) Outfall structure will be added to the plans.

11) Catch Basin B will be moved to the curb and a note will be added regarding jellyfish filter.

12) A letter will be provided to the Planning Department with the updated submission stating where resolved conditions can be found on within the submission and how outstanding conditions will be resolved subsequent to Planning Board approval.

<u>Conditions precedent to Building Permit:</u>

13) Drainage easements will be dedicated and accepted by the City.

14) Plantings in the public Right of Way receive approval from the Trees and Greenery Committee.

15) A full set of documents including all plans, studies, and the aforementioned letter will be submitted for staff review and Planning Board consideration.

The applicant made changes and updates addressing TAC comments 1 through 12. Stipulations 13 and 14 will be carried forward as recommended conditions of approval. Subsequent to the resubmittal, DPW reviewed the materials and

requested the following conditions of approval be recommended to the Planning Board:

1) Plans should be updated to eliminate the bend in the drain pipe leaving the Jellyfish curb inlet drain manhole D. DPW will review and approve.

2) Plans should be updated to relocate the landscape island near the rear of the jellyfish filter past the inlet to eliminate potential issues associated with improper grading around the island. DPW will review and approve.

3) Plans need to be updated to correct note on underdrain for the porous pavement –invert 94.00 but does not extend to the 94 contour line. DPW will review and approve.

4) Note 5 on sheet 2 should be updated to say "...for acceptance by the City and will be recorded at the registry"

5) Use of the Jellyfish filters will require a yearly maintenance plan. Applicant will provide DPW with the manufacturer specified maintenance requirements and a statement as to how the yearly maintenance will be completed. Subsequent to DPW approval, these items are to be uploaded to the application View Point portal and delivered to the Planning Department to be included in the application file.

6) The SMH detail will be updated to be consistent with the State Standard detail sheet and should show a brick invert and the notes regarding leak testing. DPW will review and approve.

7) Plans will be updated to reflect that lighting should be designed with 3000K temp bulbs instead of 4000k temp bulbs.

All of the above stipulations have been included below as recommended conditions of approval.

Planning Department Recommendation

1) Vote to grant Site Plan review approval with the following stipulations:

Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:

1.1) Plans should be updated to eliminate the bend in the drain pipe leaving the Jellyfish curb inlet drain manhole D. DPW will review and approve.

1.2) Plans should be updated to relocate the landscape island near the rear of the jellyfish filter past the inlet to eliminate potential issues associated with improper grading around the island. DPW will review and approve.

1.3) Plans need to be updated to correct note on underdrain for the porous pavement –invert 94.00 but does not extend to the 94 contour line. DPW will

review and approve.

1.4) Note 5 on sheet 2 should be updated to say "...for acceptance by the City and will be recorded at the registry"

1.5) Use of the Jellyfish filters will require a yearly maintenance plan. Applicant will provide DPW with the manufacturer specified maintenance requirements and a statement as to how the yearly maintenance will be completed. Subsequent to DPW approval, these items are to be uploaded to the application View Point portal and delivered to the Planning Department to be included in the application file.

1.6) The SMH detail will be updated to be consistent with the State Standard detail sheet and should show a brick invert and the notes regarding leak testing. DPW will review and approve.

1.7) Plans will be updated to reflect that lighting should be designed with 3000K temp bulbs instead of 4000k temp bulbs.

1.8) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

1.9) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

1.10) Associated recording fees shall be paid to the City prior to recordation. Any changes to the plan subsequent to approval must be identified in a letter and submitted to the city with the recordable plans.

1.11) Plantings in the public Right of Way receive approval from the Trees and Greenery Committee.

V. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

G. The request of **Christopher H. Garrett Revocable Trust of 2007 (Owner and Applicant),** for property located at **1299 Islington Street** requesting Preliminary and Final Subdivision approval to subdivide one (1) existing lot with 27,366 square feet (.628 acres) of area and 199.33 feet of street frontage into two (2) lots as follows: Proposed Lot 1 with 15,000 square feet (0.344 acres) of lot area and 100 feet of street frontage, and Proposed Lot 2 with 12,366 square feet (0.284 acres) of lot area and 99.33 feet of street frontage. Said property is located on Assessor Map 233 Lot 119 and lies within the Single Residence B (SRB) district. (LU-22-33)

Background

The applicant is proposing the subdivision of the existing parcel into two lots required the following: 1) Variances from Section 10.521 to allow a) a lot area and lot area per dwelling unit of 12,366 square feet where 15,000 is required for each; and b) 99' of continuous street frontage where 100' is required.

Project Review, Decisions, and Recommendations

This project has been before the Zoning Board of Adjustment and the Technical Advisory Committee, see below for more details on the review.

Zoning Board of Adjustment

On Tuesday March, 15, 2022 the Board of Adjustment voted to grant the following:

Variances from Section 10.521 to allow:
A) a lot area and lot area per dwelling unit of 12,366 square feet where 15,000 is required for each; and
B) 99' of continuous street frontage where 100' is required.

Technical Advisory Committee Review

On Tuesday, August 2, 2022 the Technical Advisory Committee recommended approval to the Planning Board with the following stipulations:

Prior to Planning Board approval:

1) Plans will be updated to include infiltration trench downslope from leach field and appropriate foundation drains to address runoff in accordance with NHDES Subsurface rules. DPW to review and approve prior to Planning Board consideration.

2) The existing sewer line will be scoped to confirm location on plan set. DPW to review, evaluate if easement is needed, and approve prior to Planning Board consideration.

3) Note 3 on the Subdivision plan will be updated to change “Lot 2” reference to the appropriate Map and Lot number.

4) Any proposed tree removal in the public right of way should be added to the plans.

5) A letter will be provided to the Planning Department with the updated submission stating where resolved conditions can be found on within the submission and how outstanding conditions will be resolved subsequent to Planning Board approval.

6) A full set of documents including all plans, studies, and the aforementioned letter – will be submitted for staff review and Planning Board consideration.

Conditions precedent to Building Permit:

7) Any proposed tree removal in the public Right of Way will receive approval from the Trees and Greenery Committee.

8) Any use of blasting or hoe ramming needed for rock removal will require vibration monitoring to ensure there is no damage to the surrounding properties.

9) Applicant will receive approval and waiver from NHDES for septic system or extend city sewer service to newly created lot. If city sewer is needed to serve lot, applicant will coordinate with DPW.

The applicant made changes and updates addressing stipulations 1 and 3 through 6. The remaining comments (2, 7, 8, and 9) have been carried forward as stipulations of approval. Subsequent to the resubmittal, DPW reviewed the materials and requested the following conditions of approval be recommended to the Planning Board:

1) The existing sewer lateral providing service to the existing structure will need to be scoped to confirm location and updated on plan as necessary. The Department of Public Works shall review location and determine if an easement is needed. Any easement will need to be reflected on final recorded plans.

2) If the tree in the ROW impedes sight distance – the applicant must receive approval from Trees & Public Greenery Committee prior to removal of tree or move the driveway to a location where there is appropriate site distance.

3) Applicant will obtain an approval from NHDES for septic system design

and installation or will need to coordinate sewer extension with the Department of Public Works.

4) Infiltration detail on sheet 3 shall be updated to remain uncovered with no loam above to allow rear roof water to infiltrate.

All of the above stipulations, as provided by DPW, and TAC stipulations 7 through 9 have been included below as recommended conditions of approval.

Planning Department Recommendation

1) Vote to grant Preliminary and Final Subdivision with the following conditions:

Conditions to be satisfied subsequent to final approval of subdivision plan but prior to commencement of any site work or construction activity:

1.1) The existing sewer lateral providing service to the existing structure will need to be scoped to confirm location and updated on plan as necessary. The Department of Public Works shall review location and determine if an easement is needed. Any easement will need to be reflected on final recorded plans.

1.2) If the tree in the ROW impedes sight distance – the applicant must receive approval from Trees & Public Greenery Committee prior to removal of tree or move the driveway to a location where there is appropriate site distance.

1.3) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

1.4) The final plat and all easement plans and deeds, including the aforementioned private easement shall be recorded concurrently at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

1.5) Property monuments shall be set as required by the Department of Public Works prior to the filing of the plat.

1.6) GIS data shall be provided to the Department of Public Works in the form as required by the City.

1.7) Applicant will obtain an approval from NHDES for septic system design and installation or will need to coordinate sewer extension with the Department of Public Works.

1.8) Infiltration detail on sheet 3 shall be updated to remain uncovered with no loam above to allow rear roof water to infiltrate.

1.9 Associated recording fees shall be paid to the City prior to recordation. Any changes to the plan subsequent to approval must be identified in a letter and submitted to the city with the recordable plans.

Conditions to be satisfied subsequent to commencement of site work and construction

<u>activity but prior to release of surety bond or certificate of occupancy:</u>

1.10) Any use of blasting or hoe ramming needed for rock removal will require vibration monitoring to ensure there is no damage to the surrounding properties.

VI. CAPITAL IMPROVEMENT PLAN PRESENTATION

A. Receive a presentation on the Capital Improvement Plan Process and appoint a CIP Advisory Committee.

Background

The Capital Improvement Plan (CIP) is both a financial and infrastructure planning tool that sets forth a multi-year schedule and financing strategies for accomplishing public capital projects that both maintain safe quality city infrastructure and assist in the achievement of Citywide Goals. Careful development of and adherence to the CIP ensures that needed capital projects are accomplished within the City's financial capability. In combination with the annual City budget, the Capital Improvement Plan has a significant impact on the planned allocation of fiscal resources, and is thus one of the most important documents considered by the City Council.

State/Local Regulatory Context

RSA 674.5: Capital Improvement Program

"674:5 Authorization. – In a municipality where the planning board has adopted a master plan, the local legislative body may authorize the planning board to prepare and amend a recommended program of municipal capital improvement projects projected over a period of at least 6 years.

…

The capital improvements program may encompass major projects being currently undertaken or future projects to be undertaken with federal, state, county and other public funds. The sole purpose and effect of the capital improvements program shall be to aid the mayor or selectmen and the budget committee in their consideration of the annual budget."

City Charter

City Charter Section 7.6 - Capital Program:

The Manager shall prepare and submit to the Council a six (6) year capital program at least three (3) months prior to the final date for submission of the budget. The program shall include:

- *A general summary of its content;*
- *A list of all capital improvements proposed during the next six (6) fiscal years;*
- *Cost estimates, methods of financing, recommended time schedules for each improvement; and*
- *Estimating annual operating and maintenance costs.*

The purposes of the CIP is to:

1. Implement needed improvements on a scheduled basis
   - Provides a complete picture of the City's major development needs

- Coordinates activities of various City departments and agencies
- Assists in implementing recommendations of the City's Master Plan

2. Forecast future allocation of fiscal resources
   - Establishes fiscal priorities for projects
   - Aids in the proper utilization of funding sources
3. Help plan for future City expenditures
   - Discourages piecemeal improvements and duplication of expenditures
4. Ensure capital project needs are provided within the City's financial capability
   - Informs the taxpayers of anticipated future improvements
   - Helps to schedule major projects to avoid large fluctuations in the tax rate

As used in the CIP, a capital improvement project is defined as a major fiscal expenditure that falls into one or more of the following categories:

- ✓ Land acquisition;
- ✓ Construction or expansion of a public facility, street, utility or public infrastructure;
- ✓ Rehabilitation of a public facility or public infrastructure provided the cost is $50,000 or more;
- ✓ Design work or planning study related to a capital project or implementation of the Master Plan;
- ✓ Any item or piece of equipment, non-vehicular in nature, that costs more than $50,000 and has a life expectancy of 5 or more years; or
- ✓ Replacement and purchase of vehicles which have a life expectancy of more than 5 years or cost more than $50,000.

Plan Development Process

The capital planning process is coordinated by the Finance and Planning Departments under the direction of the City Manager. Capital project requests are initially formulated by City department heads and submitted to the Finance Department. Members of the public may also submit project requests, which are reviewed by City departments and incorporated into the departmental project submissions as appropriate.

CIP projects originate from three sources.

- ✓ Capital Improvement Plan from the Prior Fiscal Year
- ✓ City Staff
- ✓ Residents

Staff works to update the prior year's CIP projects to reflect the current status, project needs and costing.. After city departments and residents submit their new requests for capital project, staff works with the City Manager to prioritize them by utilizing the following:

- **Project requirements** – Is the project required to meet legal, compliance, or regulatory requirements?
- **Timing** – How soon does the project need to be implemented to address the needs identified?
- **Strategic alignment** – To what extent is the project aligned with other city projects, policies, processes?
- **Public value** – How much value does the outcome of this project provide to the general public? How much public support is there for implementing this project?
- **Finance planning** – Is the project fundable in the time frame identified, are there available funding sources for this project?

Although the factors above are consistently utilized in the prioritization process, other factors, such as urgent community needs or public health and safety, may also contribute to the final project placement, allowing the process to be nimble and responsive to emerging community needs.

Planning Board Advisory Committee and City Council Adoption

The Planning Board appoints a three member Advisory Committee to review the projects in the initial draft CIP. The Finance Department incorporates the Advisory Committee's recommendations into a revised form of the CIP which is then reviewed by the Planning Board. The Planning Board holds a public hearing and votes to recommend the adoption of the document to the City Council. The City Council holds a public hearing and adopts the CIP in accordance with City Charter requirements. Once adopted, the CIP is utilized in the development of the annual budget in accordance with RSA 674.5.

Financing

Capital improvement projects are funded from a variety of sources. These funding sources include: General Fund (GF) Capital Outlay; Federal/State Grants; Bond or Lease; Revenues (Parking, Water and Sewer); State Revolving Loan Fund (SRF) and Public Private Partnerships (PPP).

General Fund – Capital Outlay – The most commonly used method of financing capital projects is through the use of the General Fund – Capital Outlay. The General Fund includes the money raised by the local property tax for a given year. When a project is funded with General Fund revenues, its

entire cost is paid off within the year. The intent is to budget annually a certain amount from the General Fund (approximately 2% of previous Fiscal Year General Fund total Budget) to address City priorities.

Grants – One source of grants is from other levels of government, for example, the Environmental Protection Agency, the NH Department of Health and Human Services, U.S. Housing and Urban Development, NH Department of Environmental Services, and the NH Department of Transportation. Generally, these Federal and State sources provide an outright grant or matching funds to go with locally raised funds. The City also pursues non-governmental private grants when applicable.

General Obligation Bonds – Bonds are used to finance major municipal capital projects. These are issued for a period of time generally extending from ten to thirty years during which time principal and interest payments are made. They are secured by the raising of property taxes. This type of payment has the advantage of allowing the costs to be amortized over the life of the project and of allowing taxpayers to pay a smaller amount of the project's cost at a time. However, they do commit the City's resources over a long period of time and decrease the flexibility of how yearly revenues can be utilized. The City's bonding capacity is a limited resource. All projects that are to be bonded should meet minimum eligibility criteria and must have a life span at least equal to the bond life. **Projects that are funded through bonds must go through a separate process provided under local and state regulations.**

Revenues – The City has two established Enterprise Funds (Water and Sewer). The needs for these two divisions are met through the revenues raised from providing that particular service. Therefore, there is no impact on the City's tax rate. Additionally, the City has established a Parking and Transportation Fund (Special Revenue Fund). Revenues derived from the City's parking functions are transferred to this fund in order to operate the City's parking and traffic related activities.

State Revolving Loan Fund – This is a program offered through the NH Department of Environmental Services for the purpose of providing low interest rate funding for approved water pollution control projects. State approval of applications does not bind the City to any of the individual projects but does lock into a low interest rate loan. Upon completion of projects, the loan becomes a serial bond payable by the City of Portsmouth Sewer or Water Fund to the State of NH. In addition, the City applies for State Aid Grant funding to assist in repaying SRF loans up to 30% of the total project cost.

Public Private Partnership – This method of financing involves joint funding of a particular project between the City and one or more private sector or non-governmental partners. This method is used for projects that will benefit the partners and help to minimize costs to local taxpayers.

Deciding on which method of financing should be selected for a given project is dependent on a number of factors. These include the cost of the project, its useful life, the eligibility of the project to receive funds from other than local taxes, long-term and short-term financial obligations of the City and a project's relative priority in terms of implementation. The Capital Improvement Plan seeks to maximize the potential benefits from all revenue sources.

Timeline

- August 18, Process Kick Off – Planning Board Presentation
- October - Citizen requests and City department project request reviewed/ financials prepared
- October/November- Planning Board Advisory Committee meets to review draft CIP
- November/December – Planning Board holds a public hearing and recommends the adoption of the CIP by the City Council
- January/February/March – City Council holds a public hearing and adopts CIP.

VII. OTHER BUSINESS

A. Chairman's Updates and Discussion Items

VIII. ADJOURNMENT

ORDINANCE #

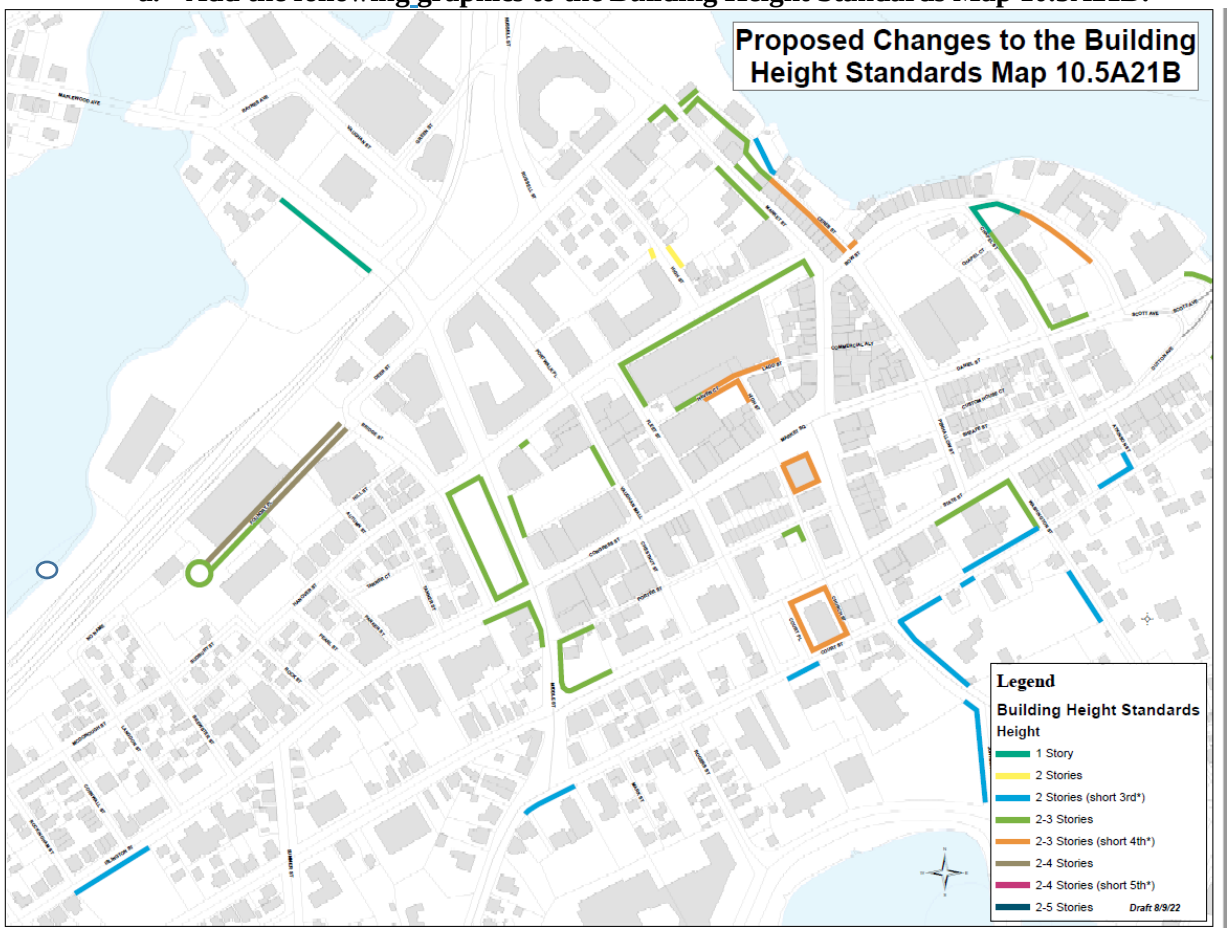
THE CITY OF PORTSMOUTH ORDAINS

That the Ordinances of the City of Portsmouth, Chapter 10 – Zoning Ordinance, be amended as follows:

Amend Article 5A Character Based Zoning: Section 10.5A21.10: Contents of Regulating Plan – Map 10.5A21B; Section 10.5A21.20 -Building Height Standards; Section 10.5A20.50 – Civic Districts; and, Article 15, Section 10.1530 - Definitions as follows:

Deletions from existing language ~~stricken~~; additions or changes to Building Height Map shown in color, modifications to existing language colored and underlined; remaining language unchanged from existing:

5) **Amend Section 10.5A21B - Building Height Standards Map as follows:**
   a. **Add the following graphics to the Building Height Standards Map 10.5A21B:**



STAFF COMMENTS - BUILDING HEIGHT MAP:

Purpose:

1. *To add building height standards for civic and municipal properties that are consistent with the abutting building height standards and existing conditions.*

2. *To add building height standards for Foundry Place in order to provide a building height standard for 66 Rock Street.*

3. *To modify the building height standard for a small portion of High Street and Haven Court to match the surrounding buildings and their associated building height standard.*

***Background** – These changes will help ensure that new buildings, additions or alterations to existing buildings within the municipal and civic properties would be better aligned within their surrounding context. The Existing Building Height Map (shown in Exhibit 1), shows that there are no building height standards for Civic or Municipal properties within the Character District zoning area. As a new public street, Foundry Place would be added to the Building Height Map and be consistent with the building heights supported by the North End Vision Plan and the recently approved projects along Foundry Place. The building height standard on High Street and Haven Court will be more consistent with the building height standard of the existing abutting properties. Exhibit 2 shows the proposed changes to the Building Height Map while Exhibit 3 shows both the existing and proposed changes as a revised Building Height Map.*

***Updates**– As discussed briefly at the 6-23-22 meeting, in order to retain the existing building height standards along the Hill and Hanover Street properties, the proposed building height standard along Foundry Place along the rear yard of the Heinemann property is recommended to be lowered to 2-3 stories or 40 to match the existing height standard for this property. Additionally, the building height standard for the South Church is recommended to be increased to 2-3 stories (short 4th) or 45' to match the existing height of the church. Note that all other civic buildings would be in conformance with the proposed building height standards.*

THE FOLLOWING REVISION IS A RESPONSE TO THE FEEDBACK RECEIVED IN THE PLANNING BOARD MEETING HELD ON AUGUST 8, 2022.

***Cemeteries** – To better align with the existing use of the properties, the proposed changes to the building height standards map have been updated to lower the building height standards along the cemeteries to 1 story or 20'; the lowest building height standard.*

b. Amended the following note on Map 10.5A21B as follows:

Incentive Overlay Districts

Within the Incentive Overlay Districts, certain specified development standards, including height, density and parking, may be modified pursuant to Section 10.5A4~~7~~6.

STAFF COMMENTS - OVERLAY DISTRICT REFERENCE:

***Purpose** – To correct an incorrect reference.*

***Background –** 10.5A47 does not exist in the code and was intended to be listed as 10.5A46.*

6) Amend Article 5 - Section 10.5A21.20 - Building Height Standards (deletions from existing language ~~stricken~~; additions to existing language colored and underlined; remaining language unchanged from existing):

a. Amend Section 10.5A21.21 as follows:

10.5A21.21 Assignments for specific **building height** require a building to have no more than the designated maximum number of **stories** or the maximum height in feet (whichever is lower) and no less than the designated minimum number of **stories**. Subject to Section 10.635.70 – Review Criteria, within the Historic District, the approved **building height** may be lower than the maximum designated number of **stories** or the maximum height in feet provided in Section 10.5A43.30 but shall be not lower than the minimum designated number of **stories** or the minimum height in feet provided.

STAFF COMMENTS - HISTORIC DISTRICT COMMISSION:

Purpose *– To make it explicit that within the Historic District the HDC has jurisdiction over height, scale, and massing of any new construction and can require, as part of its approval process, a building height less than the maximum permitted.*

Background *- Like building placement or design, the height of the building must be determined to be appropriate by the HDC so the building height standard(s) for the property set the range of permitted building heights subject to HDC approval.*

b. Amend Section 10.5A21.21 as follows:

10.5A21.22 When a **lot** is assigned to more than one **building height** standard the **lot** shall be apportioned as follows:

(a) A **building height** standard designated along ~~the~~ a **front lot line** ~~or~~ on a ~~**street**~~ **public place** shall apply to the portion of the **lot** that is 50 feet or less from such **lot line** ~~or **street**~~along a **public place**.
(b) A **building height** standard designated along a water body shall apply to the portion of the **lot** that is 100 feet or less from the mean high water line.
(c) More than 50 feet from a **front lot line** ~~or~~ along a ~~**street**~~ **public place** and more than 100 feet from a water body, the **building height** may increase to the highest **building height** standard designated for the **lot**.
(d) Where a **lot** has less depth from ~~the~~ a **front lot line**, ~~**street,**~~ along a **public place** or water body than the required minimum distances stated above, the lowest **building height** standard for the **lot** shall be applied to the required linear distance from the **lot line**, ~~**street,**~~ **public place**, or water body.

STAFF COMMENTS - BUILDING HEIGHT ON CORMER, THROUGH OR WATERFRONT LOTS:

Purpose *– To remove any ambiguity that the maximum building height is assigned to all lot lines fronting on a public place and that corner, through or waterfront lots allow for limited encroachment of a higher building height provided the taller sections of the building are located at least 50 feet from a lot line along a public place with a lower building height standard.*

Background *– This change will remove any ambiguity as to how building heights are apportioned on corner, through or waterfront lots.*

7) Amend Article 5 – Section 10.5A50: Civic Districts (deletions from existing language stricken; additions to existing language colored and underlined; remaining language unchanged from existing):

a. Amend Section 10.5A52.40 as follows:

10.5A52.40. Provided all **uses** remain civic, n~~N~~ew structures, alterations and expansions of existing structures in the Civic district ~~are exempt from the requirements of 10.5A42 and 10.5A43 provided all **uses** remain civic~~shall only conform to the Building Placement, Building and Lot Occupation, and Building Form Standards for Principal and Outbuildings listed in 10.5A41.10 C.

STAFF COMMENTS - DIMENSIONAL STANDARDS IN THE CIVIC DISTRICT:

Purpose *– To assign basic dimensional standards to Civic properties.*

Background *– In contrast to Civic properties outside the Character District Zoning Area, all 9 properties within the Civic District currently have no dimensional controls including, but not limited to, building height, setbacks, or building footprint size. The CD4 development standards are proposed. Notably, this amendment proposes no use change to the Civic Districts and all Civic properties comply with and are well below these dimensional standards. As an alternative to the CD4 Development Standards, a new set of Development Standards could be also be established for the Civic District or, the existing blanket exemption could remain in place.*

8) Amend Article 15 – Definitions - Section 10.1530: Terms of General Applicability (deletions from existing language ~~stricken~~; additions to existing language colored and underlined; remaining language unchanged from existing):

Lot line, front

A boundary of a **lot** that separates the **lot** from ~~a **street** or~~ a **public place**. A **corner lot**, ~~or a~~ **through lot** or a waterfront **lot** shall have ~~two~~ multiple **front lot line**s. In the case of a **corner lot**, **through lot** or a waterfront **lot**, the ~~**front lot line**~~ **principal front yard** shall be the line bordering ~~a **street**~~ a **public place** on which the **lot** has its address as defined by the City.

STAFF COMMENTS - FRONT LOT LINE:

Purpose *– To clarify that corner, through or waterfront lots can have multiple front lot lines and the property address only determines the principle front lot line.*

Background *– This avoids any ambiguity as to how building heights are allocated on corner, through or waterfront lots.*

Public place

A **street** way, park, **pedestrian alleyway** or **community space** that provides public access.

STAFF COMMENTS - PUBLIC PLACE:

Purpose *– To add a definition for a public place.*

Background *– Public places include, but are not limited to the existing community space types (i.e. pedestrian alleyways, greenways, squares or plazas) that provide public access.*

Urban districts

For the purposes of grade definitions and **building height** determinations, the **urban districts** are defined as the Character and Civic Districts.

STAFF COMMENTS – URBAN DISTRICTS:

***Purpose** – To add a new definition for **Urban districts** so building height can be measured along the street-facing façade of the building versus the entire perimeter of the building.*

***Background** – In urban districts this will prevent new buildings from using the existing or finished grades behind the building to raise the overall average height of the building along the street.*

Average existing grade

For all buildings located outside the **urban districts**, the **average existing grade** shall be the average ground levels adjoining the **building** at all exterior walls measured every five feet around the perimeter of the **building**. For all buildings located inside the **urban districts**, the **average existing grade** shall be the average existing ground level measured every five feet along the street-facing **facade** of all **lot lines** adjoining **a public place (**see also **building height**).

STAFF COMMENTS - AVERAGE EXISTING GRADE:

***Purpose** – To add a new definition for **Average Existing Grade** in order to minimize fill areas from being used to elevate the height of a proposed building.*

***Background** – Outside the Urban Districts, building height will continue to be measured from the average existing grade around the entire perimeter of the building. Within the Urban Districts it will only be measured along the street-facing façade(s) of the building.*

Average finished grade

For all buildings located outside the **urban districts**, the **average finished grade** shall be the average ground levels adjoining the **building** at all exterior walls measured every five feet around the perimeter of the **building**. For all buildings located inside the **urban districts**, the **average finished grade** shall be the average finished ground level measured every five feet along street-facing **facade** of all **lot lines** adjoining **a public place (**see also **building height**).

STAFF COMMENTS - AVERAGE FINISHED GRADE:

***Purpose** – To add the definition for **Average Finished Grade** in order to address cuts (or earth removal) being used to elevate the height of a building.*

***Background** – Outside the Urban Districts, this change will continue to use the average finished grade around the entire building to measure the average building height. Inside the Urban Districts, the average building height will be measured only along the street-facing façade(s) of the building.*

Building height

The greatest vertical measurement between ~~two reference points~~ the lower and upper reference points as defined below. This measurement shall be the **building height** for the purposes of this Ordinance.

(a) For buildings located outside the **urban districts** the lower reference point shall be the **average existing grade** or **average finished grade**, whichever is lower, measured along the

perimeter of the entire **building**. For buildings located inside the **urban districts** the lower reference point shall be established from the **average existing grade** or **average finished grade**, whichever is lower, along street-facing **facade** of all **lot lines** adjoining a **public place**. In the case of a corner lot, ~~or~~ through lot or waterfront lot the provisions of Section 5A.21.21 shall apply. The vertical distance between the lower and upper reference points shall not exceed the maximum number of stories or **building height**.

STAFF COMMENTS - BUILDING HEIGHT:

Purpose *– Within the Non-Urban Districts the building height will continue to be measured around the entire perimeter of the building. In contrast, in Urban Districts building height will only be measured along the street-facing facades adjoining a public place.*

Background *– Inside the Urban Districts several recent projects have included podium-type construction resulting in an additional story being added and thereby artificially increasing the average grade plane of the land around the building.*

(b) The upper reference point shall be any of the following:
(1) For a flat or flat-topped **mansard roof**, the highest point of the roof surface;
(2) For a ~~pitched~~ gable, gambrel, hip, ~~roof~~, hip-topped **mansard roof**, or **penthouse**~~or gambrel roof~~, the elevation midway between the level of the eaves or, floor in the case of a **penthouse**, and highest point of the roof. For this purpose, the "level of the eaves" shall mean the highest level where the plane of the roof intersects the plane of the outside wall on a side containing the eaves, but at no time shall this level be lower than the floor level of the uppermost **story** or **attic.**

STAFF COMMENTS - MANSARD ROOFS:

Purpose *– To clarify and differentiate how building height is measured between a flat- and hip-topped (or sloped) mansard roofs.*

Background *– The existing requirements for measuring hip-topped roofs are in conflict with the diagram currently in the code. In the end, a primary objective of the code is to encourage new buildings to have sloped roofs and to minimize flat-topped buildings.*

(c) A **parapet wall**, fence, railing, decorative cornice, or similar structure that extends more than four ~~two~~ feet above the roof surface shall be included in the determination of the **building height**, but shall not be included if it does not extend more than ~~two~~ four feet above the roof surface.~~.~~

STAFF COMMENTS - ROOF APPURTENANCES:

Purpose *– This would allow for taller root edge treatments along the edge of the roof surface on a flat-topped building.*

Background *– This would support adding a stronger roof edge treatment like a raised cornice or parapet wall. The current restriction of two feet along the roof edge of a 50-60 foot building has proven largely ineffective in achieving architectural interest along the roof edge.*

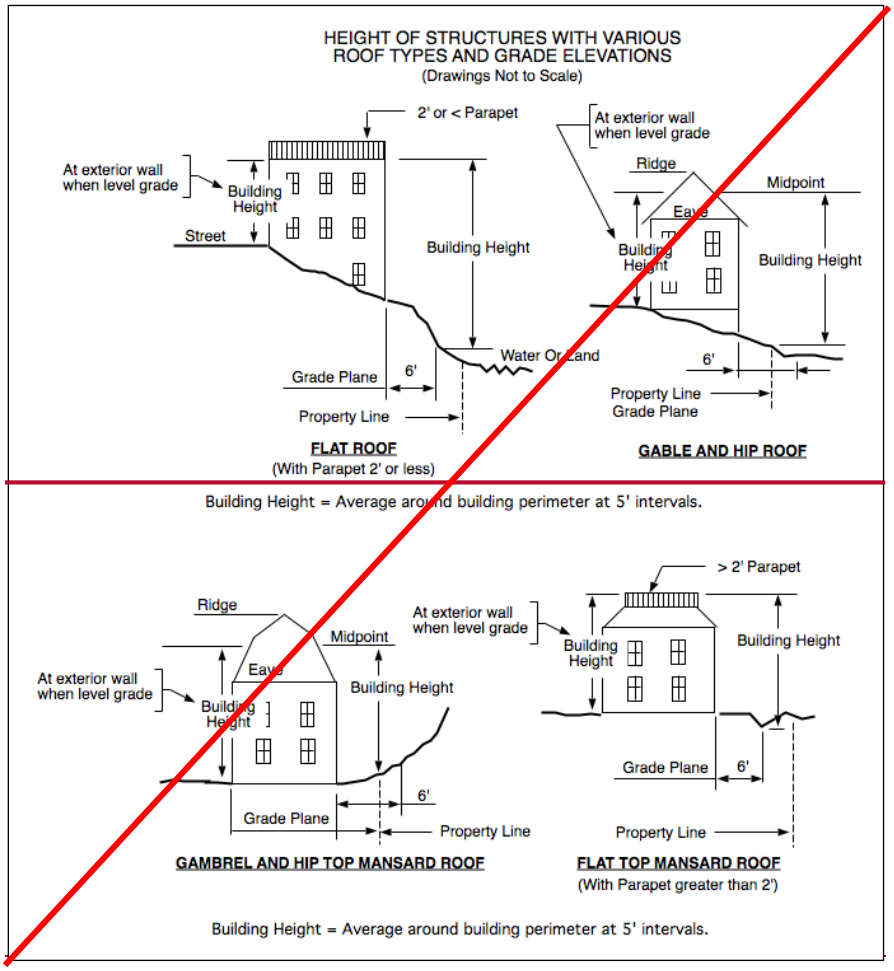
~~(d) To determine **building height**, measurements shall be taken at least every 5 feet around the entire perimeter of the **building.** The average is calculated from these figures and that figure shall be the **building**'s height for purposes of this Ordinance.~~

(See also: **average existing grade** and **average finished grade**, **parapet wall,** **mansard, penthouse** and **urban districts**)

STAFF COMMENTS – BUILDING HEIGHT GRAPHIC:

Purpose *– To delete this section and its reference to the building height diagram in order to remove existing inconsistencies on how building height is measured for some roof types and to reduce confusion in how building height is measured in urban and non-urban districts..*

Background *– The existing building height diagram illustrates how building height is currently measured. It exclusively relies on the finished grade. The proposed code amendments will separate urban districts from non-urban districts and consider both existing and finished grades.*



STAFF COMMENTS - BUILDING HEIGHT GRAPHIC:

Purpose *– To remove the diagram to avoid confusion and conflicts in how building height is measured inside and outside urban districts.*

Penthouse

A habitable space within the uppermost portion of a **building** above the **cornice** which is set back at least ~~15~~ 20 feet from all edges of the roof adjoining a **public place** and at least 15 feet from all other edges. ~~and~~ The total floor area of the **penthouse** shall not exceed 50% of the area of the **story** below and the height of the **penthouse** shall not exceed 10 feet above the **story** below for flat roof surface or 14 feet for a gable, hip, or hip-topped **mansard roof** surface. Except for elevator or stairwell access allowed under Section 10.517, no other **roof appurtenance**s shall exceed the maximum allowed height of a **penthouse**. For internal courtyards at least 40 feet from a street or vehicular right-of-way or easement, the **penthouse** shall be setback at least 8 feet from the edge of the roof of the story below. **(**see also **building height)**

STAFF COMMENTS - PENTHOUSES:

Purpose *– To modify the dimensional standards for penthouses to minimize public views from a public place and bring penthouses into parity with the height requirements for other attic areas.*

Background *– The proposed dimensional standards will increase the setback of a penthouse along a public place and encourage the use of sloped roofs. This will also allow a penthouse to be fully treated like an attic space by using the mid-point of its height to calculate the overall height of the building.*

Mansard roof

A building with either a flat- or hip-topped mansard roof as follows:

a) Flat-topped mansard - ~~a~~ four-sided flat-top mansard roof ~~or hip-topped topped roof~~ characterized by ~~two~~ one slope on each side of its sides ~~with~~ where the sloped roof may be punctured by dormer windows and the higher roof surface is a **flat roof**;

~~a)~~ b) H~~h~~ip-topped mansard – a roof characterized by two slopes on each side with the lower slope punctured by dormer windows. The upper slope of the roof may not be visible from **street** level when viewed from close to the **building**~~.~~ and the highest roof structure shall not be a **flat roof** as defined herein.

STAFF COMMENTS - MANSARD ROOF:

Purpose – *More clearly differentiate the difference between a flat- and hip-topped mansard roof.*

Background *– A flat-topped mansard roof is analogous to a flat-topped building whereas a hip-topped mansard roof is similar to a sloped roof or attic (like a gable, gambrel or hip roof).*

Short story

Either (1) a top story that is below the cornice line of a sloped roof and is at least 20% shorter in height than the story below; or (2) a story within a flat-topped **mansard roof** with a pitch no greater than 30:12.

STAFF COMMENTS - SHORT STORY:

Purpose – *Address the existing conflict between how flat- and hip-topped mansard roofs are measured in terms of building height.*

Background *– Flat-topped mansards are measured the same as flat-roofed buildings. In contrast, hip-topped mansard roofs are measured like sloped roof buildings where the mid-point between the ridge and eave is averaged. This amendment remove the conflict as to how the building height of a hip-topped mansard roof is measured.*

THE FOLLOWING REVISION IS A RESPONSE TO THE FEEDBACK RECEIVED IN THE PLANNING BOARD MEETING HELD ON AUGUST 8, 2022.

5) Amend Article 5 – Section 10.5A43.32: Building and Story Heights (deletions from existing language stricken; additions to existing language colored and underlined; remaining language unchanged from existing):

a. Amend Section 10.10.5A43.32 (b) as follows:

(a) All **roof appurtenance**s and other features that exceed the allowed **building height** for the zoning district shall not exceed 33 percent of the total roof area of the **structure** and, except for elevators, ~~and~~ stair towers, and decorative railings no taller than four feet in height, shall be set back at least 10 feet from any edge of the roof.

STAFF COMMENTS – ROOF APPURTENANCES (DECORATIVE RAILINGS):

Purpose *– To allow for decorative railings up to 4 feet in height to be located along the roof edge.*

Background *– Currently, all roof appurtenances (including decorative rail systems) are required to be located at least 10 feet from the edge of the roof. This will allow for better use of the roof surface and the opportunity to allow for decorative rail systems to add interest to the edge of the roof and the overall skyline of the city.*

EXHIBIT 1 – EXISTING BUILDING HEIGHT STANDARDS MAP (SHOWING THE GAPS FOR MUNICIPAL AND CIVIC DISTRICT PROPERTIES AND FOUNDRY PLACE).

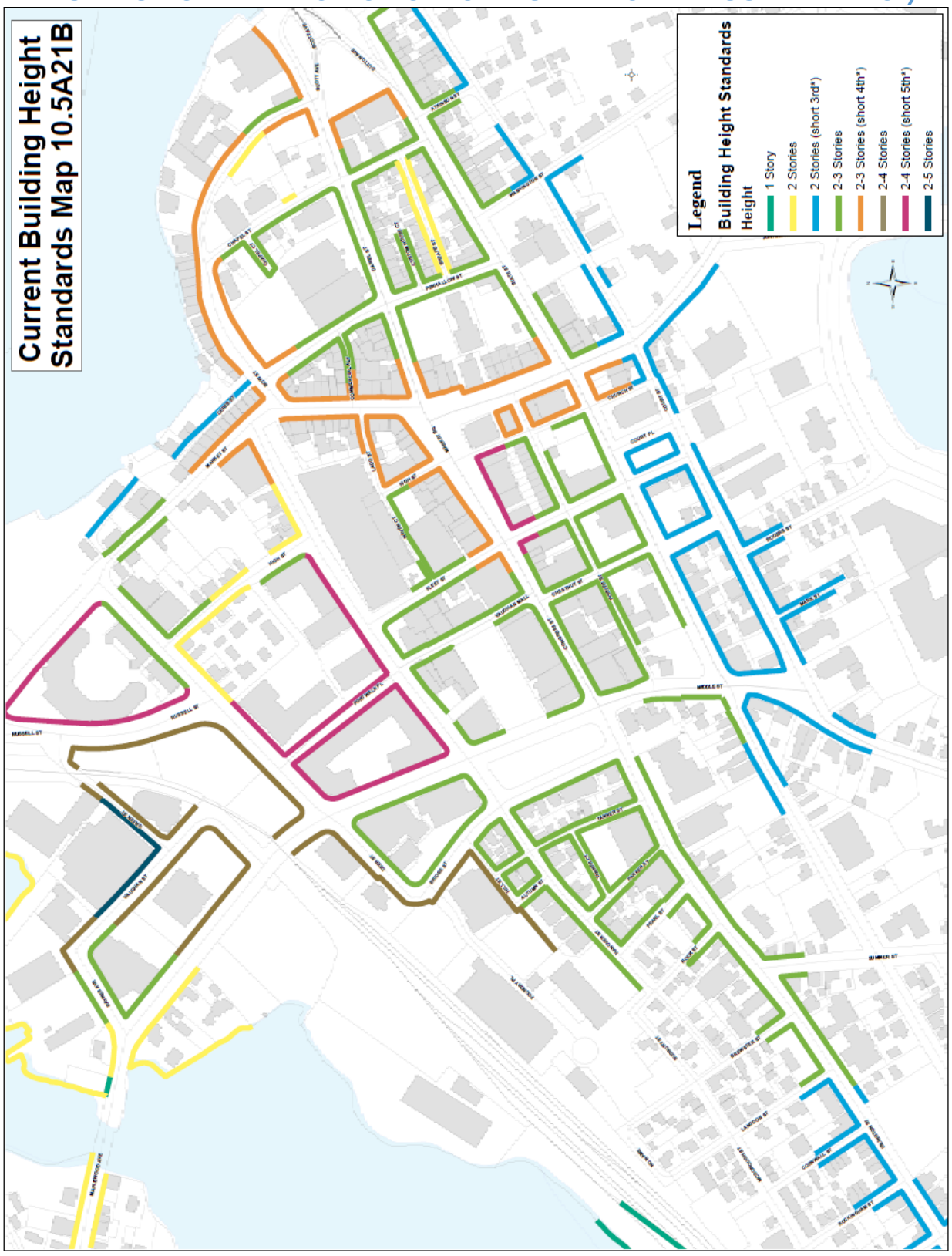


EXHIBIT 2 – PROPOSED AMENDMENTS TO THE BUILDING HEIGHT STANDARDS MAP

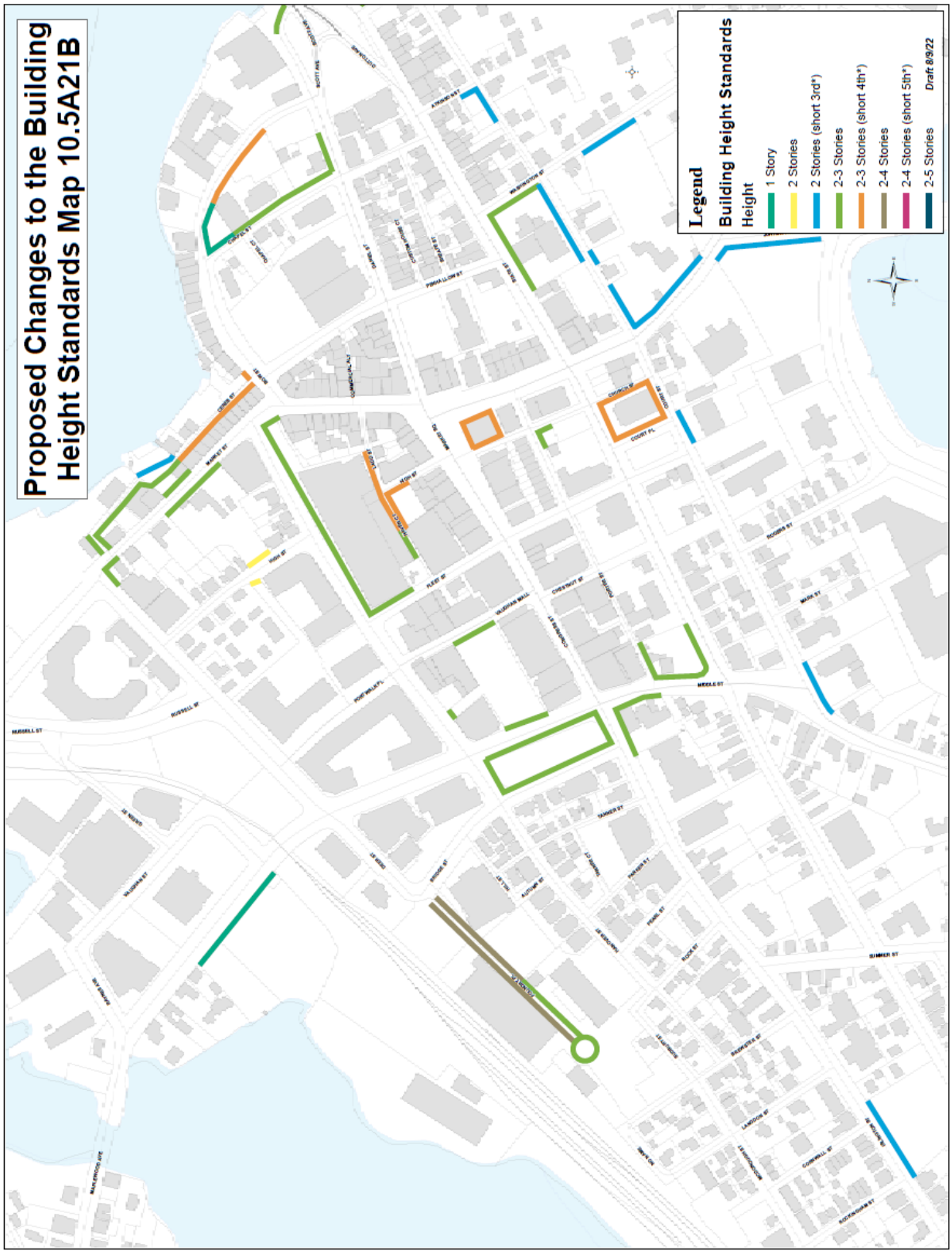
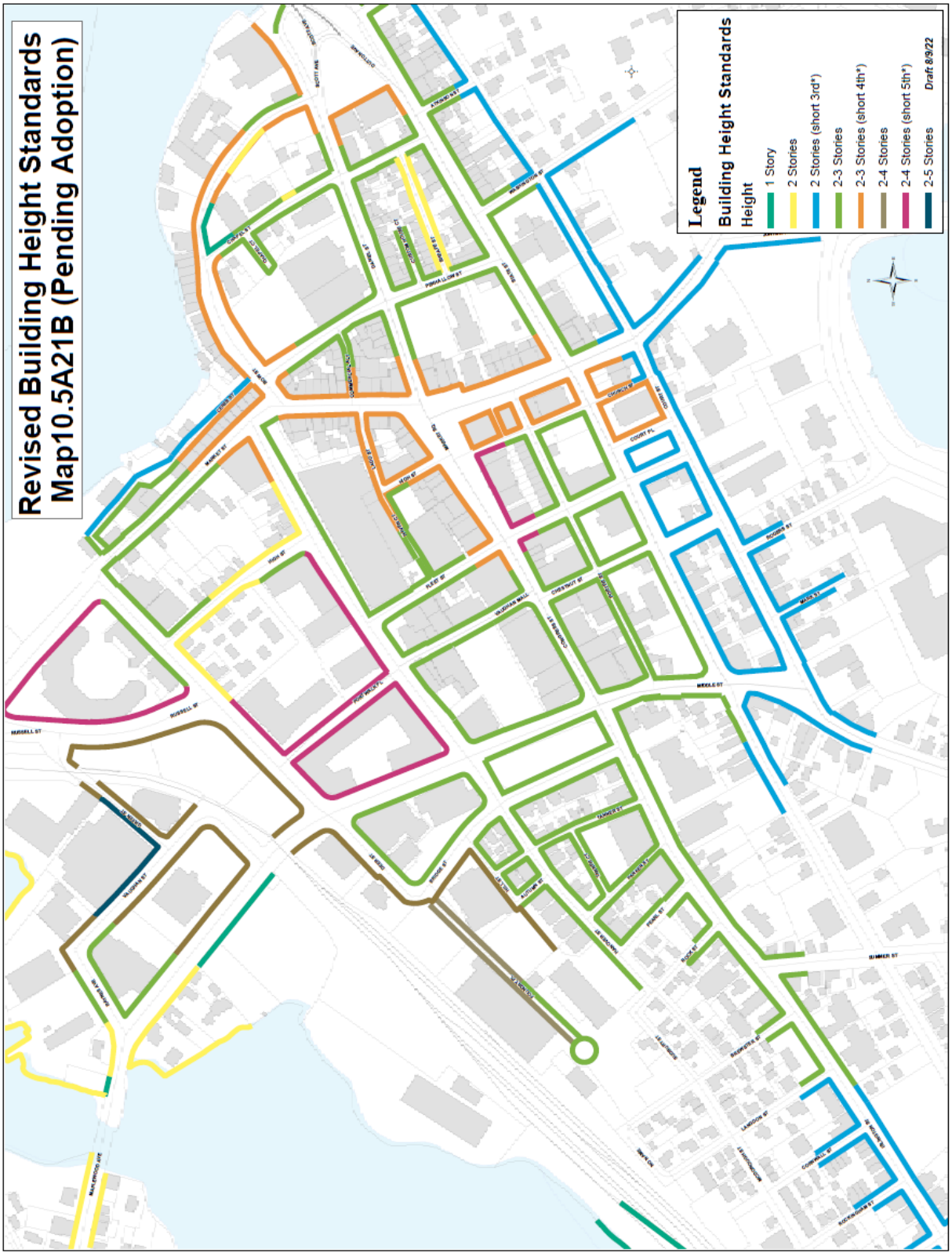


EXHIBIT 3 – REVISED BUILDING HEIGHT STANDARDS MAP SHOWING THE EXISTING AND PROPOSED BUILDING HEIGHTS STANDARDS



REGULAR MEETING
PLANNING BOARD
PORTSMOUTH, NEW HAMPSHIRE

EILEEN DONDERO FOLEY COUNCIL CHAMBERS
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

7:00 PM **July 21, 2022**

MINUTES

MEMBERS PRESENT: Rick Chellman, Chairman; Corey Clark, Vice Chair; Karen Conard, City Manager; Joe Almeida, Facilities Manager; Beth Moreau, City Councilor; Greg Mahanna; Peter Harris; James Hewitt; Jane Begala; Andrew Samonas, Alternate;

ALSO PRESENT: Beverly M. Zendt, Planning Director; Stefanie Casella, Planner 1

MEMBERS ABSENT: Franco DiRienzo, Alternate;

REGULAR MEETING 7:00pm

I. APPROVAL OF MINUTES

A. Approval of June 16, 2022 and June 23, 2022 meeting minutes.
B. Approval of June 29, 2022 special meeting minutes.
C. Approval of June 29, 2022 joint work session minutes.

City Council Representative Moreau moved to approve the June 16, 2022, revised June 23, 2022 meeting minutes, June 29, 2022 special meeting minutes, and the June 29, 2022 joint work session meeting minutes as presented, seconded by Mr. Mahanna. The motion passed unanimously.

II. DETERMINATIONS OF COMPLETENESS

SITE PLAN REVIEW

A. The request of **230 Commerce Way LLC (Owner and Applicant),** for Property located at **230 Commerce Way** requesting **Amended Site Plan Review Approval** to construct a new two-story building.

City Council Representative Moreau moved to determine the application is complete according to the Site Plan Regulations, (contingent on the granting of any required waivers under Section III and IV of the agenda) and to accept the application for consideration, seconded by Vice Chairman Clark. The motion passed unanimously.

B. The request of **HCA Health Service of NH IINC (Owner),** for property located at **333 Borthwick Avenue** requesting Amended Site Plan Approval for an 8,700 square foot addition to the existing building.

City Council Representative Moreau moved to determine the application is complete according to the Site Plan Regulations, (contingent on the granting of any required waivers under Section III and IV of the agenda) and to accept the application for consideration, seconded by Vice Chairman Clark. The motion passed unanimously.

III. PUBLIC HEARINGS -- OLD BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

A. The request of **Artwill LLC (Owner),** for property located at **437 Lafayette Road** requesting Preliminary and Final Subdivision approval to subdivide one existing lot with 65,365 square feet of lot area and 123.92 of frontage on Lafayette Road and 336.61 feet of frontage on Andrew Jarvis Drive into three lots as follows: Proposed Lot 1 with 18,434 square feet of lot area and 123.92 feet of frontage on Lafayette Road and 129.57 feet of frontage on Andrew Jarvis Drive, Proposed Lot 2 with 16,606 square feet of lot area and 102.04 feet of frontage on Andrew Jarvis Drive, and Proposed Lot 3 with 30,325 square feet of lot area and 107 feet of frontage on Andrew Jarvis Drive. Said property is located on Assessor Map 229 Lot 1 and lies within the Single Residence B (SRB) District. (LU-22-82)

City Council Representative Moreau moved to consider Public Hearings – Old Business items A and B together and vote on them separately, seconded by City Manager Conard. The motion passed unanimously.

SPEAKING TO THE APPLICATION

Justin Asic from TF Moran and Attorney Derek Durbin spoke to the application. Mr. Asic commented that he presented the 3-lot subdivision at last month's meeting. The project requires subdivision and site plan review approval and a CUP for the ADU. Last month the Board voted to continue this application, so they would have time to address any abutter concerns. They have met with the abutters and satisfied their concerns with the drainage and the maintenance of the road. They did a site walk on June 23, 2022, to demonstrate the pitch or Artwill Ave. and the drainage flow. The abutters have a shared drive between the lots with a 4-inch berm to prevent

water from gathering in the driveway. They will remove the berm and rework the grades to keep storm water out of the driveway.

Vice Chairman Clark questioned when the overflow beehives would activate. Mr. Asic responded that it would activate after the 10-year storm.

Mr. Durbin commented that they made some modifications to the easement agreement to address the abutter concerns. The concerns were not significant and pertained to the restoration of the road after construction. The developer agreed to restore Artwill Ave. to its prior condition post construction. After that the lot owners will share in the responsibility of maintainence and cost for Artwill Ave.

PUBLIC HEARING

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

1) City Council Representative Moreau moved to grant Preliminary and Final Subdivision Approval, seconded by Vice Chairman Clark with the following stipulations:

Conditions to be satisfied subsequent to final approval of subdivision but prior to commencement of any site work or construction activity:
1.1) Lot numbers as determined by the Assessor shall be added to the final plat.

1.2) Property monuments shall be set as required by the Department of Public Works prior to the filing of the plat.

1.3) GIS data shall be provided to the Department of Public Works in the form as required by the City.

1.4) The final plat and all easement deeds shall be recorded concurrently at the Registry of Deeds by the City.

1.5) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

1.6) Associated recording fees shall be paid to the City prior to recordation.

The motion passed unanimously.

2) City Council Representative Moreau moved to find that the application meets the requirements set forth in Section 10.814.60 of the Zoning Ordinance and to grant the Conditional

Use Permit, seconded by Vice Chairman Moreau with the following stipulation:
2.1) Ownership will be in accordance with the requirements set forth in the Zoning Ordinance section 10.814.30.

10.814.32 Either the principal dwelling unit or the accessory dwelling unit shall be occupied by the owner of the dwelling as his or her principal place of residence. The owner shall provide documentation demonstrating to the satisfaction of the City that one of the units is his or her principal place of residence. 10.814.321 When the property is owned by one or more trusts, one of the dwelling units shall be the principal place of residence of the beneficiary(ies) of the trust(s).

The motion passed unanimously.

3) City Council Representative Moreau moved to grant Site Plan Approval seconded by Vice Chairman Clark with the following stipulations:

Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:
3.1) Applicant will coordinate final water and sewer connections with Portsmouth Water.

3.2) The final water main connection under Andrew Jarvis Dr. will be determined by Portsmouth Water.

3.3) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

3.4) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

3.5) Associated recording fees shall be paid to the City prior to recordation.

Conditions to be satisfied subsequent to commencement of site work and construction activity but prior to release of surety bond or certificate of occupancy:

3.6) The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance;

The motion passed unanimously.

B. The request of **Artwill LLC (Owner),** for property located at **437 Lafayette Road** requesting Site Plan Approval and Conditional Use Permit Approval as permitted under Section 10814.40 of the Zoning Ordinance to subdivide the lot and construct two new single-family dwellings (one includes an attached accessory dwelling unit) in addition to

the existing single-family dwelling. Said property is located on Assessor Map 229 Lot 1 and lies within the Single Residence B (SRB) District. (LU-22-82)

DISCUSSION AND DECISION OF THE BOARD

This was voted on under Item A.

IV. PUBLIC HEARINGS – NEW BUSINESS

The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.

A. The request of **230 Commerce Way LLC (Owner and Applicant),** for Property located at **230 Commerce Way** requesting **Amended Site Plan Review Approval** to construct a new two-story building with a 12,500 square foot footprint and totaling 25,000 square feet with associated site improvements including lighting, utilities and stormwater treatment/management systems. Said property is located on Assessor Map 216 Lot 1-5 and lies within the Office Research (OR) District. (LU-22-14)

City Council Representative Moreau moved to consider Public Items – Old Business Item A and Item B together and vote on them separately, seconded by City Manager Conard. The motion passed unanimously.

SPEAKING TO THE APPLICATION

Neil Hanson from Tighe and Bond noted that they came in February for a Conceptual Consultation. They have been granted a special exception for the proposed vet use. The project site has 3 story office building and large seldom used parking lot in the rear. The proposed site plan includes the construction of a 2 story 12,000 sf vet office. They will also reconfigure the parking layout in the rear. The proposed secondary driveway has been removed from the plan. The proposal includes storm water treatment on site. Right now, runoff sheet flows to the rear wetland. The proposed project will collect and treat storm water runoff through an infiltration system. The parking lot is in the 100-foot buffer, so they need a wetland CUP to remove 5,000 sf of impervious surface from the buffer. The proposal includes 9,000 sf of buffer restoration and a new drain outfall area. They have incorporated feedback from TAC and the Conservation Commission.

Ms. Begala questioned if they were planting the same number of trees that would be removed. Mr. Hanson responded that the only area they were removing vegetation was in the narrow strip for storm water discharge. They were probably net even on trees because of the limited cutting.

Ms. Begala questioned if they did a parking demand analysis. Mr. Hanson responded that they included the parking calculations for the site. They are required to provide 193 spaces and they are providing 202 spaces for the combined office and vet use.

Ms. Begala questioned how they would ensure that people would use the dog waste stations. Mr. Hanson responded that the new parking lot islands will be heavily landscaped. They will also sign the wetland buffer and note pets were not allowed in that area.

Chairman Chellman questioned if they had worked with DPW on their fair share contribution for the multi-use path. Mr. Hanson responded that they are continuing to work on that.

PUBLIC HEARING

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

1) Mr. Mahanna moved to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit as presented, seconded by Vice Chairman Clark.

   The motion passed unanimously.

2) Mr. Mahanna moved to grant Site Plan approval, seconded by Vice Chairman Clark with the following conditions:
Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:

2.1) Applicant will work with DPW to determine fair share contribution amount that will be dedicated to City sediment removal mitigation project.

2.2) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

2.3) Applicant will work with DPW to determine fair share contribution amount that will be dedicated to pedestrian multi-use path construction on Market Street.

2.4) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

2.5) Associated recording fees shall be paid to the City prior to recordation.

2.6) The Applicant or its engineer shall submit a copy of a completed Land Use Development Tracking Form using the Pollutant Tracking and Accounting Program (PTAP) online portal currently managed by the UNH Stormwater Center or similar form approved by the City.

2.7) The applicant consult with the City Development Compliance Planner to determine if a Construction Management and Mitigation Plan (CMMP) is needed.

Conditions to be satisfied subsequent to commencement of site work and construction activity but prior to release of surety bond or certificate of occupancy:

2.8) The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance;

2.9) A stormwater inspection and maintenance report shall be completed annually and copies shall be submitted for review to the City's Stormwater Division/ Public Works Department.

The motion passed unanimously.

B. The request of **230 Commerce Way LLC (Owner and Applicant),** for Property located at **230 Commerce Way** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for the installation of a treated stormwater drainage outfall, removal of 5,070 square feet of impervious surface, and 9,250 square feet of buffer enhancements within the 100 foot buffer area for associated construction outside the buffer area. Said property is located on Assessor Map 216 Lot 1-5 and lies within the Office Research (OR) District. (LU-22-14)

DISCUSSION AND DECISION OF THE BOARD

This was voted on under Item A.

C. The request of **HCA Health Service of NH IINC (Owner),** for property located at **333 Borthwick Avenue** requesting Amended Site Plan Approval for an 8,700 square foot addition to the existing building with associated landscaping, utilities, sidewalk connectivity, and other related site work. Said property is located on Assessor Map 240 Lot 2-1 and lies within the Office Research (OR) District. (LU-22-35)

City Council Representative Moreau moved to consider Public Hearings - New Business Item C and D together and vote on them separately, seconded City Manager Conard. The motion passed unanimously.

SPEAKING TO THE APPLICATION

Matthew Hamby and Chris Dumont spoke to the application. Mr. Hamby commented that the building addition is a horizontal expansion of the cancer treatment facility. They are removing 200 sf of wetland but establishing 1,150 sf of new wetland. It is a manmade pond, and the volume will be increased by 2,000 cubic feet. There will be a new mobile MRI unit with small retaining wall. They are removing 15 parking spaces, 4 of which are ADA. They will be adding 8 spaces back, 6 of which will be ADA. They are reworking the entrance to make a more functional entrance for the cancer center entryway.

Ms. Begala requested clarification about the expansion of the pond. Mr. Hamby responded that they were filling one portion and digging out another area. They are increasing the volume by 2,000 cubic sf. It will be a detention pond.

Ms. Begala questioned if there was any bird life on the pond that would be impacted. Mr. Hamby responded that nothing came up in the environmental studies.

Mr. Mahanna questioned if there was any alternate location on the site to put the addition. Mr. Dumont responded that the wetlands and power line easement dictated the location. The addition needs to have a radiation vault that needs to be on the ground level.

Chairman Chellman questioned if there was an alternate location within the existing building. Mr. Dumont responded that this location was next to the radiology department which made sense for cancer treatment patients.

Mr. Harris questioned if they were adding more parking to the site. Mr. Hamby responded that there was an upcoming application to build a satellite lot for employees.

Mr. Hewitt questioned if they could build it on a second floor. Mr. Dumont responded that the radiation vault was too heavy and needed to be on the ground floor.

PUBLIC HEARING

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

1) Vice Chairman Clark moved to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit as presented, seconded by City Council Representative Moreau.

   Vice Chairman Clark commented that they did a good job explaining the constraints of the location. The pond and the plantings will help mitigate the impacts.

   Mr. Mahanna questioned what the difference between and natural and a manmade wetland were. Ms. Zendt responded that this was called a jurisdictional wetland and was used for a storm water wetland.

   Vice Chairman Clark added that they have some value and were mapped as a wetland but not as good at providing ecological value.

   The motion passed unanimously.

2) Vice Chairman Clark moved to grant Amended Site Plan approval, seconded by City Council Representative Moreau with the following conditions:

Conditions to be satisfied subsequent to final approval of site plan but prior to commencement of any site work or construction activity:

2.1) New sewer manhole will be a cut in manhole.

2.2) Borthwick Ave handicap access ramp flooding will be addressed and approved by DPW.

2.3) Any easement plans and deeds for which the City is a grantor or grantee shall been reviewed and approved by the Planning and Legal Departments and accepted by City Council.

2.4) The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.

2.5) Associated recording fees shall be paid to the City prior to recordation.

Conditions to be satisfied subsequent to commencement of site work and construction activity but prior to release of surety bond or certificate of occupancy:

2.6) The wetland area adjacent to the emergency area will be dredged from Borthwick to the oxygen tank area to restore free flowing drainage. This will be done in conjunction with an associated wetland enhancement along the edges of this same area.

2.7) Prior to release of bond, Applicant will work with DPW to determine fair share contribution amount that will be dedicated to City sediment mitigation project that is proposed for the area from the oxygen tanks to the Route 1 bypass area.

2.8) The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance.

The motion passed unanimously.

D. The request of **HCA Health Service of NH IINC (Owner),** for property located at **333 Borthwick Avenue** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 200 square feet of permanent and 4,400 square feet of temporary impact to the inland wetland; and 13,000 square feet of permanent and 4,300 square feet of temporary impact to the 100 foot buffer area for associated expansion of hospital facilities. Said property is located on Assessor Map 240 Lot 2-1 and lies within the Office Research (OR) District. (LU-22-35)

DISCUSSION AND DECISION OF THE BOARD

This was voted on under Item C.

E. The request of **Lancen and Sophie LaChance (Owner and Applicant),** for property located at **11 Fletcher Street** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for the installation of a stormwater underdrain outlet creating 140 square feet of permanent impact within the 100 foot wetland buffer. Said property is shown on Assessor Map 233 Lot 76-1 and lies within the Single Residence B (SRB) District. (LU-20-42)

SPEAKING TO THE APPLICATION

Vice Chairman Clark recused himself from the application. Mr. Samonas voted.

Alex Ross spoke to the application. It is a simple project with a small amount of work in the wetland buffer. The property slopes toward Benson St. and out to the wooded wetland. There are no wetlands on the parcel. It is just the 100-foot buffer. The site plan in the corner shows a small drain outlet. There will be a foundation drain that will be daylighting on the rear of the site. They coordinated with DPW on this project to prevent additional flow going to the abutter's property. At the Conservation Commission's request, they have added a planting plan with 8 trees up the slope and down in the flatter corner area. There will be shrub plantings around the outfall. They prepared a drainage study involving pervious pavement, rain garden infiltration areas, and roof gutters.

City Council Representative Moreau questioned if they had discussions with the abutters to this property about the drainage plan. Mr. Ross confirmed they have. That is why they coordinated with the DPW on this project to help address abutter concerns. The drain outfall was pushed to the corner to avoid the abutter and go to the wetland in the rear.

Ms. Begala questioned if the mulch was an organic material. Mr. Ross responded that they were following NOFA standards for the land care management on the site.

Chairman Chellman questioned if the drain was for the foundation drain only or the catch basin as well. Mr. Ross responded that it would capture all the drainage. Chairman Chellman requested clarification that there would be not water increase post development. Mr. Ross responded that there would be a decrease.

PUBLIC HEARING

Judy Pope of 66 Benson St. noted that she was the abutter with the flooding issues. The original approval for the prior owner had stipulation that runoff and drainage plan needed to be approved by the DPW and Planning Board before a building permit was issued. When the lot was sold that stipulation carried forward. That stipulation should continue to carry forward if something changes with this building in the future. There should also be a provision to account for drainage during construction. Ms. Pope questioned what measures were in place to ensure the plan was fully executed.

Angela Lambert of 65 Benson St. commented that it sounded like a good plan, but they just wanted to make sure the water would not be worse.

Alex Ross commented that the plan needs to be approved by DPW and the Planning Board before a building permit is issued. If anything changes, then they would need to go back to at least the DPW for review.

Chris Gallet of 10 Fletcher St. lives across the street. Mr. Gallet spoke in favor of the plan presented. They addressed abutter concerns and have done their research.

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

City Council Representative Moreau commented that she was on the Board when this was here 2 years ago. They did a good job working with DPW to create a drainage plan that addresses abutter concerns.

Mr. Hewitt noted that they should add a stipulation that addresses the abutter's concerns about increased flow during construction.

Ms. Begala questioned if the new plantings should be bigger to help absorb the runoff and water. Chairman Chellman responded that the drainage calculations are not reliant on the on trees taking on the water. That could be a burdensome stipulation.

1) City Council Representative Moreau moved to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit, seconded by Mr. Mahanna with the following stipulations:

1.1) The applicant shall follow NOFA standards for landcare management

1.2) Any changes to the structure will require DPW review to ensure the approved drainage plan is still effective.

1.3) The applicant will take measures to stabilize the site during construction.

The motion passed unanimously.

F. The request of **Tom and Angela Mita (Owners and Applicants),** for property located at **81 Taft Road** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance for 17 square feet of permeant disturbance to the buffer area for the construction of an expansion to the existing structure. Said property is shown

on Assessor Map 247 Lot 87 and is lies within the Single Residence B (SRB) district. (LU-22-98)

SPEAKING TO THE APPLICATION

Contractor and Hydrologist Dave Siccolo spoke to the applicaiton. The application is for a 14 by 17.5 addition. The Conservation Commission recommended approval with some stipulations. They have incorporated NOFA standards and wetland buffer plantings into the plan. 17 sf of the addition will impact the buffer. It is a small impact.

Vice Chairman Clark requested more information on the wetland plantings. Mr. Siccolo responded that they already have foundation plantings around the perimeter of the house. They will continue that foundation planting row. They will have some other drainage measures too, so any additional buffer plantings will be more than adequate.

PUBLIC HEARING

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

1) Vice Chairman Clark moved to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit seconded by City Council Representative Moreau with the following stipulations:

1.1) The applicant shall follow NOFA standards for landcare management

1.2) The applicant will add additional wetland buffer plantings subject to staff review.

The motion passed unanimously.

G. The request of **The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** requesting Wetland Conditional Use Permit approval under Section 10.1017 of the Zoning Ordinance to replace an existing unfinished right-of-way with a new private road to access two lots as well as the installation of stormwater treatment infrastructure and wetland buffer plantings which will result in 1,738 square feet of temporary impact and 4,283 square feet of permanent impact to the wetland buffer. Said property is shown on Assessor Map 283 Lot 1 and lies within the Single Residence A (SRA) district. (LU-20-190)

SPEAKING TO THE APPLICATION

Mike Garrepy spoke to the application. This came before the Planning Board in February 2021. They have been working with Planning Staff and the Legal Department to finalize approvals for the project. The CUP approval has expired, so they need a reapproval of the CUP for the proposed road impacts. They have a DES permit for buffer impacts. The Conservation Commission recommended to approve the CUP. They will re-do the road at a narrower width and add drainage.

Mr. Mahanna questioned if the emergency access had been reviewed for this street. Mr. Garrepy confirmed it was vetted through TAC. Mr. Mahanna questioned if there was a road maintenance agreement. Mr. Garrepy confirmed that was in place.

Mr. Hewitt questioned if the road would be maintained by the City. Mr. Garrepy responded that it would be private maintenance. Mr. Hewitt questioned if there were any alternate locations for the road. Mr. Garrepy responded there was not.

PUBLIC HEARING

Chairman Chellman asked if anyone was present from the public wishing to speak to, for, or against the petition. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

1) City Council Representative Moreau moved to find that the application meets the criteria set forth in 10.1017.50 and to grant the Wetland Conditional Use Permit, seconded by Vice Chairman Clark with the following stipulations:

1.1) The applicant shall follow NOFA standards for landcare management https://nofa.organiclandcare.net/wp-content/uploads/nofa_organic_land_care_standards_6thedition_2017_opt.pdf

1.2) The applicant shall require all winter maintenance personnel to have a Green Snow Pro certification.

The motion passed unanimously.

V. OTHER BUSINESS

A. Hemlock / Patricia Drive Subdivision Extension Request

Chairman Chellman noted that staff and the applicant had spent a lot of time on this. One of the issues that came about the other day was to make sure they had frontage for the lots. That has been addressed.

Mr. Garrepy agreed they were almost there. There were just a few final notes that needed to be updated.

1) City Council Representative Moreau moved to grant an extension to the Planning Board Approval for Preliminary and Final Plat approval seconded by Mr. Mahanna with the following stipulations:

1.1) The extension shall not exceed 18 months from the original date of Planning Board approval of the subdivision (February 18, 2021).

1.2) That all previous stipulations not previously addressed and approved by the Planning Board on February 18, 2021 be met prior to recordation at the Registry of Deeds.

1.3) That a release deed retaining public access and drainage rights to the City, be prepared for review and approval by the City Attorney and that such deed be fully executed by the City and all abutters. Any abutter choosing to waive their rights to the public road must submit their waiver in writing in a form acceptable by the Planning Director.

1.4) Update Plat note 3 on the subdivision plan to include the retention of rights to pass over for the abutting property owner.

1.5) Update callout note above private street to read "Former Patricia Drive Proposed Private Street See Right of Way Notes 2 & 3" where it currently reads "Former Patricia Drive Proposed Private Right of Way Easement See Right of Way Notes 2 & 3."

The motion passed unanimously.

B. Public Involvement Summary Report

Ms. Zendt introduced Intern Luke Cowan to present the public feedback for the ADU ordinance, which the Land Use Committee is focusing on for phase 2 of the proposed amendments.

Mr. Cowan commented that they conducted small focus group meetings. The groups consisted of previous ADU applicants, architects, engineers, and neighborhood representatives. They also sent surveys to ADU direct abutters. The response rate was over 10%. There have been 25 building permits pulled for ADUs since 2017. There were some emerging themes from the feedback. People felt that there needs to be a clearer process. The dimensional relief is a protection and obstacle. There is a considerable cost and risk involved in the process. It is a deterrent. The regulations for an ADU need to be clear. Abutter feedback was generally neutral or positive. ADU applicants thought it was complicated because there was not a step-by-step process. There is always a risk when an applicant has to apply for a variance and modifications. The cost for the process is high and approval is not guaranteed. People also felt that there needed to be more clarity in the ordinance. It should be clear and specific. The abutter survey showed short term rentals and parking as top concerns. They are thinking about proposing criteria that would allow some ADUS to be approved without the Planning

Board review. Architects noted that the lot size requirements need to be smaller to make it feasible.

Mr. Samonas commented that the Seattle preapproved example may not work as well for Portsmouth. It would be hard to ensure the ADUs would be architecturally compatible The ADUs are good because it allows for people to age in place. It would be good if they could streamline the cost or add a preapproval checklist. It could save applicants time, money, and confusion. Having a city staff person dedicated to this would be good.

Mr. Mahanna agreed that they needed a liaison. There should be a point of contact for the average civilian.

Ms. Begala commented that the goal for these changes should be more specific about what extent they want to expand ADUs and to what density. It needs to be a goal that can be measured. Only 40% of the abutter feedback was positive. The rest were neutral or negative. There should be further conversation with the public about what kind of density they are trying to achieve. This process seems to be subverting the Planning Board's regulatory function role. There are some members of the Planning Board on the Land Use Committee. However, the Planning Board should have input on this. Ms. Begala still had an outstanding question about where and how the Planning Board gets to have a role and input on changes to the zoning land use regulations. The Planning Board should be involved in next steps. It is not clear what happens next.

Chairman Chellman noted that if a Planning Board member had specific ideas for issues tonight is good night to talk about it. The State regulations apply mostly to towns not cities because that is the majority of NH. In a town the Planning Board is the only one with the role in presenting zoning amendments. In Portsmouth the Planning Board can propose a change of its own volition. It can also come through City Council or a petition. If the Board wants to look at other things, then they can have more meetings. This is something that was identified by City Council as an important priority and the Land Use Committee is working on it. The Planning Board is involved. They can provide input based on the presentation they just had. The feedback so far is that they should look to make a simple application that fits the goals. They would involve this Board in creating those regulations. Then it would go to City Council.

Ms. Zendt commented that the City Council helps staff to set their work plan. Public outreach is labor intensive. Ordinance changes are intensive and hard even if it seems like a simple update. The Planning Board works to refine amendments when they are presented to them.

City Council Representative Moreau commented that the whole point of bringing this information to the Planning Board is to get their ideas to the Land Use Committee and staff. They are currently working on a red line version. When that is done, they will present it to the Planning Board for feedback. There will be a public hearing at the Planning Board and several at the City Council.

Mr. Hewitt questioned how many ADU's had been approved since 2017. Mr. Cowan responded that 25 building permits had been pulled for an ADU since 2017. There have been 31 approvals total. Mr. Hewitt noted that the ADUs had a high approval rate, so there were pretty good odds for applicants to move forward. Ms. Zendt responded that the risk of denial was still there. One went for a variance last month and was not approved.

Mr. Samonas commented that they needed to ensure that ADUs were being used as a workaround to add square footage onto their home.

Mr. Mahanna commented that this was good information to work off of, and they should have had the same level of information about the building height changes as well. This is a good starting point to make changes. If they had something like this for the building height changes, then it would have been better.

Chairman Chellman commented that the building height amendments were directly tied to the Master Plan. Those are being amended from that. The ADU ordinance was built from scratch. That's the big difference.

Ms. Begala commented that there was not enough specificity for the Master Plan. They need to look at the cumulative effect for the ADUs. They need to determine how much density is needed and how much is acceptable for the people in this town. They should revise the Master Plan with a clear measurable objective in density. Ms. Begala questioned how the focus group participants were picked. City Council Representative Moreau responded that they picked engineers and architects who regularly present to the Planning Board because they were the most familiar with the ordinance. Then they went to the citywide neighborhood meeting to find neighborhood representatives. They sent the survey to every ADU abutter. ADU applicants were contacted and whoever responded and could attend were picked.

Ms. Begala commented that there was concern about the short-term rentals and parking. It should not be a widespread issue in Portsmouth. They should create a checklist and tool kit to help the average applicant navigate the ADU process.

Mr. Almeida commented that in the past the ADU can be somewhat villainized for unfair reasons. The negative comment in the presentation had to do with aesthetics, not noise or parking. Short term rentals can be a concern, but the bigger concern is signing a one-year lease to someone who parties a lot. It is nice to have an ADU to allow people to age in place. However, there is nothing wrong with someone adding an ADU to generate an income as well. They need to simplify the process, but this is a positive thing.

Vice Chairman Clark commented that they needed to keep people's property rights in mind. In a lot of instances someone could buy a small house, demo it, and quadruple the size of it. In that scenario the abutter has no input because it's all allowed in the ordinance. That can be more impactful than an ADU going in. Abutters provide valuable input, but they need to keep people's property rights in mind too.

City Council Representative Moreau commented that this ordinance is required under state law. They either had to accept the model they gave us or modify it. Portsmouth added detached ADUs and garden cottages to the ordinance. It would make sense to try to streamline it. One suggestion they made for an attached ADU is if it's within the footprint of the house, then they should be able to do it off a checklist. It may make sense to put together a handbook.

Chairman Chellman commented the Land Use Committee will bring the red line version to the Planning Board. It would be good to wait to work on the changes until that happens.

Mr. Samonas questioned if they could sit in on the Land Use Committee Meetings. City Council Representative Moreau confirmed they were public meetings. Planning Board members can provide public comment or submit written suggestions. The next meeting is August 5, 2022.

Mr. Hewitt requested clarification on the comment about not finding the ordinance in other communities. City Council Representative Moreau responded that they asked architects and engineers if there was another town with better a ordinance that they could reference. The architects and engineers did not have any better example.

Mr. Samonas questioned if these changes would be neighborhood specific or across the board. City Council Representative Moreau responded that they would be across the board for any residential zone that allows for an ADU.

C. Chairman's Updates and Discussion Items

Chairman Chellman commented that any questions that the Planning Board members may have for staff should go through him. The Chairman will work with staff and get a response. Also, the letter to the editor that Mr. Hewitt submitted was ok because it dealt with a legislative matter. Members can talk about legislative matters. They cannot talk to an applicant about an application outside of the meetings. Zoning amendments are a legislative matter, and they can talk about it. That being said, before sending private letters they should talk about it here to determine the best course of action.

Ms. Begala requested that they use Survey Monkey when scheduling special meetings, so they can determine the best day for the most members to attend.

VI. ADJOURNMENT

Chairman Chellman adjourned the meeting at 9:36 p.m.

Respectfully submitted,

Minutes, Planning Board Meeting, July 21, 2022

Becky Frey,
Secretary for the Planning Board

P-0616-005
August 10, 2022

Mr. Rick Chellman, Chairman
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit Application**
Portsmouth Regional Hospital– Proposed Satellite Parking Lot
Supplemental Information

Dear Chairman Chellman:

On behalf of Portsmouth Regional Hospital, we are pleased to submit the following supplemental information to support an application requesting a Site Plan Review for a proposed satellite parking lot located across Borthwick Avenue from the hospital:

- One (1) copy of the Site Plan Application Checklist, dated March 22, 2022;
- One (1) copy of the Owner Authorization, dated March 16, 2022;
- One (1) full & one (1) half size copy of the Site Plan Set, last revised August 10, 2022;
- One (1) copy of the Fire Truck Turning Plan, last revised July 20, 2022;
- Drainage Analysis, to be submitted under a separate cover;
- One (1) copy of Light Fixture and Pole Cut Sheets;
- One (1) copy of the Operations and Maintenance Plan, last revised May 12, 2022;
- One (1) copy of the Sight Distance Exhibit, last revised July 20, 2022;
- One (1) copy of the TAC Stipulation Report, dated July 21, 2022; and
- One (1) copy of the Peer Review Response Letter, dated July 21, 2022.

The project is located at the east corner of Borthwick Avenue and Eileen Dondero Foley Avenue which is identified as Map 234 Lot 7-4A on the City of Portsmouth Tax Maps. The proposed project is necessary to expand Portsmouth Regional Hospital's parking in order to support the existing hospital and its growing services provided to the New Hampshire Seacoast region.

The existing hospital building is operating with 783 parking spaces, which is 32% less than the minimum required by the City's Zoning Ordinance. The proposed project includes the construction of a new 501 space satellite parking lot located across the street from the existing hospital. The proposed parking lot would be accessed via two new entrances, one on Borthwick Avenue and the other along Eileen Dondero Foley Avenue. The project will consist of associated on-site improvements such as pedestrian connections, dark-sky lighting, security cameras, electric vehicle charging stations, landscaping, and stormwater management. The project has been designed to avoid wetland buffer impact and will be providing approximately 19,000 SF of buffer enhancement area.

In addition, the project will be contributing a 1,300 LF public multi-use path along Borthwick Avenue that in the future will be part of a larger bicycle/pedestrian network connecting downtown with the NH Seacoast Greenway.

On February 23, 2022, the Zoning Board of Adjustment granted the following for this project:

1. A special exception from section 10.1113.112 to allow a parking lot on another lot in the same ownership as the lot in question within 300 feet of the property line of the lot in question.
2. A variance from section 10.113.41 to allow a 35-foot front setback for a parking lot where 50 ft is required.

The project attended three (3) meetings with the Technical Advisory Committee (TAC) and TAC recommended approval to the Planning Board on June 7, 2022 with four stipulations. Enclosed with this package is a TAC Stipulation Report addressing the status of these stipulations.

On June 29, 2022, the applicant submitted a complete package to the Planning Board. Since that time, revisions to the package had been made to address the local drainage peer review comments from Altus Engineering and comments from the NHDES Alteration of Terrain Bureau. These changes were submitted in an additional complete package on July 21, 2022. A second letter of peer review comments was received on August 9, 2022, from Altus Engineering. Per our coordination with the City DPW technical advisor, Dave Desfosses, Tighe & Bond has updated the enclosed plans in accordance with the comments provided by Altus. Additionally, Tighe & Bond was directed update the Drainage Analysis and submit it separately to support the proposed plan changes. The plan changes associated with the peer review comments received on August 9, 2022, are list below and bubbled on the enclosed plans.

- Sheet C-101 – Demolition Plan
  - The 24" drain line that exists under Borthwick Avenue has been updated to remove the portion on unused pipe.
- Sheet C-103 – Grading, Drainage, & Erosion Control Plan
  - An additional catch basin, PCB22, has been proposed on the south curbline of Borthwick Avenue near the Eileen Dondero Foley Avenue intersection.
- The additional comments provided were reviewed and, as requested by Dave Desfosses, Tighe & Bond will submit an updated Drainage Analysis and comment response letter to address the remaining minor comments associated with the Analysis.

We respectfully request to be placed on the Planning Board meeting agenda for August 18, 2022. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President

Alexander Sellar, PE
Project Engineer

Copy: Portsmouth Regional Hospital
Dave Desfosses, Portsmouth DPW (via email)

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City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: Portsmouth Regional Hospital Date Submitted: 03/22/2022

Application # (in City's online permitting): _____

Site Address: Borthwick Ave, Portsmouth NH Map: 234 Lot: 7-4A

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**	Completed	N/A
☑	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**	Completed	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	N/A	
☐	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	N/A	N/A
☑	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	Site Plan Sheet C-102	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Existing Conditions Plan Sheet C-101	N/A
☑	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	Existing Conditions Plan Sheet C-101	N/A
☑	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
☑	List of reference plans. **(2.5.3.1H)**	Existing Conditions Plan Sheet C-101	N/A
☑	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Utilities Plan Sheet C-104	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☑	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☑	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Existing Conditions Plan Sheet C-101	N/A
☑	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☑	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	Existing Conditions Plan Sheet C-101	N/A
☑	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	All Plan Sheets	N/A
☑	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	All Plan Sheets	N/A
☑	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☑	Source and date of data displayed on the plan. **(2.5.4.2D)**	All Plan Sheets	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	Existing Conditions Plan Sheet C-101	
☐	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	N/A	
☑	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Site Plan Sheet C-102.1	
☑	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	Site Plan Sheet C-102.1	
☑	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	Utility Plan Sheet C-104	
☐	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	N/A	

☑	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	Utilities Plan Sheet C-104	
☐	**8. Solid Waste Facilities: (2.5.4.3H)**	N/A	
	• The size, type and location of solid waste facilities.	N/A	
☑	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	Grading, Drainage & Erosion Control Plan Sheet C-103	
☑	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	Lighting Plan Sheet C-106	
☑	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Lighting Plan Sheet C-106	
☑	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	Landscaping Plan Sheet C-105	
☑	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading, Drainage & Erosion Control Plan Sheet C-103	
☑	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	Site Plan Sheet C-102.1	
☑	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Existing Conditions Plan Sheet C-101	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	N/A	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	N/A	
☑	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Grading, Drainage & Erosion Control Plan Sheet C-103	
☐	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☑	Stormwater Management and Erosion Control Plan. **(7.4)**	Enclosed	
☑	Inspection and Maintenance Plan **(7.6.5)**	Enclosed	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Cover Sheet	
☑	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Enclosed	
☑	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	Enclosed	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	Cover Sheet	
☑	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Site Plan Sheet C-102	N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☑	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Site Plan Sheet C-102	N/A

Applicant's Signature: _____ **Date:** 3/22/22

Owner's/Agent Letter of Authorization

This letter is to Authorize Tighe & Bond, Inc. (Civil Engineer), to represent and submit on behalf of Portsmouth Regional Hospital (Applicant), applications and materials in all site design and permitting matters for the proposed project at the east corner between Borthwick Ave and Eileen Dondero Foley Ave. This project includes the construction of a satellite parking lot, and associated site and stormwater improvements. This authorization shall relate to those activities that are required for local, state, and federal permitting for the above project and include and required signatures for those applications.

Signature	DEAN M. CARUCCI Print Name	3.16.22 Date
Witness	MATTHEW P. LARKIN Print Name	3.16.2022 Date

PROPOSED SATELLITE PARKING LOT

PORTSMOUTH, NEW HAMPSHIRE

444 BORTHWICK AVENUE

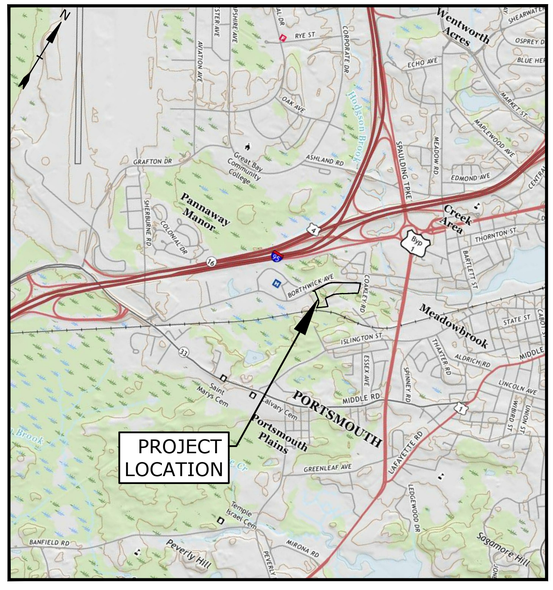
PERMIT DRAWINGS

MARCH 22, 2022

LAST REVISED AUGUST 10, 2022

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	08/10/2022
1 OF 2	EXISTING CONDITIONS PLAN	07/13/2022
2 OF 2	EXISTING CONDITIONS PLAN	07/13/2022
G-101	GENERAL NOTES, ABBREVIATIONS, & LEGEND SHEET	08/10/2022
C-101	DEMOLITION PLAN	08/10/2022
C-102	OVERALL PARKING PLAN	08/10/2022
C-102.1	SITE PLAN	08/10/2022
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	08/10/2022
C-104	UTILITY PLAN	08/10/2022
C-105	LANDSCAPE PLAN	08/10/2022
C-106	PHOTOMETRICS PLAN	08/10/2022
C-501	EROSION CONTROL NOTES & DETAILS SHEET	08/10/2022
C-502	DETAILS SHEET	08/10/2022
C-503	DETAILS SHEET	08/10/2022
C-504	DETAILS SHEET	08/10/2022
C-505	DETAILS SHEET	08/10/2022
C-506	DETAILS SHEET	08/10/2022
C-507	DETAILS SHEET	08/10/2022
C-508	DETAILS SHEET	08/10/2022
C-509	DETAILS SHEET	08/10/2022
C-510	DETAILS SHEET	08/10/2022

LIST OF PERMITS		
FEDERAL	STATUS	DATE
CONSTRUCTION GENERAL PERMIT (CGP) & NOI		
LOCAL		
SITE PLAN REVIEW PERMIT		
ZONING BOARD OF ADJUSTMENT - SPECIAL EXCEPTION & VARIANCE	APPROVED	2/23/2022
STATE		
NHDES STANDARD DREDGE AND FILL WETLAND IMPACT PERMIT	PENDING	
NHDES ALTERATION OF TERRAIN	PENDING	



LOCATION MAP
SCALE: 1" = 2,000'

CONSTRUCTION NOTES:
1. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
3. TIGHE & BOND. ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

PREPARED BY:
Tighe&Bond
177 Corporate Drive
Portsmouth, NH 03801
(603) 433-8818

BRADLEE MEZQUITA, PE
STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 8-10-22

PATRICK M. CRIMMINS, PE
STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 8/10/2022

APPLICANT:
Portsmouth Regional Hospital
333 Borthwick Avenue
Portsmouth, NH 03801

SURVEY CONSULTANT:
DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005
http://www.doucetsurvey.com

OWNER:
HCA Realty Inc.
c/o Ducharme Mcmillen & Assoc - HCA NH
PO Box 80610
Indianapolis, IN 46280

WILDLIFE PROTECTION NOTES:
1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGREVIEW@WILDLIFE.NH.GOV. EMAIL SUBJECT LINE: NHB22-1544, PRH SATELLITE PARKING LOT, WILDLIFE SPECIES OBSERVATION.
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE;
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY, TO ASSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FIS 1002.04
4. THE NHF&G, INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

F

COMPLETE SET 21 SHEETS

811 DigSafe MA-ME-NH-RI-VT

Last Save Date: July 21, 2022 12:51 PM By: ASELLAR
Plot Date: August 10, 2022 4:40 PM By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_CS.dwg Layout Tab: CS

NOTES:

1. REFERENCE: TAX MAP 234, LOT 7–4A
BORTHWICK AVENUE EXTENSION
PORTSMOUTH, NEW HAMPSHIRE
D.S. PROJECT NO. 2826

2. TOTAL PARCEL AREA: 395,745 SQ. FT. OR 9.09 AC.

3. OWNER OF RECORD: HCA REALTY INC.
C/O DUCHARME MCMILLEN & ASSOC. – HCA NH
PO BOX 80610
INDIANAPOLIS, IN 46280
R.C.R.D BOOK 4400 PAGE 2048, BOOK 4639 PAGE 2128.

4. TOPOGRAPHY SHOWN HEREON IS BASED ON A COMBINATION OF AERIAL MAPPING BY EASTERN TOPOGRAPHICS IN 5/03 AND CONVENTIONAL SURVEY BY DOUCET SURVEY, SEE NOTE 5. EXCEPT FOR THE NOTED AREA, NO ADDITIONAL UPDATES WERE DONE TO THE AERIAL TOPOGRAPHY FROM 2003.

5. FIELD SURVEY PERFORMED BY DOUCET SURVEY AT VARIOUS TIMES BETWEEN 2003 & 2022.

6. JURISDICTIONAL WETLANDS DELINEATED BY JEREMY DEGLER (CWS #301, PWS #2809) OF TIGHE & BOND, ON SEPTEMBER 17, 2021 IN ACCORDANCE WITH 1987 US ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y–87–1 AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION (JANUARY 2012).

7. FLOOD HAZARD ZONE: "x", PER FIRM MAP #33015C0260F, DATED 1/29/2021.

8. HORIZONTAL DATUM IS BASED ON NH STATE PLANE COORDINATE SYSTEM. AS ESTABLISHED BY JAMES VERRA & ASSOCIATES IN MAY 2003.

9. VERTICAL DATUM IS BASED ON NGVD 29.

10. THE PARCEL IS SUBJECT TO, AND/OR IN BENEFIT OF THE FOLLOWING EASEMENTS, RESTRICTIONS, ETC.
    A. SUBJECT TO AN ELECTRIC EASEMENT GRANTED BY SAN ANTONIO ET AL TO NH ELECTRIC CO, SEE R.C.R.D. BOOK 1230, PAGE 222.
    B. SUBJECT TO A GAS LINE EASEMENT RESERVED BY NORTHERN UTILITIES, INC., SEE R.C.R.D. BK. 4392 PG. 110
    C. SUBJECT TO AN ACCESS AND UTILITY EASEMENT RESERVED BY ISLINGTON WOODS, LLC, SEE R.C.R.D. BOOK 4639 PAGE 2128.
    D. SUBJECT TO THE RIGHTS OF THE CITY OF PORTSMOUTH TO CONSTRUCT & MAINTAIN A SEWER LINE, SEE R.C.R.D. BOOK 4685, PAGE 553.
    E. SUBJECT TO AN "AGREEMENT REGARDING PROHIBITED USES", SEE R.C.R.D. BOK. 4400 PG. 2051.
    F. ALL OTHER RIGHTS OR EASEMENTS OF RECORD OR OTHERWISE. THIS PLAN DOES NOT REPRESENT A TITLE EXAMINATION, AND NONE WAS PROVIDED.

11. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY, INC. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.

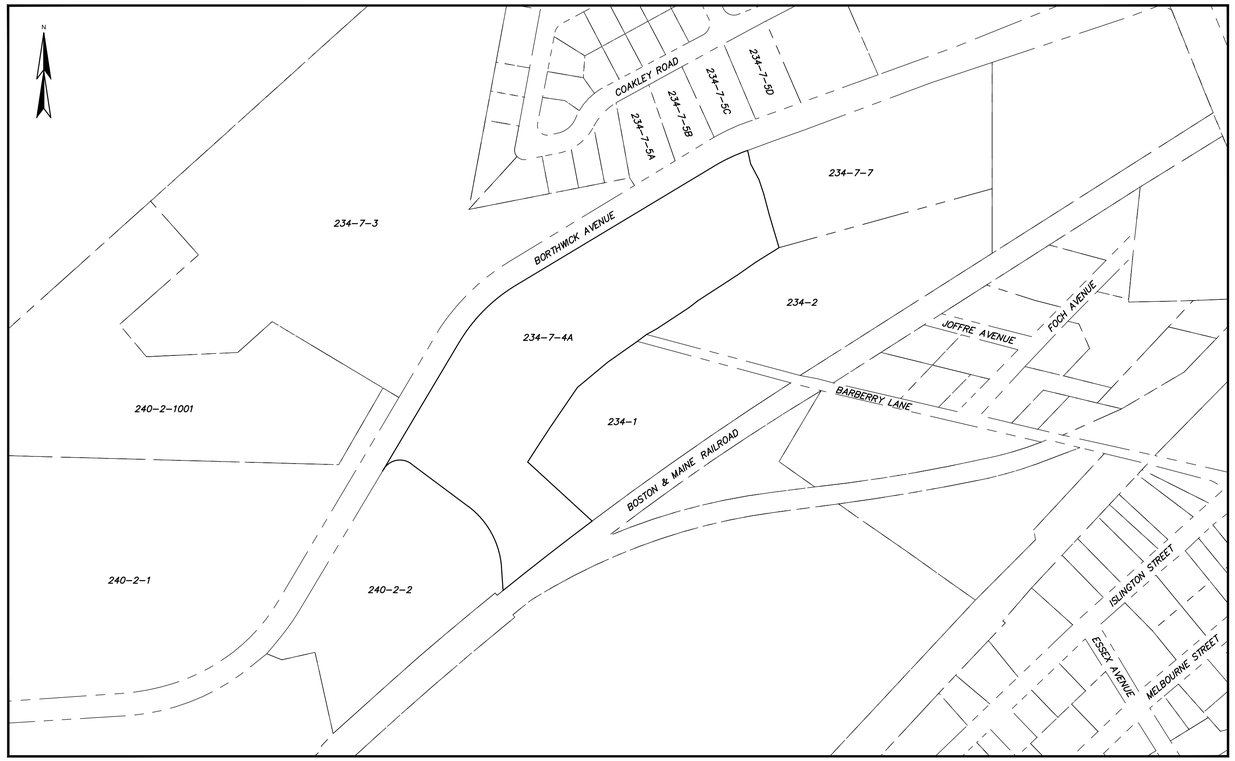
12. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON–SITE.

13. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.

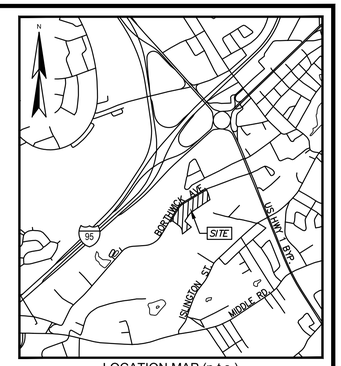
14. ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG–SAFE AT 1–888–DIG–SAFE.

REFERENCE PLANS:

1. "LOT LINE REVISION PLAN FOR PORTSMOUTH HOSPITAL OFFICE BUILDING ASSOCIATION, ISLINGTON WOODS, LLC AND HCA REALTY, INC. (TAX MAP 234, LOTS 7–4A & 7–4B) (TAX MAP 240, LOT 2–2) BORTHWICK AVENUE EXTENSION PORTSMOUTH, NEW HAMPSHIRE" DATED 1/13/06 BY DOUCET SURVEY, INC., R.C.R.D. PLAN D–33642.
2. "SUBDIVISION & LOT LINE REVISION PLAN BETWEEN NORTHERN UTILITIES, INC. AND ISLINGTON WOODS, LLC," BY DOUCET SURVEY, INC., DATED FEBRUARY 25, 2004, R.C.R.D. PLAN D–31871.
3. "GAS LINE AS–BUILT EASEMENT AND CONSERVATION EASEMENT PLAN," BY KIMBALL CHASE COMPANY, INC. DATED 10/31/85, R.C.R.D. PLAN D–15830.
4. "PLAT OF PROPERTY AND IMPROVEMENTS FOR HCA REALTY, INC.," BY CESP, INC. DATED DECEMBER 12, 1986, R.C.R.D. PLAN D–15831.
5. "EASEMENT PLAN FOR ISLINGTON WOODS, LLC AND BOSTON & MAINE CORPORATION BETWEEN ISLINGTON ST. & BORTHWICK AVE. EXT. (TAX MAP 223 LOT 113 & TAX MAP 234 LOT 7–4B) PORTSMOUTH, NEW HAMPSHIRE" DATED 10/20/2005 BY DOUCET SURVEY, INC., R.C.R.D. PLAN D–33500.
6. "LOT LINE REVISION PLAN LAND OF SEARAY REALTY, LLC TAX AMP 234 LOTS 2, 3, & 7–7 US ROUTE 1 BY–PASS & BARBERRY LANE PORTSMOUTH, NEW HAMPSHIRE. DATED 3/12/2014 BY DOUCET SURVEY, INC., R.C.R.D. PLAN D–38435.
7. "SUBDIVISION & EASEMENT PLAN LAND OF BORTHWICK FOREST, LLC (TAX MAP 241, LOT 25) AND SHOWING LAND OF HCA REALTY, INC. (TAX MAP 234, LOT 7–4A) (TAX MAP 240 LOT 2–2102) BORTHWICK AVE. & ISLINGTON ST. PORTSMOUTH, NH" DATED 11/12/2019 BY DOUCET SURVEY, INC., R.C.R.D. PLAN D–42049



KEY MAP



LOCATION MAP (n.t.s.)

200 0 200 400
SCALE: 1 INCH = 200 FT.

LEGEND: AERIAL DATA

BUILDINGS		U.P.?	UTILITY POLE
STRUCTURE		U.P.?	UTILITY POLE OBSCURED
TREELINE			HYDRANT
TRAIL/WALK			MEDIUM LONE TREE
DRIVEWAY			SMALL LONE TREE
DRIVEWAY OBSCURED			SIGN
CURBING			POST
PAVED ROAD			SIGN
PAVED ROAD OBSCURED			
GRAVEL ROAD			
DRAINAGE OBSCURED			
FENCE OBSCURED			
FENCE			
PIPELINE			
PILE LIMIT			
STONE WALL			
DITCH			
TRAIL/WALK OBSCURED			
HEADWALL			
CONCRETE			
RAILROAD			
RAILROAD OBSCURED			

LEGEND

LOT LINE			SIGN
APPROXIMATE ABUTTERS LOT LINE			SIGN (TWO POSTS)
EXISTING EASEMENT LINE			DRILL HOLE FOUND
STONE WALL			IRON PIPE/ROD FOUND
REMNANT STONE WALL			FIRE HYDRANT
OHW	OVERHEAD WIRE	WV	WATER GATE VALVE
SS	SEWER LINE	IV	IRRIGATION CONTROL VALVE
SD	DRAIN LINE	GV	GAS GATE VALVE
	CULVERT	CB	CATCH BASIN
G	GAS LINE		DRAIN MANHOLE
100	MAJOR CONTOUR LINE (SEE NOTE 5)	F.E.S	FLARED END SECTION
98	MINOR CONTOUR LINE (SEE NOTE 5)	S	SEWER MANHOLE
	TREE LINE	HH	HAND HOLE
	EDGE OF WETLAND (SEE NOTE 6)		DECIDUOUS TREE
	EDGE OF WETLAND AS PROVIDED BY CLIENT (NOT SURVEY LOCATED)		MAST ARM
	WETLAND AREA		RAIL ROAD SIGNAL
	CONCRETE	D.H.F.	DRILL HOLE FOUND
	RIP RAP	EP	EDGE OF PAVEMENT
	LANDSCAPED AREA	EOG	EDGE OF GRAVEL
	LEDGE OUTCROP	VGC	VERTICAL GRANITE CURB
		SWL	SINGLE WHITE LINE
		DYL	DOUBLE YELLOW LINE
XW	REFERENCED WATER LINE	EM	ELECTRIC METER
	UTILITY POLE		
	UTILITY POLE & GUY WIRE		
	UTILITY POLE W/LIGHT		

STATE OF NEW HAMPSHIRE — LAND SURVEYOR — No. 916 — STEVEN V. MICHAUD — SIGNATURE

STATE OF NEW HAMPSHIRE — JEREMY M. DEGLER — NO. 301 — CERTIFIED WETLAND SCIENTIST

EXISTING CONDITIONS PLAN
FOR
TIGHE & BOND
OF
TAX MAP 234 LOT 7-4A
BORTHWICK AVENUE EXTENSION
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	3/22/22	UPDATE WETLANDS PER CLIENT	SVM

DRAWN BY:	W.D.C.	DATE:	OCTOBER 2021
CHECKED BY:	S.V.M.	DRAWING NO.	2826B
JOB NO.	2826	SHEET	1 OF 2

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
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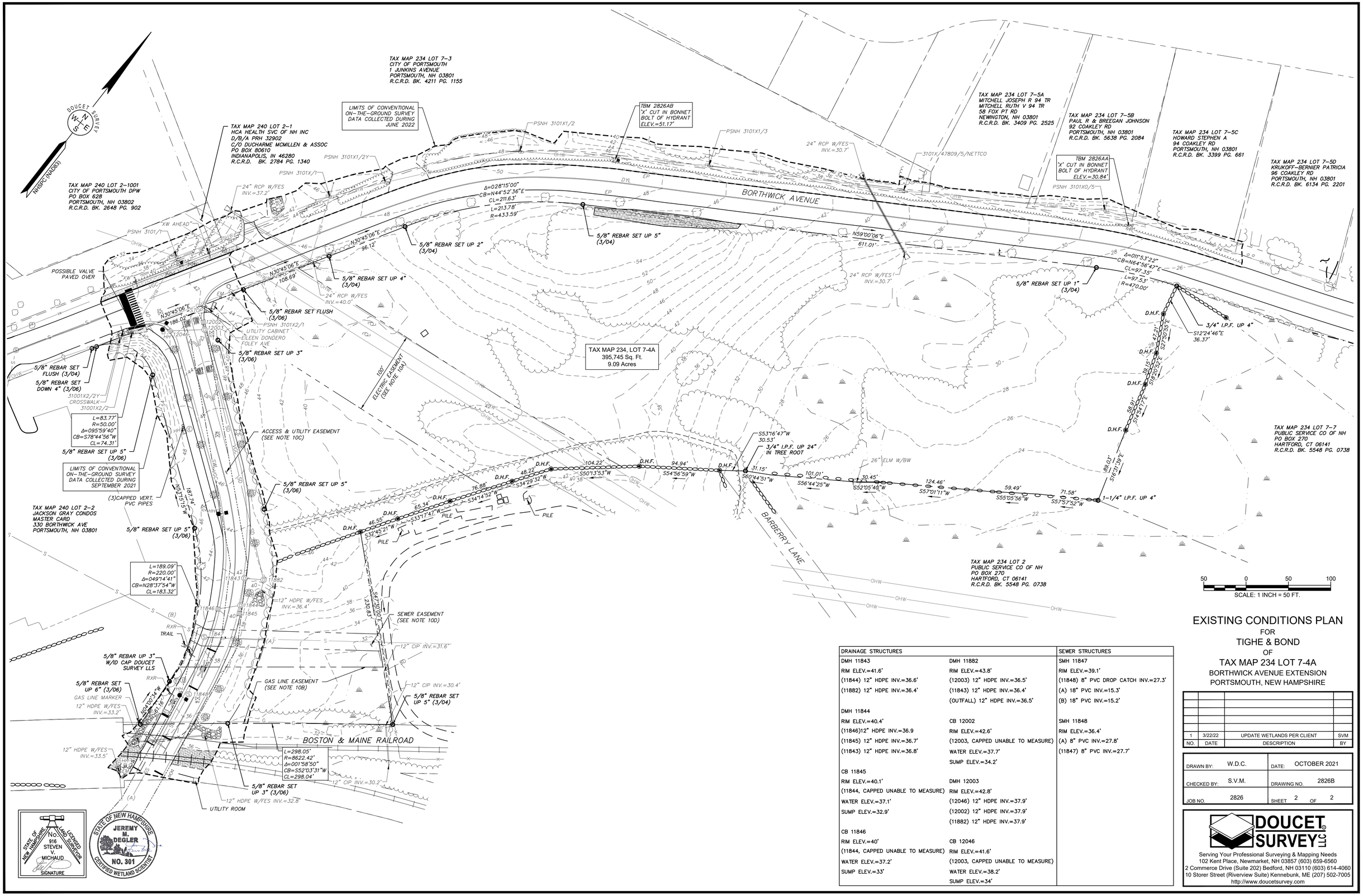

DRAINAGE STRUCTURES		SEWER STRUCTURES
DMH 11843	DMH 11882	SMH 11847
RIM ELEV.=41.6'	RIM ELEV.=43.8'	RIM ELEV.=39.1'
(11844) 12" HDPE INV.=36.6'	(12003) 12" HDPE INV.=36.5'	(11848) 8" PVC DROP CATCH INV.=27.3'
(11882) 12" HDPE INV.=36.4'	(11843) 12" HDPE INV.=36.4'	(A) 18" PVC INV.=15.3'
	(OUTFALL) 12" HDPE INV.=36.5'	(B) 18" PVC INV.=15.2'
DMH 11844		
RIM ELEV.=40.4'	CB 12002	SMH 11848
(11846)12" HDPE INV.=36.9	RIM ELEV.=42.6'	RIM ELEV.=36.4'
(11845) 12" HDPE INV.=36.7'	(12003, CAPPED UNABLE TO MEASURE)	(A) 8" PVC INV.=27.8'
(11843) 12" HDPE INV.=36.8'	WATER ELEV.=37.7'	(11847) 8" PVC INV.=27.7'
	SUMP ELEV.=34.2'	
CB 11845		
RIM ELEV.=40.1'	DMH 12003	
(11844, CAPPED UNABLE TO MEASURE)	RIM ELEV.=42.8'	
WATER ELEV.=37.1'	(12046) 12" HDPE INV.=37.9'	
SUMP ELEV.=32.9'	(12002) 12" HDPE INV.=37.9'	
	(11882) 12" HDPE INV.=37.9'	
CB 11846		
RIM ELEV.=40'	CB 12046	
(11844, CAPPED UNABLE TO MEASURE)	RIM ELEV.=41.6'	
WATER ELEV.=37.2'	(12003, CAPPED UNABLE TO MEASURE)	
SUMP ELEV.=33'	WATER ELEV.=38.2'	
	SUMP ELEV.=34'	

STATE OF NEW HAMPSHIRE
No. 916
STEVEN V. MICHAUD
LICENSED LAND SURVEYOR
SIGNATURE

STATE OF NEW HAMPSHIRE
JEREMY M. DEGLER
NO. 301
CERTIFIED WETLAND SCIENTIST

EXISTING CONDITIONS PLAN

FOR

TIGHE & BOND

OF

TAX MAP 234 LOT 7-4A

BORTHWICK AVENUE EXTENSION

PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY
1	3/22/22	UPDATE WETLANDS PER CLIENT	SVM

DRAWN BY:	W.D.C.	DATE:	OCTOBER 2021
CHECKED BY:	S.V.M.	DRAWING NO.	2826B
JOB NO.	2826	SHEET	2 OF 2

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2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060
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http://www.doucetsurvey.com

GENERAL NOTES:

1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
6. THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
7. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES AND HOMES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS AND HOME SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
9. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
10. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
11. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
12. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
3. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
4. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
7. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER THE UTILITY COMPANY AND CITY OF PORTSMOUTH STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
9. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
10. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, LIGHTING, MANHOLES, CATCH BASINS, UNDER GROUND PIPING, POLES, STAIRS, SIGNS, FENCES, RAMPS, WALLS, BOLLARDS, BUILDING SLABS, FOUNDATION, TREES AND LANDSCAPING.
11. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
12. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
13. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
14. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
15. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.

SITE NOTES:

1. PAVEMENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, FIRE LANES, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES. ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL THERMOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND STOP BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT MARKINGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F".
2. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
3. SEE DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES.
5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
6. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM TO CURRENT MUTCD STANDARDS.
7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
8. ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY IS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING RETAINING WALL DESIGN FROM STRUCTURAL ENGINEER AND/OR WALL MANUFACTURER. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO CONSTRUCT WALL IN ACCORDANCE WITH DESIGN APPROVED BY THE ENGINEER. RETAINING WALL SHALL BE SEGMENTAL BLOCK WALL SYSTEM AS OUTLINED IN THE DETAILS.
10. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
11. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
12. THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATIONS DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY.
13. ALL TREES PLANTED ARE TO BE INSTALLED UNDER THE SUPERVISION OF THE CITY OF PORTSMOUTH DPW USING STANDARD INSTALLATION METHODS.
14. THE APPLICANT SHALL PREPARE A CONSTRUCTION MITIGATION AND MANAGEMENT PLAN (CMMP) FOR REVIEW AND APPROVAL BY THE CITY'S LEGAL AND PLANNING DEPARTMENTS.

SITE RECORDING NOTES:

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESSED APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
3. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.

2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL) OR RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
4. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
5. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
6. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS AND NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
7. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.

EROSION CONTROL NOTES:

1. SEE SHEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

UTILITY NOTES:

1. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - FAIRPOINT AND COMCAST
2. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
3. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
4. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE APPLICABLE UTILITY COMPANIES.
5. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
7. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
8. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
9. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
2. ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
3. PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
4. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
5. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
6. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
9. THREE INCHES (3") OF NON-COMBUSTIBLE MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE MULCH IS TO BE USED IN A CURBED ISLAND THE MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
10. SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
11. TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR.
12. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
13. TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 'TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES.
14. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
15. EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
16. THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
17. UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
19. PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY DOUCET SURVEY, DATED OCTOBER 2021.
2. WETLAND DELINEATION BY TIGHE & BOND, ON SEPTEMBER 17, 2021, AND FIELD LOCATED BY DOUCET SURVEY.

REFERENCE PLANS:

1. SEE EXISTING CONDITIONS PLAN, BY DOUCET SURVEY.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS	NHDES	NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
AC	ACRES	NRCC	NORTHEAST REGIONAL CLIMATE CENTER
ADA	AMERICANS WITH DISABILITIES ACT	NRCS	NATURAL RESOURCES CONSERVATION SERVICE
AGGR	AGGREGATE	OC	ON CENTER
AOT	ALTERATION OF TERRIAN	OD	OUTSIDE DIAMETER
BLDG	BUILDING	PAD	PROPOSED AREA DRAIN
BMP(S)	BEST MANAGEMENT PRACTICE(S)	PC	POINT OF CURVATURE
BOC	BOTTOM OF CURB	PCB	PROPOSED CATCH BASIN
BOW	BOTTOM OF WALL	PDMH	PROPOSED DRAINAGE MANHOLE
CB	CATCH BASIN	PI	POINT OF INTERSECTION
CCB	CAPE COD BERM	POS	PROPOSED OUTLET STRUCTURE
CMP	CORRUGATED METAL PIPE	PROP	PROPOSED
CONST	CONSTRUCT	PSMH	PROPOSED SEWER MANHOLE
COORD	COORDINATE	PT	POINT OF TANGENCY
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE	PVMT	PAVEMENT
DMH	DRAINAGE MANHOLE	PYD	PROPOSED YARD DRAIN
DH	DOGHOUSE	R	RADIUS
DWG	DRAWING	RCP	REINFORCED CONCRETE PIPE
ELEV	ELEVATION	RL	ROOF LEADER
EP	EDGE OF PAVEMENT	ROW	RIGHT OF WAY
EXIST	EXISTING	SF	SQUARE FEET
FES	FLARED END SECTION	SSSNNE	SOCIETY OF SOIL SCIENTISTS OF NORTHERN NEW ENGLAND
FF	FINISHED FLOOR	STD	STANDARD
HDPE	HIGH DENSITY POLYETHYLENE	TBR	TO BE REMOVED
HMA	HOT MIX ASPHALT	TOC	TOP OF CURB
HMP	HOT MIX PAVEMENT	TOW	TOP OF WALL
HW	HEADWALL	TYP	TYPICAL
HYD	HYDRANT	UD	UNDERDRAIN
ID	INSIDE DIAMETER	USCS	UNIFIED SOIL CLASSIFICATION SYSTEM
INV	INVERT	USDA	UNITED STATES DEPARTMENT OF AGRICULTURE
L	LENGTH	W	WIDTH
LF	LINEAR FEET	W/	WITH
MAX	MAXIMUM	YD	YARD DARIN
MIN	MINIMUM		
NCSS	NATIONAL COOPERATIVE SURVEY		

LEGEND

- EXISTING LOT LINE
- PROPOSED LEASE LINE
- APPROXIMATE LIMIT OF WORK
- APPROXIMATE LIMIT OF SAWCUT
- EXISTING RIGHT-OF-WAY LINE
- EXISTING CHAIN LINK FENCE
- OHW — EXISTING OVERHEAD WIRE
- EXISTING SEWER LINE
- PROPOSED SEWER LINE
- EXISTING DRAIN LINE
- PROPOSED DRAIN LINE
- PROPOSED DRAIN LINE
- G — EXISTING GAS LINE
- PROPOSED GAS LINE
- T — EXISTING TELEPHONE LINE
- PC — PROPOSED COMMUNICATIONS LINE
- PE — PROPOSED ELECTRIC LINE
- APPROXIMATE LIMITS OF UTILITY LINE REMOVAL
- W — EXISTING WATER LINE
- PROPOSED WATER LINE
- 100 — EXISTING MAJOR CONTOUR LINE
- 98 — EXISTING MINOR CONTOUR LINE
- 45 — PROPOSED CONTOUR LINE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING EDGE OF WETLAND
- EXISTING WETLAND AREA
- WETLAND BUFFER
- EXISTING CONCRETE
- PROPOSED CONCRETE
- EXISTING CRUSHED STONE
- APPROXIMATE LIMIT OF TREE CLEARING
- EXISTING PAVEMENT/CONCRETE TO BE REMOVED
- PROPOSED STANDARD DUTY PAVEMENT SECTION
- PROPOSED HEAVY DUTY PAVEMENT SECTION
- PROPOSED BITUMINOUS SIDEWALK
- PROPOSED SNOW STORAGE AREA
- PROPOSED BUFFER ENHANCEMENT AREA
- APPROXIMATE LIMIT OF WORK
- APPROXIMATE LIMIT OF SAWCUT
- PROPOSED SILT SOCK
- EXISTING UTILITY POLE
- EXISTING UTILITY POLE & GUY WIRE
- EXISTING UTILITY POLE W/LIGHT
- EXISTING UTILITY POLE STUMP
- PROPOSED LIGHT POLE BASE
- EXISTING SIGN
- PROPOSED SIGN
- EXISTING IRON PIPE/ROD FOUND
- EXISTING POST
- EXISTING BOLLARD
- PROPOSED BOLLARD
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- WATER GATE VALVE
- PROPOSED WATER GATE VALVE
- EXISTING GAS GATE VALVE
- EXISTING GAS REGULATOR
- EXISTING VENT PIPE
- EXISTING TELEPHONE BOX
- EXISTING UTILITY BOX
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING DRAIN MANHOLE
- PROPOSED DRAIN MANHOLE
- EXISTING ELECTRIC MANHOLE
- EXISTING SEWER MANHOLE
- EXISTING DECIDUOUS TREE
- PROPOSED LANDSCAPING
- B–XX — BORING LOCATION
- TP–XX — TEST PIT LOCATION
- ×100.0 — EXISTING SURVEYED SPOT GRADE
- ±44.45 — APPROX EXISTING SPOT GRADE
- 44.45 — PROPOSED SPOT GRADE
- CONC. — CONCRETE
- APPROXIMATE CUT AND CAP LOCATION OF EXISTING UTILITY
- VGC — VERTICAL GRANITE CURB
- VBB — SLOPED BITUMINOUS BERM
- SWL — SINGLE WHITE LINE
- DYL — DOUBLE YELLOW LINE

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 — LICENSED PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 — LICENSED PROFESSIONAL ENGINEER
8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
F	07/21/2022	REV PER AOT & PEER REVIEW
E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

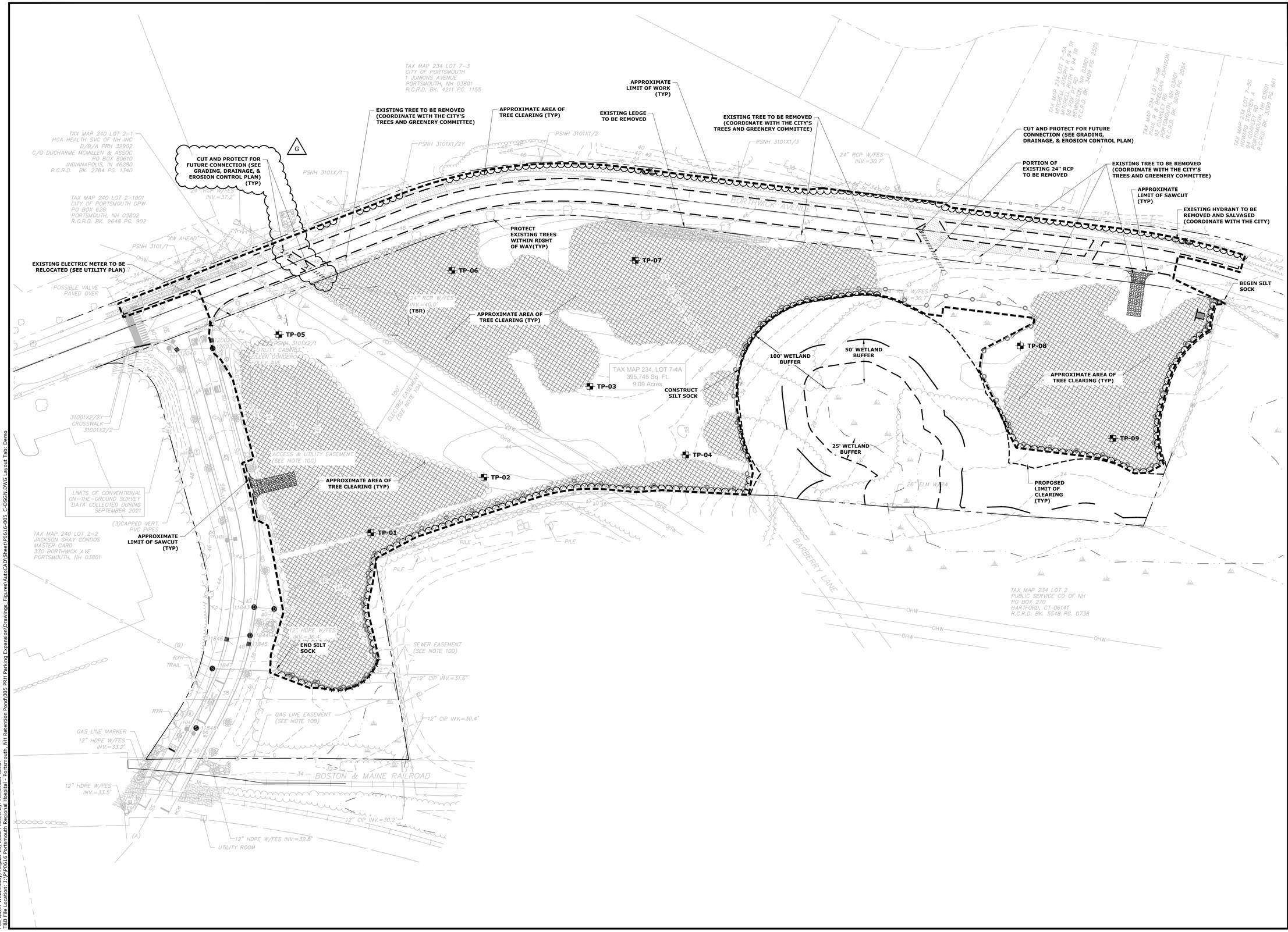
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

GENERAL NOTES, ABBREVIATIONS, AND LEGEND SHEET

SCALE: AS SHOWN

G-101

Last Save Date: August 10, 2022 10:52 AM By: ASELLAR
Plot Date: Wednesday, August 10, 2022 10:52 AM By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: G-101



Last Save Date: August 10, 2022 10:50 AM By: AFSELLAR
Plot Date: Wednesday, August 10, 2022 Plotted By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: Demo

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED PROFESSIONAL ENGINEER
8/10/2022

N

SCALE IN FEET
0 50' 100'
GRAPHIC SCALE

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

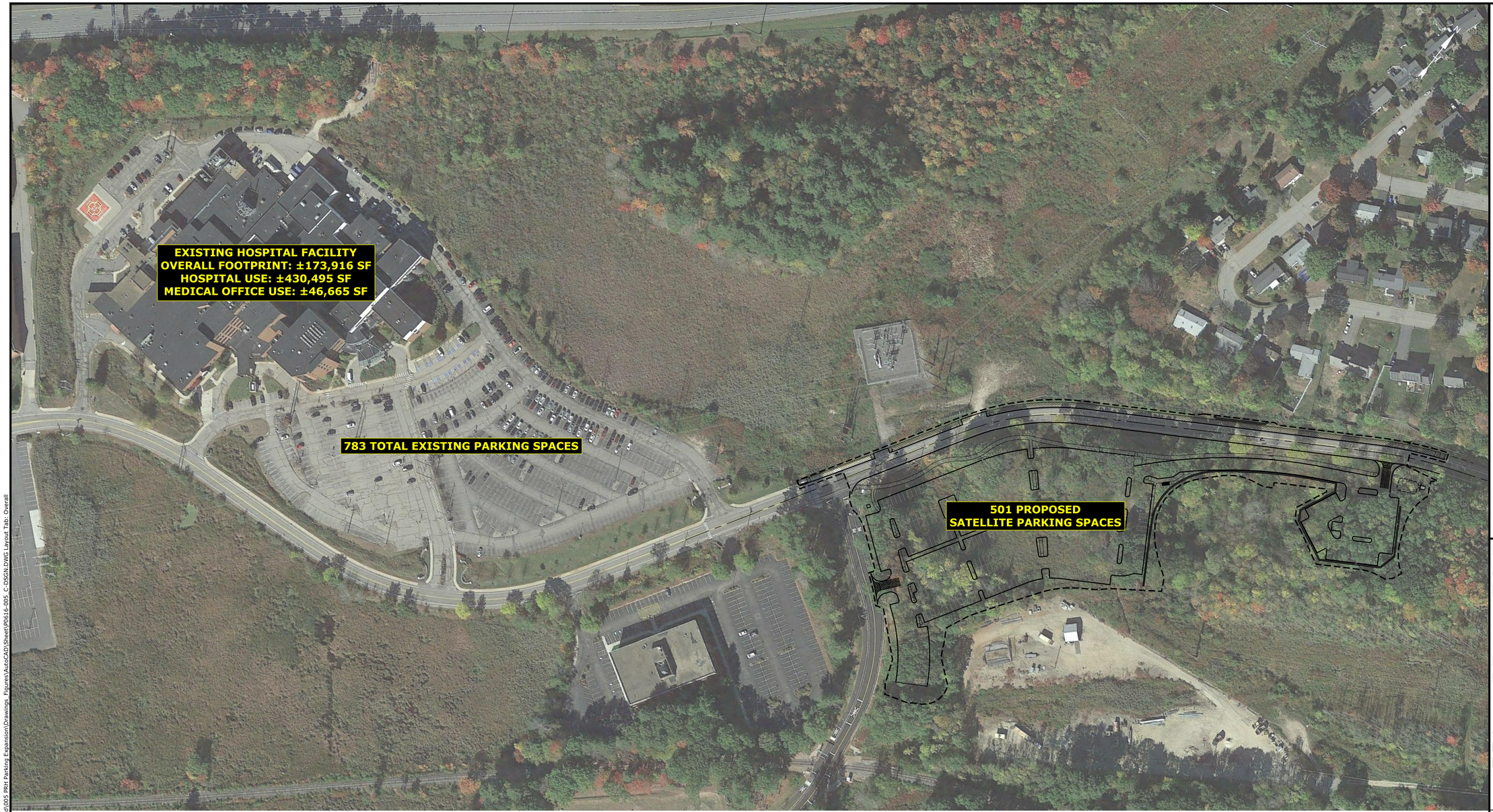
MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
F	07/21/2022	REV PER AOT & PEER REVIEW
E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

DEMOLITION PLAN

SCALE: AS SHOWN

C-101



PARKING REQUIREMENTS:	REQUIRED	PROPOSED
PARKING STALL LAYOUT:		
• STANDARD 90°	8.5' X 19'	8.5' X 19'
DRIVE AISLE WIDTH:		
• 90° (2-WAY TRAFFIC)	24 FT	24 FT
MINIMUM SETBACKS:		
• FRONT:	50 FT	35.4 FT (1)

PARKING SPACE REQUIREMENTS:		
MEDICAL OFFICE:		
1 SPACE / 250 GFA		
= ±46,665 SF / 250 SF/SPACE =	187 SPACES	
HOSPITAL:		
PER PARKING DEMAND ANALYSIS(2)	965 SPACES	
MINIMUM PARKING:	1,152 SPACES	783 EXISTING SPACES
MAXIMUM PARKING(3):	1,382 SPACES	501 PROPOSED SPACES(4)
		1,284 TOTAL SPACES
ACCESSIBLE PARKING REQUIREMENTS:		
PROPOSED SATELLITE PARKING LOT	11 SPACES	11 SPACES

(1) - A VARIANCE WAS GRANTED BY THE ZONING BOARD OF ADJUSTMENT ON FEBRUARY 23, 2022 FROM SECTION 10.113.41 TO ALLOW A 35 FOOT FRONT SETBACK FOR A PARKING LOT WHERE 50 FEET IS REQUIRED
(2) - PARKING DEMAND BASED ON GFA OF THE EXISTING HOSPITAL (±430,495 SF)
(3) - MAXIMUM PARKING EQUALS 120% OF MINIMUM
(4) - INCLUDING 11 ADA SPACES IN THE SATELLITE PARKING LOT PER ADA STANDARDS SECTION 208

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
8/10/2022

N

SCALE IN FEET
0 100' 200'
GRAPHIC SCALE

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

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C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

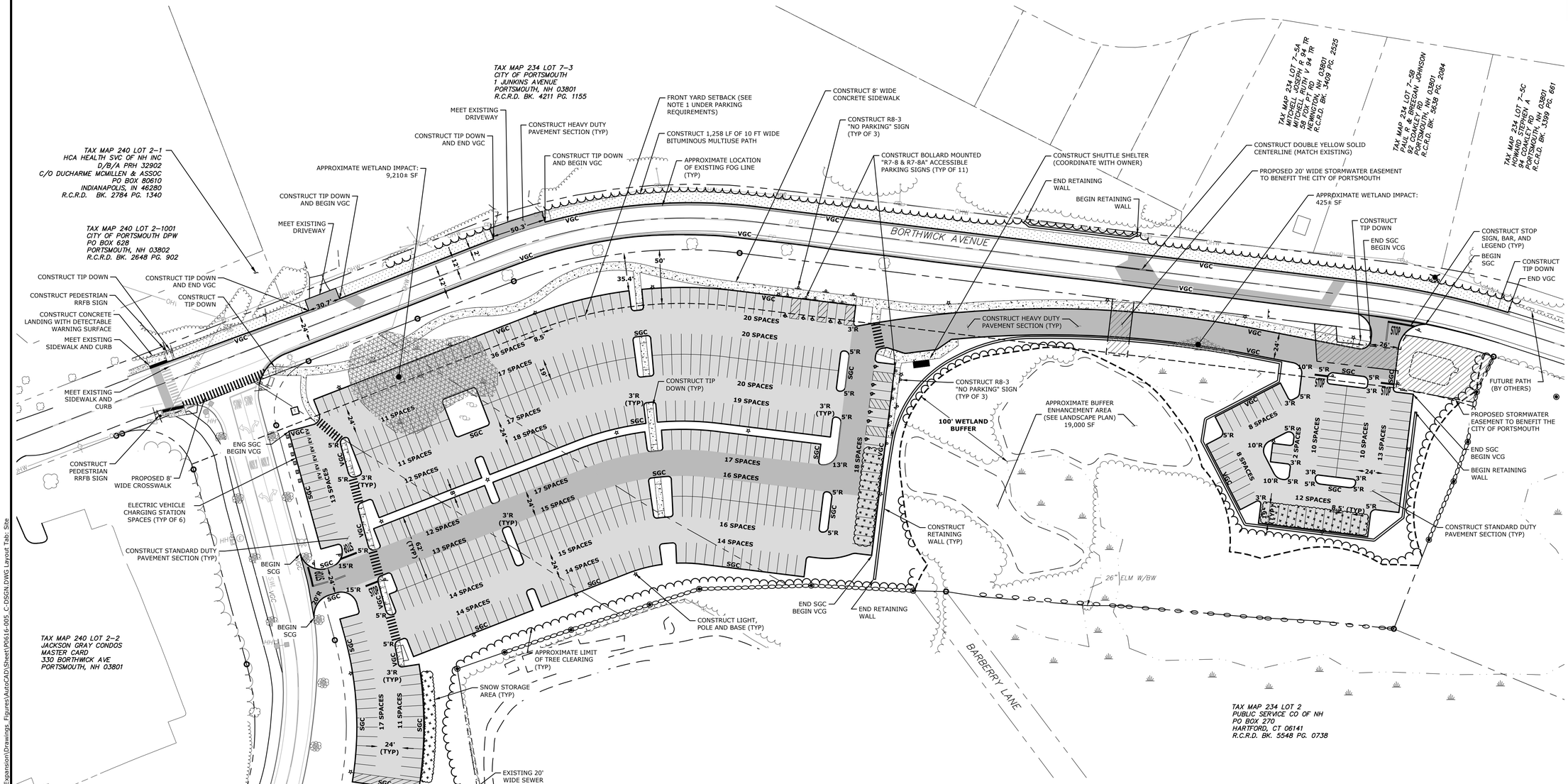
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

OVERALL PARKING PLAN

SCALE: AS SHOWN

C-102

Last Save Date: August 10, 2022 10:50 AM By: ASELLAR
Plot Date: Wednesday, August 10, 2022 10:50 AM By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings_Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: Overall



PARKING REQUIREMENTS:	REQUIRED	PROPOSED
PARKING STALL LAYOUT:		
• STANDARD 90°	8.5' X 19'	8.5' X 19'
DRIVE AISLE WIDTH:		
• 90° (2-WAY TRAFFIC)	24 FT	24 FT
MINIMUM SETBACKS:		
• FRONT:	50 FT	35.4 FT (1)
PARKING SPACE REQUIREMENTS:		
MEDICAL OFFICE:		
1 SPACE / 250 GFA		
= ±46,665 SF / 250 SF/SPACE =	187 SPACES	
HOSPITAL:		
PER PARKING DEMAND ANALYSIS(2)	965 SPACES	
MINIMUM PARKING:	1,152 SPACES	783 EXISTING SPACES
MAXIMUM PARKING(3):	1,382 SPACES	501 PROPOSED SPACES(4)
		1,284 TOTAL SPACES
ACCESSIBLE PARKING REQUIREMENTS:		
PROPOSED SATELLITE PARKING LOT	11 SPACES	11 SPACES

(1) - A VARIANCE WAS GRANTED BY THE ZONING BOARD OF ADJUSTMENT ON FEBRUARY 23, 2022 FROM SECTION 10.113.41 TO ALLOW A 35 FOOT FRONT SETBACK FOR A PARKING LOT WHERE 50 FEET IS REQUIRED
(2) - PARKING DEMAND BASED ON GFA OF THE EXISTING HOSPITAL (±430,495 SF)
(3) - MAXIMUM PARKING EQUALS 120% OF MINIMUM
(4) - INCLUDING 11 ADA SPACES IN THE SATELLITE PARKING LOT PER ADA STANDARDS SECTION 208

SITE DATA:
LOCATION:TAX MAP 0234, LOT 0007-004A
444 BORTHWICK AVENUE & EILEEN DONDERO FOLEY AVENUE
PORTSMOUTH, NH 03801

ZONING DISTRICTS:OFFICE RESEARCH
WETLAND

ALLOWED USE: SATELLITE PARKING LOT (1)

(1) - A SPECIAL EXCEPTION WAS GRANTED BY THE ZONING BOARD OF ADJUSTMENT ON FEBRUARY 23, 2022 FROM SECTION 10.1113.112 TO ALLOW A PARKING LOT ON ANOTHER LOT IN THE SAME OWNERSHIP

DIMENSIONAL REQUIREMENTS:	REQUIRED	PROPOSED
MINIMUM LOT AREA:	3 ACRES	±9.09 ACRES
MINIMUM STREET FRONTAGE:	300 FT	±1,313 FT
MINIMUM SETBACKS:		
• FRONT:	50 FT	N/A
• SIDE:	75 FT	N/A
• REAR:	50 FT	N/A
MAXIMUM BUILDING HEIGHT:	30 FT	N/A
MAXIMUM BUILDING COVERAGE:	30%	0 %
MINIMUM OPEN SPACE:	25%	±56.5%

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
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8/10/2022

SCALE IN FEET
0 50' 100'
GRAPHIC SCALE

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

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A	03/22/2022	TAC SUBMISSION

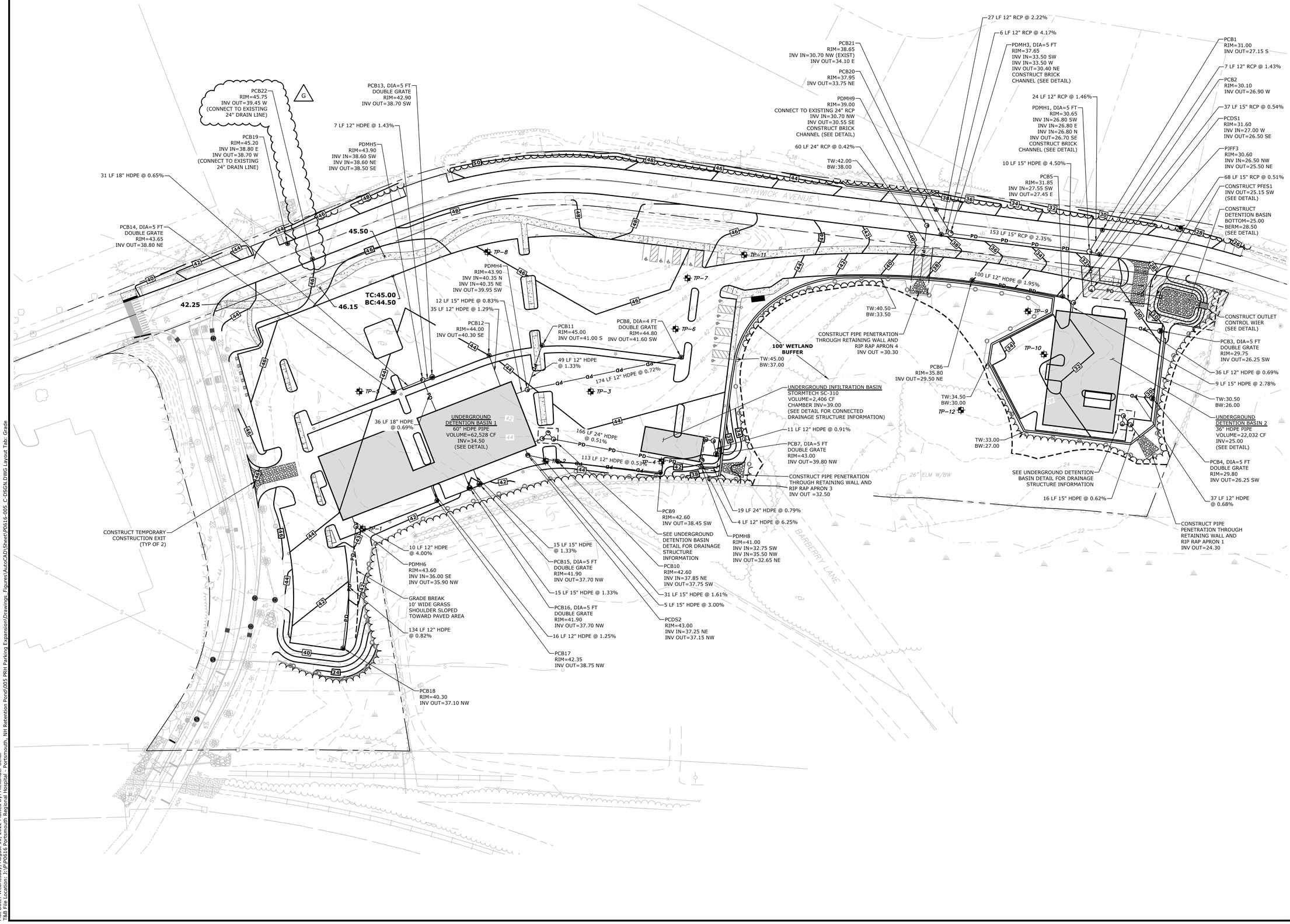
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Save Date: August 10, 2022 10:50 AM By: AFELLAR
Plot Date: Wednesday, August 10, 2022 10:51 AM By: Alexander Sellar
T&B File Location: I:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings_Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: Site



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Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 8/10/22

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 8/10/2022

N

SCALE IN FEET
0 50' 100'
GRAPHIC SCALE

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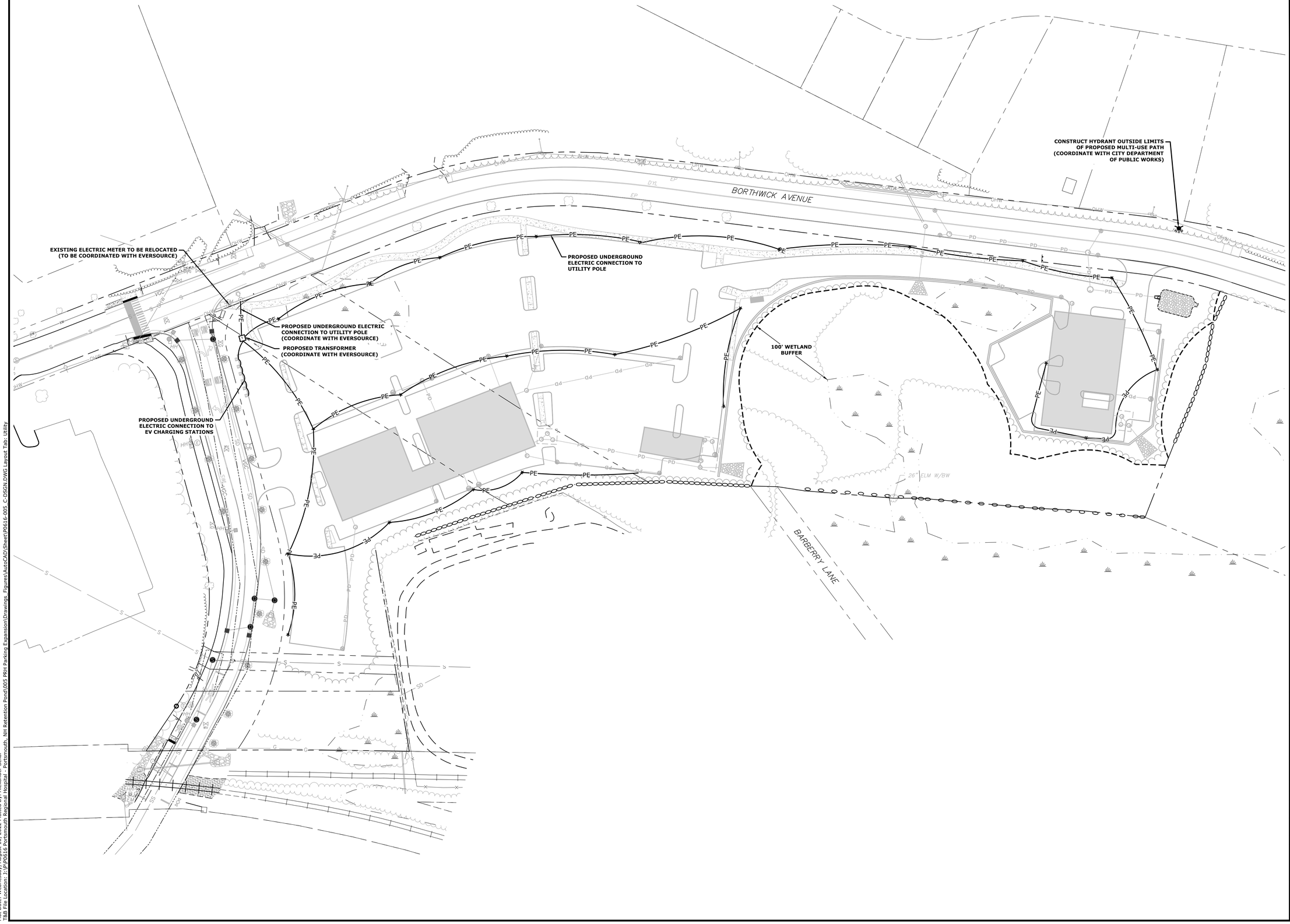
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103



Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
8/10/22

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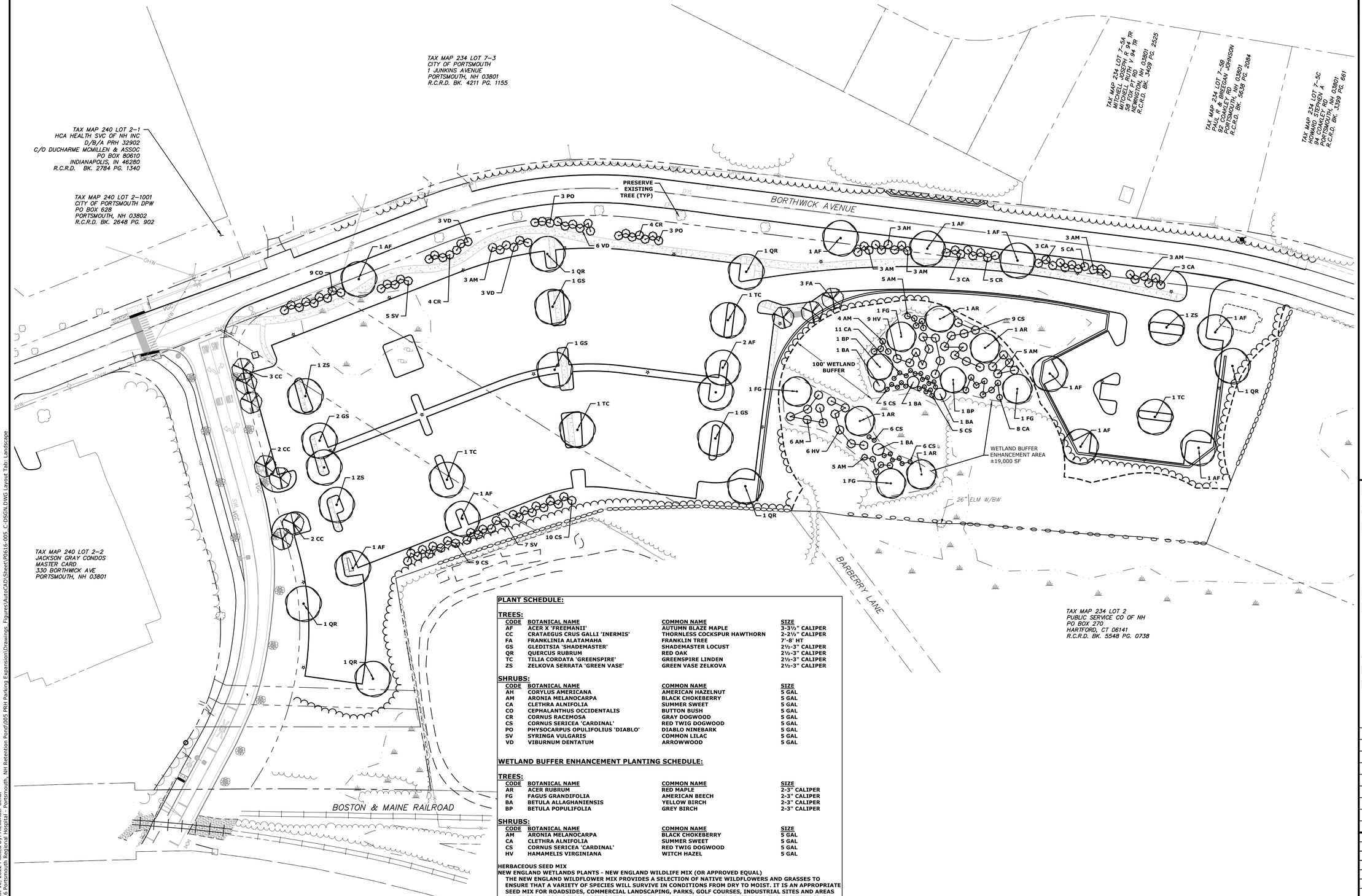
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

UTILITY PLAN

SCALE: AS SHOWN

C-104

Last Save Date: August 10, 2022 12:15 PM By: ASELLAR
Plot Date: Wednesday, August 10, 2022 12:15 PM By: Alexander Sellar
T&B File Location: J:\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings_Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: Utility



PLANT SCHEDULE:

TREES:

CODE	BOTANICAL NAME	COMMON NAME	SIZE
AF	ACER X 'FREEMANII'	AUTUMN BLAZE MAPLE	3-3½" CALIPER
CC	CRATAEGUS CRUS GALLI 'INERMIS'	THORNLESS COCKSPUR HAWTHORN	2-2½" CALIPER
FA	FRANKLINIA ALATAMAHA	FRANKLIN TREE	7'-8' HT
GS	GLEDITSIA 'SHADEMASTER'	SHADEMASTER LOCUST	2½-3" CALIPER
QR	QUERCUS RUBRUM	RED OAK	2½-3" CALIPER
TC	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2½-3" CALIPER
ZS	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2½-3" CALIPER

SHRUBS:

CODE	BOTANICAL NAME	COMMON NAME	SIZE
AH	CORYLUS AMERICANA	AMERICAN HAZELNUT	5 GAL
AM	ARONIA MELANOCARPA	BLACK CHOKEBERRY	5 GAL
CA	CLETHRA ALNIFOLIA	SUMMER SWEET	5 GAL
CO	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	5 GAL
CR	CORNUS RACEMOSA	GRAY DOGWOOD	5 GAL
CS	CORNUS SERICEA 'CARDINAL'	RED TWIG DOGWOOD	5 GAL
PO	PHYSOCARPUS OPULIFOLIUS 'DIABLO'	DIABLO NINEBARK	5 GAL
SV	SYRINGA VULGARIS	COMMON LILAC	5 GAL
VD	VIBURNUM DENTATUM	ARROWWOOD	5 GAL

WETLAND BUFFER ENHANCEMENT PLANTING SCHEDULE:

TREES:

CODE	BOTANICAL NAME	COMMON NAME	SIZE
AR	ACER RUBRUM	RED MAPLE	2-3" CALIPER
FG	FAGUS GRANDIFOLIA	AMERICAN BEECH	2-3" CALIPER
BA	BETULA ALLAGHANIENSIS	YELLOW BIRCH	2-3" CALIPER
BP	BETULA POPULIFOLIA	GREY BIRCH	2-3" CALIPER

SHRUBS:

CODE	BOTANICAL NAME	COMMON NAME	SIZE
AM	ARONIA MELANOCARPA	BLACK CHOKEBERRY	5 GAL
CA	CLETHRA ALNIFOLIA	SUMMER SWEET	5 GAL
CS	CORNUS SERICEA 'CARDINAL'	RED TWIG DOGWOOD	5 GAL
HV	HAMAMELIS VIRGINIANA	WITCH HAZEL	5 GAL

HERBACEOUS SEED MIX
NEW ENGLAND WETLANDS PLANTS - NEW ENGLAND WILDLIFE MIX (OR APPROVED EQUAL)
THE NEW ENGLAND WILDFLOWER MIX PROVIDES A SELECTION OF NATIVE WILDFLOWERS AND GRASSES TO ENSURE THAT A VARIETY OF SPECIES WILL SURVIVE IN CONDITIONS FROM DRY TO MOIST. IT IS AN APPROPRIATE SEED MIX FOR ROADSIDES, COMMERCIAL LANDSCAPING, PARKS, GOLF COURSES, INDUSTRIAL SITES AND AREAS UNDERGOING ECOLOGICAL RESTORATION. THE MIX CAN BE APPLIED BY HYDRO-SEEDING (NO TACKIFIERS), BY MECHANICAL SPREADER, OR BY HAND. LIGHTLY RAKE OR ROLL AFTER SOWING TO INCREASE SEED TO SOIL CONTACT. APPLY ON A CLEAN, WEED FREE SEED BED. BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE FALL DORMANT SEEDING.

APPLICATION RATE: 23 LBS/ACRE | 1900 SQ FT/LB

Tighe&Bond

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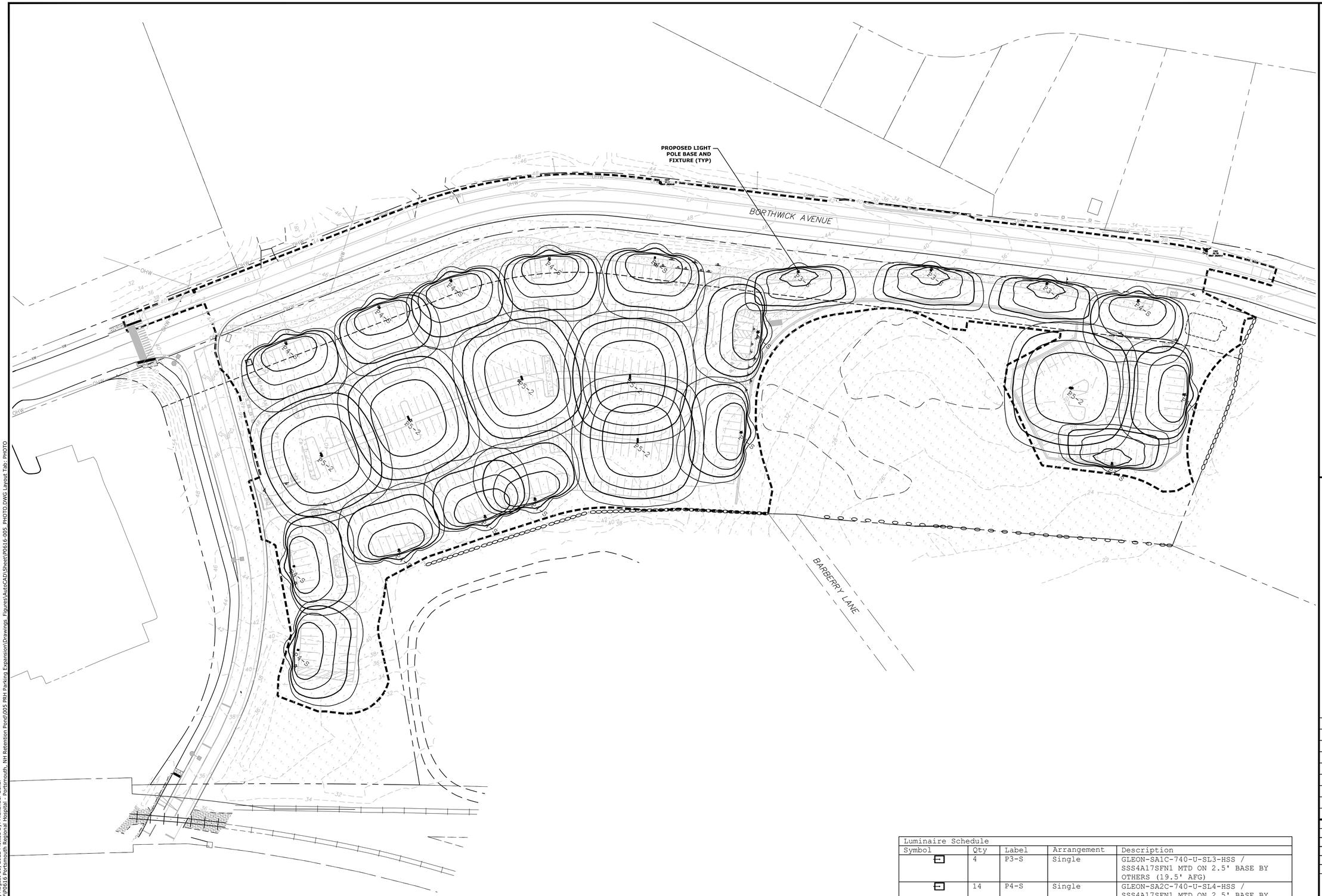
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DSGN.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

LANDSCAPE PLAN

SCALE: AS SHOWN

C-105

Last Save Date: August 10, 2022 12:15 PM By: AFSELLAR
Plot Date: August 10, 2022 12:17 PM By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-DSGN.DWG Layout Tab: Landscape



Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	4	P3-S	Single	GLEON-SA1C-740-U-SL3-HSS / SSS4A17SFN1 MTD ON 2.5' BASE BY OTHERS (19.5' AFG)
	14	P4-S	Single	GLEON-SA2C-740-U-SL4-HSS / SSS4A17SFN1 MTD ON 2.5' BASE BY OTHERS (19.5' AFG)
	6	P5-2	Back-Back	GLEON-SA2C-740-U-5WQ / SSS4A17SFN2 MTD ON 2.5; BASE BY OTHERS (19.5' OAH AFG)

Tighe&Bond

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PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_PHOTO.DWG
DRAWN BY:	MKF
CHECKED:	PMC
APPROVED:	BLM

PHOTOMETRICS PLAN

SCALE: AS SHOWN

C-106

Last Save Date: July 21, 2022 12:54 PM By: ASELLAR
Plot Date: Wednesday, August 10, 2022 Plotted By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings_Figures\AutoCAD\Sheet\P0616-005_PHOTO.DWG Layout Tab: PHOTO

GENERAL PROJECT INFORMATION

PROJECT OWNER:	PORTSMOUTH REGIONAL HOSPITAL 333 BORTHWICK AVENUE PORTSMOUTH, NH
PROJECT NAME:	PROPOSED SATELLITE PARKING LOT
PROJECT ADDRESS:	BORTHWICK AVENUE PORTSMOUTH, NH
PROJECT MAP / LOT:	MAP 234 / LOT 7-4A
PROJECT LATITUDE:	43°-03'-56.5"N
PROJECT LONGITUDE:	70°-47'-07.21"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE CONSTRUCTION OF A 520 SPOT SATELLITE PARKING LOT TO SERVICE THE EXISTING PORTSMOUTH REGIONAL HOSPITAL. THE WORK IS ANTICIPATED TO START IN FALL 2022, AND BE COMPLETED BY FALL 2023.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 6.24 ACRES.

SOIL CHARACTERISTICS

USCS SITE SPECIFIC SOIL SURVEY CONDUCTED BY TIGHE & BOND INC., ON NOVEMBER 18 & 19, 2021 THE SOILS ON SITE CONSIST OF WOODBRIDGE, BOXFROD,SCITICO, PAXTON, HOLLIS, CHATFIELD AND SCIO SOILS WHICH RANGE FROM WELL DRAINED TO POORLY DRAINED SOILS WITH HYDROLOGIC SOIL GROUP RATING(S) OF B & C.

NAME OF RECEIVING WATERS

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA OVERLAND FLOW TO AN UNNAMED WETLAND AND ULTIMATELY FLOWS TO THE PISCATAQUA RIVER.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - DEVELOPMENT OF BORROW PIT AREAS
   - DISPOSAL OF SEDIMENT SPOIL, STUMP AND OTHER SOLID WASTE
   - FLOOD PLAIN EXCAVATION WORK
   - STREAM CHANNEL MODIFICATIONS
   - CONTROL OF DUST
   - CONSTRUCTION OF ACCESS AND HAUL ROAD
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS INCLUDING BUT NOT LIMITED TO BORTHWICK AVENUE AND ELLEN DONDERO FOLEY AVENUE.

STOCKPILES:

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. PERMANENT MEASURES AND PLANTINGS:
   A. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
   B. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
   C. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
   D. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
   E. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
   F. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
   G. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
   H. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

   IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

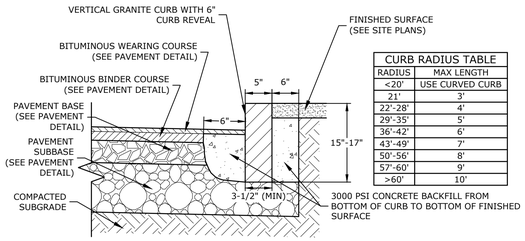
1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL REGULATED MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE, ON AN IMPERVIOUS SURFACE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
      g. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
      i. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
      ii. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      iii. SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
      iv. INSPECT FUEL STORAGE AREAS WEEKLY;
      v. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS;
      vi. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
      vii. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      viii. THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         (1) EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED;
         (2) PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS;
         (3) HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS;
         (4) USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES;
         (5) PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      ix. FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT, OR ITS SUCCESSOR DOCUMENT. HTTPS://WWW.DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF
      b. FERTILIZERS:
      i. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
      ii. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
      iii. STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
      i. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
      ii. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
      iii. EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

1. THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE ENGINEER. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.
2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
   A. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE ENGINEER AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
   B. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
   C. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
   D. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

BLASTING NOTES:

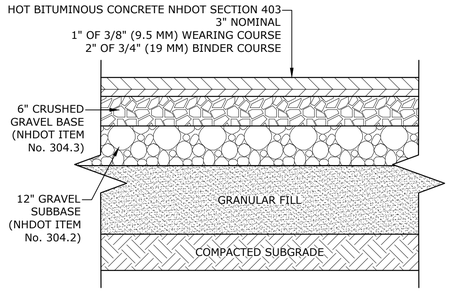
1. CONTRACTOR SHALL CONTACT THE NHDES PRIOR TO COMMENCING ANY BLASTING ACTIVITIES
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT:
   A. A BLASTING PLAN THAT IDENTIFIES:
      a. WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
      b. THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
      c. SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.
3. IF MORE THAN 5000 CUBIC YARDS OF BLAST ROCK WILL BE GENERATED AND THERE ARE ONE OR MORE PUBLIC DRINKING WATER WELLS WITHIN 2000 FEET OF THE BLASTING ACTIVITIES, A PLAN TO MONITOR GROUNDWATER TO DETECT ANY CONTAMINATION IN SUFFICIENT TIME TO PROTECT THE WATER SUPPLY WELLS SHALL BE PROVIDED TO THE NHDES. THE GROUNDWATER MONITORING PLAN SHALL INCLUDE:
   A. MONITORING FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA:
      a. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY THE NHDES.
   B. THE FOLLOWING BEST MANAGEMENT PROCEDURES FOR BLASTING SHALL BE COMPLIED WITH:
      a. LOADING PRACTICES - THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
      i. DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS;
      ii. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON-SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
      iii. SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
      iv. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
      v. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT;
      vi. EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE NEED TO BE ATTENDED TO.
      b. EXPLOSIVE SELECTION - THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDW



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

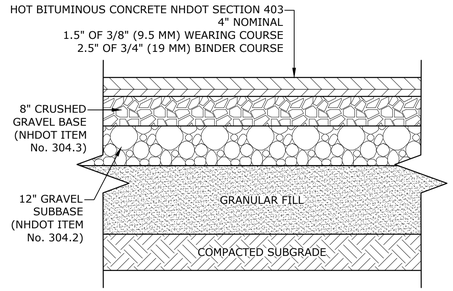
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE



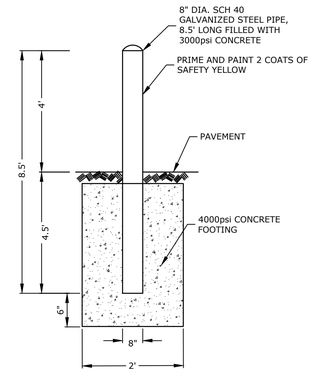
NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.
5. CONTRACTOR SHALL CONFIRM THIS PAVEMENT SECTION WITH THE PROJECT'S GEOTECHINCAL ENGINEEER PRIOR TO CONSTRUCTION.

STANDARD DUTY PARKING LOT PAVEMENT SECTION
NO SCALE

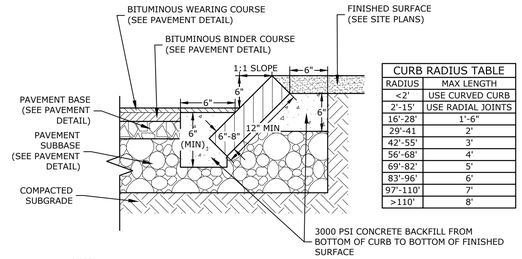


NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.
5. CONTRACTOR SHALL CONFIRM THIS PAVEMENT SECTION WITH THE PROJECT'S GEOTECHINCAL ENGINEEER PRIOR TO CONSTRUCTION.

HEAVY DUTY PARKING LOT PAVEMENT SECTION
NO SCALE



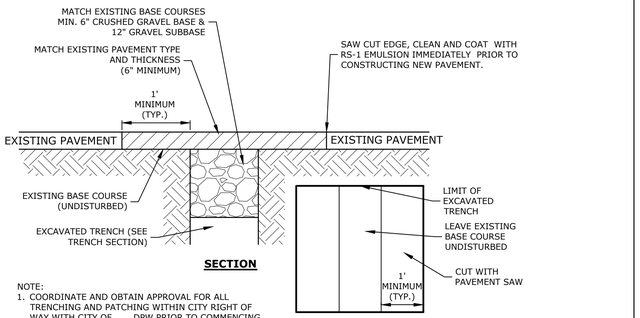
TYPICAL BOLLARD
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

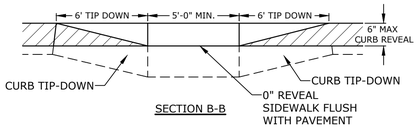
SLOPED GRANITE CURB
NO SCALE



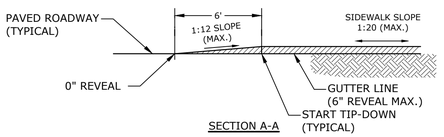
NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF ___ DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE

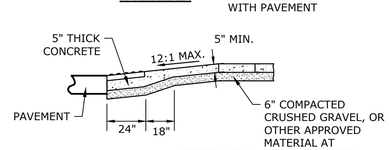
NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



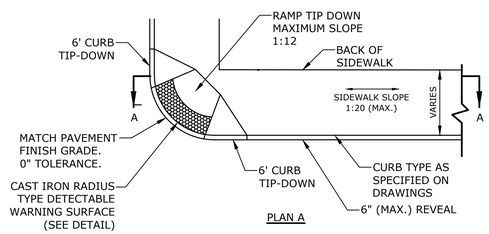
SECTION B-B



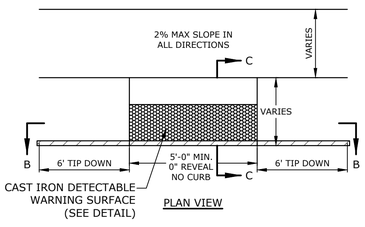
SECTION A-A



SECTION C-C



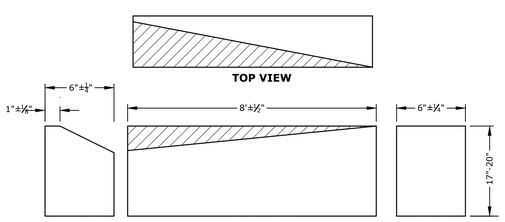
PLAN A



PLAN VIEW

NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 6" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON SET IN CONCRETE (SEE DETAIL.)
4. PROVIDE DETECTABLE WARNING SURFACES ANYTIME THAT A CURB RAMP, BLENDED TRANSITION, OR LANDING CONNECTS TO A STREET.
5. LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.
6. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
7. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURBLINE.
8. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
9. DETECTABLE WARNING PANELS SHALL BE A MINIMUM OF 2 FEET IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
10. THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT).

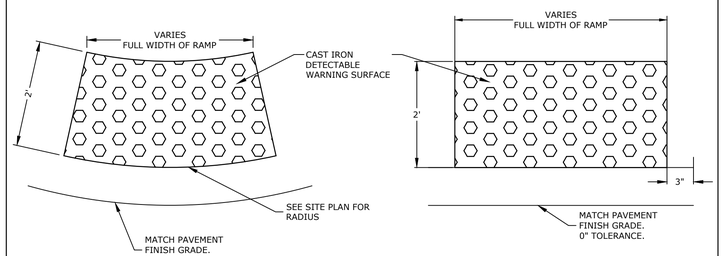
TIP DOWN RAMP
NO SCALE



TRANSITION SECTION
GRANITE SLOPE CURB TO VERTICAL GRANITE CURB

NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN STRAIGHT GRANITE CURB AND SLOPE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE SLOPE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.

CURB TRANSITION
NO SCALE



NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CAST IRON DETECTABLE WARNING SURFACE
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 8/10/22

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
F	07/21/2022	REV PER AOT & PEER REVIEW
E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

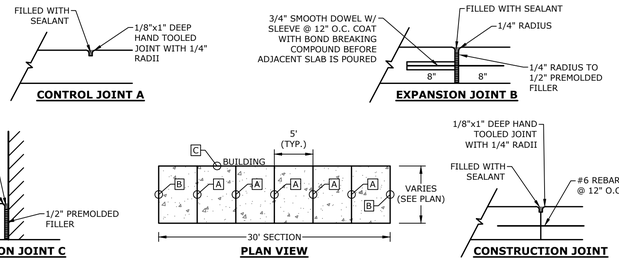
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DETAILS.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

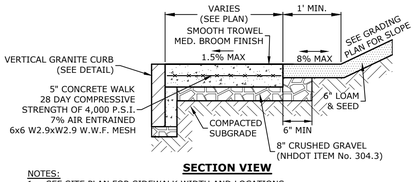
DETAILS SHEET

SCALE: AS SHOWN

C-502

Last Save Date: July 21, 2022 12:52 PM By: ASELLAR
Plot Date: July 21, 2022 12:52 PM By: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-Details.DWG Layout Tab: C-502



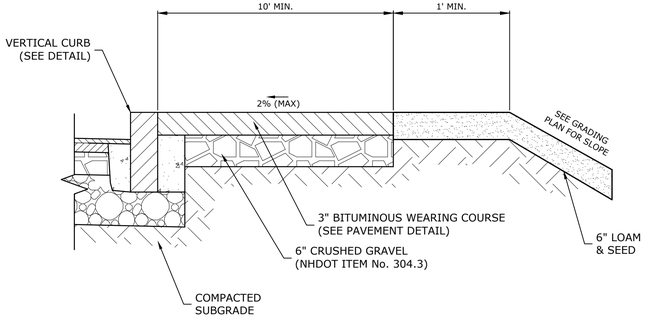


SECTION VIEW

NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.
3. ISOLATION JOINTS ADJACENT TO BUILDING SHALL BE COORDINATED WITH BUILDING DRAWINGS.

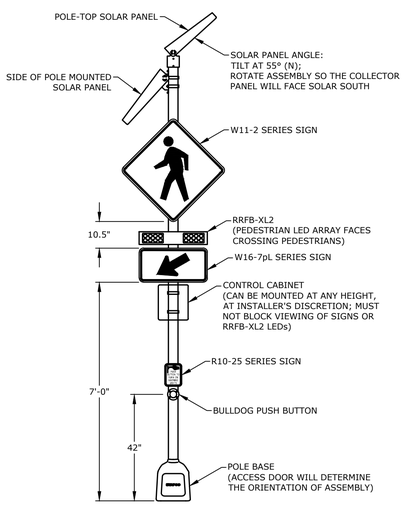
CONCRETE SIDEWALK WITH GRANITE CURB

NO SCALE



MULTI-USE PATH

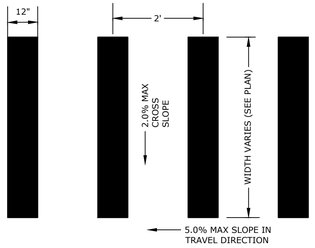
NO SCALE



NOTES:
1. THE POLE AND HOUSING EQUIPMENT SHALL BE THE COLOR BLACK
2. THE POLE DIAMETER SHALL BE 3.5 INCHES

RECTANGULAR RAPID FLASHING BEACON (RRFB)

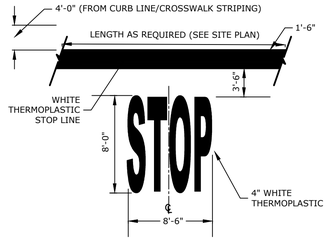
NO SCALE



NOTE:
STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

CROSS WALK STRIPING

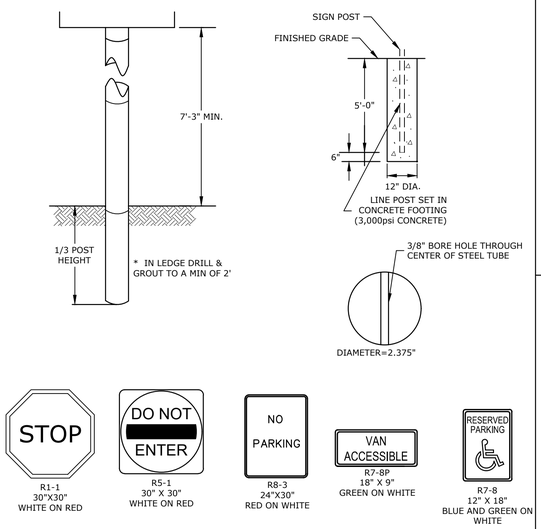
NO SCALE



NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR & LEGEND

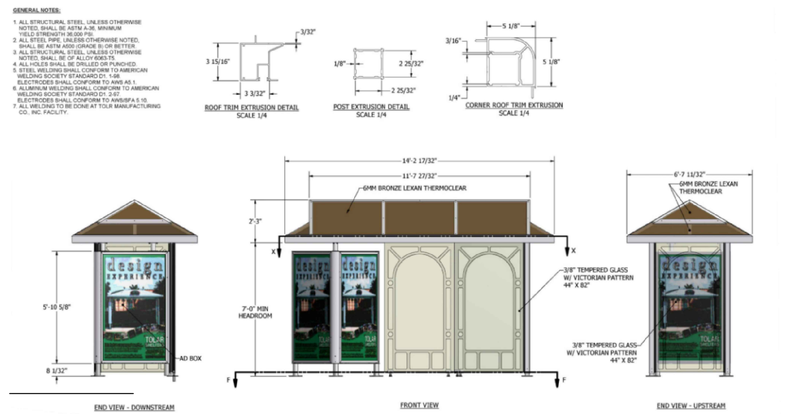
NO SCALE



NOTES:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
POST: SCHEDULE 40 GALVANIZED STEEL PIPE (OUTSIDE DIA. = 2.375").
FINISH: POST TO BE POWDER COATED GLOSS BLACK
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER (AS REQUIRED)
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

SIGN LEGEND & POST

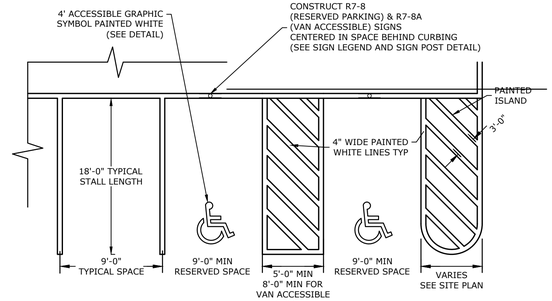
NO SCALE



NOTE:
1. DETAIL SHOWN HEREIN IS ATYPICAL FOR PERMITTING PURPOSED.
2. FINAL BUSH SHELTER TO BE SELECTED BY OWNER PRIOR TO CONSTRUCTION.

TYPICAL BUS SHELTER

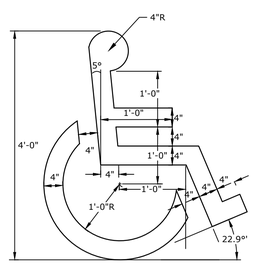
NO SCALE



NOTE:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

PARKING SPACE STRIPING

NO SCALE



NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL

NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 8/10/22

STATE OF NEW HAMPSHIRE — PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 8/10/2022

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PROJECT NO:	P0616-001
DATE:	3/22/22
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DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-503

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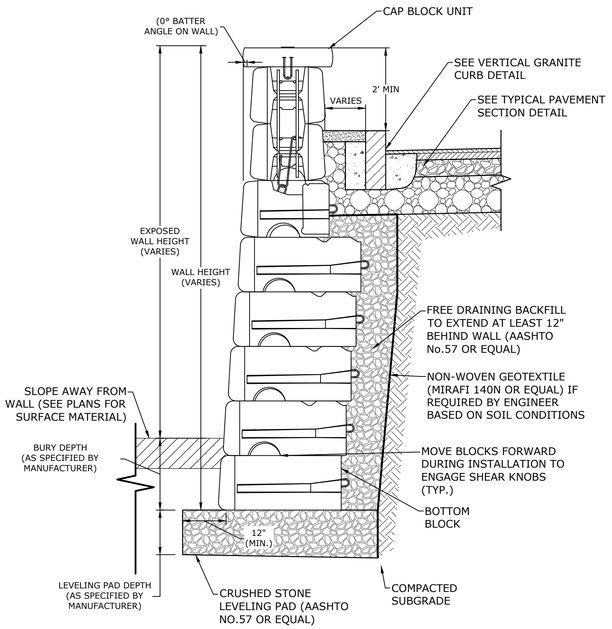
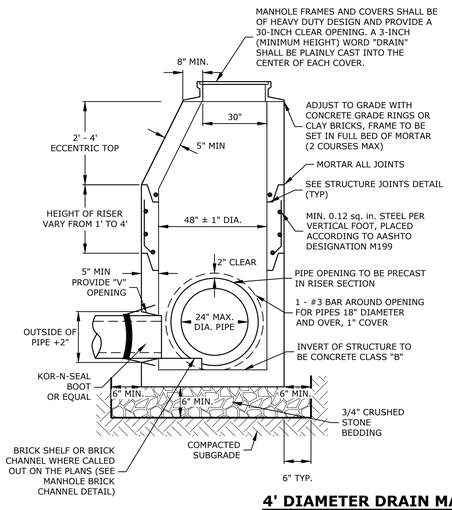


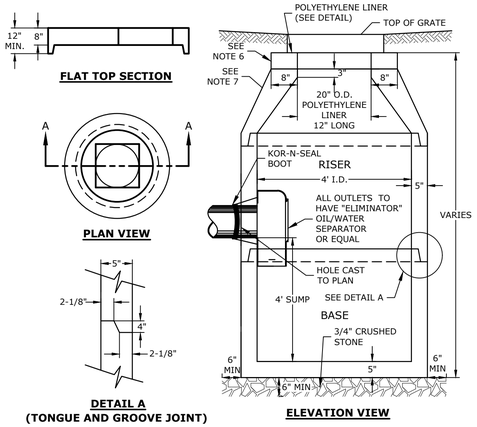
NOTES:
1. RETAINING WALL SHALL BE BY REDI ROCK LEDGESTONE OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL SUBMIT DESIGN AND CALCULATIONS FOR THE RETAINING WALL THAT SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. CALCULATIONS SHALL INCLUDE A GLOBAL STABILITY ANALYSIS.
3. MINIMUM DESIGN PARARMETERS:
   - GLOBAL STABILITY FACTOR OF SAFETY = 1.3
   - OVERTURNING FACTOR OF SAFETY = 2.0
   - SLIDING FACTOR OF SAFETY = 1.5
   - GEOGRID PULLOUT FACTOR OF SAFETY = 1.5
   - SEISMIC FACTOR OF SAFETY = 1.1
4. WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, BUILDING LOADS, GUARDRAIL AND/OR FENCING AS REQUIRED.
5. WALL DESIGN ENGINEER SHALL CONSIDER HEIGHT AND SPECIFY GUARDRAIL WHERE REQUIRED
6. ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL AND THE WALL DESIGN ENGINEER'S DESIGN PLANS AND SPECIFICATIONS.
7. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETED IN ACCORDANCE WITH DESIGN.
8. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE OR OTHER MEASURES SHALL BE TAKEN TO PROTECT THE WALL FROM RUNOFF.
11. CONTRACTOR SHALL SUPPLY SAMPLE TO THE OWNER FOR APPROVAL PRIOR TO WALL CONSTRUCTION.

TYPICAL EXTENDED BLOCK RETAINING WALL SECTION
NO SCALE



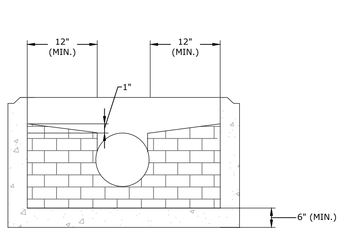
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

4' DIAMETER DRAIN MANHOLE
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCH BASIN
NO SCALE

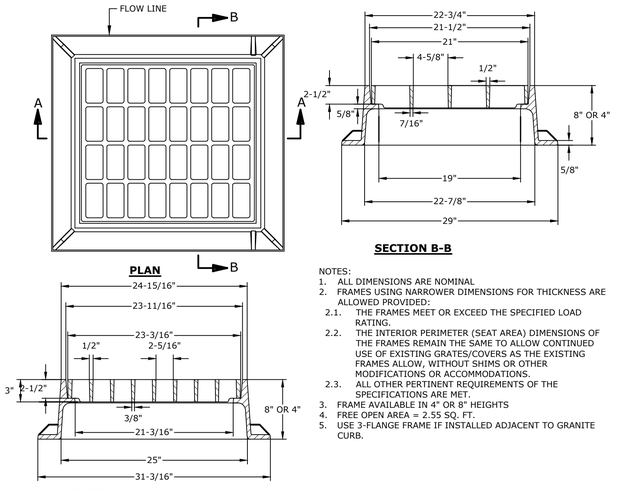


TOP OF SHELF SHALL BE 1" ABOVE CROWN OF HIGHEST PIPE

NOTES:
1. BRICK CHANNEL SHALL BE ASTM C32 SEWER BRICK.
2. CARE SHALL BE TAKEN TO ENSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE DRAIN INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. MANHOLE TEST TO BE CONDUCTED AFTER CHANNEL INSTALLATION IS COMPLETE.
5. WHERE THE ALIGNMENT CHANGES OR SIDE FLOW ENTERS THE MANHOLE, CONSTRUCT CHANNEL WITH A SMOOTH RADIAL CHANNEL.

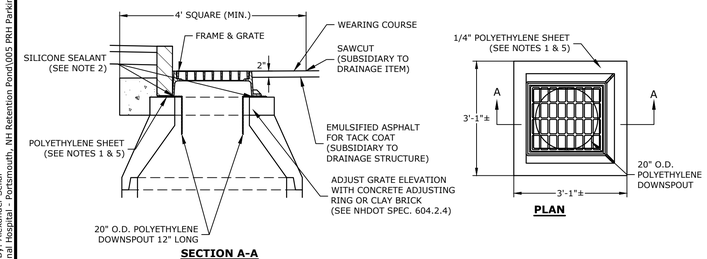
MANHOLE BRICK CHANNEL
NO SCALE

F



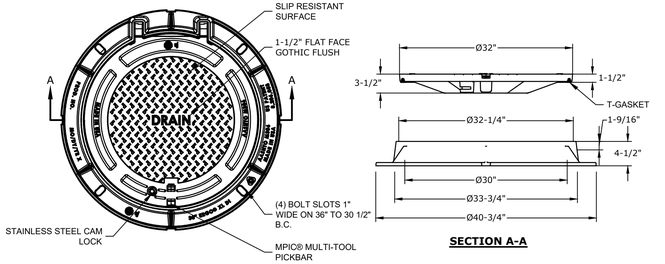
NOTES:
1. ALL DIMENSIONS ARE NOMINAL
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   2.1. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   2.2. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   2.3. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. FRAME AVAILABLE IN 4" OR 8" HEIGHTS
4. FREE OPEN AREA = 2.55 SQ. FT.
5. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.

CATCH BASIN FRAME & GRATE
NO SCALE



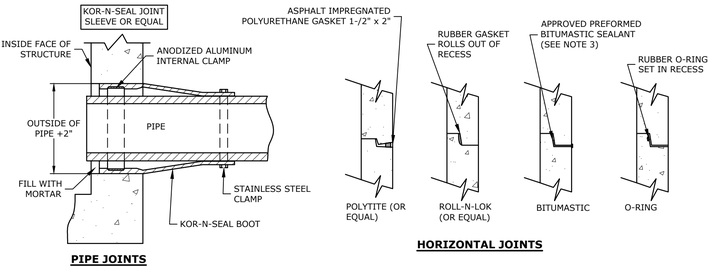
NOTES:
1. POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.
2. PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.
3. PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).
4. USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.
5. TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).
6. THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.
7. PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.
8. SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS", FOR ADDITIONAL INFORMATION.
9. CATCHBASINS WITHIN CITY RIGHT OF WAY SHALL HAVE A POLYETHYLENE LINER

POLYETHYLENE LINER
NO SCALE



NOTES:
1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.
2. ALL DIMENSIONS ARE NOMINAL.
3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
4. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN HE CENTER OF THE COVER.

DRAIN MANHOLE FRAME & COVER
NO SCALE



NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

STRUCTURE JOINTS
NO SCALE

Tighe&Bond

BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
8/10/22

PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
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F	07/21/2022	REV PER AOT & PEER REVIEW
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C	05/12/2022	TAC RESUBMISSION 2
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FILE:	P0616-005_C-DETAILS.DWG
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CHECKED:	PMC
APPROVED:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-504

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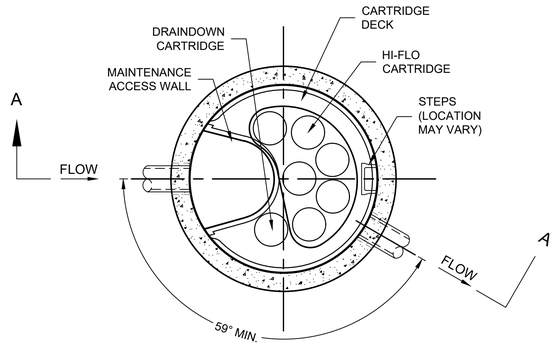
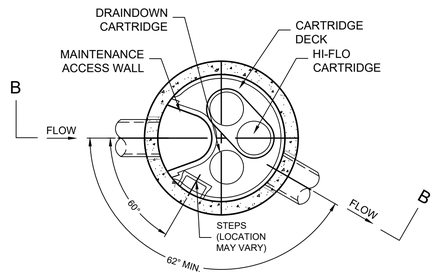
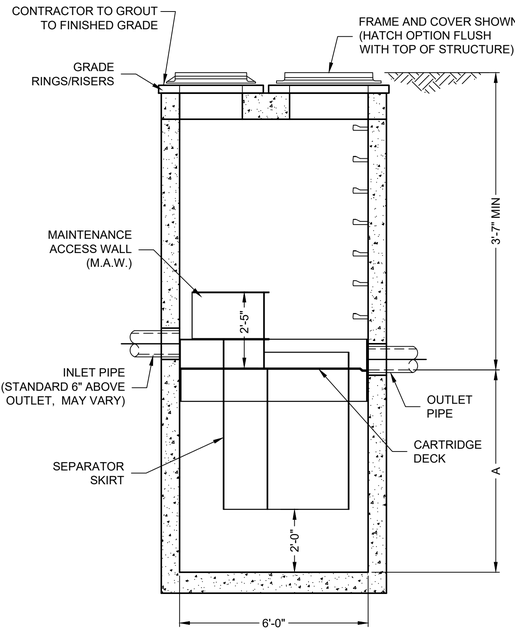


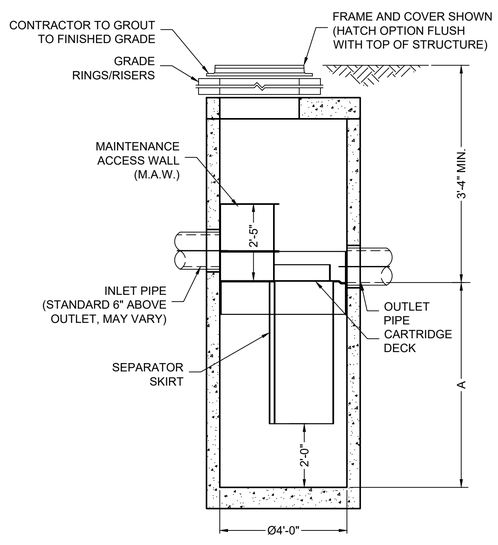
JF 6 PLAN VIEW



JF 4 PLAN VIEW



SECTION A-A



SECTION B-B

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

PROPOSED CIRCULAR JELLYFISH FILTER (JFF) UNIT
NO SCALE

FRAME AND COVER
(DIAMETER VARIES)
NO SCALE

UNIT MODEL SCHEDULE	
PJFF1	4-2-1
PJFF2	4-1-1
PJFF3	6-5-1
PJFF4	4-1-1

GENERAL NOTES:
1. TREATMENT UNIT SHALL BE CONTECH JELLYFISH FILTER UNIT OR APPROVED EQUAL.
2. CONTECH TO PROVIDE FINAL DIMENSIONS BASED ON APPROVED FLOWS AND ALL MATERIALS UNLESS NOTED OTHERWISE.
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOADING REQUIREMENTS. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. CONTRACTOR SHALL PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
B. CONTRACTOR SHALL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
C. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

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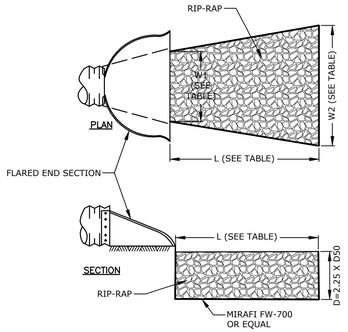
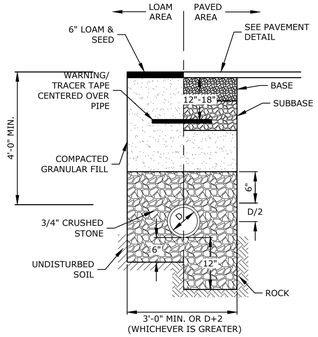


FIELD ELEVATIONS					
	WIDTH OF APRON (W_1, FT)	WIDTH OF APRON (W_2, FT)	LENGTH OF APRON (L, FT)	MEDIAN DIAMETER (FT)	MINIMUM DEPTH (FT)
RRA 1	4	13	9	0.50	1.13
RRA 2	6	23	17	0.50	1.13
RRA 3	6	23	17	0.50	1.13

NOTES:
1. STONE SIZE AND MAT DIMENSIONS DETAILED ON PLANS.
2. STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.
3. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D50 SIZE.

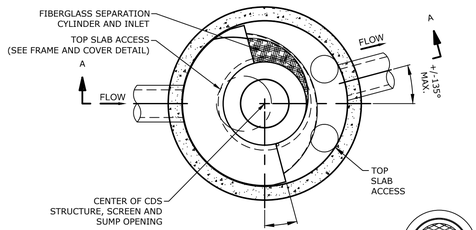
F

RIP-RAP APRON DETAIL
NO SCALE



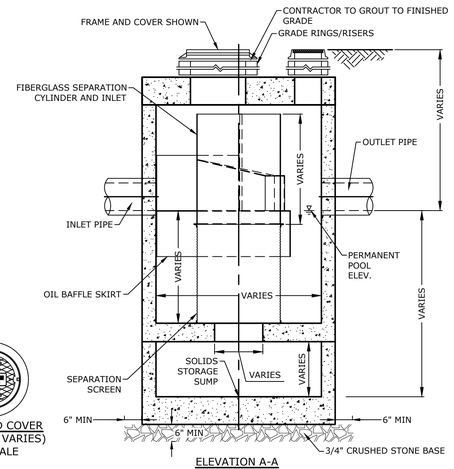
NOTE:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE



PLAN VIEW

FRAME AND COVER
(DIAMETER VARIES)
NO SCALE



ELEVATION A-A

GENERAL NOTES:
1. PRE-TREATMENT UNIT SHALL BE CONTECH CONTINUOUS DEFLECTIVE SEPARATION (CDS) UNIT OR APPROVED EQUAL.
2. CONTECH TO PROVIDE FINAL DIMENSIONS BASED ON APPROVED FLOWS AND ALL MATERIALS UNLESS NOTED OTHERWISE.
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET HS20 (AASHTO M 306) LOAD RATING.
5. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES:
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE CONSIDERED BY THE CONTRACTOR PRIOR TO INSTALLATION.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN ON GRADING PLAN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

UNIT MODEL SCHEDULE	
PCDS1	1515-3
PCDS2	1515-3

PROPOSED CONTINUOUS DEFLECTIVE SEPARATION (CDS) UNIT
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
8/10/2022

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DETAILS SHEET

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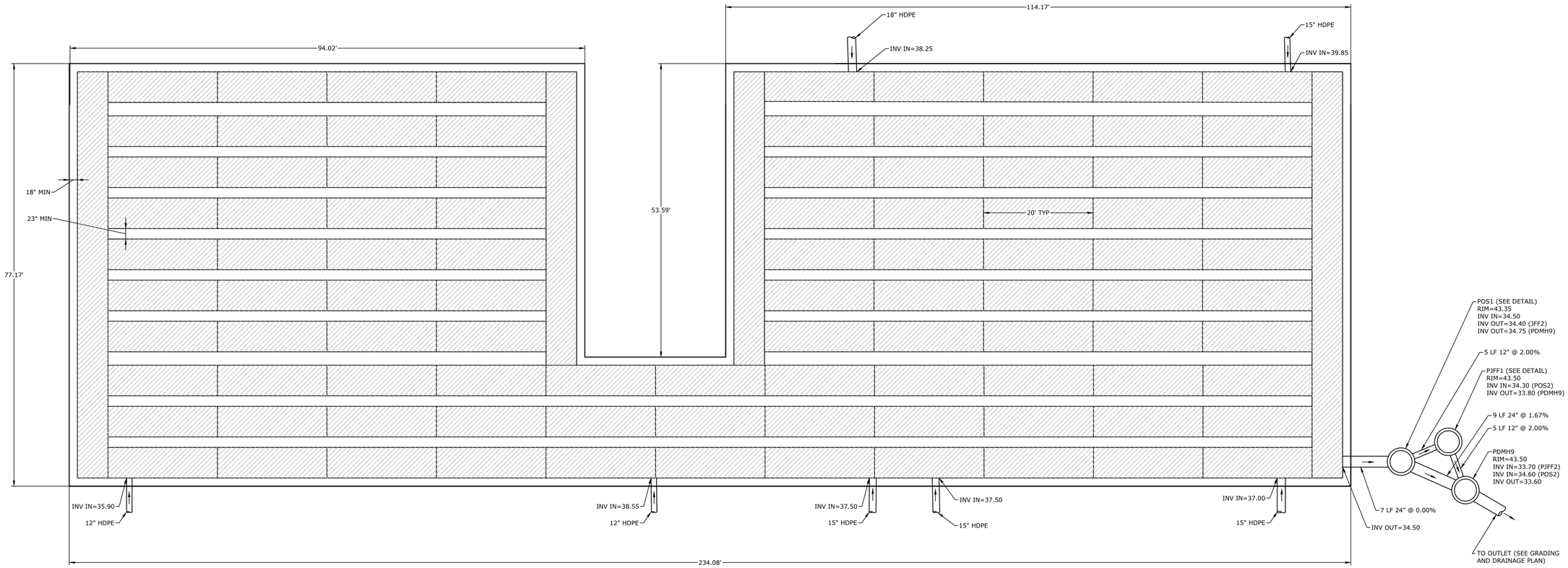
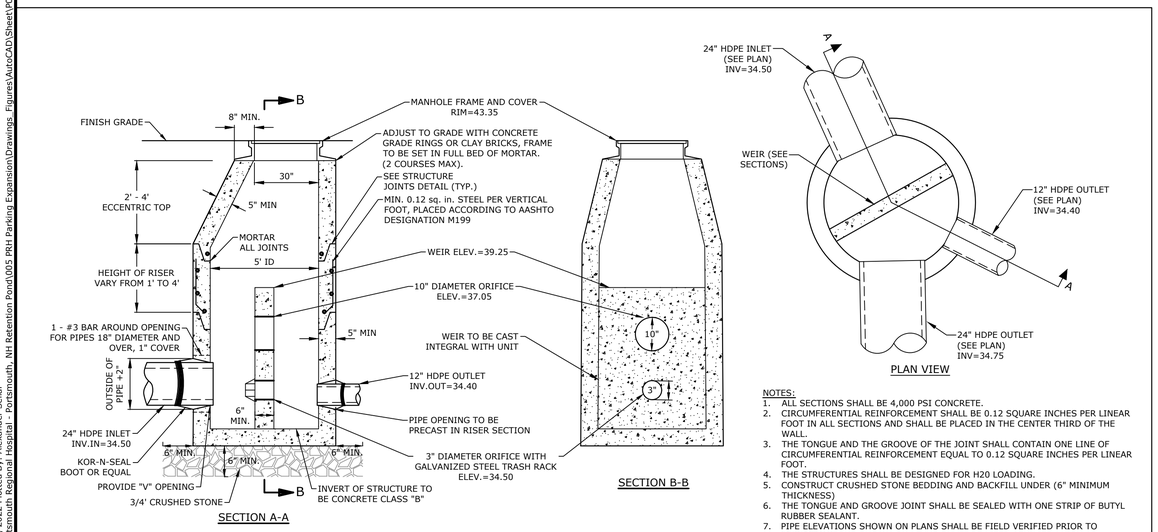




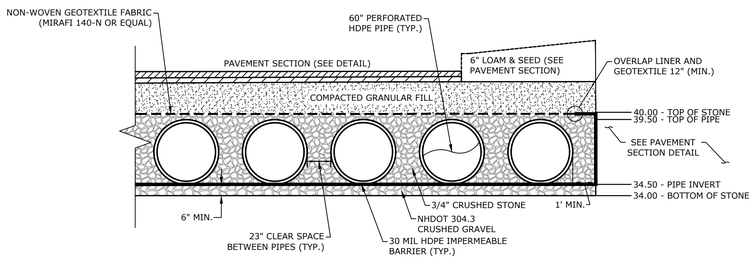
SECTION A-A

PLAN VIEW

SECTION B-B

OUTLET STRUCTURE (POS1)
NO SCALE

NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
11. SEE DRAINAGE MANHOLE DETAIL FOR MORE INFORMATION (CORE HOLE SIZE, MINIMUM FLOOR AND WALL THICKNESS, ETC.)



SECTION VIEW

Inspection & Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually
Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

NOTE:
1. THE UNDERGROUND INFILTRATION BASIN (UIB) SYSTEM SHALL BE HIGH DENSITY POLYETHYLENE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURES DESIGN TO ENGINEER FOR REVIEW AND APPROVAL.
2. THE CONTRACTOR SHALL SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
4. THE SURFACE COVER MATERIALS, INCLUDING TOPSOIL/SUBSOIL SHALL BE REMOVED TO THE TOP OF THE EXISTING NATURALLY DEPOSITED SAND. CARE SHALL BE TAKEN TO AVOID MIXING OF THESE MATERIALS WITH OTHER EXCAVATED SOILS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO REVIEW THE SUBSURFACE MATERIAL PRIOR TO INSTALLATION.
5. THE DESIGN ENGINEER SHALL PROVIDE SUFFICINT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE PROPOSED DESIGN PLAN.
6. THE DESIGN SHALL REQUIRE INSPECTION PORTS/COVERS SUCH THAT SYSTEM CAN BE CLEANED BY VACUUM TRUCK WITH A MINIMUM OF ONE IN EACH CORNER. (FINAL LOCATIONS TO BE COORDINATED PRIOR TO CONSTRUCTION)

60" HDPE UNDERGROUND DETENTION BASIN (UDB-1) DETAIL
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
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8/10/2022

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Plot Date: July 21, 2022 12:52 PM By: Alexander Sellar
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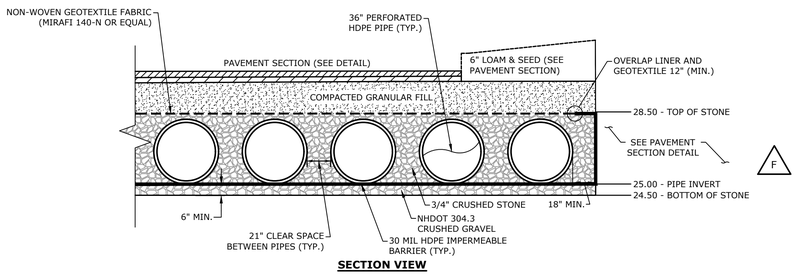

SECTION VIEW

Inspection & Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually
Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

NOTE:
1. THE UNDERGROUND INFILTRATION BASIN (UIB) SYSTEM SHALL BE HIGH DENSITY POLYETHYLENE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURES DESIGN TO ENGINEER FOR REVIEW AND APPROVAL.
2. THE CONTRACTOR SHALL SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
4. THE SURFACE COVER MATERIALS, INCLUDING TOPSOIL/SUBSOIL SHALL BE REMOVED TO THE TOP OF THE EXISTING NATURALLY DEPOSITED SAND. CARE SHALL BE TAKEN TO AVOID MIXING OF THESE MATERIALS WITH OTHER EXCAVATED SOILS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO REVIEW THE SUBSURFACE MATERIAL PRIOR TO INSTALLATION.
5. THE DESIGN ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE PROPOSED DESIGN PLAN.
6. THE DESIGN SHALL REQUIRE INSPECTION PORTS/COVERS SUCH THAT SYSTEM CAN BE CLEANED BY VACUUM TRUCK WITH A MINIMUM OF ONE IN EACH CORNER. (FINAL LOCATIONS TO BE COORDINATED PRIOR TO CONSTRUCTION)

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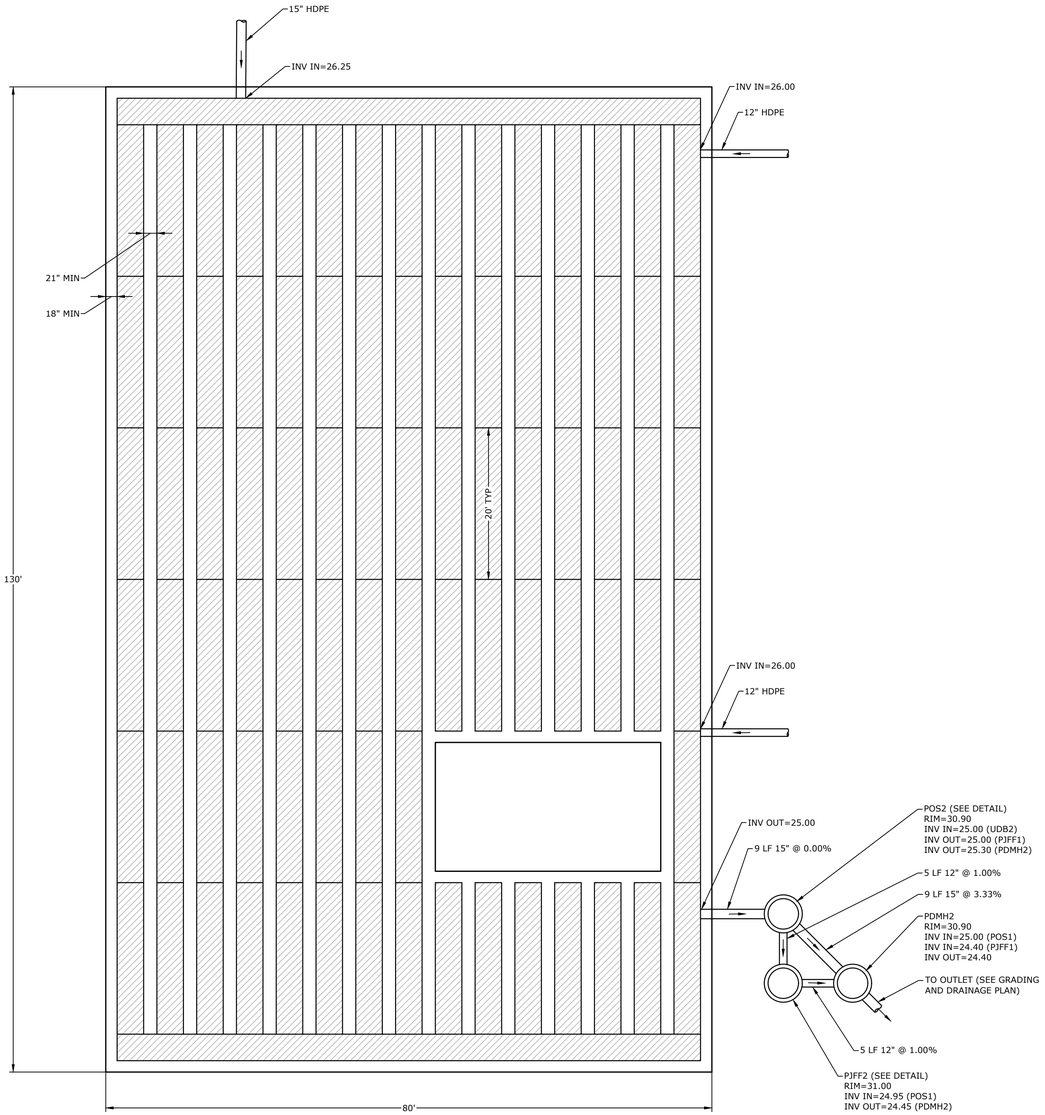
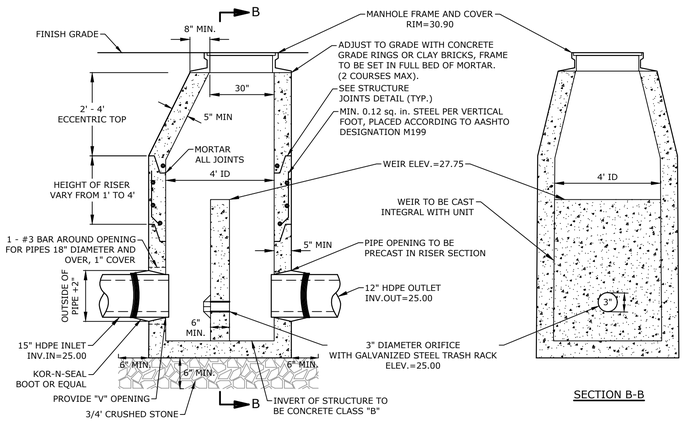
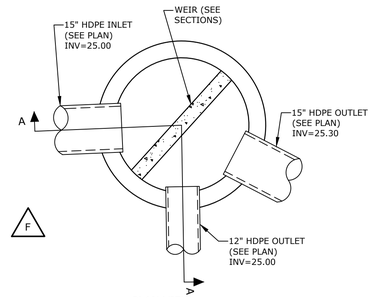


36" HDPE UNDERGROUND DETENTION BASIN 2 (UDB-2) DETAIL
NO SCALE





NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
11. SEE DRAINAGE MANHOLE DETAIL FOR MORE INFORMATION (CORE HOLE SIZE, MINIMUM FLOOR AND WALL THICKNESS, ETC.)

OUTLET STRUCTURE (POS2)
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 8/10/22

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
F	07/21/2022	REV PER AOT & PEER REVIEW
E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DETAILS.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

DETAILS SHEET

SCALE: AS SHOWN

C-507

Last Save Date: July 21, 2022 12:52 PM By: ASELLAR
Plot Date: Wednesday, July 27, 2022 Plotted by: Alexander Sellar
T&B File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-Details.DWG Layout Tab: C-507

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	A FLAT SURFACE SHALL BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT.

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".

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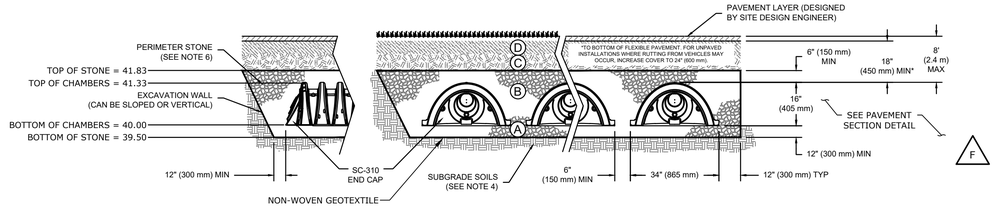

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NOTES:

1. SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SURFACE COVER MATERIALS, INCLUDING TOPSOIL/SUBSOIL SHALL BE REMOVED TO THE TOP OF THE EXISTING NATURALLY DEPOSITED SAND. CARE SHALL BE TAKEN TO AVOID MIXING OF THESE MATERIALS WITH OTHER EXCAVATED SOILS. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO APPROVE THE SUBSURFACE MATERIAL PRIOR TO INSTALLATION. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING AND PROTECTION OF SUBGRADE THROUGHOUT CONSTRUCTION PER MANUFACTURER'S RECOMMENDATIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

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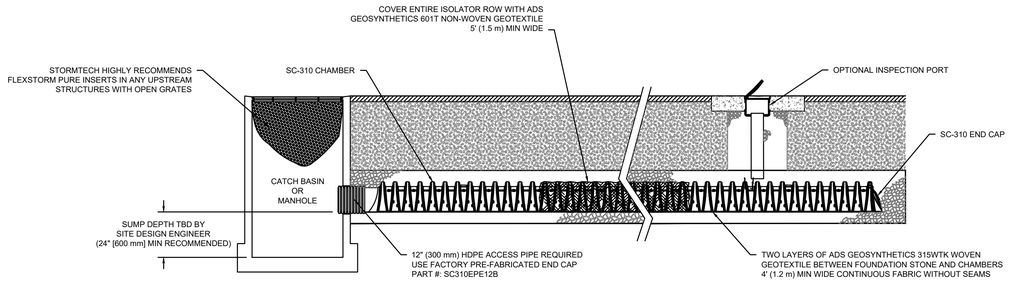


SC-310 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

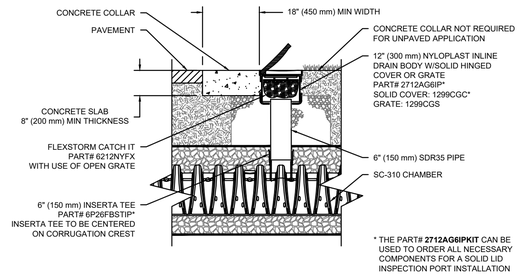
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



* THE PART# **2712AG6IPKIT** CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

SC-310 6" INSPECTION PORT DETAIL
NTS

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740, SC-310, OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.^]
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".^]
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   - 7.1. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   - 7.2. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   - 7.3. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

NOTES FOR CONSTRUCTION EQUIPMENT^]

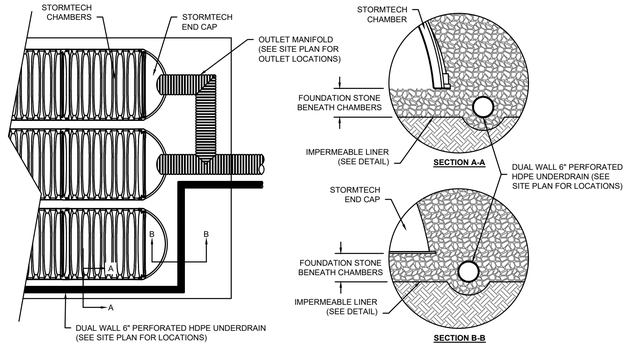
1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".^]
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".^]
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM

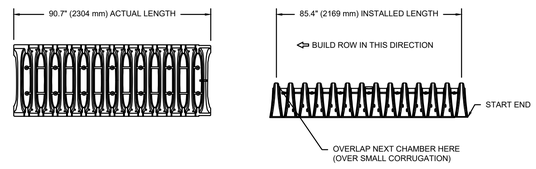
1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.^]
2. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".^]
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.^] STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.^]
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.^]
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.^]
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.^]
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).^]
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.^]
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.



UNDERDRAIN DETAIL
NTS

SC-310 TECHNICAL SPECIFICATION

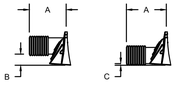
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	(0.88 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC			---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC			---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC			---	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

Tighe&Bond

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
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E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
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DETAILS SHEET

SCALE: AS SHOWN

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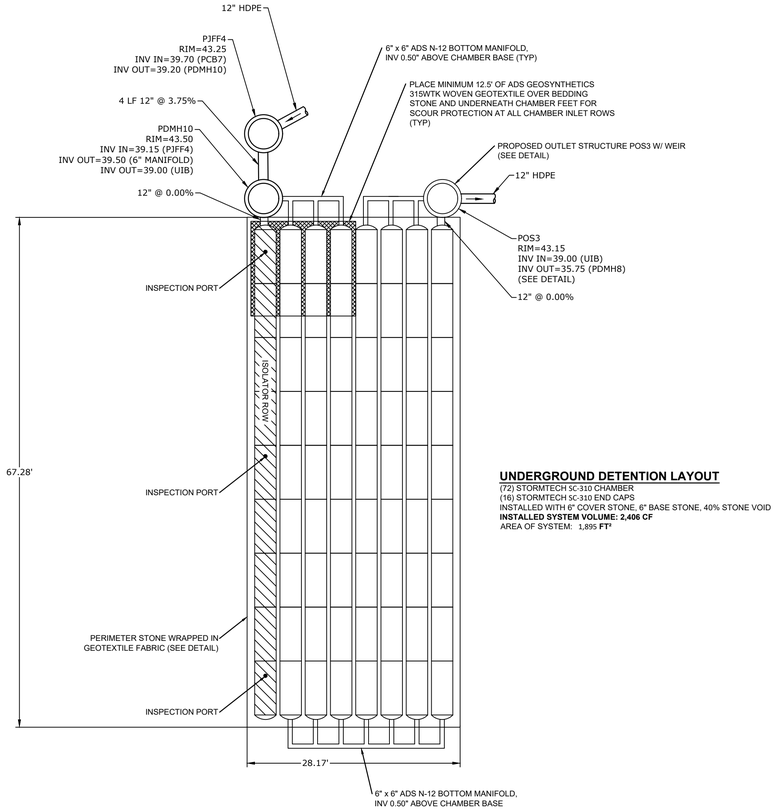
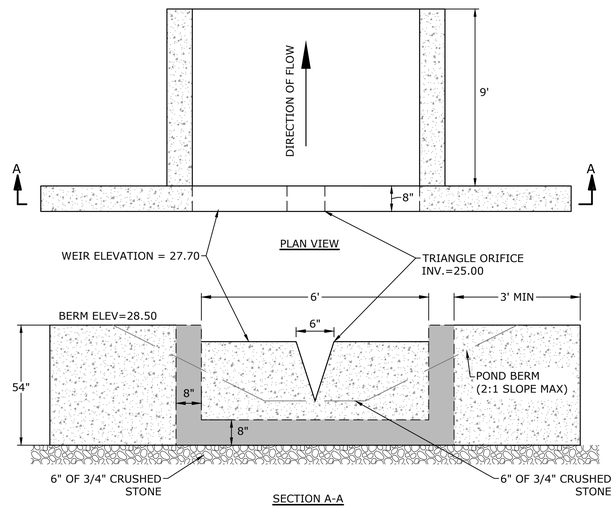


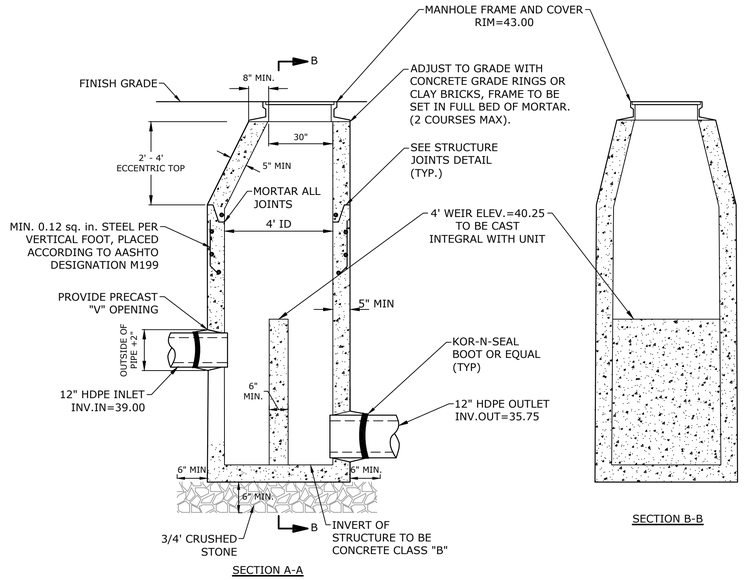
UNDERGROUND DETENTION LAYOUT
(72) STORMTECH SC-310 CHAMBER
(16) STORMTECH SC-310 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 2,406 CF
AREA OF SYSTEM: 1,895 **FT²**

UNDERGROUND INFILTRATION BASIN
STORMTECH SC-310 CHAMBER LAYOUT
NO SCALE

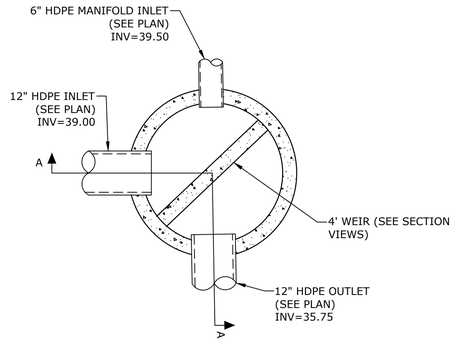


NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE (TYPE II CEMENT).
2. REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.

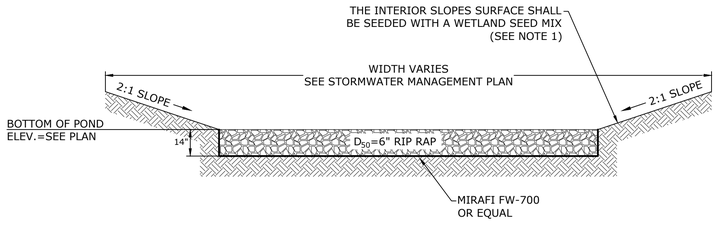
OUTLET CONTROL WEIR
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.
11. SEE DRAINAGE MANHOLE DETAIL FOR MORE INFORMATION (CORE HOLE SIZE, MINIMUM FLOOR AND WALL THICKNESS, ETC.)



OUTLET STRUCTURE DETAIL (POS3)
NO SCALE



DETENTION BASIN SECTION
NO SCALE

NOTES:
1. WETLAND SEED MIX SHALL BE "NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES", BY NEW ENGLAND WETLAND PLANTS, INC. OR APPROVED EQUAL AND SHALL BE INSTALLED IN ACCORDANCE TO THE MANUFACTURER'S SPECIFICATIONS.
2. SEE PLANS FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
3. RIP RAP STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.
4. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D_{50} SIZE.

F

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
8/10/22

STATE OF NEW HAMPSHIRE
PATRICK CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

444 Borthwick Avenue
Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
G	08/10/2022	REV PER PEER REVIEW
F	07/21/2022	REV PER AOT & PEER REVIEW
E	06/29/2022	PB SUBMISSION
D	05/23/2022	AOT SUBMISSION
C	05/12/2022	TAC RESUBMISSION 2
B	04/21/2022	TAC RESUBMISSION
A	03/22/2022	TAC SUBMISSION

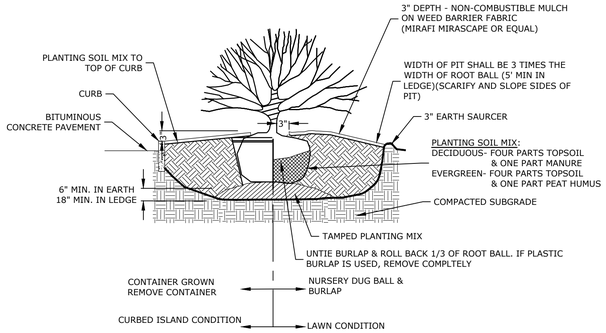
PROJECT NO:	P0616-001
DATE:	3/22/22
FILE:	P0616-005_C-DETAILS.DWG
DRAWN BY:	AFS
CHECKED:	PMC
APPROVED:	BLM

DETAILS SHEET

SCALE: AS SHOWN

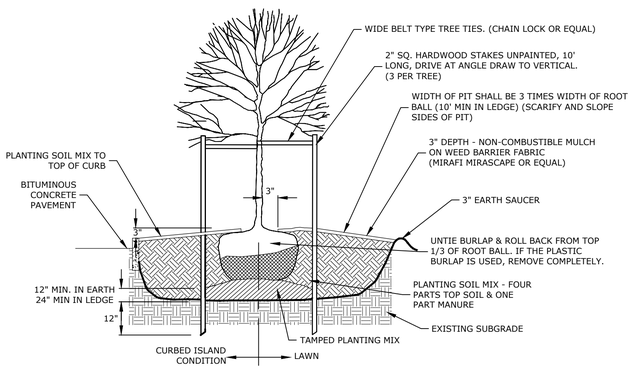
C-509

Last Save Date: July 21, 2022 12:52 PM By: ASELLAR
Plot Date: July 21, 2022 12:52 PM By: Alexander Sellar
File Location: J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Drawings, Figures\AutoCAD\Sheet\P0616-005_C-Details.DWG Layout Tab: C-509



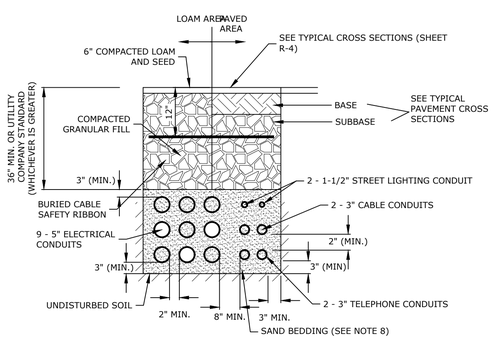
NOTES:
1. PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING
NO SCALE



NOTES:
1. PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

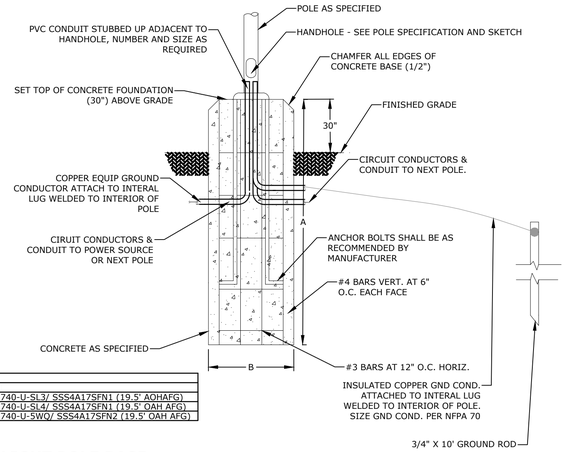
DECIDUOUS TREE PLANTING
NO SCALE



NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

TYPICAL ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE

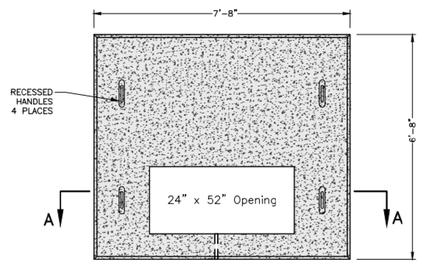
NOTES:
1. ALL LIGHT POLES, LUMINAIRES, AND WIRE TO BE FURNISHED AND INSTALLED BY THE POWER COMPANY. UNLESS OTHERWISE DIRECTED.
2. ANCHOR BOLTS, GROUND ROD & GROUND WIRE TO BE FURNISHED BY THE POWER COMPANY AND INSTALLED BY THE CONTRACTOR, UNLESS OTHERWISE DIRECTED.
3. BOLT CIRCLE DIAMETER SHALL BE VERIFIED WITH THE POWER COMPANY.
4. ALL BASES SHALL BE LOCATED 10'-0" (TO CENTER) FROM FACE OF CURB OR EDGE OF PAVED SHOULDER, UNLESS OTHERWISE NOTED.
5. REINFORCEMENT SHALL CONFORM TO SECTION 544 OF THE STANDARD SPECIFICATIONS.
6. ANY ANCHOR BOLTS DAMAGED DURING INSTALLATION SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER.
7. UPON INSTALLATION, ANCHOR BOLT THREADS SHALL BE CLEANED WITH A WIRE BRUSH.
8. TERRAIN SURROUNDING BASE MUST BE GRADED AS SHOWN IN DETAIL "A" TO PREVENT IMPACTING VEHICLES FORM SNAGGING ON BASE.



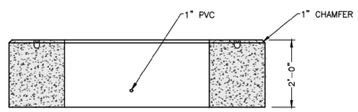
LUMINAIRE SCHEDULE

SYMBOL	QTY	LABEL	ARRANGEMENT	DESCRIPTION
■	3	P3	SINGLE	GLEON-SA1C-740-U-SL3/ SSS4A17SFN1 (19.5' AOHAFG)
■■	15	P4	SINGLE	GLEON-SA2C-740-U-SL4/ SSS4A17SFN1 (19.5' OAH AFG)
■■	5	P5-2	BACK-BACK	GLEON-SA2C-740-U-SWQ/ SSS4A17SFN2 (19.5' OAH AFG)

LIGHT POLE BASE
NO SCALE



PLAN



SECTION A–A

NOTES:
1. DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
2. CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
3. STEEL REINFORCEMENT - ASTM A615, GRADE 60
4. PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

3-PHASE TRANSFORMER PAD
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE – BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER – 8/10/22

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 8/10/2022

Proposed Satellite Parking Lot

Portsmouth Regional Hospital

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DETAILS SHEET

SCALE: AS SHOWN

C-510

Last Save Date: July 21, 2022 12:52 PM By: ASELLAR
Plot Date: Wednesday, August 10, 2022 8:10 AM By: Alexander Sellar
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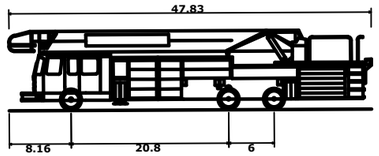

LEGEND

WHEEL BASE

OVERHANG

Portsmouth Fire Truck	
Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.432ft
Min Body Ground Clearance	0.862ft
Track Width	8.000ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

PROPOSED SATELLITE PARKING LOT
BORTHWICK AVE
PORTSMOUTH, NEW HAMPSHIRE

FIRE TRUCK TURNING PLAN

BORTHWICK AVENUE

EILEEN DONDERO FOLEY AVE

STOP

0 80' 160'

GRAPHIC SCALE

Tighe&Bond

JULY 20, 2022
P0616-005_FIRE.DWG

Last Save Date: June 29, 2022 1:32 PM By: ASELLAR
Plot Date: Wednesday, July 20, 2022 Plotted By: Alexander Sellar
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Scalable Illumination with LED Light Squares

Energy Savings and Environmental Stewardship

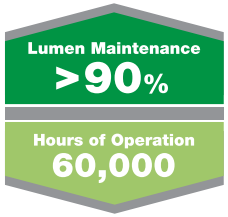
The simplest and most effective way to reduce a lighting fixture's impact on the environment is to minimize its energy consumption. By incorporating Light Squares from Cooper Lighting Solutions, the Galleon LED luminaire provides energy savings up to 75 percent compared to standard HID solutions.

Long Life

With a 60,000+ hour rated life (at greater than 90 percent lumen maintenance), the Galleon LED Luminaire operates up to six times longer than traditional metal halide fixtures.

Low Maintenance

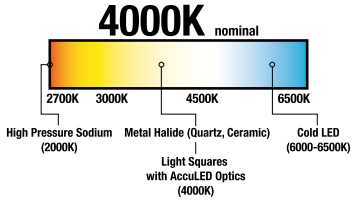
With simple quick disconnects, the Light Squares are easily removed in the field for replacement or for the rotation of the optics.



NOTE: Compliant with IESNA TM-21

Warm White Color

Lighting designers, architects and specifying engineers have long preferred light sources that provide a balanced spectral power distribution and warm white light. Many LED solutions standardize on a cool blue 5000-6000K correlated color temperature (CCT) to maximize lumen output. The Galleon LED Luminaire provides warm white light at a standard 4000K CCT with no sacrifice in lumen output.



Superior Efficiency and Control

With efficiencies as high as 95 percent, the patented AccuLED Optics™ system is up to 30 percent more efficient than traditional HID optical systems. Available in 16 optional distributions, this system provides the flexibility and performance required for outdoor applications.

House Side Shield

For stringent light trespass requirements and the ultimate level of backlight control, a house side shield accessory is available for factory or field installation. Designed to seamlessly integrate with the SL2, SL3, SL4 and AFL distributions, the house side shield virtually eliminates backlight and also enhances visual comfort.

Optical Performance Redefined

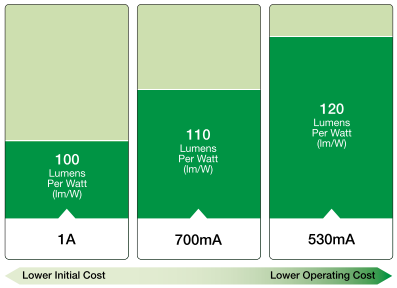
Performance and Scalability

The Galleon LED luminaire is designed around superior optical performance and scalability. With a choice of 30 lumen packages and 16 optical distributions, the optimal configuration can be used to maximize light levels while minimizing operating costs.

Power Consumption (Watts)

Number of Light Squares	Drive Current		
	530mA	700mA	1A
1	30	38	56
2	54	72	107
3	80	105	157
4	105	138	213
5	130	176	264
6	159	210	315
7	184	243	370
8	209	276	421
9	234	314	475
10	259	348	528

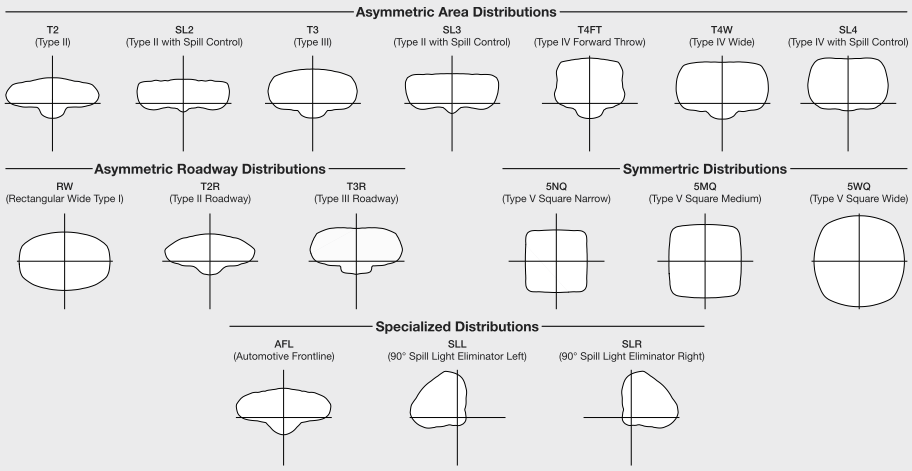
Efficacy (lm/W)



NOTE: Nominal efficacy at 4000K CCT

Optical Distributions

The Galleon luminaire has a choice of seven asymmetric area, three asymmetric roadway, three symmetric and three specialized distributions.



Project		Catalog #		Type	
Prepared by		Notes		Date	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Typical Applications

Outdoor • Parking Lots • Walkways • Roadways • Building Areas

Interactive Menu

- Ordering Information page 2
- Mounting Details page 3
- Optical Distributions page 4
- Product Specifications page 4
- Energy and Performance Data page 4
- Control Options page 9

Product Certifications

Product Features

LumenSafe Technology · Enlighted · WaveLinx · Light ARchitect™

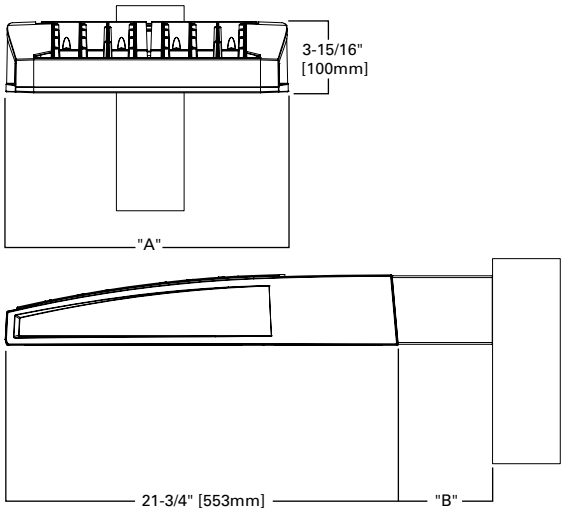
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **AHD145**=After Hours Dim, 5 Hours [22] **AHD245**=After Hours Dim, 6 Hours [22] **AHD255**=After Hours Dim, 7 Hours [22] **AHD355**=After Hours Dim, 8 Hours [22] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **MS-L20**=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24] **MS-L40W**=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24] **MS/X-L20**=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24, 25] **MS/X-L40W**=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24, 25] **MS/DIM-L20**=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24] **MS/DIM-L40W**=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**OA/RA1016**=NEMA Photocontrol Multi-Tap - 105-285V **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1201**=NEMA Photocontrol - 347V **OA/RA1013**=Photocontrol Shorting Cap **OA/RA1014**=120V Photocontrol **MA1252**=10kV Surge Module Replacement **MA1036-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon **MA1037-XX**=2@180° Tenon Adapter for 2-3/8" O.D. Tenon **MA1197-XX**=3@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1188-XX**=4@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1189-XX**=2@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1190-XX**=3@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1191-XX**=2@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1038-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon **MA1039-XX**=2@180° Tenon Adapter for 3-1/2" O.D. Tenon **MA1192-XX**=3@120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1193-XX**=4@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1194-XX**=2@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1195-XX**=3@90° Tenon Adapter for 3-1/2" O.D. Tenon **FSIR-100**=Wireless Configuration Tool for Occupancy Sensor [24] **GLEON-MT1**=Field Installed Mesh Top for 1-4 Light Squares **GLEON-MT2**=Field Installed Mesh Top for 5-6 Light Squares **GLEON-MT3**=Field Installed Mesh Top for 7-8 Light Squares **GLEON-MT4**=Field Installed Mesh Top for 9-10 Light Squares **GLEON-QM**=Quick Mount Arm Kit [11] **GLEON-QMEA**=Quick Mount Extended Arm Kit [12] **LS/HSS**=Field Installed House Side Shield [28, 30] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

NOTES:

1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
2. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
3. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
4. Not compatible with MS/4-LXX or MS/1-LXX sensors.
5. Not compatible with extended quick mount arm (QMEA).
6. Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA).
7. Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A.
8. 480V must utilize Wye system only. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems.)
9. May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
10. Factory installed.
11. Maximum 8 light squares.
12. Maximum 6 light squares.
13. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table.
18. Not available with Enlighted wireless sensors.
19. Cannot be used with other control options.
20. Low voltage control lead brought out 18" outside fixture.
21. Not available if any "MS" sensor is selected. Motion sensor has an integral photocell.
22. Requires the use of BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
24. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.

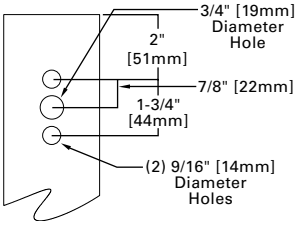
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

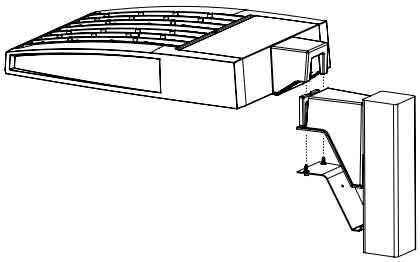
Mounting Details

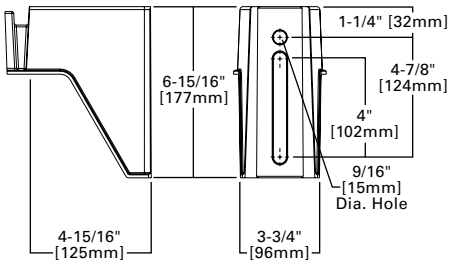
Standard Arm (Drilling Pattern)

TYPE "N"

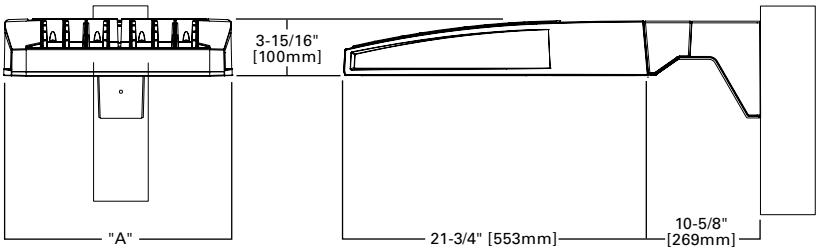


Quick Mount Arm (Includes fixture adapter)

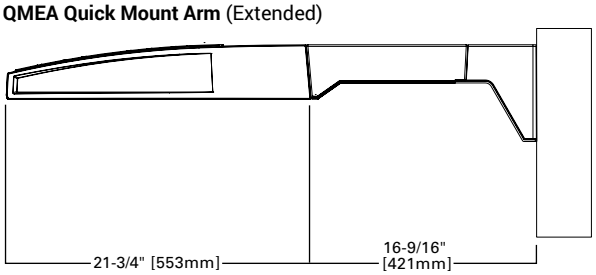




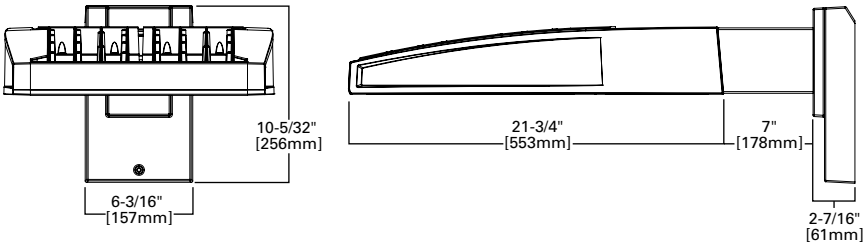
QM Quick Mount Arm (Standard)



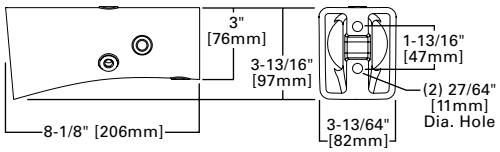
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

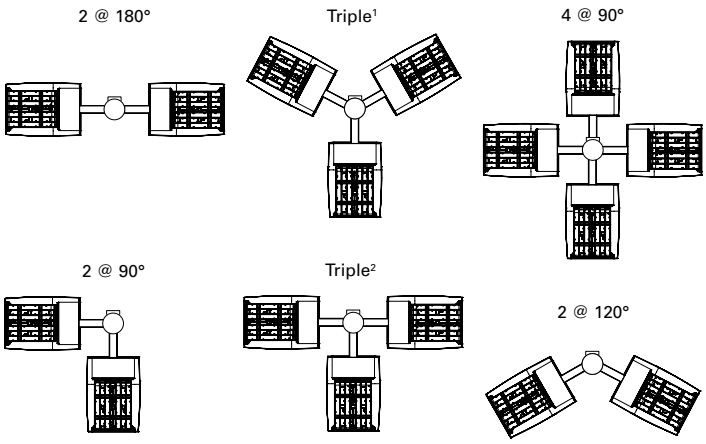


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°.

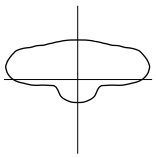
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with Quick Mount Arm (lbs.)	EPA with Quick Mount Arm (Sq. Ft.)	Weight with Quick Mount Extended Arm (lbs.)	EPA with Quick Mount Extended Arm (Sq. Ft.)
1-4	33	0.96	35	1.11	38	1.11
5-6	44	1.00	46	1.11	49	1.11
7-8	54	1.07	56	1.11	--	--
9-10	63	1.12	--	--	--	--

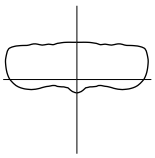
Optical Distributions

Asymmetric Area Distributions

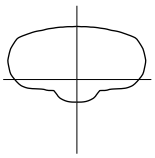
T2 (Type II)



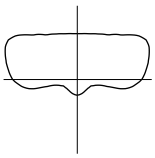
SL2 (Type II with Spill Control)



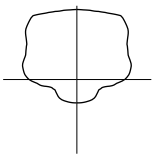
T3 (Type III)



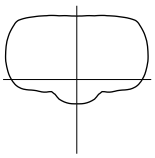
SL3 (Type III with Spill Control)



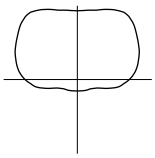
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

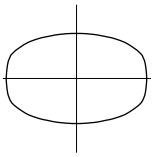


SL4 (Type IV with Spill Control)

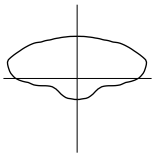


Asymmetric Roadway Distributions

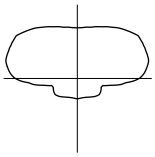
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

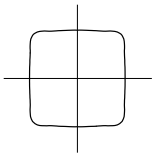


T3R (Type III Roadway)

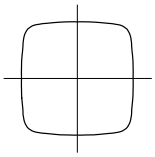


Symmetric Distributions

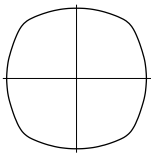
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

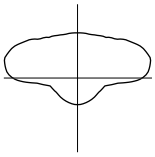


5WQ (Type V Square Wide)

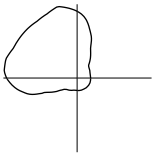


Specialized Distributions

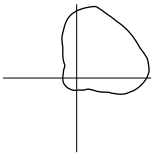
AFL (Automotive Frontline)



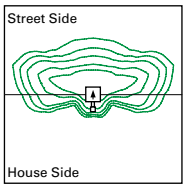
SLL (90° Spill Light Eliminator Left)



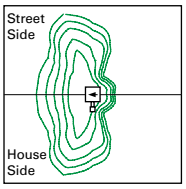
SLR (90° Spill Light Eliminator Right)



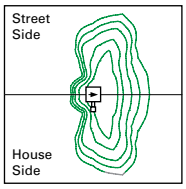
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

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Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

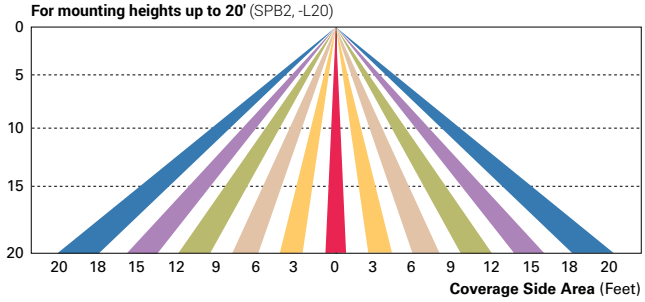
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

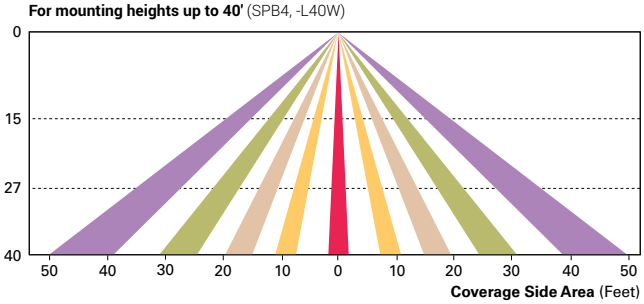
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

For mounting heights up to 20' (SPB2, -L20)

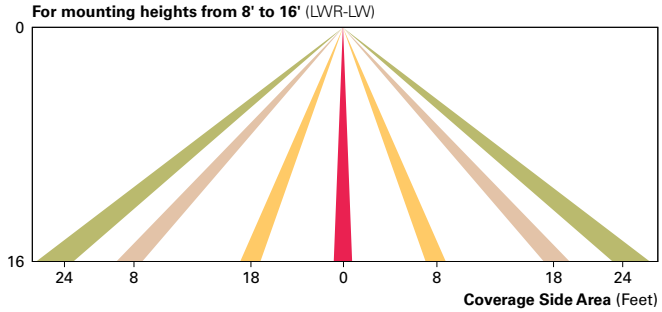


For mounting heights up to 40' (SPB4, -L40W)

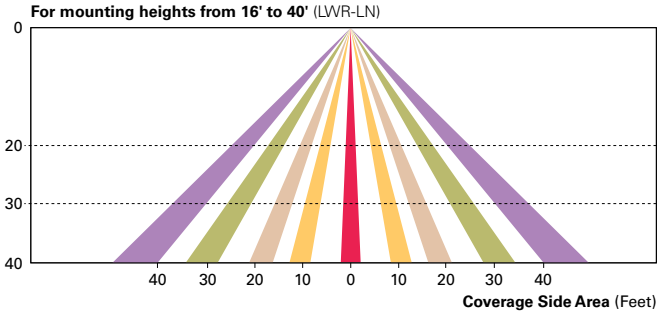


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Cooper Lighting Solutions brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

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Peachtree City, GA 30269
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www.cooperlighting.com

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Specifications and dimensions
subject to change without notice.

Steel Poles

SSS SQUARE STRAIGHT STEEL

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

FEATURES

- ASTM Grade steel base plate with ASTM A366 base cover
- Hand hole assembly 3" x 5" on 5" and 6" pole; and 2" x 4" on 4" pole
- 10'-39' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

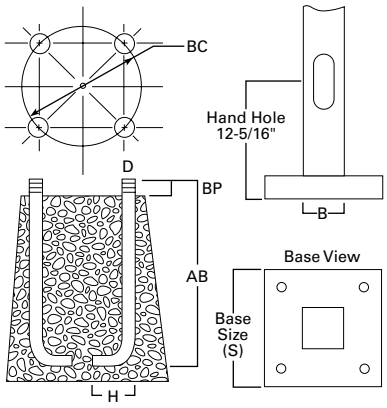
ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

Product Family	Shaft Size (Inches)[1]	Wall Thickness (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Arm Lengths (Feet)	Options (Add as Suffix)
SSS=Square Straight Steel	**4**=4" **5**=5" **6**=6"	**A**=0.120" **M**=0.188" **X**=0.250"	**10**=10' **15**=15' **20**=20' **25**=25' **30**=30' **35**=35' **39**=39'	**S**=Square Steel Base	**F**=Dark Bronze **G**=Galvanized Steel **J**=Summit White **K**=Carbon Bronze **L**=Dark Platinum **R**=Hartford Green **S**=Silver **T**=Graphite Metallic **V**=Grey **W**=White **X**=Custom Color **Y**=Black	**2**=2-3/8" O.D. Tenon (4" Long) **3**=3-1/2" O.D. Tenon (5" Long) **4**=4" O.D. Tenon (6" Long) **9**=3" O.D. Tenon (4" Long) **6**=2-3/8" O.D. Tenon (6" Long) **7**=4" O.D. Tenon (10" Long) **A**=Type A Drilling **C**=Type C Drilling **E**=Type E Drilling **F**=Type F Drilling **G**=Type G Drilling **J**=Type J Drilling **K**=Type K Drilling **M**=Type M Drilling **N**=Type N Drilling **R**=Type R Drilling **S**=Standard Upsweep Arm **Z**=Type Z Drilling	**1**=Single **2**=2 at 180° **3**=Triple[2] **4**=4 at 90° **5**=2 at 90° **X**=None	**X**=None **2**=2' **3**=2.5' **4**=4' **6**=6' **8**=8'	**A**=1/2" Tapped Hub[3] **B**=3/4" Tapped Hub[3] **C**=Convenience Outlet[4] **E**=GFCI Convenience Outlet[4] **G**=Ground Lug **H**=Additional Hand Hole[5] **V**=Vibration Dampener

NOTES: 1. All shaft sizes nominal. **2.** Square poles are 3 at 90°, round poles are 3 at 120°. **3.** Tapped Hub is located 5' below the pole top and on the same side of pole as hand hole, unless specified otherwise. **4.** Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. **5.** Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

DIMENSIONS



See technical information.

Effective Projected Area (At Pole Top)

Mounting Height (Feet)	Catalog Number [1, 2]	Wall Thickness (Inches)	Base Square [3] (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection [3] (Inches)	Shaft Size [3] (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) [4]				Max. Fixture Load - Includes Bracket (Pounds)
MH			**S**	**BC**	**BP**	**B**	**D x AB x H**		**80 mph**	**90 mph**	**100 mph**	**110 mph**	
10	SSS4A10S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	85	30.0	22.0	17.0	13.0	100
15	SSS4A15S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	118	15.0	11.5	8.7	6.5	100
20	SSS4A20S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	150	8.7	5.9	3.9	2.5	150
20	SSS5A20S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	183	15.4	11.1	7.9	5.5	150
25	SSS4A25S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	181	3.7	1.7	0.3	--	200
25	SSS5A25S	0.120	10-1/2	11	5	5	3/4 x 25 x 3	222	9.3	6.0	3.5	1.6	200
25	SSS6A25S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	284	9.9	6.1	3.5	1.2	200
30	SSS5A30S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	260	4.7	2.1	--	--	200
30	SSS5M30S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	392	10.4	6.4	3.5	1.5	200
30	SSS6A30S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	330	4.3	1.4	--	--	200
30	SSS6M30S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	489	19.0	13.0	8.7	5.6	200
35	SSS5M35S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	453	5.8	2.8	--	--	200
35	SSS6M35S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	564	12.8	7.2	3.7	1.0	200
35	SSS6X35S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	738	16.5	11.0	6.8	3.5	200
39	SSS6M39S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	618	7.3	3.0	--	--	300
39	SSS6X39S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	816	13.0	7.0	3.7	0.8	300

Effective Projected Area (Two Feet Above Pole Top)

Mounting Height (Feet)	Catalog Number [1, 2]	Wall Thickness (Inches)	Base Square [3] (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection [3] (Inches)	Shaft Size [3] (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) [4]				Max. Fixture Load - Includes Bracket (Pounds)
MH			**S**	**BC**	**BP**	**B**	**D x AB x H**		**80 mph**	**90 mph**	**100 mph**	**110 mph**	
10	SSS4A10S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	85	23.0	17.5	14.0	11.0	100
15	SSS4A15S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	118	13.4	10.0	7.5	5.7	100
20	SSS4A20S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	150	7.6	5.2	3.4	2.1	150
20	SSS5A20S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	183	13.8	9.9	7.1	4.9	150
25	SSS4A25S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	181	3.4	1.6	0.3	--	200
25	SSS5A25S	0.120	10-1/2	11	5	5	3/4 x 25 x 3	222	8.5	5.5	3.2	1.5	200
25	SSS6A25S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	284	9.1	5.6	3.0	1.2	200
30	SSS5A30S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	260	1.8	--	--	--	200
30	SSS5M30S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	392	9.6	5.9	1.9	0.2	200
30	SSS6A30S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	330	4.1	1.3	--	--	200
30	SSS6M30S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	489	18.5	12.5	8.4	5.3	200
35	SSS5M35S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	453	5.5	2.4	--	--	200
35	SSS6M35S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	564	11.8	7.0	3.5	1.0	200
35	SSS6X35S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	738	16.0	10.5	6.4	3.4	200
39	SSS6M39S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	618	7.0	2.4	--	--	300
39	SSS6X39S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	816	12.0	6.7	3.0	0.5	300

NOTES:

1. Catalog number includes pole with hardware kit. Anchor bolts not included. Before installing, make sure proper anchor bolts and templates are obtained.

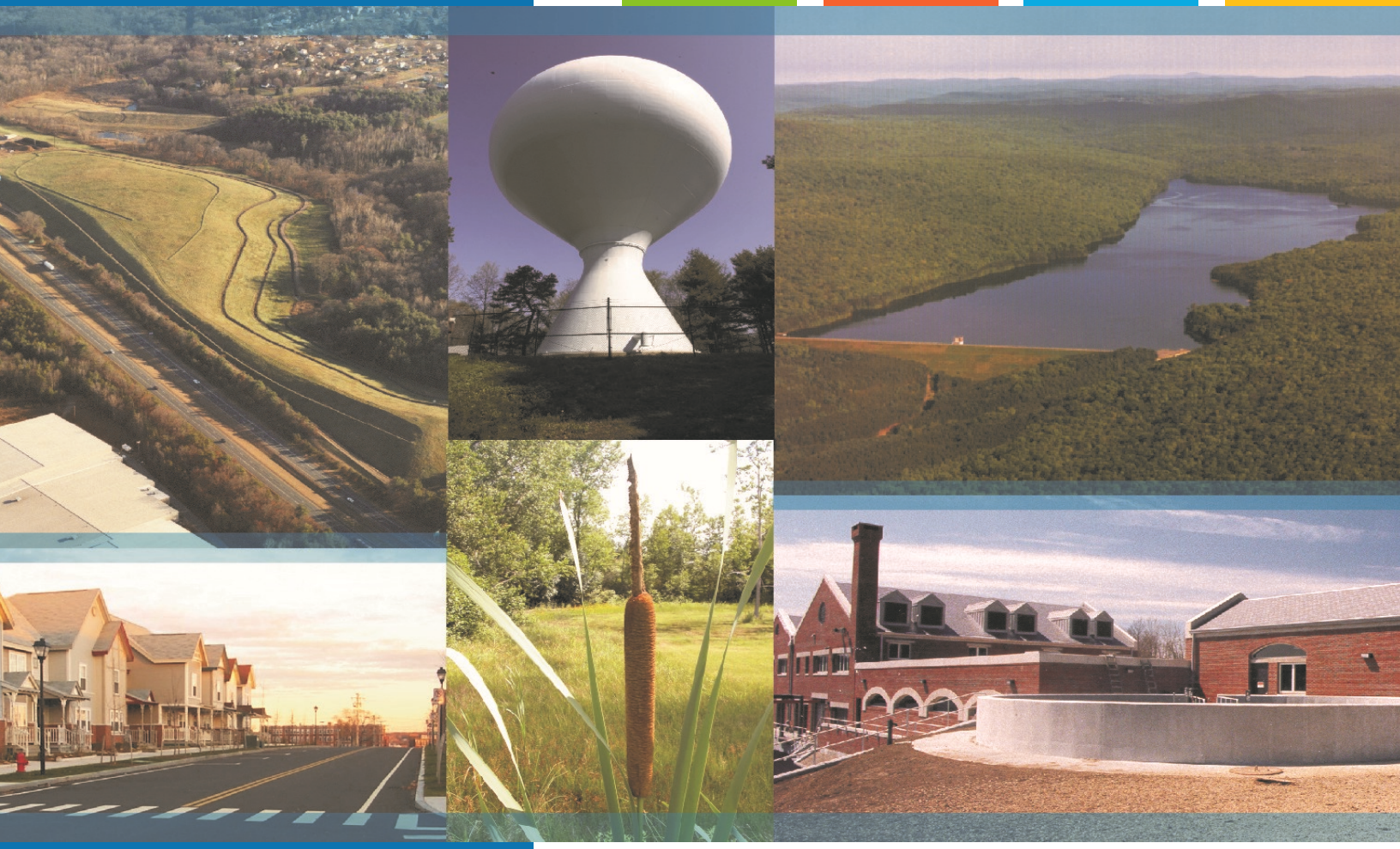
2. Tenon size or machining for rectangular arms must be specified. Hand hole position relative to drill location.

3. Shaft size, base square, anchor bolts and projections may vary slightly. All dimensions nominal.

4. EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.



Proposed Satellite Parking Lot
Borthwick Ave
Portsmouth, NH

Long-Term Operation & Maintenance Plan

Portsmouth Regional Hospital

March 22, 2022
Last Revised May 12, 2022

Tighe&Bond

100% Recyclable

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Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

Portsmouth Regional Hospital
333 Borthwick Avenue
Portsmouth, New Hampshire 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Underground Detention System
- Contech Jellyfish Filtration System
- Contech CDS System
- ADS Stormtech System with Isolator Row

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Bi-Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Jelly Fish Units	Annually/ In accordance with Manufacturer's Recommendations (See section 1.5 for I&M Manuals)
CDS Units	Twice Annually/ In accordance with Manufacturer's Recommendations (See section 1.6 for I&M Manuals)
Underground Detention Basin - Visual observation of sediment levels within system	Bi-Annually
ADS Stormtech System with Isolator Row - Visual observation of sediment levels within system	In accordance with Manufacturer's Recommendations

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Underground Detention/Infiltration System Maintenance Requirements

Underground Detention/Infiltration System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually
Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

1.5 ADS Stormtech System with Isolator Row

ADS Stormtech System w/Isolator Row Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Inspect Isolator Row for sediment	6 months for the first year, then adjust based on previous observations	- Inspect inside the isolator row through inspection ports (if provided) or through the upstream structure.
Jetting and Vacuuming	Annually or as required by inspection.	- If sediment is 3" or above, then clean out isolator row using the jetvac process. - Vacuum structure sump as required.

1.6 Contech Jellyfish Filter System Maintenance Requirements and O&M Manual

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

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THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

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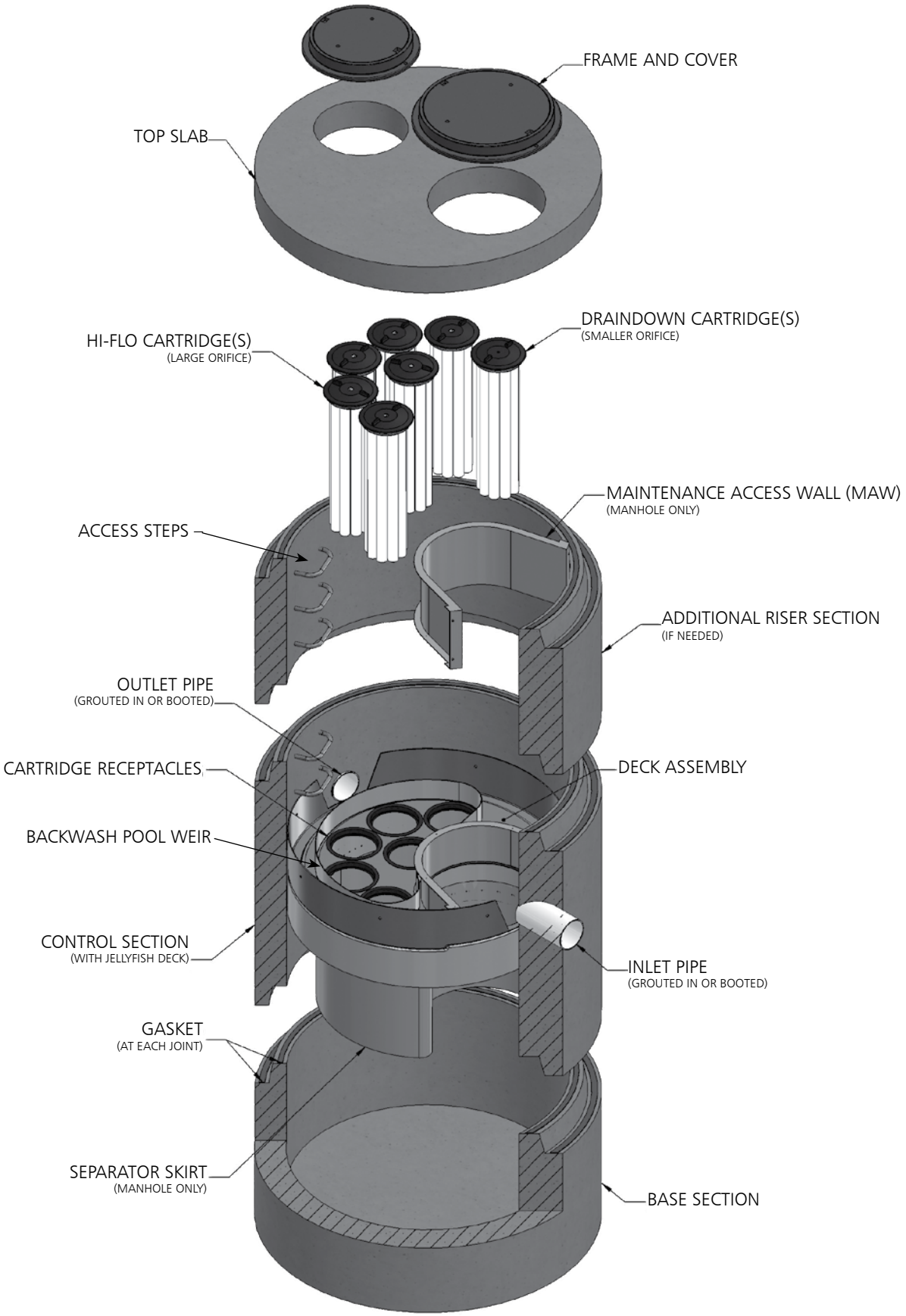

FRAME AND COVER
TOP SLAB
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

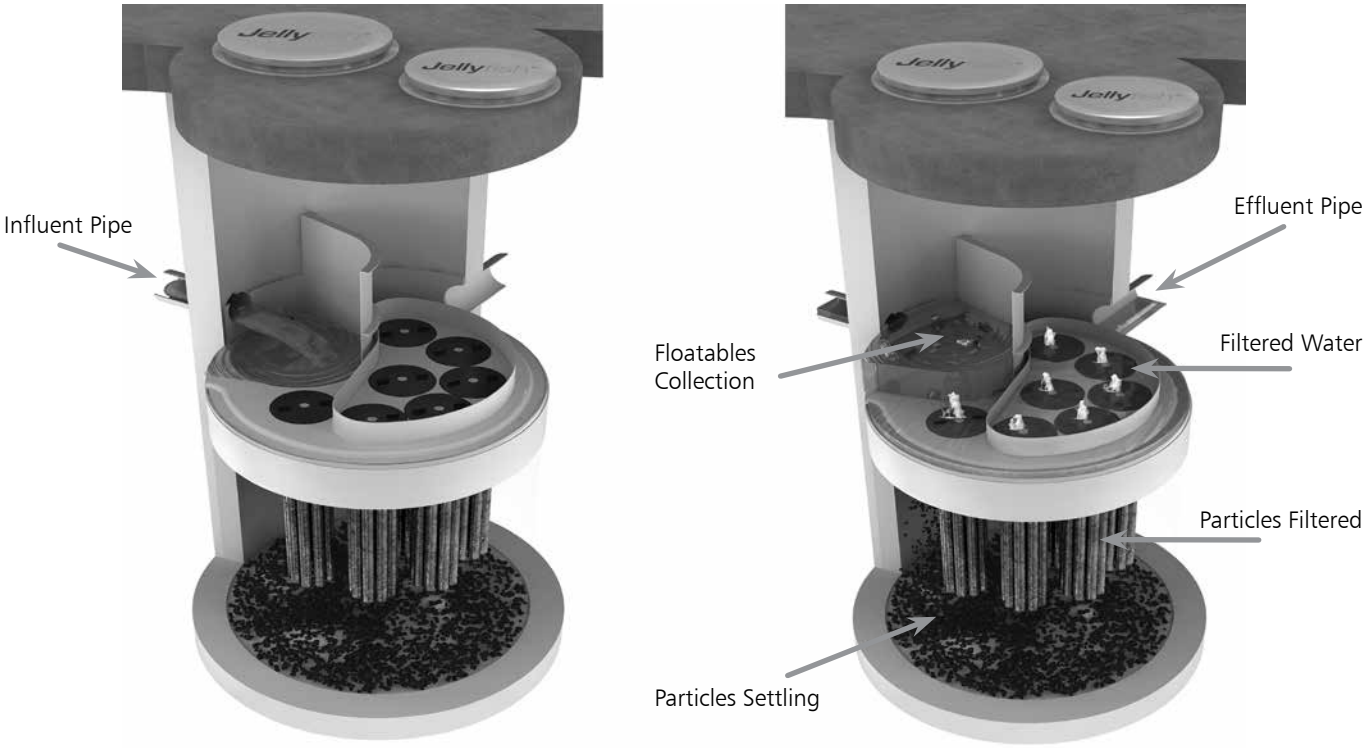
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



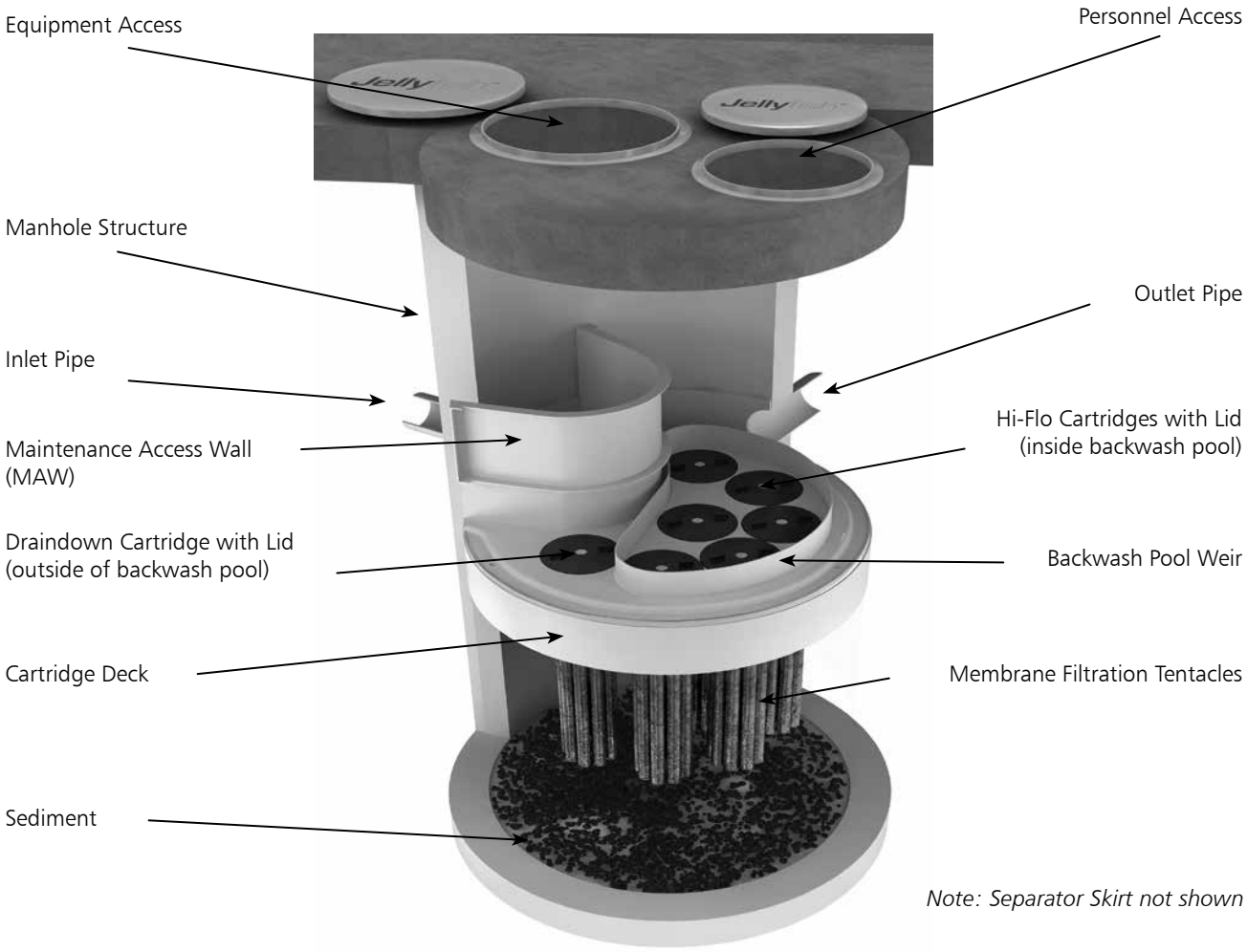
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.

Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

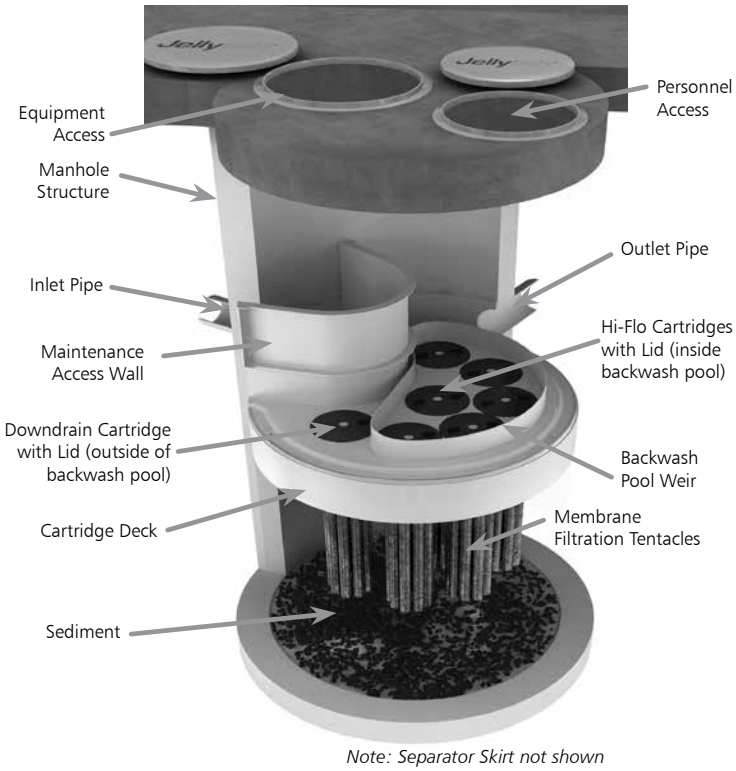
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

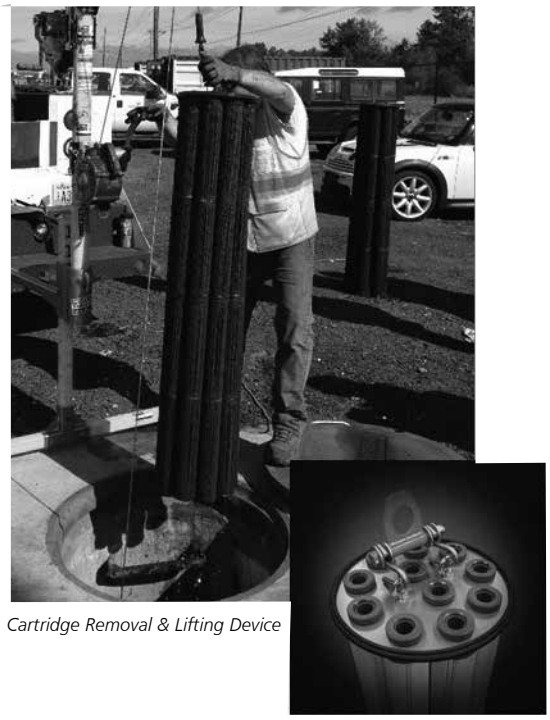
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.



Cartridge Removal & Lifting Device

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

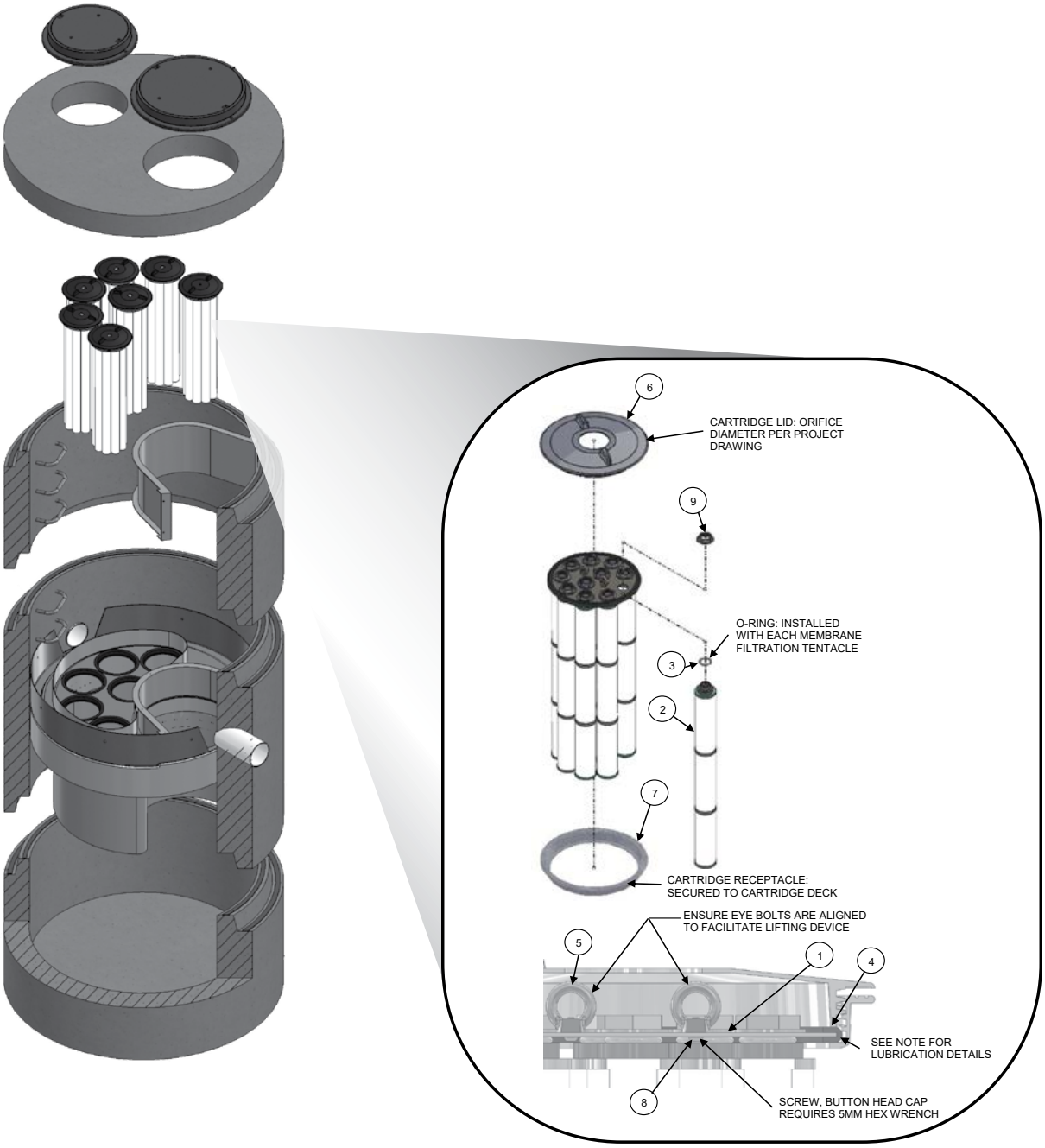


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

1.7 Contech CDS O&M Manual

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance

CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

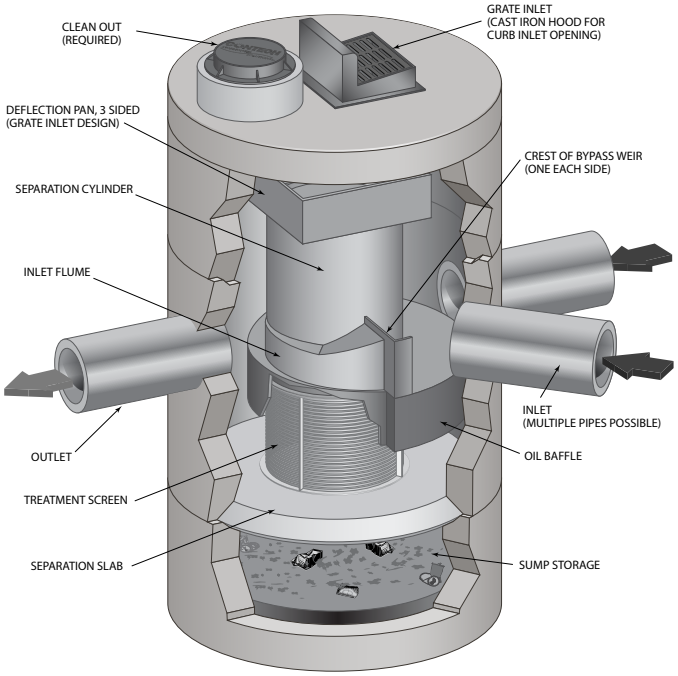
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

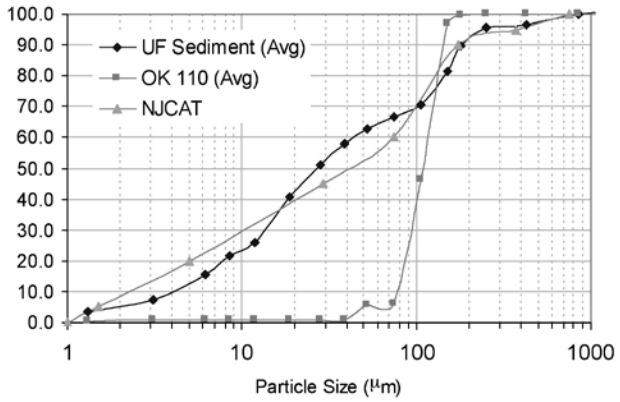


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

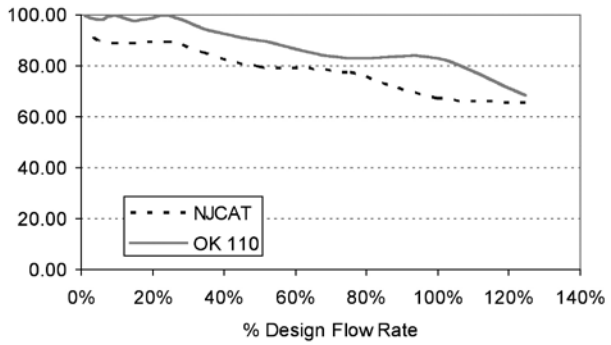


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

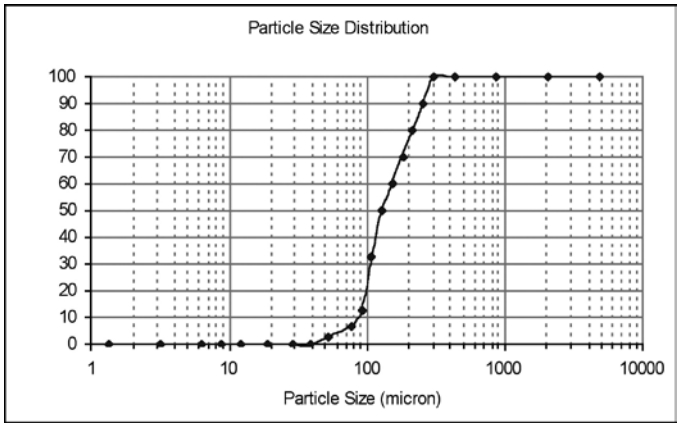


Figure 3. WASDOE PSD

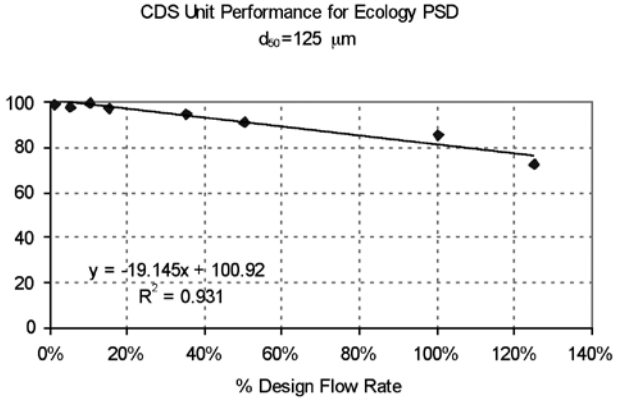


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified

during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

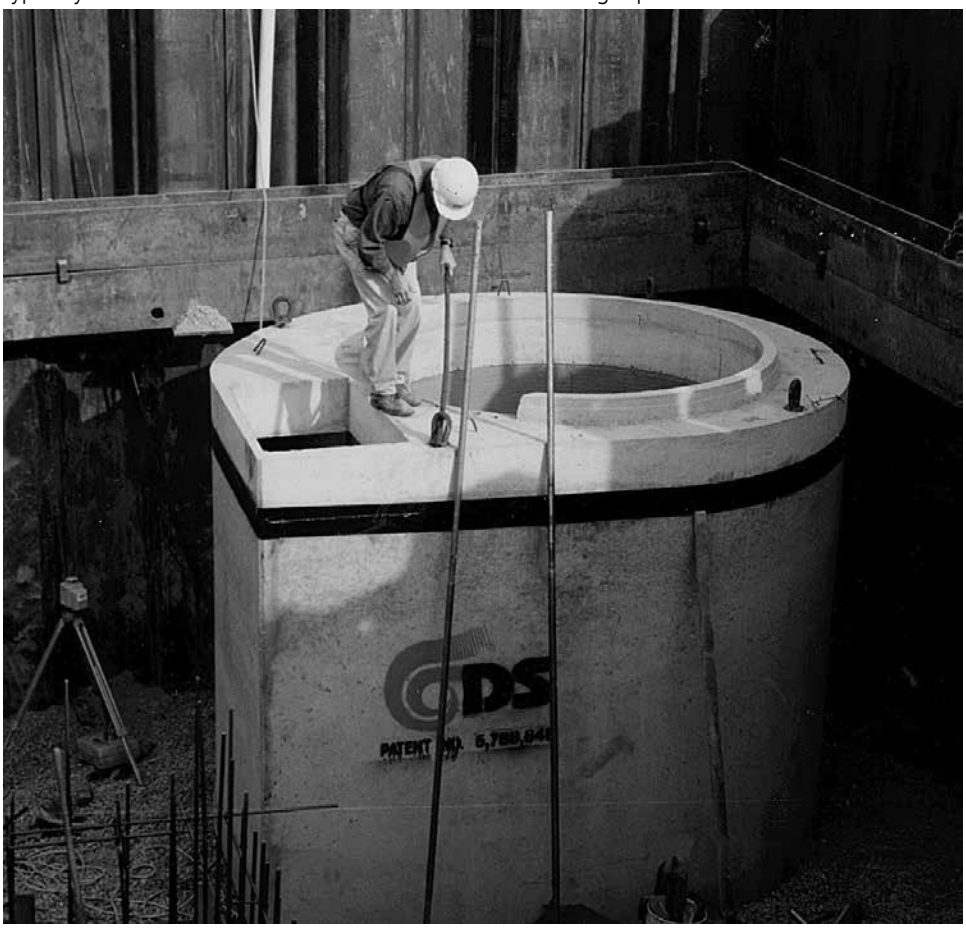
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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RECYCLED PAPER

1.8 Snow & Ice Management for Standard Asphalt and Walkways

As shown on the Site Plans, the site has reasonable accommodations for on-site snow storage. If required, the property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. All snow removal will be hauled off-site and legally disposed of. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted withing the 100' wetland buffer. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the Borthwick Avenue, Satellite Parking Lot in Portsmouth, New Hampshire. The Plan includes operational guidelines including winter operator certification requirements, weather monitoring, equipment calibration requirements, mechanical removal, and salt usage evaluation and monitoring. Due to the evolving nature of chloride management efforts, the Chlorides Management Plan will be reviewed annually, in advance of the winter season, to reflect the current management standards.

2.1 Background Information

The Borthwick Avenue, Satellite Parking Lot is located within the Borthwick Ave Tributary in Portsmouth, New Hampshire. This tributary has been identified as a chloride impaired.

2.2 Operational Guidelines – Chloride Management

All private contractors engaged at the development site for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. Private contractors are expected to minimize the effects of the use of de-icing, anti-icing and pretreatment materials by adhering to the strict guidelines outlined below.

The winter operational de-icing, anti-icing and pretreatment materials will adhere to the following protocols:

2.2.1 Winter Operator Certification Requirements

All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance must be current UNHT2 Green SnowPro Certified operators or equivalent and will use only pre-approved methods for spreading abrasives on private roadways and parking lots. All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance shall provide to the property management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the Facilities Management office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

The property manager will coordinate weather information for use by winter

maintenance contractors. This information in conjunction with site specific air/ground surface temperature monitoring will ensure that private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance will make more informed decisions as to when and to what extent de-icing, anti-icing and pretreatment materials are applied to private roadways, sidewalks, and parking lots.

2.2.3 Equipment Calibration Requirements

All equipment utilized on the premises for the purpose of winter operational snow removal and surface maintenance will conform to the following calibration requirements.

2.2.3.1 Annual Calibration Requirements

All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of the annual calibration report for each piece of equipment utilized on the premises. Each calibration report shall include the vehicle/carrier VIN number and the serial numbers for each component including, but not limited to, spreader control units, salt aggregate spreader equipment, brining/pre-wetting equipment, ground speed orientation unit, and air/ground surface temperature monitor. Annual calibration reports will be available on file in the Facilities Management office and be present in the vehicle/carrier at all times.

Prior to each use, each vehicle/carrier operator will perform a systems check to verify that unit settings remain within the guidelines established by the Management Team in order to accurately dispense material. All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Property Management Team to ensure that each vehicle/carrier is operating in a manner consistent with the guidelines set herein or State and Municipal regulations. All units will be recalibrated, and the updated calibration reports will be provided each time repairs or maintenance procedures affect the hydraulic system of the vehicle/carrier.

2.2.4 Increased Mechanical Removal Capabilities

All private contractors engaged at the premises will endeavor to use mechanical removal means on a more frequent basis for roadways, parking lots and sidewalks. Dedicating more manpower and equipment to increase snow removal frequencies prevents the buildup of snow and the corresponding need for de-icing, anti-icing and pretreatment materials. Shortened maintenance routes, with shorter service intervals, will be used to stay ahead of snowfall. Minimized snow and ice packing will reduce the need for abrasives, salt aggregates, and/or brining solution to restore surfaces back to bare surface states after winter precipitation events.

After storm events the management team will be responsible for having the streets swept to recapture un-melted de-icing materials, when practical.

2.3 Salt Usage Evaluation and Monitoring

All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of a storm report, which includes detailed information regarding treatment areas and the use of de-icing, anti-icing and pretreatment materials applied for the removal of snow and surface maintenance on the premises. The property manager will maintain copies of Summary Documents, including copies of the Storm Reports, operator certifications, equipment used for roadway and sidewalk winter maintenance, calibration reports and amount of de-icing materials used.

2.4 Summary

The above-described methodologies are incorporated into the Operational Manual and are to be used to qualify and retain all private contractors engaged at the Borthwick Avenue premises for the purpose of winter operational snow removal and surface maintenance. This section of the Manual is intended to be an adaptive management document that is modified as required based on experience gained from past practices and technological advancements that reflect chloride BMP standards. All employees directly involved with winter operational activities are required to review this document and the current standard Best Management Practices published by the UNH Technology Transfer (T2) program annually. All employees directly involved with winter operational activities, and all private contractors engaged at the premises for the purposes of winter operational snow removal and surface maintenance, must be current UNHT2 Green SnowPro Certified operators or equivalent and undergo the necessary requirements to maintain this certification annually.

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

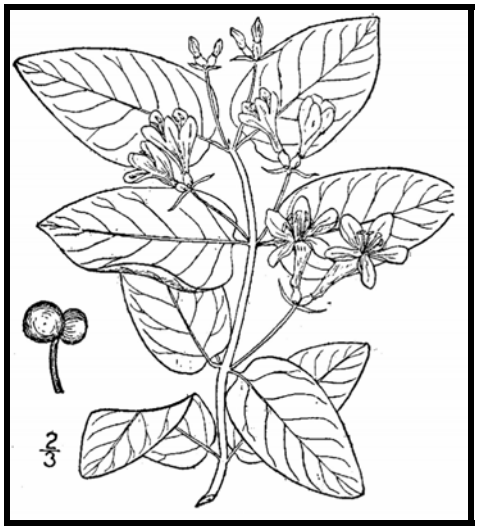
Section 3
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

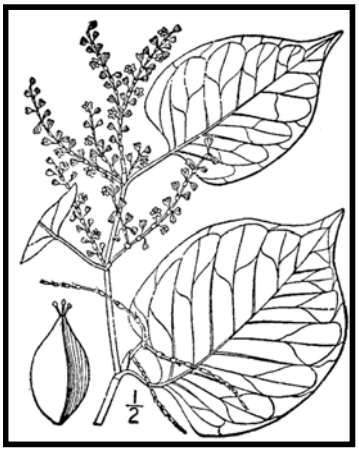
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

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Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.

Using tools to remove woody stems.

Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.

Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.

Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.

Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.

Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 4
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the City of Portsmouth on an annual basis.

Stormwater Management Report						
Satellite Parking Lot		**Borthwick Avenue**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Deep Sump CB's			❑Yes ❑No			
Underground Detention Basin 1			❑Yes ❑No			
Underground Detention Basin 2			❑Yes ❑No			
Underground Infiltration Basin			❑Yes ❑No			
Jellyfish Filter 1			❑Yes ❑No			
Jellyfish Filter 2			❑Yes ❑No			
CDS 1			❑Yes ❑No			
CDS 2			❑Yes ❑No			

www.tighebond.com

100% Recyclable

PROPOSED SATELLITE PARKING LOT
BORTHWICK AVE
PORTSMOUTH, NEW HAMPSHIRE

SITE DISTANCE EXHIBIT

N

360'

14.5'

360'

OHW

STOP

26" ELM W/BW

SIGHT DISTANCE CALCULATIONS

BORTHWICK AVE POSTED SPEED LIMIT	**35 MPH**
DESIGN SPEED	**45 MPH**
STOPPING SIGHT DISTANCE AT INTERSECTIONS	**360 FT**

TABLE 9-21 STOPPING SIGHT DISTANCE FOR TURNING ROADWAYS (AASHTO THE GREEN BOOK 2011)

0 50' 100'

GRAPHIC SCALE

Tighe&Bond

JULY 20, 2022
P0616-005_C-DSGN.DWG

444 Borthwick - TAC STIPULATIONS REPORT

Date: July, 20, 2022

City of Portsmouth TAC, June 7, 2022:			
	TAC Stipulation	**Applicant Response**	**Sheet**
TAC Stipulations from June 13, 2022 Correspondence:			
1	A preliminary street address and Map/Lot number are to be obtained for the property.	The applicant coordinated with the City GIS Director and obtained a property address of 444 Borthwick Avenue.	N/A
2	The plan set will be updated to include more details on the multiuse path including extending topography and proposed grading as well as the necessary changes needed to complete design. Updated plans will be provided to DPW for review and approval.	On June 27th, the applicant performed a site walk with DPW to confirm the path alignment and details. The agreed upon alignment is relfected in the enclosed Site Plans and completed design topography has been added as required. These plans have been concurrently submitted to the DPW for final approval.	C-102.1 & C-103
3	Applicant will work with DPW to address all comments from the peer review conducted by Altus.	On June 22nd, Tighe & Bond met with Altus and DPW to review Altus' preliminary findings. Tighe & Bond has submitted a response to Altus Engineering and the City DPW to address these findings. A copy of this response supplemental information have been included in this submission.	Peer Review Response Letter
4	House side shields will be added to parking lot lights as necessary to prevent light pollution into Coakley Rd homes. Details are to be added to the plan.	The enclosed Photometric Plan has been revised to incorporate house shields for lighing along Borthwick Avenue to prevent light pollution toward the Coakley Road neighborhood. The enclosed Lighting Cut sheets include the specifications for these house shields.	C-106 & Lighting Cut Sheets

P-0616-005
July 21, 2022

Eric Weinrieb, PE
Altus Engineering, Inc.
133 Court Street
Portsmouth, NH 03801-4413

Re: **Draft Drainage Review - Response to Comments**
Portsmouth Regional Hospital Satellite Parking Lot

Dear Eric:

As discussed during our meeting on June 22, 2022, we are pleased to submit the following responses and supplemental information to support the Portsmouth Regional Hospital Satellite Parking Lot project. We have reviewed the comments in the letter titled "Draft Drainage Review" provided to Tighe & Bond on June 22, 2022 and the following supplemental information is provided to support the responses to these comments.

- One (1) full size copy of the Site Plans, last revised 7/21/2022
- One (1) copy of the Drainage Analysis, last revised 7/21/2022

Listed below are the comments provided (in *italics*) and responses (in **bold**).

Comments:

PLANS

1. *Comment: A catch basin should be installed on the north side of Borthwick, just upslope of the crosswalk.*

   Response: The plans have been updated to add a proposed catch basin (PCB19) upslope of the crosswalk in a location coordinated with the City DPW during a site walk on June 27, 2022 and coordinated with the additional survey. The survey located an existing 24" drain line which is in an opportune position to tie into for the proposed catch basin.

2. *Comment: In general, catch basins should be installed every 300-feet along the curb line, ending at the end of the curbing.*

   Response: The plans have been updated to provide two additional catch basins along Borthwick Avenue (PCB20 and PCB21) to provide adequate spacing.

3. *Comment: The proposed 46 contour along the northwest portion of the site should be reviewed.*

   Response: The proposed 46 contour has been updated.

4. *Comment: It appears that there will be a "hole" without positive drainage between the 2 retaining walls. Regrading or an additional structure may be necessary.*

Response: These two retaining walls and the "hole" have been removed. The grading and drainage have been updated to accommodate this change.

5. *Comment: It is unclear why the two retaining walls between Borthwick and the parking lot are proposed. Eliminating the wall may reduce construction cost and will eliminate unnecessary maintenance for the City in the right-of-way.*

   Response: These two retaining walls have been removed.

6. *Comment: The proposed sidewalk is on both private property and in the City right-of-way. Who will maintain it? Will licenses be required?*

   Response: The owner will maintain the new sidewalks and any required licenses will be coordinated with the City.

7. *Comment: The proposed 44 contour and 32 appear to be missing in the southwest portion of the site.*

   Response: The 44 and 32 contour have been added to the plans.

8. *Comment: A catch basin grate analysis should be provided to support the grate sizing.*

   Response: The individual contributing areas for each catch basin have been sized in accordance with NHDES Env-Wq 1508.15. This requires that contributing area is 0.25 acres or under for a deep sump and hooded catch basin for pretreatment. Catch basins where this is not possible have been specified as a double grated structure.

9. *Comment: Subgrade preparation notes should be provided for the underground detention basin as well as the soils adjacent to the sidewall for the liner.*

   Response: These notes have been added to the Underground detention basin details on sheets C-506 and C-507.

10. *Comment: C-508 Notes: number 4. The site design engineer needs to provide additional supporting documentation.*

    Response: Note number 4 on sheet C-508 has been updated to align with the ADS Stormtech Design Manual in conjunction with site conditions.

11. *Comment: Test pits are deficient in the subsurface infiltration basin. Nearest pits (4 and 6) are approximately 30-feet from the bed.*

    Response: The subsurface infiltration basin has been updated to be located between TP-3 and TP-4, which identifies the required soil characteristics, along with groundwater and ledge elevations. The location of the basin was further coordinated with the NHDES Alteration of Terrain Bureau to allow for adequate groundwater recharge to the maximum extent practicable.

12. *Comment: Backfill material adjacent to the infiltration geotextile should be specified.*

    Response: The detail has been updated to reference the Pavement Section Detail for areas adjacent to the infiltration geotextile.

13. *Comment: DMH P3 should have a brick or concrete invert to the mid height of the pipes.*

    Response: The drain manholes within the right of way or City easement have been updated to call out a brick invert and an additional detail has been added to the plans on sheet C-504.

OFF SITE ANALYSIS

An off-site drainage analysis was completed to determine if there are any down gradient off-site impacts at the Borthwick Avenue cross culvert at the Route 1 Bypass intersection.

14. *Comment: It is difficult to confirm the subcatchment boundaries due to plan scale. Full sized plans should be provided. As such, it is not possible to determine the accuracy of the subcatchment boundaries and longest flow paths.*

    Response: The full size sheets of the watersheds have been included with this response package.

15. *Comment: Tc should be checked for S-6 and S-7. Longest flow path is exact same length.*

    Response: The Tc for S-6 has been updated. The Tc for S-7 has been updated to match the updated catchment area.

16. *Comment: Pre-development S-4 and S-5 should be combined. A link should not be used.*

    Response: The Pre-development model has been updated to include S-5 as a subcatchment instead of a link with the same Tc as S-4.

17. *Comment: Portion of S-4, along Borthwick and Eileen Dondero Foley Drive may drain towards the hospital.*

    Response: Subcatchment S-4 boundaries have been updated.

18. *Comment: Subcatchment 7 may be smaller than indicated on the plan.*

    Response: Subcatchment 7 has been updated to reflect our conversation with City DPW. The subcatchment now only includes a portion of the residential lots that border Borthwick Avenue.

19. *Comment: Reach 1 – has warnings and hints that need to be addressed. I found an 8-inch CMP. I am not convinced that the Essex neighborhood drains R-1. I think it may drain to the Bypass.*

    Response: Reach 1 has been removed and substituted with a pond P-5 as recommended by these warnings and hints. The Essex Avenue neighborhood has been split off into a separate subcatchment S-1 to divert flow to the Bypass.

20. *Comment: Based on my observations, nothing in the area could be considered "light brush". See Reach 2. Reach 2 except in a couple of spots, it is not a 100'; x 4' deep channel. There is nothing in my opinion that is "light brush" on this site.*

    Response: The Manning's number for Reach 2 has been updated to reflect woods with dense underbrush. Reach 2 has also been split into two

separate Reaches, R-2 and R-4, to more accurately represent the contours shown on the City provided GIS data.

21. *Comment: Reach 3 has warnings and hints that need to be addressed.*

    Response: Reach 3 has been removed and substituted with a pond P-6 as recommended by these warnings and hints.

22. *Comment: Reach 3 should be routed to another Reach prior to entering Pond 3.*

    Response: Reach R-3 has been updated to accommodate this recommendation with the addition of pond P-6.

23. *Comment: It appears that Pond 2 should be in a tailwater condition.*

    Response: A link has been added after Pond P-2 to add 9" of tailwater to the Pond.

24. *Comment: Explanation of invert and storage elevations for Pond 3 would be helpful. Consideration for brush, debris, variations in grade, etc. may be necessary to account for site conditions. We recognize that Pond 3 remains the same in both scenarios.*

    Response: Pond P-3 Storage elevations initially were provided by City DPW and updated with GIS contour data provided by the City. The invert and pipe size for the Pond 3 outlet has since been updated to reflect the "Pubic Service of New Hampshire Mill Pond Substation Site Plans", prepared by Tighe & Bond, dated February 26, 2014. The outlet pipe is a 48" RCP pipe with an invert in of 14.6 and an invert out of 14.4.

25. *Comment: Pond 4 – has a hint. The peak elevation is 12.94-feet above the flood level.*

    Response: The model has been updated and Pond 4 no longer has this hint.

26. *Comment: The analysis should include a summary on the pre- and post-developments runoff volume.*

    Response: The runoff volumes for the analyzed storm events have been added to Table 7.3.

ON-SITE ANALYSIS

27. *Comment: Full sized plans with the longest flow paths should be provided.*

    Response: These plans have been included in this response.

28. *Comment: The City requires that the applicant demonstrate that downstream channel or system capacity is adequate. As such, it is necessary a pre-development point of analysis at each of the proposed outfall locations to ensure that there will not be impacts to the abutting properties.*

    Response: The Point of Analysis' have been updated to measure the project's outfall locations to analyze the downstream impacts. The enclosed drainage report has been updated.

29. *Comment: The drainage report summary needs to provide information on the pre- and post-development volume, and discharge velocities in addition to the peak rate of runoff.*

    Response: Additional tables (Table 4.2 & 4.3) have been included in Section 4 of the Drainage Report to include this required information.

30. *Comment: There is a depression (contour 40) to the south of the electric easement. Based on site observations, it appears that discharge from this area is infrequent. As such, in the pre-development conditions, the area needs to be modelled as a pond with a weir overflow. Soil conditions should be verified in this area.*

    Response: The depression has been added to the pre-development analysis.

31. *Comment: The analysis should include all contributing surface runoff that flows through the site. The runoff from Borthwick Avenue needs to be included.*

    Response: The drainage report has been updated as required.

32. *Comment: It visually appears that a portion of the site near the street intersection drains toward the street.*

    Response: The drainage report has been updated as required.

33. *Comment: The longest flow path for subcatchment Pre 1.1 should extend to the property line.*

    Response: The Pre-Development drainage analysis and watershed plan have been updated as required.

34. *Comment: Catch basin grate analysis should be provided for each structure.*

    Response: The individual contributing areas for each catch basin have been conservatively sized in accordance with NHDES Env-Wq 1508.15. Catch basins where this is not possible have been specified as a double grate structure.

35. *Comment: Based test pits 4 and 6, ledge was encountered at 35-inches. Based interpolation, ledge will be encountered within 35-inches of the existing ground surface in the infiltration basin. Based on the pits, it appears that ledge will need to be excavated to construct the infiltration basin. It is unclear as to how infiltration will occur. Additionally, test pit 8 shows up on one sheet. It also is close to the infiltration basin. The pit notes that there is a restrictive layer at 39-inches.*

    Response: The subsurface infiltration basin has been updated to be located between TP-3 and TP-4, which identifies the required soil characteristics, along with groundwater and ledge elevations. The location of the basin was further coordinated with the NHDES Alteration of Terrain Bureau to allow for adequate groundwater recharge to the maximum extent practicable. Additionally, the basin has been raised to create adequate separation between the expected groundwater and ledge elevations.

36. *Comment: Post development Subcatchment 1.1 has 2-SF of woods, group B. Seems odd.*

    Response: Subcatchment 1.1 has been updated as required.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Vice President

Alexander Sellar, PE
Project Engineer

Enclosures
Copy: Dave Desfosses, City of Portsmouth DPW (via email)

J:\P\P0616 Portsmouth Regional Hospital - Portsmouth, NH Retention Pond\005 PRH Parking Expansion\Report_Evaluation\Applications\20220721_PB Submission peer review\Peer Review\Peer Review Comment Response Letter.docx

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

August 9, 2022

Peter Stith, Principal Planner
Planning Department
1 Junkins Avenue, 3rd Floor
Portsmouth, NH

Re: Peer Review for Proposed Portsmouth Regional Hospital Satellite Parking Lot
Portsmouth Tax Map 234, Lot 7-4A
Altus Project No. 5350

Transmitted via email to: pmstith@cityofportsmouth.com

Dear Peter:

In accordance with the Three-Party Services agreement between the City, Portsmouth Regional Hospital and Altus Engineering, Inc. (Altus) dated May 31, 2022, Altus has completed a follow up review of the plans and documents received on July 22, 2022.

On May 26, 2022 Altus received initial plans and documents prepared by Tighe & Bond for a 500-vehicle satellite parking lot along Borthwick Avenue. On June 14, 2022, Altus walked the property and the surrounding area to develop an understanding of the site conditions and drainage characteristics. Altus prepared a "Draft Drainage Review" and met with Tighe & Bond and David Desfosses on June 22, 2022 to discuss our initial findings.

It is understood that the July 21, 2022 plan set is intended to address both our initial concerns and the comments raised by NHDES in their review of the Alteration of Terrain Permit Application.

The revised design addresses many of our concerns including eliminating the retaining walls near the intersection of Eileen Dondero Foley Drive and Borthwick Avenue. Although this increases the wetland impact, it reduces construction cost and maintenance for both the City and the applicant.

Altus offers the following for the City's consideration, comments are organized by document and regulation to facilitate the review.

DEMOLITION PLAN

1. A portion of the 24-inch RCP under Borthwick Avenue is scheduled to be abandoned in place. The unused portion of the pipe should be removed.

SITE PLAN

2. The proposed sidewalk is on both private property and in the City right-of-way. Who will maintain it? Will a license be required?

GRADING, DRAINAGE & EROSION CONTROL PLAN

3. Catch basins have been added in Borthwick Avenue as suggested. It is Altus' opinion that they should be sited closer to the crosswalk on the northwest side of Borthwick Avenue.

4. An additional catch basin should be installed directly upslope of the intersection with Eileen Dondero Foley Drive to prevent a concentrated runoff across the intersection. The Designer should consider installing a catch basin where the 24-inch RCP culvert passes under the south side of Borthwick Avenue.

5. The catch basin on the northeast end of Borthwick Avenue should be relocated to where the sidewalk terminates to prevent the roadway shoulder from eroding. If the catch basin cannot be relocated, the Designer should consider installing erosion control stone to reduce the potential for erosion where the curb terminates.

EROSION CONTROL NOTES AND DETAILS SHEET

6. The inlet protection – coir mat inlet filter may not be appropriate for use in Borthwick Avenue where traffic is present and if the inlet protection will be subject to plowing.

DETAILS SHEET

7. The Designer is indicating that a substitute "or equal" for the "jellyfish" is allowed. It is unclear who will determine if the design criteria have been met with the substitution.

ON-SITE DRAINAGE ANALYSIS

8. A catch basin grate analysis should be provided to support the grate sizing for the structures in both the parking lot and along Borthwick Avenue. If the grates are undersized, runoff will pond and/or run past the intended structure.

9. Previously noted pre-development drainage computation concerns have been fully addressed by the Applicant.

10. Post development subcatchment 1.1 appears to be deficient the southwesterly portion of the site.

11. The time of concentration for post development subcatchment 2.4 should be checked.

12. Post development subcatchment 1S is not depicted on the watershed plan.

13. Post development subcatchments should be sized based on the individual catch basin that they are routed to and not the stormwater treatment device.

14. The analysis suggests that the peak rate of runoff decreases in all storm events analyzed except for the flow to Point of Analysis 3 (POA 3). Since there remain outstanding concerns with the computations, Altus cannot support their findings at this time. However, Altus does concur that minor increases may be justified as changing Borthwick Avenue from open drainage to closed drainage has benefits that may outweigh the increase in the concentration of flow at the POA. The Designer should look at the downstream conditions and provide recommendations to ensure that the area will remain stable.

15. In all storm events analyzed, the Designer has indicated that the volume of runoff entering the wetland system to the south and east of the property will increase. Once other issues noted above have been resolved, Altus can provide commentary on the updated findings.

16. It is Altus' opinion that the design approach meets the required pollutant removal efficiency.

17. It is recommended that the long term stormwater operation and maintenance requirements be recorded at the Registry of Deeds.

OFF SITE DRAINAGE ANALYSIS

An off-site drainage analysis was completed to determine if there are any down gradient off-site impacts at the Borthwick Avenue cross culvert at the Route 1 Bypass intersection. The Designer has addressed most of our initial comments.

18. Final comments will be pending the revised on-site computations.

19. Subcatchment S-3 identifies that the entire area is comprised of ¼ acre house lots. It is Altus opinion that most of the area appears to be heavily forested.

20. It is Altus' opinion that portions of pre-development subcatchments S-4 and S-5 should be combined. The analysis needs to model the on-site depression as a detention basin.

21. The hydrologic soil groups for Subcatchment S-4 should be reevaluated. A significant portion of the area is a marsh/pond. The hydrologic soil for this area should be group D.

22. Subcatchment S-8 should include forested areas in addition to the ¼ acre house lots.

Altus concludes that there are minor issues and details that need to be further clarified by the project engineer before we can make a recommendation regarding the acceptability of the design.

We look forward to working with the applicant to resolve the issues and to be able to make a full recommendation to the City.

Respectfully submitted,

ALTUS ENGINEERING, INC.

Eric D. Weinrieb, PE
President

Ecopy: Patrick Crimmins, PE, Tighe & Bond
Alexander Sellar, PE, Tighe & Bond
David Desfosses, Portsmouth DPW
Beverly Mesa-Zendt, Planning Director

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JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

July 27, 2022

Portsmouth Planning Board
Attn: Board Members
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Site Plan Application
1169 & 1171 Sagamore Avenue, Portsmouth, NH
Tax Map 224, Lots 14 & 15
JBE Project No. 21047

Dear Board Members,

Jones & Beach Engineers, Inc., respectfully submits a Site Plan Application on behalf of the applicant, The Sagamore Group, LLC. The intent of this application is to remove existing structures as shown on Sheet C1 and construct a 10-unit condominium complex. The units are 2 duplex style homes with 6 single-family homes. All units will have a 2-car garage with space for 2 cars in the driveways. The private driveway is proposed as one-way traffic and will be 20' wide. This site will be served by underground electric, municipal water & sewer. Gas will be from on-site propane tanks. TAC approval was received on June 13, 2022.

The following items are provided in support of this Application:

1. Completed Site Plan Application (submitted online).
2. Site Plan Application Checklist.
3. Letters of Authorization.
4. Current Deeds.
5. Architectural Plans.
6. One (1) Full Size Plan Set Folded.
7. One (1) Drainage Analysis.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph A. Coronati
Vice President

cc: Michael Garrepy, (via email)
Mick Khavari (via email)
Michael Fecteau (via email)

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

July 28, 2022

Portsmouth Planning Board
Attn: Board Members
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Wetland Conditional Use Application
1169 & 1171 Sagamore Avenue, Portsmouth, NH
Tax Map 224, Lots 14 & 15, and Tax Map 201, Lot 26
JBE Project No. 21047

Dear Board Members,

Jones & Beach Engineers, Inc., respectfully submits a Wetland Conditional Use Application for the above-referenced properties on behalf of the applicant, The Sagamore Group, LLC. The intent of this project is to remove existing structures on the subject parcels and construct 10 condominium units. Runoff from impervious surfaces will be treated and detained on-site, and some of it infiltrated. Then, it is discharged toward a depression with an isolated wetland in the northeast corner of the subject parcel. Peak rates of runoff toward the depression will be reduced in the proposed condition compared with the existing condition during all analyzed storm events.

After discussions with the Technical Advisory Committee and with the abutters, we have agreed to install a cross-culvert under Sagamore Avenue to connect the wetlands on either side. Although no one could find a culvert in the field an old culvert in the field or on old plans, it was agreed that one should be located here. The culvert also collects and treats roadway drainage with catch basins and a proprietary treatment device called a Jellyfish.

The Conservation Commission voted to recommend approval of this application at its meeting on July 13, 2022, with the following conditions:

1) For one year the applicant will monitor the site where invasive species are to be removed in order to determine the success of the removal and the health of the new wetland plantings. The new plantings shall have a greater than 80% success rate after one year. If not applicant shall replant.
RESPONSE: This will be followed. See Note #33 on Sheet C2.

2) The applicant will follow NOFA standards for land care and only use organic land management techniques within the wetland and wetland buffer areas.
RESPONSE: This will be followed. See Note #34 on Sheet C2.

The culvert will drain toward a larger wetland located across the street on City-owned property (Tax Map 201, Lot 26). The intent of the proposed culvert is to reduce peak water elevations within the depression in the proposed condition and to mitigate the potential for flooding during larger storm events, as modelled. The culvert will unavoidably need to be within the buffer of the larger wetland and therefore triggers the need for a Conditional Use Permit. The smaller wetland on Lot 15 is under 10,000 S.F. in area and therefore too small to have a buffer of its own. Proposed temporary buffer impacts are as follows (whereas work within the right of way is exempt from the requirement for a CUP):

- 300 S.F. on Lot 15 (Proposed Condominium Site)
- 270 S.F. on Lot 26 (City Owned Property)
- 570 S.F. Total

Additionally, because a new sidewalk is being proposed as requested by the City, runoff from a 460' ± long stretch of the southbound side of Sagamore Avenue which currently drains via sheet flow is proposed to be directed into a closed drainage system. This closed drainage system is proposed to be tied into the proposed cross-culvert. Road runoff will be treated via a "Jellyfish" filtration device before being discharged toward the larger wetland on Lot 26. Runoff from the proposed condominium development will be treated on-site.

10.1017.50 Criteria for Approval of Conditional Use Applications:

1. *The land is reasonably suited to the use, activity or alteration.*
   RESPONSE: As agreed to by the Technical Advisory Committee, the wetland located on Map 201, Lot 26 has much more available flood storage than the depression surrounding the isolated wetland in the corner of the subject parcel on which the condominium units are proposed. The large wetland on this City-owned property is able to handle the runoff better than the isolated depression surrounding the smaller wetland across the street, and it should be noted that peak rates of runoff toward that isolated depression are reduced in the proposed conditions and the intent of the proposed culvert is to act as an overflow. The City-owned land is in conservation and therefore won't be developed and provides excellent stormwater attenuation.

2. *There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.*
   RESPONSE: It is not possible to build this culvert outside of the wetland buffer. The culvert directly provides an overflow from a smaller wetland to drain toward a larger one; therefore, it must be located in the wetland buffer.

3. *There will be no adverse impact on the wetland functional values of the site or surrounding properties.*
   RESPONSE: In the existing condition, the runoff from Sagamore Ave and from the subject parcel reach a wetland untreated. In the proposed condition, all runoff will be treated before reaching the wetland on the City-owned property. Runoff from the proposed condominium development will be treated on-site and runoff from the road will be treated with a proposed Jellyfish filtration device.

4. *Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.*
   RESPONSE: A very minimal amount of vegetation will need to be cleared for the proposed culvert. It will be primarily underneath the roadway and only the inlet and outlet with associated erosion control measures will be in existing vegetated areas. Existing vegetation will only be disturbed on the side slope of the road for the installation of the culvert and of the rip rap. Grass and naturally occurring shrubs may be allowed to grow back over the proposed culvert along the side slope of the road, but trees should not be allowed to grow over it.

5. *The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.*
   RESPONSE: There will be minimal temporary impact for the installation of the culvert. In the existing condition, stormwater enters the wetland untreated. In the proposed condition, the runoff from the condominium development and the roadway will be treated, which mitigates the potential for degradation of water quality downstream. The culvert is to be installed within the wetland buffer, not the wetland itself. Proposed temporary impacts to the wetland buffer are as noted above. There will be no permanent impacts to the wetland buffer.

6. *Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.*
   RESPONSE: The installation of the culvert results in only temporary disturbance. Grass may be allowed to grow back over the culvert. For maintenance purposes, trees should not be allowed to grow over the culvert, but the remainder of the wooded area within the wetland buffer will remain wooded.

The following information is additionally required for Conditional Use Applications:

- Total area of inland wetland (both on and off subject parcel): 521 S.F. *
- Distance of proposed activity to wetland requiring CUP: 7' (Only the wetland on Lot 26 is large enough to require a CUP)
- Wetland buffer total area on lot: 1,354 S.F. *
- Wetland buffer area to be disturbed: See Above
- Inland wetland total area on lot: 257 S.F.
- Inland wetland area to be disturbed: 0 S.F.

* Responses with asterisk refer only to Tax Map 224, Lot 15; Tax Map 201, Lot 26 has not been fully surveyed, only the portion shown on the plans.

The following items are provided in support of this Application:

1. Conditional Use Application Completed & Submitted Online.
2. Signed Letter of Authorization.
3. Current Deed.
4. Off-Site Wetland Buffer Impact Letter prepared by Gove Environmental Services, Inc.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Daniel Meditz, E.I.T.
Project Engineer

cc: Michael Garrepy (via email)
Mick Khavari (via email)
Tim Phoenix, Hoefle, Phoenix, Gormley & Roberts (via email)
Peter Britz, Portsmouth Planning (via email)
Stefanie Casella, Portsmouth Planning (via email)

Letter of Authorization

The Sagamore Group, LLC, 4 Merrill Industrial Drive, Hampton, NH, 03842, USA, developer of property located in Portsmouth, NH, known as Tax Map 224, Lots 14 & 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on our behalf concerning the subject properties. The parcels are located at 1169 & 1171 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

The Sagamore Group, LLC

Daniel Jackson, Member
Duly authorized

5/4/21
Date

dotloop signature verification:

Letter of Authorization

We, John & Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owners of property located in Portsmouth, NH, known as Tax Map 224, Lot 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1169 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

John J Hebert — dotloop verified 05/04/21 2:47 PM EDT SE1Q-MIJAR-1SWP-P2NG

Witness | John Hebert | Date

Colleen Hebert — dotloop verified 05/04/21 2:49 PM EDT DBG-7MLM-TUEK-BAFX

Witness | Colleen Hebert | Date

dotloop signature verification:

Letter of Authorization

I, Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owner of property located in Portsmouth, NH, known as Tax Map 224, Lot 14, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1171 Sagamore Avenue in Portsmouth, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Witness

Colleen Hebert

dotloop verified
05/04/21 2:49 PM EDT

Date

WARRANTY DEED NEW HAMPSHIRE 901

KNOW ALL MEN BY THESE PRESENTS

2299-1707

'77 DEC -5 A 11:00
REC'D ROCKINGHAM COUNTY 35571
REGISTRY OF DEEDS

THAT the Mark H. Wentworth Home for Chronic Invalids, a voluntary corporation duly , established by law and having a usual place of business in Portsmouth ofx Rockingham County, State of New Hampshire, for consideration paid, grant to the City of Portsmouth, a municipal corporation in the County of Rockingham and State of New Hampshire ,

ofx ~~County, State of~~

, with WARRANTY COVENANTS,

(Description and incumbrances, if any)

A certain tract of land situate on the Easterly side of Sagamore Avenue and the Southerly side of Wentworth Road, also known as Wentworth House Road in said Portsmouth and more particularly bounded as follows:

Beginning at a point in the Southerly sideline of Wentworth Road at the Northeasterly corner of land of Harold and Katherine Abbott and running Easterly along the Southerly sideline of Wentworth Road 464 feet more or less to land of Herman and Bertraude L. Odiorne; thence turning and running Southerly by said Odiornes, land of Mike Kuchtey and land of Helen F. Mulcahy 605 feet more or less to the Portsmouth-Rye town line; thence turning and running Southwesterly by said Portsmouth-Rye town line 1090 feet more or less to the Westerly sideline of Sagamore Avenue; thence turning and running Northerly by said Sagamore Avenue 1200 feet more or less to an iron pipe in the ground at land of Richard and Kathryn Cooper; thence turning and running Easterly by said land of Cooper 100 feet to an iron pipe in the ground; thence turning and running Northerly by said land of Cooper 100 feet to a drill hole in a ledge; thence continuing Northerly by land of Richard Cooper and others 80 feet to a corner at land of Valley Oil Company; thence turning and running Easterly by land of said Oil Company 49 feet more or less to an iron pipe at land of said Abbotts; thence continuing in an Easterly direction by land of Abbotts 100 feet more or less to an iron pipe; thence turning and running Northerly by said land of said Abbotts 139 feet more or less to Wentworth Road and the point of beginning. Containing by estimation 16.5 acres.

Being the same premises acquired by deed of Charles J. Griffin Executor of the will of Henry Kenney dated October 17, 1939, recorded in Rockingham County Registry of Deeds Book 963 Page 375 less a certain lot conveyed to Richard Cooper and Kathryn E. Cooper by deed dated September 27, 1956, recorded in Rockingham County Registry of Deeds Book 1410 Page 350.

~~xxifxx~~ ~~of said Grantor~~
~~hxxbxxdx~~

~~release to said Grantor all rights of~~ ~~dx~~ ~~xxxxxx~~ ~~and homestead and other interest therein~~

WITNESS the hand and corporate seal this 27th day of September , 19 77

Witness: Patricia L. Pugh

Mark H. Wentworth Home for Chronic Invalids

By: Wyman P. Boynton President

State of New Hampshire

Rockingham, ss. September 27 , 1977

Then personally appeared the above named Wyman P. Boynton, President of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids, and for this purpose duly authorized and acknowledged the foregoing [illegible] voluntary act and deed, [illegible] of said corporation, before me

Patricia L. Pugh

Notary Public — Justice of the Peace.

2299-1708

Mark H. Wentworth Home
for Chronic Invalids

Meeting of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids held at the Home on December 3, 1976, with a quorum of the Trustees present.

President, Wyman P. Boynton, presided.

On motion it was

VOTED: To sell the Sagamore Avenue property of the Home to the City of Portsmouth for the sum of $40,000.00, together with the appraisers fee and the abatement of the 1976 taxes; and further that the President be authorized to execute all deeds and other instruments required.

A true extract from the reco

Richard E. Winslow, C

Approved

KNOW ALL MEN BY THESE PRESENTS, That Norman J. Smith, of P.O. Box 95, Portsmouth, County of Rockingham and State of New Hampshire,

BK2418 P0173

14391

JUL 29 2 56 PM '82

for consideration paid, grant to Colleen M. Hebert of 1169 Sagamore Avenue, Portsmouth, County of Rockingham and State of New Hampshire,

with warranty covenants

A certain parcel of land, together with the buildings thereon, situate on the Westerly side of Sagamore Avenue, so-called, in Portsmouth in the County of Rockingham and State of New Hampshire, more particularly bounded and described as follows:

Beginning in the Westerly sideline of the Avenue at land now or formerly of Haven L. Joy; thence running Westerly by other land of Joy, Two Hundred Ninety-three and Five Tenths (293.5) feet to land now or formerly of Ralph W. Junkins Est. et als; thence turning and running Norterly by other land of Junkins et als One Hundred Twenty-six and Thirty-two Hundredths (126.32) feet to a point at other land now or formerly of John J. and Harriet Scammon; thence turning and running Easterly by other land of Scammon Three Hundred (300) feet, more or less, to the Westerly sideline of the Avenue, thence running Southerly by the sideline Forty-seven and Sixty-five Hundredths (47.65) feet to a point, thence running Southeasterly by the sideline Forty-nine and Eight Hundredths (49.08) feet to land of Joy which is the point of beginning.

Being the same premises conveyed to Norman J. Smith and Janet S. Smith by deed of John J. Scammon et al dated July 24, 1954 and recorded in the Rockingham County Registry of Deeds in Book 1323 Page 324.

STATE OF NEW HAMPSHIRE
TAX ON TRANSFER OF REAL PROPERTY
STATE TAX COMMISSION
JUL 2 '82
325.00
R.D. 10655

Norman J. Smith, being single husband release to and grantee all rights of curtesy dower and homestead and other interests therein

Witness, my hand this 29th day of July 19 82.

Witness
Judith A. Giles

Norman J. Smith

L.S.

L.S.

L.S.

State of New Hampshire
Rockingham ss.: July 29 A.D. 19 82

Personally appeared Norman J. Smith

known to me or satisfactorily proven to be the person whose name subscribed to the foregoing instrument and acknowledged that he executed the same for the purposes therein contained.

Before me
Judith A. Giles
Justice of the Peace ~~Notary Public~~

061594

2012 NOV 30 PM 1:45

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS THAT I, ROBERT F. SCAMMON, JR., single and not a party to a civil union, of 1169 Sagamore Avenue, Portsmouth, New Hampshire, 03801

For consideration paid, grant to **JOHN J. HEBERT AND COLLEEN HEBERT,** husband and wife, of 54 Pioneer Road, Rye, New Hampshire, 03870, as joint tenants with rights of survivorship,

With Warranty Covenants, the following described premises situate in Portsmouth, Rockingham County, New Hampshire:

A certain lot or parcel of land with the buildings thereon situate on Sagamore Avenue, City of Portsmouth, County Rockingham and State of New Hampshire, bounded and described as follows:

Beginning at the concrete bound at the Northeasterly corner of the within described lot, the said bound being Four Hundred Seventy-nine (479) feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running Southerly twenty-four (24) degrees thirty-four (34) minutes west along said Sagamore Avenue one hundred (100) feet to a stake in the stone wall at other land now or formerly of Allen B. Keen; thence turning and running N 83° 43' W by other land of said Keen 300 feet to a stake; thence turning and running N 24° 30' E 100 feet by land now or formerly of Frank E. Brooks, etals; thence turning and running S 83° 43' E by land of said Brooks and other 300 feet to Sagamore Avenue and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth adjoining and lying on the northerly side of the above described parcel and bounded and described as follows: Beginning at a concrete bound at the southeasterly corner of these premises at land described above, said bound being 479 feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running N 83° 43' W by the above described parcel 300 feet to a point of land now or formerly of Frank E Brooks et als; thence turning and running N 24° 30' E by other land of said Brooks and others 300 feet, more or less to

said Sagamore Avenue; thence turning and running southerly along said Sagamore Avenue 50 feet to said concrete bound and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth and bounded and described as follows: Beginning at the northeasterly corner of the herein described parcel at the intersection of the westerly sideline of said Sagamore Avenue and land now or formerly of Allen B. Keen, said point being 100 feet S 24° 34' W along said Sagamore Avenue from the concrete bound aforementioned; thence running southerly along said Avenue 25 feet to land now or formerly of Frank E .Brooks, et als; thence turning and running N 83° 43' W by land now or formerly Frank E. Brooks, et als 300 feet, more or less, to a point; thence turning and running N 24° 30' E 25 feet by land of said Brooks, et als, to a stake at other land now or formerly of Allen B. Keen; thence turning and running Southeast 83° 43' E by other land of said Keen 300 feet to Sagamore Avenue and being the point of beginning. This parcel adjoining and lying on the southerly side of the first described parcel herein.

Being the same premises conveyed to the within Grantor by deed of Barbara Scammon dated April 25, 1995, recorded in Rockingham County Registry of Deeds, Book 3097, Page 1715.

Signed this 30th day of November, 2012.

Robert F. Scammon, Jr.

STATE OF NEW HAMPSHIRE
ROCKINGHAM COUNTY

Personally appeared this 30th day of November, 2012, Robert F. Scammon, Jr., who acknowledged that he/she/they executed the foregoing instrument as his/her/their free act and deed for the purposes contained herein.

Before me,

Lori Hebert, Notary Public

My commission expires: 05/09/2017

LORI HEBERT NOTARY PUBLIC NEW HAMPSHIRE

GES, Inc.
8 Continental Drive
Exeter, NH 03833

1169 Sagamore Road
Portsmouth, NH

Off-site Wetland Buffer Impact:

Photos taken on June 28, 2022

Location of proposed culvert outlet is at log. The wetland edge is at the Phragmities growing next to the road.

Phragmities is adjacent the road and extends back into the wetland.

The majority of the wetland has Phragmities, with only some of the hydrologically wetter areas being too wet to allow the common reed to grow.

It is my understanding that the culvert is essentially a stormwater overflow for only major storm events and does not flow into the wetlands on most smaller storms. Further, the discharge has been cleaned by other upslope stormwater controls. This limited amount of discharge should have no appreciable impact on the wetlands.

Compiled by Jim Gove, CWS # 051, CSS # 004 on 6-28-2022.

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: The Sagamore Group, LLC Date Submitted: 08/23/22

Application # (in City's online permitting): LU-21-167

Site Address: 1169 & 1171 Sagamore Ave. Map: 224 Lot: 14&15

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**		N/A
☒	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**		N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	Included	
☒	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	C1 & C2	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	C1	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
X	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	Application	N/A
X	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	C1 & C2	N/A
X	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	Cover Sheet	N/A
X	List of reference plans. **(2.5.3.1H)**	C1 & C2	N/A
X	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	Cover Sheet	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
X	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
X	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
X	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	C1 Note #15	N/A
X	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
X	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	C1	N/A
X	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Cover Sheet	N/A
X	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	All Sheets	N/A
X	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
X	Source and date of data displayed on the plan. **(2.5.4.2D)**	C1	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	C1	
☒	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	Architectural Plans	
☒	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	C2 T1-T4	
☒	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	C2	
☒	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	C1 & C5	
☒	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	C1, C5, P1	

☒	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	C1 & C5	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	C2 Note #22	
☒	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	C3 C2 C2 Note #35	
☒	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	L2	
☒	**11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)**	L2	
☒	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	L2 C5	
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C1 & C3	
☒	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	C2	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	C1 & C2	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	N/A	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	N/A	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	Previously Submitted	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	C3	
☒	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	Not in Either	
☒	Stormwater Management and Erosion Control Plan. **(7.4)**	Included	
☒	Inspection and Maintenance Plan **(7.6.5)**	Included	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	Easements shown on C1 & C2	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	Enclosed	
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	Pending	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	C2 Note #5	
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	C2 Note #19	N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	C2 Notes #20 & #21	N/A

Applicant's Signature: [signature] (as agent) **Date:** 3/22/22

KNOW ALL MEN BY THESE PRESENTS

2299-1707

THAT the Mark H. Wentworth Home for Chronic Invalids, a voluntary corporation duly established by law and having a usual place of business in Portsmouth of~~x~~ Rockingham County, State of New Hampshire, for consideration paid, grant to the City of Portsmouth, a municipal corporation in the County of Rockingham and State of New Hampshire

of~~x~~ ~~County, State of~~

, with WARRANTY COVENANTS,

'77 DEC-5 A11:00
REC'D ROCKINGHAM COUNTY 35571
REGISTRY OF DEEDS

(Description and incumbrances, if any)

A certain tract of land situate on the Easterly side of Sagamore Avenue and the Southerly side of Wentworth Road, also known as Wentworth House Road in said Portsmouth and more particularly bounded as follows:

Beginning at a point in the Southerly sideline of Wentworth Road at the Northeasterly corner of land of Harold and Katherine Abbott and running Easterly along the Southerly sideline of Wentworth Road 464 feet more or less to land of Herman and Bertraude L. Odiorne; thence turning and running Southerly by said Odiornes, land of Mike Kuchtey and land of Helen F. Mulcahy 605 feet more or less to the Portsmouth-Rye town line; thence turning and running Southwesterly by said Portsmouth-Rye town line 1090 feet more or less to the Westerly sideline of Sagamore Avenue; thence turning and running Northerly by said Sagamore Avenue 1200 feet more or less to an iron pipe in the ground at land of Richard and Kathryn Cooper; thence turning and running Easterly by said land of Cooper 100 feet to an iron pipe in the ground; thence turning and running Northerly by said land of Cooper 100 feet to a drill hole in a ledge; thence continuing Northerly by land of Richard Cooper and others 80 feet to a corner at land of Valley Oil Company; thence turning and running Easterly by land of said Oil Company 49 feet more or less to an iron pipe at land of said Abbotts; thence continuing in an Easterly direction by land of Abbotts 100 feet more or less to an iron pipe; thence turning and running Northerly by said land of said Abbotts 139 feet more or less to Wentworth Road and the point of beginning. Containing by estimation 16.5 acres.

Being the same premises acquired by deed of Charles J. Griffin Executor of the will of Henry Kenney dated October 17, 1939, recorded in Rockingham County Registry of Deeds Book 963 Page 375 less a certain lot conveyed to Richard Cooper and Kathryn E. Cooper by deed dated September 27, 1956, recorded in Rockingham County Registry of Deeds Book 1410 Page 350.

~~wife~~x husband~~x~~ of said Grantor~~x~~

release to said Grantee all rights of ~~dower~~ ~~curtesy~~ and homestead and other interest therein~~x~~

WITNESS the ~~hand~~ and ~~seal~~ corporate this 27th day of September, 19 77

Witness:

Patricia A. Pugh

Mark H. Wentworth Home for Chronic Invalids

By: Wyman P. Boynton, President

State of New Hampshire

Rockingham, ss. September 27, 1977

Then personally appeared the above named Wyman P. Boynton, President of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids, and for this purpose duly authorized and acknowledged the foregoing instrument to be ~~his~~ voluntary act and deed, ~~before me~~ of said corporation, before me

Patricia A. Pugh

Notary Public — Justice of the Peace.

2299-1708

Mark H. Wentworth Home
for Chronic Invalids

Meeting of the Board of Trustees of the Mark H. Wentworth Home for Chronic Invalids held at the Home on December 3, 1976, with a quorum of the Trustees present.

President, Wyman P. Boynton, presided.

On motion it was

VOTED: To sell the Sagamore Avenue property of the Home to the City of Portsmouth for the sum of $40,000.00, together with the appraisers fee and the abatement of the 1976 taxes; and further that the President be authorized to execute all deeds and other instruments required.

A true extract from the reco

Richard E. Winslow, Cl

THE MARK H. WENTWORTH HOME FOR CHRONIC INVALICS INCORPORATED 1911 NEW HAMPSHIRE

Approved

14391

JUL 29 2 56 PM '82

KNOW ALL MEN BY THESE PRESENTS, That Norman J. Smith, of P.O. Box 95, Portsmouth, County of Rockingham and State of New Hampshire,

BK2418 P0173

for consideration paid, grant to Colleen M. Hebert of 1169 Sagamore Avenue, Portsmouth, County of Rockingham and State of New Hampshire,

with **warranty covenants**

A certain parcel of land, together with the buildings thereon, situate on the Westerly side of Sagamore Avenue, so-called, in Portsmouth in the County of Rockingham and State of New Hampshire, more particularly bounded and described as follows:

Beginning in the Westerly sideline of the Avenue at land now or formerly of Haven L. Joy; thence running Westerly by other land of Joy, Two Hundred Ninety-three and Five Tenths (293.5) feet to land now or formerly of Ralph W. Junkins Est. et als; thence turning and running Norterly by other land of Junkins et als One Hundred Twenty-six and Thirty-two Hundredths (126.32) feet to a point at other land now or formerly of John J. and Harriet Scammon; thence turning and running Easterly by other land of Scammon Three Hundred (300) feet, more or less, to the Westerly sideline of the Avenue, thence running Southerly by the sideline Forty-seven and Sixty-five Hundredths (47.65) feet to a point, thence running Southeasterly by the sideline Forty-nine and Eight Hundredths (49.08) feet to land of Joy which is the point of beginning.

Being the same premises conveyed to Norman J. Smith and Janet S. Smith by deed of John J. Scammon et al dated July 24, 1954 and recorded in the Rockingham County Registry of Deeds in Book 1323 Page 324.

STATE OF NEW HAMPSHIRE
TAX ON TRANSFER OF REAL PROPERTY
STATE TAX COMMISSION
JUL 29 '82
325.00
RB. 10665

Norman J. Smith, being single husband XXXXXXXXXXXXXXX release to and grantee all rights of curtesy dower and homestead and other interests therein

Witness, my hand XXXXXXX this 29th day of July 19 82.

Witness

Judith A. Giles

Norman J. Smith

L.S.

L.S.

L.S.

State of New Hampshire

Rockingham ss.: July 29 A.D. 19 82

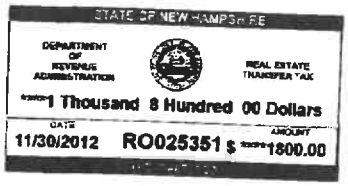
Personally appeared Norman J. Smith

known to me, or satisfactorily proven to be the person whose name subscribed to the foregoing instrument and acknowledged that he executed the same for the purposes therein contained

Before me,

Judith A. Giles

Justice of the Peace ~~Notary Public~~



061594

2012 NOV 30 PM 1:45

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS THAT I, ROBERT F. SCAMMON, JR., single and not a party to a civil union, of 1169 Sagamore Avenue, Portsmouth, New Hampshire, 03801

For consideration paid, grant to **JOHN J. HEBERT AND COLLEEN HEBERT,** husband and wife, of 54 Pioneer Road, Rye, New Hampshire, 03870, as joint tenants with rights of survivorship,

With Warranty Covenants, the following described premises situate in Portsmouth, Rockingham County, New Hampshire:

A certain lot or parcel of land with the buildings thereon situate on Sagamore Avenue, City of Portsmouth, County Rockingham and State of New Hampshire, bounded and described as follows:

Beginning at the concrete bound at the Northeasterly corner of the within described lot, the said bound being Four Hundred Seventy-nine (479) feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running Southerly twenty-four (24) degrees thirty-four (34) minutes west along said Sagamore Avenue one hundred (100) feet to a stake in the stone wall at other land now or formerly of Allen B. Keen; thence turning and running N 83° 43' W by other land of said Keen 300 feet to a stake; thence turning and running N 24° 30' E 100 feet by land now or formerly of Frank E. Brooks, etals; thence turning and running S 83° 43' E by land of said Brooks and other 300 feet to Sagamore Avenue and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth adjoining and lying on the northerly side of the above described parcel and bounded and described as follows: Beginning at a concrete bound at the southeasterly corner of these premises at land described above, said bound being 479 feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running N 83° 43' W by the above described parcel 300 feet to a point of land now or formerly of Frank E Brooks et als; thence turning and running N 24° 30' E by other land of said Brooks and others 300 feet, more or less to

said Sagamore Avenue; thence turning and running southerly along said Sagamore Avenue 50 feet to said concrete bound and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth and bounded and described as follows: Beginning at the northeasterly corner of the herein described parcel at the intersection of the westerly sideline of said Sagamore Avenue and land now or formerly of Allen B. Keen, said point being 100 feet S 24° 34' W along said Sagamore Avenue from the concrete bound aforementioned; thence running southerly along said Avenue 25 feet to land now or formerly of Frank E .Brooks, et als; thence turning and running N 83° 43' W by land now or formerly Frank E. Brooks, et als 300 feet, more or less, to a point; thence turning and running N 24° 30' E 25 feet by land of said Brooks, et als, to a stake at other land now or formerly of Allen B. Keen; thence turning and running Southeast 83° 43' E by other land of said Keen 300 feet to Sagamore Avenue and being the point of beginning. This parcel adjoining and lying on the southerly side of the first described parcel herein.

Being the same premises conveyed to the within Grantor by deed of Barbara Scammon dated April 25, 1995, recorded in Rockingham County Registry of Deeds, Book 3097, Page 1715.

Signed this 30th day of November, 2012.

Robert F. Scammon, Jr.

STATE OF NEW HAMPSHIRE
ROCKINGHAM COUNTY

Personally appeared this 30th day of November, 2012, Robert F. Scammon, Jr., who acknowledged that he/she/they executed the foregoing instrument as his/her/their free act and deed for the purposes contained herein.

Before me,

Lori Hebert, Notary Public

My commission expires: 05/09/2017

LORI HEBERT NOTARY PUBLIC HAMPSHIRE

Letter of Authorization

The Sagamore Group, LLC, 4 Merrill Industrial Drive, Hampton, NH, 03842, USA, developer of property located in Portsmouth, NH, known as Tax Map 224, Lots 14 & 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on our behalf concerning the subject properties. The parcels are located at 1169 & 1171 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

The Sagamore Group, LLC

Daniel Jackson, Member
Duly authorized

5/4/21
Date

dotloop signature verification:

Letter of Authorization

We, John & Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owners of property located in Portsmouth, NH, known as Tax Map 224, Lot 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1169 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

	John G Hebert dotloop verified 05/04/21 2:47 PM EDT 5E1O-MUAR-1SWP-P2NG	
Witness	John Hebert	Date
	Colleen Hebert dotloop verified 05/04/21 2:49 PM EDT CJBG-7MIM-TUFK-BAEX	
Witness	Colleen Hebert	Date

dotloop signature verification:

Letter of Authorization

I, Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owner of property located in Portsmouth, NH, known as Tax Map 224, Lot 14, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1171 Sagamore Avenue in Portsmouth, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

Witness

Colleen Hebert dotloop verified 05/04/21 2:49 PM EDT RLSS-SIAZ-YMEI-YUBD

Colleen Hebert

Date

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801

(603) 610-7216

TECHNICAL ADVISORY COMMITTEE

June 13, 2022

John Hebert
Colleen Hebert
54 Pioneer Rd
Rye, NH 03870

RE: Site Plan Review for properties located at 1169 and 1171 Sagamore Avenue (LU-21-167)

Dear Mr. Hebert and Ms. Hebert:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, June 7, 2022, considered your application for requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single family units) and 3 existing accessory structures to be replaced with 6 single family structures and 2 2 family structures to total 10 living units and 22 parking spaces where 15 is required. Said property is shown on Assessor Map 224 Lot 14 and Lot 15 and lies within the Mixed Residential Office (MRO) District. As a result of said consideration, the Committee voted to **recommend approval** to the Planning Board with the following stipulations:

Items to be addressed prior to Planning Board approval:

1) Catch basin 3 is to be relocated upgrade to the northern side of the driveway servicing 1167 Sagamore Ave.

2) Applicant will provide confirmation from the Jelly Fish system manufacturer that the proposed location is adequate for the system to properly perform its functions.

Condition Precedent:

3) The proposed culvert across Sagamore Ave will need a Wetland Conditional Use Permit and City Council approval for work on City property.

Condition Subsequent:

4) Third party inspection of stormwater, sewer, water, and sidewalk installation is required.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, July 21, 2022**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Wednesday, June 29, 2022**.

Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*
- *Traffic Studies*
- *Etc.*

All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Beverly Mesa-Zendt,
Planning Director

cc:

Daniel Jackson, Sagamore Group, LLC
Joseph Coronati, Jones & Beach Engineers

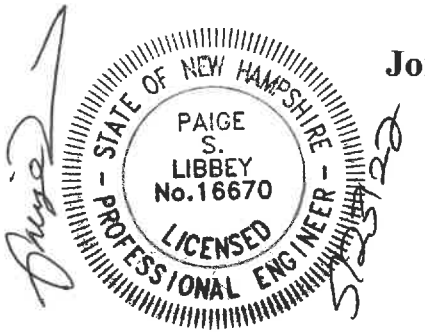
DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Sagamore Avenue Condominiums
1169 & 1171 Sagamore Ave.
Portsmouth, NH 03801
Tax Map 224, Lots 14 & 15

Prepared for:

The Sagamore Group, LLC
P.O. Box 430
Hampton, NH 03842



Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
August 23, 2021
Revised October 5, 2021
Revised December 28, 2021
Revised February 9, 2022
Revised March 22, 2022
Revised April 18, 2022
Revised May 10, 2022
JBE Project No. 21047

EXECUTIVE SUMMARY

The Sagamore Group, LLC proposes to construct ten (10) residential condominium units on a 1.83-acre parcel of land located at 1169 & 1171 Sagamore Avenue in Portsmouth, NH. In the existing condition, the two lots to be consolidated are home to single-family residences with multiple sheds and paved driveways, a pool, and a gravel driveway running through the lots.

A drainage analysis of the entire site was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.60	0.31	1.40	0.87	2.11	1.40	2.80	1.92
Analysis Point #2	0.86	0.72	1.53	1.25	2.06	1.68	2.56	2.07
Analysis Point #3	1.20	0.22	2.24	0.53	3.14	0.80	3.98	1.07
Analysis Point #4	0.24	0.21	0.50	0.40	0.73	0.56	0.94	0.70
Analysis Point #5	N/A	0.69	N/A	1.05	N/A	1.50	N/A	2.40

A similar summary of the existing and proposed peak volumes in units of acre-feet is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.063	0.036	0.140	0.089	0.208	0.139	0.275	0.189
Analysis Point #2	0.072	0.067	0.127	0.117	0.172	0.158	0.215	0.196
Analysis Point #3	0.086	0.017	0.228	0.039	0.402	0.058	0.573	0.077
Analysis Point #4	0.022	0.019	0.045	0.037	0.064	0.051	0.083	0.065
Analysis Point #5	N/A	0.082	N/A	0.206	N/A	0.343	N/A	0.478

The subject parcels are located in the Mixed Residential / Office (MRO) Zoning District. The subject parcels currently consist of the aforementioned single-family residences with associated driveways, sheds, and a pool, all of which is proposed to be demolished. The topography and ledge outcrops on the site as well as a stretch of Sagamore Ave. that is considered in this analysis define six (6) subcatchments, which drain to four (4) analysis points. Subcatchments 2S-4S drain directly toward their respective analysis points while subcatchment 6S drains directly toward Analysis Point #1, subcatchment 1S drains directly toward an isolated wetland which overflows toward both Analysis Points 1&3, and subcatchment 5S drains toward a shallow depression straddling the two properties, modelled as a pond, before cresting over a "berm" and running off toward the northerly abutter's detention pond (Analysis Point 3). The neighboring "Westwind Townhomes of Portsmouth" site to the south stands topographically prominent to this parcel, so some runoff from this development reaches

the southeast corner of the subject parcel although most of it drains directly into the Sagamore Avenue right of way. The runoff reaching this corner of the property (Analysis Point 2) then continues south along Sagamore Avenue. The majority of the site drains to the north in the existing condition, reaching either the abutting "Sea Star Cove Condominium" detention pond (Analysis Point 3) or the adjacent depression (Analysis Point 1) after overflowing from the isolated wetland in the rear of the site. Also included in Subcatchment 1S, which drains toward Analysis Point 1, is a stretch of Sagamore Ave with a low point at a horseshoe shaped driveway for an abutter to the subject property. Runoff from this stretch of the road sheet flows across the abutter's property in the proposed condition before ultimately reaching either the isolated wetland or a wooded depression defined as Analysis Point 1.

The proposed site development consists of the aforementioned ten (10) condominium units with associated paved roadway and individual driveways. The addition of the proposed impervious paved areas and buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the net result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this possibility. The proposed site development divides the site into nineteen (19) subcatchments, representing both the periphery of the site that will continue its existing flow pattern toward the aforementioned analysis points as well as the developed portions that will be routed into the site's stormwater management system for treatment and reduction of peak flows. The proposed stormwater management system for the front of the site consists of two (2) bioretention systems to filter runoff and a downstream concrete galley field that will detain runoff and release it slowly, allowing for peak flow rates to be reduced. The proposed stormwater management system for the rear of the site consists of two catch basins as well as several yard drains draining into a concrete galley field designed for infiltration, from which overflow will be routed to the concrete galley field in the center of the site that is designed for detention. Through the use of these practices, the peak rate and volume of runoff is reduced toward Analysis Points #1-4 during all analyzed storm events.

Otherwise, some roof runoff will be infiltrated through subsurface stone beds. These systems, in combination with the concrete galley field designed for infiltration, will help to reduce volumes of runoff below the existing condition and promote groundwater recharge.

Additionally, although the system has been designed to reduce the amount of flooding on to abutting properties in the proposed condition, a cross-street culvert is proposed as an overflow from the depression surrounding the isolated wetland. As modelled, this culvert protects against flooding on to adjacent properties during all analyzed storm events. This culvert outlets across the street into a larger wetland area, so new Analysis Point 5 is introduced in the proposed condition for the runoff that is captured by this culvert.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

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25 Year - 24 Hour Summary
50 Year - 24 Hour Complete

Appendix II Proposed Conditions Analysis

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1.0 RAINFALL CHARACTERISTICS

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows and volumes resulting from storm events.

2.0 EXISTING CONDITIONS ANALYSIS

The two existing single-family residential properties feature three houses, two sheds, a pool, two paved driveways and a gravel driveway running through the site in addition to a paved island in the center of the site. The site is otherwise covered by both woods and grass, with sporadic ledge outcrops. A small section of the southern part of the site is sloped toward the south, while the majority of it is sloped toward the north.

The area draining toward the north is split into three subcatchments; Subcatchments 1S, 3S, and 5S. Subcatchment 1S drains into an isolated wetland near the northeast corner of the site. Subcatchment 1S includes the entire on and off-site contributing watershed area toward the isolated wetland, which includes parts of abutting properties as well as a stretch of Sagamore Avenue. Subcatchment 3S drains into Analysis Point #3 (AP3) representing the abutting condominium property's private detention pond. Subcatchment 5S drains toward a shallow depression straddling the two existing subject parcels, represented as 1P, and once the depression fills it crests over a berm and drains across Subcatchment 3S toward Analysis Point #3.

Two additional subcatchments were defined for the area draining toward the south; Subcatchment 2S and Subcatchment 4S. Subcatchment 2S is directed toward Analysis Point #2 (AP2), representing the shoulder of Sagamore Avenue. Runoff in this direction combines with runoff from the edge of the abutting property and continues south. Subcatchment 4S, which is separated from 3S by a ledge outcrop, a building roof, and otherwise a subtle inflection in the surface topography, is located in the southwestern corner of the property and this small area drains directly into the Sea Star Cove Condiminium property, represented by Analysis Point #4 (AP4).

There are two berms on the isolated wetland in the northeast corner of the subject site. A lower berm carries overflow toward the abutter's detention pond and a higher, 70' long x 10' wide berm carries any extreme overflow toward a depression in the woods represented as Analysis Point AP1. Additionally, a stretch of the road and areas of abutting properties drain directly toward Analysis Point AP1 and are represented as Subcatchment 6S.

Existing soil types were determined through a High Intensity Soil Survey (HISS) conducted by a Certified Soil Scientist. A Site-Specific Soil Map (SSSM) conversion table was provided along with the report that was generated based on the results of the HISS. These soils are categorized into Hydrologic Soil Groups (HSG) B and D. Areas surrounding ledge outcrops are categorized into HSG D while the remainder of the upland area of the site is mostly categorized into HSG B. Specifically, the upland soil types include the Hollis-Rock Outcrop Complex, Made Land – Similar to Canton, Newfields, and Chatfield Variant. According to "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5, the saturated hydraulic conductivity (Ksat) value for Canton soils ranges from 2 to 6 inches/hour within the B horizon and 6 to 20 inches/hour within the C horizon; the Ksat value for Newfields soils ranges from 0.6 to 2 inches per hour within both the B and C horizons, and the Ksat value for both Chatfield Variant and Hollis soils ranges from 0.6 to 6 inches/hour within both the B and C horizons.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious paved areas and buildings causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this possibility. The proposed development, consisting of the aforementioned ten (10) condominium units with associated paved roadway and driveways as well as stormwater management features divide the subject parcel into nineteen (19) subcatchments. Subcatchments 2S-4S drain directly into their respective Analysis Points, AP2-AP4, as previously outlined. Subcatchments 5S-6S will drain into the two bioretention systems in the front of the site, and after receiving treatment in the bioretention systems, runoff will be piped into concrete "Galley" chambers for underground detention. Subcatchments 7S-8S represent the rear of the site and runoff from here is graded toward two catch basins in sequence from which a closed drainage network feeds into another Galley chamber system, except that this one is designed for infiltration. Overflow from this will be piped into the Galley chamber system in the center of the site that is designed for detention only. Subcatchments 9S-12S represent lawn areas that are proposed to drain toward yard drains. Subcatchments 13S-15S represent roof subcatchments from which runoff will be infiltrated through subsurface stone infiltration beds in lawn areas. Subcatchments 16S, 17S, and 18S represent three stretches of Sagamore Avenue that are to drain toward proposed deep sump catch basins, the purpose of which is to pre-treat roadway runoff and drain it to the wetland across the street. The three proposed catch basins drain toward a proposed "Jellyfish" filtration system for treatment. Finally, Subcatchment 19S represents the sections of adjacent properties draining directly toward the wooded depression to the north of the site represented as AP1. As explained in the executive summary, the proposed stormwater management features help to reduce off-site peak rates and volumes toward AP1-AP4 below the existing condition.

As stated in the executive summary, a new cross street culvert is proposed to be installed as an overflow to prevent runoff from cresting on to adjacent properties after filling the depression surrounding the isolated wetland. Because this culvert carries water across the road, a new analysis point is introduced, represented as Analysis Point 5 to delineate the runoff that enters the larger wetland across the street. The three proposed catch basins along Sagamore Ave feed into a "Jellyfish" filtration system which intercepts the cross-street culvert and treats runoff directed toward it, and therefore the roadway runoff that enters the proposed catch basin also directly reaches Analysis Point AP5 after being treated.

As modelled, this proposed culvert reduces the peak elevation within the depression surrounding the isolated wetland and reduces the potential for flooding during peak storm events. A summary of the peak elevations during each analyzed storm event are as follows, noting that the flood elevation is situated at 31.3:

	2 Year	10 Year	25 Year	50 Year
Existing	30.48	31.32 (Flooding)	31.36 (Flooding)	31.44 (Flooding)
Proposed	30.42	30.65	30.96	31.18

After passing through the bioretention systems and concrete "Galley" chambers, treated and attenuated runoff will gradually drain toward the isolated wetland in the northeast corner of the site, from which any overflow will drain across the street via the proposed culvert during all analyzed storm events. The peak rates and volumes of runoff will be reduced in all analyzed storm events toward Analysis Points 1-4 in the proposed condition compared to the existing condition.

The site will be graded such that runoff from all impervious areas, with the exception of clean roof, patio, and deck runoff, will be treated, detained, and some of it infiltrated to groundwater, by way of bioretention systems and subsurface infiltration and detention chambers. The two bioretention systems in the front of the site cannot be used for infiltration due to the presence of ledge in the area where they are proposed, therefore they shall be lined and underdrained. The proposed concrete Galley chambers in the center of the site will also lined and underdrained due to the presence of groundwater while the proposed concrete Galley chambers in the northwest corner of the site are designed as a subsurface infiltration basin, with at least 3' between the bottom of the chamber and the SHWT.

The Ksat values stated at the end of the Existing Conditions Analysis were used to determine the design infiltration rates of each stormwater practice. The lower Ksat for each soil type was divided by 2 to develop a design infiltration rate of 0.3 or 1 inches/hour for each stormwater practice depending on what soil type they are located in. When a practice is located within multiple soil types, a weighted average is taken. For example, the underground stone infiltration bed in back of Units 1 and 2 straddles two soil types, one with each aforementioned design infiltration rate, so the two rates were averaged and a design infiltration rate of 0.65 inches/hour was ultimately used.

By reducing the peak rate and volume of stormwater runoff toward the neighbor's detention pond, the functioning of the overall drainage system between the two properties is improved resultant to this development. The outfall is in an optimal location as the treated and attenuated runoff will be released toward an existing wetland, a rip rap outlet protection apron is proposed in order to dissipate any concentrated flows that result, and a proposed cross-street culvert will work to reduce the potential for flooding on adjacent properties. The contours surrounding the isolated wetland in the northeastern corner of the site are modelled as a pond, 21P, in the proposed condition, where it is modelled as 2P in the existing condition.

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and infiltration basins (including subsurface ones) provide a removal efficiency of 90% for TSS and 60% for nitrogen provided that there is 3' of soil or stone separating the bottom of the chamber from the seasonal high water table and that the chamber is at least 75' from surface water. Runoff from all impervious surfaces with the exception of roofs is being directed toward one of these two types of treatment systems. The City of Portsmouth Site Plan Review Regulations stipulate that stormwater BMPs should either be designed for 80% TSS removal and 50%

nitrogen removal, OR to retain and treat the Water Quality Volume. This plan exceeds the requirements for pollutant removal because appropriate treatment / groundwater recharge systems are used and the Water Quality Volume is retained and treated.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, properties, and wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, catch basins, drain manholes, yard drains, bioretention systems, concrete "Galley" chambers, subsurface stone infiltration beds, rip rap outlet protection, a "Jellyfish" filtration system for road runoff, and a proposed cross-street culvert as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. The drainage outfall is in its optimal location and the rate and the volume of runoff reaching the abutter's detention pond from the subject site will be reduced. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process. Peak rates and volumes of runoff from the site will be reduced toward all analysis points during all analyzed storm events.

This project disturbs less than 100,000 S.F. and does not require a NHDES Alteration of Terrain Permit.

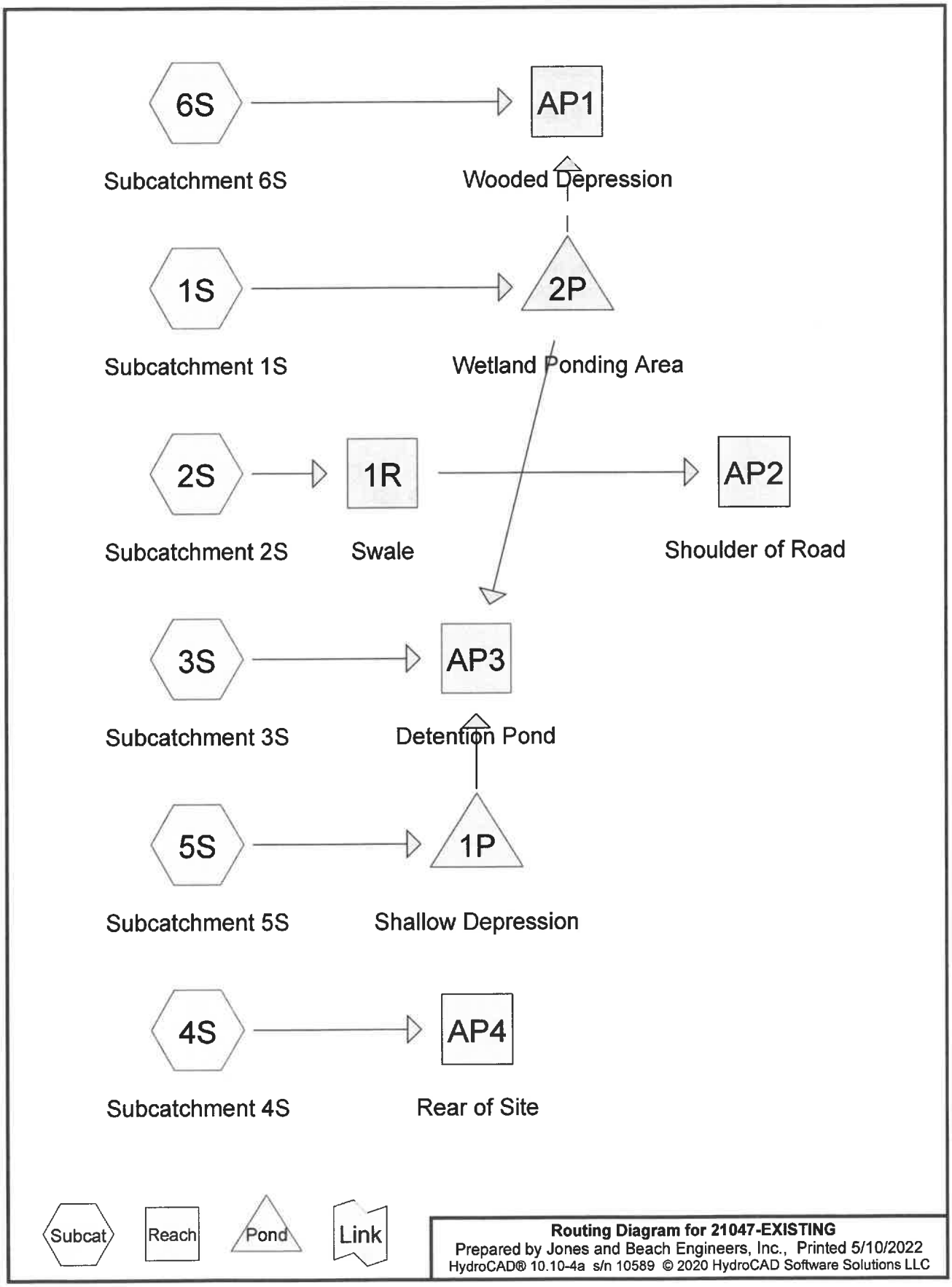
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

Daniel Meditz, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Routing Diagram for 21047-EXISTING
Prepared by Jones and Beach Engineers, Inc., Printed 5/10/2022
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.644	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S)
0.448	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S)
0.135	96	Gravel surface, HSG B (1S, 5S)
0.107	96	Gravel surface, HSG D (1S, 2S, 3S, 4S, 5S)
0.156	98	Ledge Outcrop, HSG D (1S, 2S, 3S, 4S, 5S)
0.228	98	Paved parking, HSG B (5S, 6S)
0.047	98	Paved roads w/curbs & sewers, HSG B (1S)
0.040	98	Paved roads w/curbs & sewers, HSG D (1S, 2S)
0.064	98	Roofs, HSG B (1S, 4S, 5S, 6S)
0.103	98	Roofs, HSG D (1S, 2S, 4S, 5S)
0.861	55	Woods, Good, HSG B (1S, 3S, 4S, 5S, 6S)
0.088	77	Woods, Good, HSG D (1S, 3S, 4S, 5S)
2.921	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.980	HSG B	1S, 3S, 4S, 5S, 6S
0.000	HSG C	
0.941	HSG D	1S, 2S, 3S, 4S, 5S
0.000	Other	
2.921		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=34,729 sf 15.46% Impervious Runoff Depth>1.25"
Flow Length=112' Tc=20.1 min CN=72 Runoff=0.75 cfs 0.083 af

Subcatchment2S: Subcatchment2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>2.27"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=0.99 cfs 0.072 af

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>0.61"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.13 cfs 0.019 af

Subcatchment4S: Subcatchment4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>1.44"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.24 cfs 0.022 af

Subcatchment5S: Subcatchment5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>1.87"
Flow Length=87' Tc=7.2 min CN=81 Runoff=1.07 cfs 0.080 af

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>1.13"
Flow Length=137' Tc=16.7 min CN=70 Runoff=0.60 cfs 0.063 af

Reach 1R: Swale Avg. Flow Depth=0.43' Max Vel=0.52 fps Inflow=0.99 cfs 0.072 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=0.86 cfs 0.072 af

Reach AP1: Wooded Depression Inflow=0.60 cfs 0.063 af
Outflow=0.60 cfs 0.063 af

Reach AP2: Shoulder of Road Inflow=0.86 cfs 0.072 af
Outflow=0.86 cfs 0.072 af

Reach AP3: Detention Pond Inflow=1.20 cfs 0.086 af
Outflow=1.20 cfs 0.086 af

Reach AP4: Rear of Site Inflow=0.24 cfs 0.022 af
Outflow=0.24 cfs 0.022 af

Pond 1P: Shallow Depression Peak Elev=37.14' Storage=590 cf Inflow=1.07 cfs 0.080 af
Outflow=1.16 cfs 0.067 af

Pond 2P: Wetland Ponding Area Peak Elev=30.48' Storage=3,609 cf Inflow=0.75 cfs 0.083 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.339 af Average Runoff Depth = 1.39"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=34,729 sf 15.46% Impervious Runoff Depth>2.67"
Flow Length=112' Tc=20.1 min CN=72 Runoff=1.67 cfs 0.177 af

Subcatchment2S: Subcatchment2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>4.04"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=1.72 cfs 0.127 af

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>1.66"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.43 cfs 0.052 af

Subcatchment4S: Subcatchment4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>2.95"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.50 cfs 0.045 af

Subcatchment5S: Subcatchment5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>3.53"
Flow Length=87' Tc=7.2 min CN=81 Runoff=2.00 cfs 0.151 af

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>2.49"
Flow Length=137' Tc=16.7 min CN=70 Runoff=1.40 cfs 0.140 af

Reach 1R: Swale Avg. Flow Depth=0.53' Max Vel=0.60 fps Inflow=1.72 cfs 0.127 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=1.53 cfs 0.127 af

Reach AP1: Wooded Depression Inflow=1.40 cfs 0.140 af
Outflow=1.40 cfs 0.140 af

Reach AP2: Shoulder of Road Inflow=1.53 cfs 0.127 af
Outflow=1.53 cfs 0.127 af

Reach AP3: Detention Pond Inflow=2.24 cfs 0.228 af
Outflow=2.24 cfs 0.228 af

Reach AP4: Rear of Site Inflow=0.50 cfs 0.045 af
Outflow=0.50 cfs 0.045 af

Pond 1P: Shallow Depression Peak Elev=37.17' Storage=590 cf Inflow=2.00 cfs 0.151 af
Outflow=2.06 cfs 0.138 af

Pond 2P: Wetland Ponding Area Peak Elev=31.32' Storage=6,101 cf Inflow=1.67 cfs 0.177 af
Primary=0.10 cfs 0.038 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.038 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.692 af Average Runoff Depth = 2.84"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.67 cfs @ 12.29 hrs, Volume= 0.177 af, Depth> 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	4,202	55	Woods, Good, HSG B
	191	61	>75% Grass cover, Good, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	2,054	98	Paved roads w/curbs & sewers, HSG B
	5,450	55	Woods, Good, HSG B
	745	98	Roofs, HSG B
*	1,274	98	Ledge Outcrop, HSG D
	1,901	77	Woods, Good, HSG D
	666	96	Gravel surface, HSG D
	3,000	80	>75% Grass cover, Good, HSG D
	534	98	Paved roads w/curbs & sewers, HSG D
	763	98	Roofs, HSG D
	34,729	72	Weighted Average
	29,359		84.54% Pervious Area
	5,370		15.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	12	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	112	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.72 cfs @ 12.09 hrs, Volume= 0.127 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	401	98	Ledge Outcrop, HSG D
	1,855	96	Gravel surface, HSG D
	7,620	80	>75% Grass cover, Good, HSG D
	1,200	98	Paved roads w/curbs & sewers, HSG D
	908	98	Roofs, HSG D
	2,786	80	>75% Grass cover, Good, HSG D
	1,725	98	Roofs, HSG D
	16,495	86	Weighted Average
	12,261		74.33% Pervious Area
	4,234		25.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	45	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.6	45	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.43 cfs @ 12.37 hrs, Volume= 0.052 af, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	28	98	Ledge Outcrop, HSG D
	660	96	Gravel surface, HSG D
	1,114	77	Woods, Good, HSG D
	291	80	>75% Grass cover, Good, HSG D
	4,820	61	>75% Grass cover, Good, HSG B
	9,535	55	Woods, Good, HSG B
	16,448	60	Weighted Average
	16,420		99.83% Pervious Area
	28		0.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	11	0.0230	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	18	0.0167	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
3.2	19	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	22	0.0540	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.0	30	0.0180	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
2.0	80	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.1	180	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,545	98	Ledge Outcrop, HSG D
	27	96	Gravel surface, HSG D
	21	98	Roofs, HSG D
	111	77	Woods, Good, HSG D
	174	80	>75% Grass cover, Good, HSG D
	798	98	Roofs, HSG B
	1,028	61	>75% Grass cover, Good, HSG B
	3,201	55	Woods, Good, HSG B
	7,905	75	Weighted Average
	4,541		57.44% Pervious Area
	3,364		42.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	68	0.0290	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 2.00 cfs @ 12.10 hrs, Volume= 0.151 af, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,532	98	Ledge Outcrop, HSG D
	1,442	96	Gravel surface, HSG D
	59	98	Roofs, HSG D
	715	77	Woods, Good, HSG D
	3,730	80	>75% Grass cover, Good, HSG D
	1,158	98	Roofs, HSG B
	852	98	Paved parking, HSG B
	1,842	96	Gravel surface, HSG B
	6,869	61	>75% Grass cover, Good, HSG B
	256	55	Woods, Good, HSG B
	1,896	80	>75% Grass cover, Good, HSG D
	1,007	98	Roofs, HSG D
	22,358	81	Weighted Average
	16,750		74.92% Pervious Area
	5,608		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	6	0.0500	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.2	15	0.0200	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
3.8	31	0.0167	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.9	14	0.1400	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	21	0.0676	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.2	87	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.40 cfs @ 12.24 hrs, Volume= 0.140 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
9,085	98	Paved parking, HSG B
5,246	61	>75% Grass cover, Good, HSG B
14,877	55	Woods, Good, HSG B
102	98	Roofs, HSG B
29,310	70	Weighted Average
20,123		68.66% Pervious Area
9,187		31.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

Summary for Reach 1R: Swale

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 4.04" for 10 Yr 24 Hr(+15%) event
Inflow = 1.72 cfs @ 12.09 hrs, Volume= 0.127 af
Outflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af, Atten= 11%, Lag= 2.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.60 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 9.6 min

Peak Storage= 358 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 9.59'
Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 8.19 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 8.0 '/' Top Width= 18.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'

‡

Summary for Reach AP1: Wooded Depression

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.673 ac, 31.34% Impervious, Inflow Depth > 2.49" for 10 Yr 24 Hr(+15%) event
Inflow = 1.40 cfs @ 12.24 hrs, Volume= 0.140 af
Outflow = 1.40 cfs @ 12.24 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 4.03" for 10 Yr 24 Hr(+15%) event
Inflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af
Outflow = 1.53 cfs @ 12.13 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.688 ac, 14.97% Impervious, Inflow Depth > 1.62" for 10 Yr 24 Hr(+15%) event
Inflow = 2.24 cfs @ 12.11 hrs, Volume= 0.228 af
Outflow = 2.24 cfs @ 12.11 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.181 ac, 42.56% Impervious, Inflow Depth > 2.95" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af
Outflow = 0.50 cfs @ 12.18 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Shallow Depression

[93] Warning: Storage range exceeded by 0.09'
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=39)

Inflow Area = 0.513 ac, 25.08% Impervious, Inflow Depth > 3.53" for 10 Yr 24 Hr(+15%) event
Inflow = 2.00 cfs @ 12.10 hrs, Volume= 0.151 af
Outflow = 2.06 cfs @ 12.10 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 2.06 cfs @ 12.10 hrs, Volume= 0.138 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.17' @ 12.10 hrs Surf.Area= 3,088 sf Storage= 590 cf

Plug-Flow detention time= 64.1 min calculated for 0.138 af (91% of inflow)
Center-of-Mass det. time= 20.8 min (835.5 - 814.7)

Volume	Invert	Avail.Storage	Storage Description
#1	36.75'	590 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.75	417	0	0
36.88	1,613	132	132
37.00	2,380	240	372
37.08	3,088	219	590

Device	Routing	Invert	Outlet Devices
#1	Primary	37.07'	**27.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.04 cfs @ 12.10 hrs HW=37.17' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 2.04 cfs @ 0.77 fps)

Summary for Pond 2P: Wetland Ponding Area

Inflow Area = 0.797 ac, 15.46% Impervious, Inflow Depth > 2.67" for 10 Yr 24 Hr(+15%) event
Inflow = 1.67 cfs @ 12.29 hrs, Volume= 0.177 af
Outflow = 0.10 cfs @ 16.12 hrs, Volume= 0.038 af, Atten= 94%, Lag= 230.1 min
Primary = 0.10 cfs @ 16.12 hrs, Volume= 0.038 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.32' @ 16.12 hrs Surf.Area= 4,120 sf Storage= 6,101 cf

Plug-Flow detention time= 438.2 min calculated for 0.038 af (21% of inflow)

Center-of-Mass det. time= 299.4 min (1,146.8 - 847.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.10 cfs @ 16.12 hrs HW=31.32' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.33 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=34,729 sf 15.46% Impervious Runoff Depth>3.92"
Flow Length=112' Tc=20.1 min CN=72 Runoff=2.46 cfs 0.260 af

Subcatchment2S: Subcatchment2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>5.48"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=2.30 cfs 0.173 af

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>2.67"
Flow Length=180' Tc=24.1 min CN=60 Runoff=0.72 cfs 0.084 af

Subcatchment4S: Subcatchment4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>4.25"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.73 cfs 0.064 af

Subcatchment5S: Subcatchment5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>4.91"
Flow Length=87' Tc=7.2 min CN=81 Runoff=2.77 cfs 0.210 af

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>3.71"
Flow Length=137' Tc=16.7 min CN=70 Runoff=2.11 cfs 0.208 af

Reach 1R: Swale Avg. Flow Depth=0.60' Max Vel=0.64 fps Inflow=2.30 cfs 0.173 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=2.06 cfs 0.172 af

Reach AP1: Wooded Depression Inflow=2.11 cfs 0.208 af
Outflow=2.11 cfs 0.208 af

Reach AP2: Shoulder of Road Inflow=2.06 cfs 0.172 af
Outflow=2.06 cfs 0.172 af

Reach AP3: Detention Pond Inflow=3.14 cfs 0.402 af
Outflow=3.14 cfs 0.402 af

Reach AP4: Rear of Site Inflow=0.73 cfs 0.064 af
Outflow=0.73 cfs 0.064 af

Pond 1P: Shallow Depression Peak Elev=37.19' Storage=590 cf Inflow=2.77 cfs 0.210 af
Outflow=2.81 cfs 0.197 af

Pond 2P: Wetland Ponding Area Peak Elev=31.36' Storage=6,271 cf Inflow=2.46 cfs 0.260 af
Primary=0.55 cfs 0.121 af Secondary=0.00 cfs 0.000 af Outflow=0.55 cfs 0.121 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.999 af Average Runoff Depth = 4.11"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=34,729 sf 15.46% Impervious Runoff Depth>5.14"
Flow Length=112' Tc=20.1 min CN=72 Runoff=3.23 cfs 0.342 af

Subcatchment2S: Subcatchment2S Runoff Area=16,495 sf 25.67% Impervious Runoff Depth>6.84"
Flow Length=45' Slope=0.0400 '/' Tc=6.0 min CN=86 Runoff=2.84 cfs 0.216 af

Subcatchment3S: Subcatchment3S Runoff Area=16,448 sf 0.17% Impervious Runoff Depth>3.72"
Flow Length=180' Tc=24.1 min CN=60 Runoff=1.01 cfs 0.117 af

Subcatchment4S: Subcatchment4S Runoff Area=7,905 sf 42.56% Impervious Runoff Depth>5.51"
Flow Length=68' Slope=0.0290 '/' Tc=12.6 min CN=75 Runoff=0.94 cfs 0.083 af

Subcatchment5S: Subcatchment5S Runoff Area=22,358 sf 25.08% Impervious Runoff Depth>6.24"
Flow Length=87' Tc=7.2 min CN=81 Runoff=3.48 cfs 0.267 af

Subcatchment6S: Subcatchment6S Runoff Area=29,310 sf 31.34% Impervious Runoff Depth>4.91"
Flow Length=137' Tc=16.7 min CN=70 Runoff=2.80 cfs 0.275 af

Reach 1R: Swale Avg. Flow Depth=0.65' Max Vel=0.68 fps Inflow=2.84 cfs 0.216 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=8.19 cfs Outflow=2.56 cfs 0.215 af

Reach AP1: Wooded Depression Inflow=2.80 cfs 0.275 af
Outflow=2.80 cfs 0.275 af

Reach AP2: Shoulder of Road Inflow=2.56 cfs 0.215 af
Outflow=2.56 cfs 0.215 af

Reach AP3: Detention Pond Inflow=3.98 cfs 0.573 af
Outflow=3.98 cfs 0.573 af

Reach AP4: Rear of Site Inflow=0.94 cfs 0.083 af
Outflow=0.94 cfs 0.083 af

Pond 1P: Shallow Depression Peak Elev=37.21' Storage=590 cf Inflow=3.48 cfs 0.267 af
Outflow=3.48 cfs 0.253 af

Pond 2P: Wetland Ponding Area Peak Elev=31.44' Storage=6,611 cf Inflow=3.23 cfs 0.342 af
Primary=1.90 cfs 0.202 af Secondary=0.00 cfs 0.000 af Outflow=1.90 cfs 0.202 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.300 af Average Runoff Depth = 5.34"
78.16% Pervious = 2.283 ac 21.84% Impervious = 0.638 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.23 cfs @ 12.28 hrs, Volume= 0.342 af, Depth> 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	4,202	55	Woods, Good, HSG B
	191	61	>75% Grass cover, Good, HSG B
	9,900	61	>75% Grass cover, Good, HSG B
	4,049	96	Gravel surface, HSG B
	2,054	98	Paved roads w/curbs & sewers, HSG B
	5,450	55	Woods, Good, HSG B
	745	98	Roofs, HSG B
*	1,274	98	Ledge Outcrop, HSG D
	1,901	77	Woods, Good, HSG D
	666	96	Gravel surface, HSG D
	3,000	80	>75% Grass cover, Good, HSG D
	534	98	Paved roads w/curbs & sewers, HSG D
	763	98	Roofs, HSG D
	34,729	72	Weighted Average
	29,359		84.54% Pervious Area
	5,370		15.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	12	0.3300	2.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.1	112	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 2.84 cfs @ 12.09 hrs, Volume= 0.216 af, Depth> 6.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	401	98	Ledge Outcrop, HSG D
	1,855	96	Gravel surface, HSG D
	7,620	80	>75% Grass cover, Good, HSG D
	1,200	98	Paved roads w/curbs & sewers, HSG D
	908	98	Roofs, HSG D
	2,786	80	>75% Grass cover, Good, HSG D
	1,725	98	Roofs, HSG D
	16,495	86	Weighted Average
	12,261		74.33% Pervious Area
	4,234		25.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	45	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.6	45	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.01 cfs @ 12.35 hrs, Volume= 0.117 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	28	98	Ledge Outcrop, HSG D
	660	96	Gravel surface, HSG D
	1,114	77	Woods, Good, HSG D
	291	80	>75% Grass cover, Good, HSG D
	4,820	61	>75% Grass cover, Good, HSG B
	9,535	55	Woods, Good, HSG B
	16,448	60	Weighted Average
	16,420		99.83% Pervious Area
	28		0.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	11	0.0230	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	18	0.0167	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
3.2	19	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	22	0.0540	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.0	30	0.0180	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
2.0	80	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.1	180	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af, Depth> 5.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,545	98	Ledge Outcrop, HSG D
	27	96	Gravel surface, HSG D
	21	98	Roofs, HSG D
	111	77	Woods, Good, HSG D
	174	80	>75% Grass cover, Good, HSG D
	798	98	Roofs, HSG B
	1,028	61	>75% Grass cover, Good, HSG B
	3,201	55	Woods, Good, HSG B
	7,905	75	Weighted Average
	4,541		57.44% Pervious Area
	3,364		42.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	68	0.0290	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 3.48 cfs @ 12.10 hrs, Volume= 0.267 af, Depth> 6.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,532	98	Ledge Outcrop, HSG D
	1,442	96	Gravel surface, HSG D
	59	98	Roofs, HSG D
	715	77	Woods, Good, HSG D
	3,730	80	>75% Grass cover, Good, HSG D
	1,158	98	Roofs, HSG B
	852	98	Paved parking, HSG B
	1,842	96	Gravel surface, HSG B
	6,869	61	>75% Grass cover, Good, HSG B
	256	55	Woods, Good, HSG B
	1,896	80	>75% Grass cover, Good, HSG D
	1,007	98	Roofs, HSG D
	22,358	81	Weighted Average
	16,750		74.92% Pervious Area
	5,608		25.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	6	0.0500	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.2	15	0.0200	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
3.8	31	0.0167	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.9	14	0.1400	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	21	0.0676	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.2	87	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 2.80 cfs @ 12.23 hrs, Volume= 0.275 af, Depth> 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
9,085	98	Paved parking, HSG B
5,246	61	>75% Grass cover, Good, HSG B
14,877	55	Woods, Good, HSG B
102	98	Roofs, HSG B
29,310	70	Weighted Average
20,123		68.66% Pervious Area
9,187		31.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

Summary for Reach 1R: Swale

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 6.84" for 50 Yr 24 Hr(+15%) event
Inflow = 2.84 cfs @ 12.09 hrs, Volume= 0.216 af
Outflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af, Atten= 10%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.68 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 8.6 min

Peak Storage= 527 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 11.65'
Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 8.19 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 10.0 8.0 '/' Top Width= 18.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'

‡

Summary for Reach AP1: Wooded Depression

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.673 ac, 31.34% Impervious, Inflow Depth > 4.91" for 50 Yr 24 Hr(+15%) event
Inflow = 2.80 cfs @ 12.23 hrs, Volume= 0.275 af
Outflow = 2.80 cfs @ 12.23 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.379 ac, 25.67% Impervious, Inflow Depth > 6.83" for 50 Yr 24 Hr(+15%) event
Inflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af
Outflow = 2.56 cfs @ 12.13 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.688 ac, 14.97% Impervious, Inflow Depth > 4.07" for 50 Yr 24 Hr(+15%) event
Inflow = 3.98 cfs @ 12.11 hrs, Volume= 0.573 af
Outflow = 3.98 cfs @ 12.11 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.181 ac, 42.56% Impervious, Inflow Depth > 5.51" for 50 Yr 24 Hr(+15%) event
Inflow = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af
Outflow = 0.94 cfs @ 12.17 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Shallow Depression

[93] Warning: Storage range exceeded by 0.13'

Inflow Area = 0.513 ac, 25.08% Impervious, Inflow Depth > 6.24" for 50 Yr 24 Hr(+15%) event
Inflow = 3.48 cfs @ 12.10 hrs, Volume= 0.267 af
Outflow = 3.48 cfs @ 12.10 hrs, Volume= 0.253 af, Atten= 0%, Lag= 0.0 min
Primary = 3.48 cfs @ 12.10 hrs, Volume= 0.253 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.21' @ 12.10 hrs Surf.Area= 3,088 sf Storage= 590 cf

Plug-Flow detention time= 43.0 min calculated for 0.253 af (95% of inflow)
Center-of-Mass det. time= 15.6 min (814.3 - 798.7)

Volume	Invert	Avail.Storage	Storage Description
#1	36.75'	590 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.75	417	0	0
36.88	1,613	132	132
37.00	2,380	240	372
37.08	3,088	219	590

Device	Routing	Invert	Outlet Devices
#1	Primary	37.07'	**27.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=3.45 cfs @ 12.10 hrs HW=37.21' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.45 cfs @ 0.91 fps)

Summary for Pond 2P: Wetland Ponding Area

Inflow Area = 0.797 ac, 15.46% Impervious, Inflow Depth > 5.14" for 50 Yr 24 Hr(+15%) event
Inflow = 3.23 cfs @ 12.28 hrs, Volume= 0.342 af
Outflow = 1.90 cfs @ 12.57 hrs, Volume= 0.202 af, Atten= 41%, Lag= 17.7 min
Primary = 1.90 cfs @ 12.57 hrs, Volume= 0.202 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.44' @ 12.57 hrs Surf.Area= 4,625 sf Storage= 6,611 cf

Plug-Flow detention time= 192.9 min calculated for 0.202 af (59% of inflow)
Center-of-Mass det. time= 88.0 min (916.6 - 828.7)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	6,968 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,036	357.0	1,624	2,538	7,787
31.00	2,891	433.0	2,451	4,989	12,582
31.50	4,916	435.0	1,929	6,919	12,839
31.51	4,916	435.0	49	6,968	12,843

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

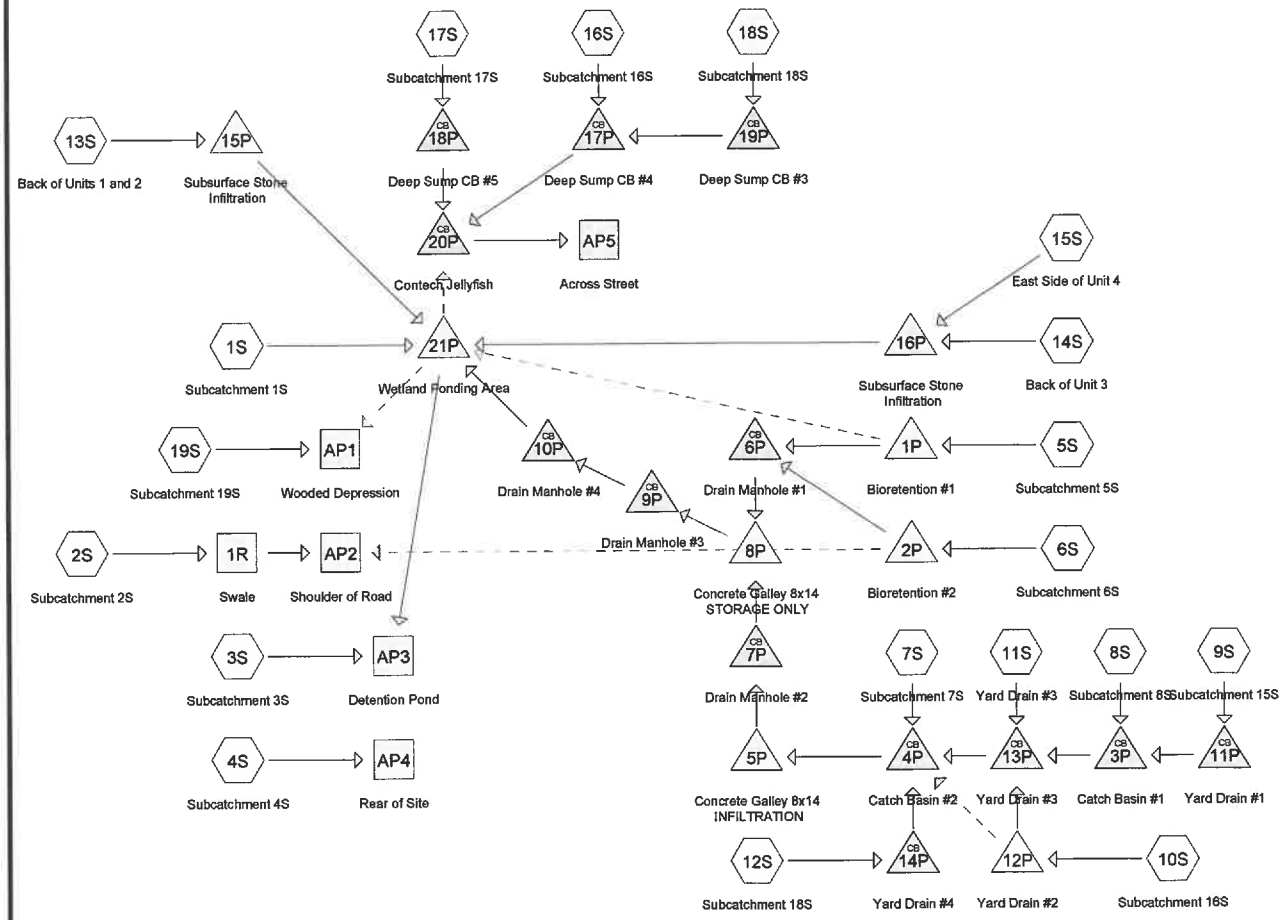
Primary OutFlow Max=1.86 cfs @ 12.57 hrs HW=31.43' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.86 cfs @ 0.87 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Subcat | Reach | Pond | Link

Routing Diagram for 21047-PROPOSED
Prepared by Jones and Beach Engineers, Inc., Printed 5/10/2022
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.673	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 19S)
0.400	80	>75% Grass cover, Good, HSG D (1S, 2S, 6S, 7S, 8S, 9S, 10S, 12S)
0.095	98	Ledge Outcrop, HSG D (2S, 4S, 8S)
0.522	98	Paved parking, HSG B (5S, 6S, 7S, 8S, 17S, 18S, 19S)
0.136	98	Paved parking, HSG D (5S, 6S, 7S, 8S, 17S)
0.042	98	Paved roads w/curbs & sewers, HSG B (1S, 16S)
0.007	98	Paved roads w/curbs & sewers, HSG D (2S)
0.257	98	Roofs, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 9S, 11S, 12S, 13S, 15S, 19S)
0.289	98	Roofs, HSG D (1S, 2S, 6S, 7S, 8S, 9S, 12S, 14S, 15S)
0.487	55	Woods, Good, HSG B (1S, 3S, 4S, 19S)
0.014	77	Woods, Good, HSG D (1S, 4S)
2.921	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.980	HSG B	1S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 15S, 16S, 17S, 18S, 19S
0.000	HSG C	
0.941	HSG D	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 12S, 14S, 15S, 17S
0.000	Other	
2.921		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=13,938 sf 18.32% Impervious Runoff Depth>0.96"
Flow Length=48' Tc=6.6 min CN=67 Runoff=0.31 cfs 0.026 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>2.36"
Flow Length=126' Tc=12.0 min CN=87 Runoff=0.76 cfs 0.067 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>1.07"
Tc=6.0 min CN=69 Runoff=0.22 cfs 0.017 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>1.87"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.21 cfs 0.019 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 73.74% Impervious Runoff Depth>2.45"
Tc=6.0 min CN=88 Runoff=0.44 cfs 0.033 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% Impervious Runoff Depth>2.63"
Flow Length=60' Tc=6.0 min CN=90 Runoff=0.71 cfs 0.052 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 83.39% Impervious Runoff Depth>2.93"
Flow Length=135' Tc=6.0 min CN=93 Runoff=0.72 cfs 0.055 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.01% Impervious Runoff Depth>2.63"
Flow Length=86' Tc=11.2 min CN=90 Runoff=0.77 cfs 0.067 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>1.58"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.12 cfs 0.009 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>0.71"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.04 cfs 0.004 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>0.96"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.06 cfs 0.005 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>2.03"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.07 cfs 0.005 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

Subcatchment14S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.03 cfs 0.002 af

Subcatchment15S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

Subcatchment17S: Subcatchment17S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.36 cfs 0.030 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>0.80"
Flow Length=137' Tc=16.7 min CN=64 Runoff=0.31 cfs 0.036 af

Reach 1R: Swale Avg. Flow Depth=0.61' Max Vel=0.64 fps Inflow=0.76 cfs 0.067 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=0.72 cfs 0.067 af

Reach AP1: Wooded Depression Inflow=0.31 cfs 0.036 af
Outflow=0.31 cfs 0.036 af

Reach AP2: Shoulder of Road Inflow=0.72 cfs 0.067 af
Outflow=0.72 cfs 0.067 af

Reach AP3: Detention Pond Inflow=0.22 cfs 0.017 af
Outflow=0.22 cfs 0.017 af

Reach AP4: Rear of Site Inflow=0.21 cfs 0.019 af
Outflow=0.21 cfs 0.019 af

Reach AP5: Across Street Inflow=0.69 cfs 0.082 af
Outflow=0.69 cfs 0.082 af

Pond 1P: Bioretention #1 Peak Elev=35.21' Storage=137 cf Inflow=0.44 cfs 0.033 af
Primary=0.44 cfs 0.030 af Secondary=0.00 cfs 0.000 af Outflow=0.44 cfs 0.030 af

Pond 2P: Bioretention #2 Peak Elev=35.40' Storage=218 cf Inflow=0.71 cfs 0.052 af
Primary=0.60 cfs 0.051 af Secondary=0.00 cfs 0.000 af Outflow=0.60 cfs 0.051 af

Pond 3P: Catch Basin #1 Peak Elev=35.59' Inflow=0.89 cfs 0.076 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=0.89 cfs 0.076 af

Pond 4P: Catch Basin #2 Peak Elev=35.08' Inflow=1.70 cfs 0.145 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=1.70 cfs 0.145 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=34.18' Storage=0.050 af Inflow=1.70 cfs 0.145 af
Discarded=0.46 cfs 0.144 af Primary=0.00 cfs 0.000 af Outflow=0.46 cfs 0.144 af

Pond 6P: Drain Manhole #1 Peak Elev=34.70' Inflow=1.02 cfs 0.081 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=1.02 cfs 0.081 af

Pond 7P: Drain Manhole #2 Peak Elev=34.20' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=33.77' Storage=0.021 af Inflow=1.02 cfs 0.081 af
Primary=0.38 cfs 0.080 af Secondary=0.00 cfs 0.000 af Outflow=0.38 cfs 0.080 af

Pond 9P: Drain Manhole #3 Peak Elev=31.97' Inflow=0.38 cfs 0.080 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.38 cfs 0.080 af

Pond 10P: Drain Manhole #4 Peak Elev=31.47' Inflow=0.38 cfs 0.080 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.38 cfs 0.080 af

Pond 11P: Yard Drain #1 Peak Elev=36.03' Inflow=0.12 cfs 0.009 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.12 cfs 0.009 af

Pond 12P: Yard Drain #2 Peak Elev=39.02' Storage=1 cf Inflow=0.04 cfs 0.004 af
Primary=0.04 cfs 0.004 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.004 af

Pond 13P: Yard Drain #3 Peak Elev=35.31' Inflow=0.98 cfs 0.086 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' Outflow=0.98 cfs 0.086 af

Pond 14P: Yard Drain #4 Peak Elev=36.66' Inflow=0.07 cfs 0.005 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.07 cfs 0.005 af

Pond 15P: Subsurface Stone Infiltration Peak Elev=29.07' Storage=0.002 af Inflow=0.07 cfs 0.006 af
Discarded=0.01 cfs 0.006 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.006 af

Pond 16P: Subsurface Stone Infiltration Peak Elev=32.44' Storage=0.002 af Inflow=0.07 cfs 0.005 af
Discarded=0.02 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.005 af

Pond 17P: Deep Sump CB #4 Peak Elev=29.99' Inflow=0.46 cfs 0.038 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.46 cfs 0.038 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.53' Inflow=0.23 cfs 0.019 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.23 cfs 0.019 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.20' Inflow=0.36 cfs 0.030 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.36 cfs 0.030 af

Pond 20P: Contech Jellyfish Peak Elev=29.41' Inflow=0.69 cfs 0.082 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=0.69 cfs 0.082 af

Pond 21P: Wetland Ponding Area Peak Elev=30.42' Storage=3,584 cf Inflow=0.63 cfs 0.106 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.05 cfs 0.026 af Outflow=0.05 cfs 0.026 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.464 af Average Runoff Depth = 1.91"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=13,938 sf 18.32% Impervious Runoff Depth>2.24"
Flow Length=48' Tc=6.6 min CN=67 Runoff=0.80 cfs 0.060 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>4.14"
Flow Length=126' Tc=12.0 min CN=87 Runoff=1.32 cfs 0.117 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=69 Runoff=0.53 cfs 0.039 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>3.52"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.40 cfs 0.037 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 73.74% Impervious Runoff Depth>4.25"
Tc=6.0 min CN=88 Runoff=0.75 cfs 0.056 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% Impervious Runoff Depth>4.46"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.17 cfs 0.089 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 83.39% Impervious Runoff Depth>4.79"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.15 cfs 0.089 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.01% Impervious Runoff Depth>4.46"
Flow Length=86' Tc=11.2 min CN=90 Runoff=1.28 cfs 0.113 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>3.14"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.25 cfs 0.018 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>1.82"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.12 cfs 0.011 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>2.24"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.16 cfs 0.012 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>3.73"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.13 cfs 0.010 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

Subcatchment14S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

Subcatchment15S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.013 af

Subcatchment17S: Subcatchment17S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.046 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>1.98"
Flow Length=137' Tc=16.7 min CN=64 Runoff=0.87 cfs 0.089 af

Reach 1R: Swale Avg. Flow Depth=0.76' Max Vel=0.73 fps Inflow=1.32 cfs 0.117 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=1.25 cfs 0.117 af

Reach AP1: Wooded Depression Inflow=0.87 cfs 0.089 af
Outflow=0.87 cfs 0.089 af

Reach AP2: Shoulder of Road Inflow=1.25 cfs 0.117 af
Outflow=1.25 cfs 0.117 af

Reach AP3: Detention Pond Inflow=0.53 cfs 0.039 af
Outflow=0.53 cfs 0.039 af

Reach AP4: Rear of Site Inflow=0.40 cfs 0.037 af
Outflow=0.40 cfs 0.037 af

Reach AP5: Across Street Inflow=1.05 cfs 0.206 af
Outflow=1.05 cfs 0.206 af

Pond 1P: Bioretention #1 Peak Elev=35.60' Storage=155 cf Inflow=0.75 cfs 0.056 af
Primary=0.73 cfs 0.054 af Secondary=0.00 cfs 0.000 af Outflow=0.73 cfs 0.054 af

Pond 2P: Bioretention #2 Peak Elev=36.19' Storage=303 cf Inflow=1.17 cfs 0.089 af
Primary=1.03 cfs 0.087 af Secondary=0.00 cfs 0.000 af Outflow=1.03 cfs 0.087 af

Pond 3P: Catch Basin #1 Peak Elev=35.87' Inflow=1.50 cfs 0.132 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=1.50 cfs 0.132 af

Pond 4P: Catch Basin #2 Peak Elev=35.75' Inflow=2.93 cfs 0.254 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=2.93 cfs 0.254 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=35.72' Storage=0.094 af Inflow=2.93 cfs 0.254 af
Discarded=0.67 cfs 0.251 af Primary=0.00 cfs 0.000 af Outflow=0.68 cfs 0.251 af

Pond 6P: Drain Manhole #1 Peak Elev=34.96' Inflow=1.76 cfs 0.141 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=1.76 cfs 0.141 af

Pond 7P: Drain Manhole #2 Peak Elev=34.71' Inflow=0.00 cfs 0.000 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=34.73' Storage=0.041 af Inflow=1.76 cfs 0.141 af
Primary=0.50 cfs 0.140 af Secondary=0.00 cfs 0.000 af Outflow=0.50 cfs 0.140 af

Pond 9P: Drain Manhole #3 Peak Elev=32.03' Inflow=0.50 cfs 0.140 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=0.50 cfs 0.140 af

Pond 10P: Drain Manhole #4 Peak Elev=31.53' Inflow=0.50 cfs 0.140 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.50 cfs 0.140 af

Pond 11P: Yard Drain #1 Peak Elev=36.14' Inflow=0.25 cfs 0.018 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.25 cfs 0.018 af

Pond 12P: Yard Drain #2 Peak Elev=39.04' Storage=2 cf Inflow=0.12 cfs 0.011 af
Primary=0.12 cfs 0.011 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.011 af

Pond 13P: Yard Drain #3 Peak Elev=35.76' Inflow=1.76 cfs 0.155 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' Outflow=1.76 cfs 0.155 af

Pond 14P: Yard Drain #4 Peak Elev=36.72' Inflow=0.13 cfs 0.010 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.13 cfs 0.010 af

Pond 15P: Subsurface Stone Infiltration Peak Elev=30.07' Storage=0.004 af Inflow=0.11 cfs 0.009 af
Discarded=0.02 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.009 af

Pond 16P: Subsurface Stone Infiltration Peak Elev=32.81' Storage=0.003 af Inflow=0.10 cfs 0.008 af
Discarded=0.03 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.008 af

Pond 17P: Deep Sump CB #4 Peak Elev=30.09' Inflow=0.70 cfs 0.059 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.70 cfs 0.059 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.64' Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.35 cfs 0.029 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.31' Inflow=0.55 cfs 0.046 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.55 cfs 0.046 af

Pond 20P: Contech Jellyfish Peak Elev=29.53' Inflow=1.05 cfs 0.206 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=1.05 cfs 0.206 af

Pond 21P: Wetland Ponding Area Peak Elev=30.65' Storage=4,209 cf Inflow=1.19 cfs 0.200 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=0.44 cfs 0.119 af Outflow=0.44 cfs 0.119 af

Total Runoff Area = 2.921 ac Runoff Volume = 0.846 af Average Runoff Depth = 3.48"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.060 af, Depth> 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
586	98	Paved roads w/curbs & sewers, HSG B
1,864	55	Woods, Good, HSG B
3,396	61	>75% Grass cover, Good, HSG B
611	80	>75% Grass cover, Good, HSG D
541	77	Woods, Good, HSG D
3,408	55	Woods, Good, HSG B
1,564	61	>75% Grass cover, Good, HSG B
1,600	98	Roofs, HSG B
368	98	Roofs, HSG D
13,938	67	Weighted Average
11,384		81.68% Pervious Area
2,554		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	32	0.0625	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	16	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
6.6	48	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.32 cfs @ 12.16 hrs, Volume= 0.117 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	4,812	80	>75% Grass cover, Good, HSG D
	319	98	Paved roads w/curbs & sewers, HSG D
	2,823	98	Roofs, HSG D
*	186	98	Ledge Outcrop, HSG D
	3,901	80	>75% Grass cover, Good, HSG D
	2,732	98	Roofs, HSG D
	14,773	87	Weighted Average
	8,713		58.98% Pervious Area
	6,060		41.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	38	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	17	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.1	71	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
12.0	126	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
6,481	61	>75% Grass cover, Good, HSG B
143	55	Woods, Good, HSG B
1,812	98	Roofs, HSG B
8,436	69	Weighted Average
6,624		78.52% Pervious Area
1,812		21.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.40 cfs @ 12.18 hrs, Volume= 0.037 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
*	2,343	98	Ledge Outcrop, HSG D
	73	77	Woods, Good, HSG D
	917	55	Woods, Good, HSG B
	1,386	61	>75% Grass cover, Good, HSG B
	710	98	Roofs, HSG B
	5,429	81	Weighted Average
	2,376		43.76% Pervious Area
	3,053		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.2100	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.8	7	0.2860	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
12.2	42	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
13.2	87	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.056 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,824	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,268	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	88	Weighted Average
1,824		26.26% Pervious Area
5,122		73.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
687	61	>75% Grass cover, Good, HSG B
1,334	98	Paved parking, HSG B
2,813	98	Paved parking, HSG D
3,196	80	>75% Grass cover, Good, HSG D
2,382	98	Roofs, HSG D
10,412	90	Weighted Average
3,883		37.29% Pervious Area
6,529		62.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	20	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	40	0.0100	0.93		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
2.4	60	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.089 af, Depth> 4.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,935	98	Roofs, HSG B
2,857	98	Paved parking, HSG B
1,047	61	>75% Grass cover, Good, HSG B
857	98	Roofs, HSG D
2,481	98	Paved parking, HSG D
572	80	>75% Grass cover, Good, HSG D
9,749	93	Weighted Average
1,619		16.61% Pervious Area
8,130		83.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	40	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.0	60	0.0100	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.3	35	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	135	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 1.28 cfs @ 12.15 hrs, Volume= 0.113 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

	Area (sf)	CN	Description
	1,788	61	>75% Grass cover, Good, HSG B
	4,412	98	Paved parking, HSG B
	1,219	98	Roofs, HSG B
	2,194	80	>75% Grass cover, Good, HSG D
*	1,608	98	Ledge Outcrop, HSG D
	39	98	Paved parking, HSG D
	2,016	98	Roofs, HSG D
	13,276	90	Weighted Average
	3,982		29.99% Pervious Area
	9,294		70.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	26	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
11.2	86	Total			

Summary for Subcatchment 9S: Subcatchment 15S

Runoff = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,238	61	>75% Grass cover, Good, HSG B
1,015	80	>75% Grass cover, Good, HSG D
72	98	Roofs, HSG B
747	98	Roofs, HSG D
3,072	77	Weighted Average
2,253		73.34% Pervious Area
819		26.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	67	0.0160	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 10S: Subcatchment 16S

Runoff = 0.12 cfs @ 12.19 hrs, Volume= 0.011 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,918	61	>75% Grass cover, Good, HSG B
237	80	>75% Grass cover, Good, HSG D
3,155	62	Weighted Average
3,155		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	83	0.0060	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 11S: Yard Drain #3

Runoff = 0.16 cfs @ 12.11 hrs, Volume= 0.012 af, Depth> 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,421	61	>75% Grass cover, Good, HSG B
460	98	Roofs, HSG B
2,881	67	Weighted Average
2,421		84.03% Pervious Area
460		15.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	60	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 12S: Subcatchment 18S

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
94	61	>75% Grass cover, Good, HSG B
904	80	>75% Grass cover, Good, HSG D
11	98	Roofs, HSG B
332	98	Roofs, HSG D
1,341	83	Weighted Average
998		74.42% Pervious Area
343		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	37	0.0190	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.2	37	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 13S: Back of Units 1 and 2

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
918	98	Roofs, HSG B
918		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 14S: Back of Unit 3

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
310	98	Roofs, HSG D
310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 15S: East Side of Unit 4

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
500	98	Roofs, HSG B
2	98	Roofs, HSG D
502	98	Weighted Average
502		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 16S: Subcatchment 16S

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
1,247	98	Paved roads w/curbs & sewers, HSG B
1,247		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
2,230	98	Paved parking, HSG B
576	98	Paved parking, HSG D
2,806	98	Weighted Average
2,806		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 18S: Subcatchment 18S

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af, Depth> 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
4,475	98	Paved parking, HSG B
4,475		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 0.87 cfs @ 12.25 hrs, Volume= 0.089 af, Depth> 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.61"

Area (sf)	CN	Description
4,147	98	Paved parking, HSG B
4,462	61	>75% Grass cover, Good, HSG B
102	98	Roofs, HSG B
14,877	55	Woods, Good, HSG B
23,588	64	Weighted Average
19,339		81.99% Pervious Area
4,249		18.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

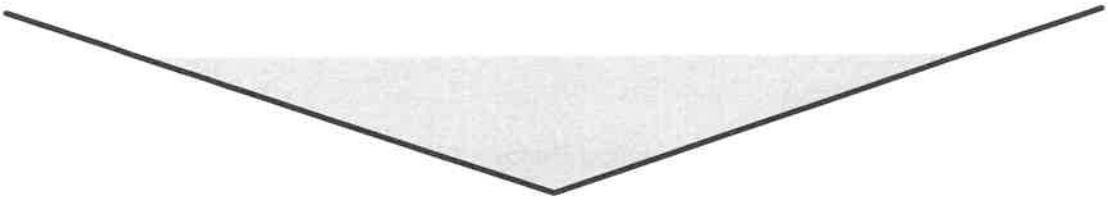
Summary for Reach 1R: Swale

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 4.14" for 10 Yr 24 Hr(+15%) event
Inflow = 1.32 cfs @ 12.16 hrs, Volume= 0.117 af
Outflow = 1.25 cfs @ 12.21 hrs, Volume= 0.117 af, Atten= 5%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.73 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 7.7 min

Peak Storage= 240 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 4.53'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 2.65 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'



Summary for Reach AP1: Wooded Depression

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.542 ac, 18.01% Impervious, Inflow Depth > 1.98" for 10 Yr 24 Hr(+15%) event
Inflow = 0.87 cfs @ 12.25 hrs, Volume= 0.089 af
Outflow = 0.87 cfs @ 12.25 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 4.13" for 10 Yr 24 Hr(+15%) event
Inflow = 1.25 cfs @ 12.21 hrs, Volume= 0.117 af
Outflow = 1.25 cfs @ 12.21 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.720 ac, 49.10% Impervious, Inflow Depth > 0.27" for 10 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af
Outflow = 0.53 cfs @ 12.10 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.125 ac, 56.24% Impervious, Inflow Depth > 3.52" for 10 Yr 24 Hr(+15%) event
Inflow = 0.40 cfs @ 12.18 hrs, Volume= 0.037 af
Outflow = 0.40 cfs @ 12.18 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Across Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 12.64" for 10 Yr 24 Hr(+15%) event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Bioretention #1

Inflow Area = 0.159 ac, 73.74% Impervious, Inflow Depth > 4.25" for 10 Yr 24 Hr(+15%) event
Inflow = 0.75 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.73 cfs @ 12.11 hrs, Volume= 0.054 af, Atten= 3%, Lag= 1.1 min
Primary = 0.73 cfs @ 12.11 hrs, Volume= 0.054 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.60' @ 12.11 hrs Surf.Area= 315 sf Storage= 155 cf

Plug-Flow detention time= 39.0 min calculated for 0.054 af (96% of inflow)
Center-of-Mass det. time= 15.9 min (809.2 - 793.3)

Volume	Invert	Avail.Storage	Storage Description
#1	33.99'	694 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.99	315	0.0	0	0
34.00	315	40.0	1	1
34.99	315	40.0	125	126
35.00	315	15.0	0	126
36.49	315	15.0	70	197
36.50	315	100.0	3	200
37.00	484	100.0	200	400
37.50	668	100.0	288	688
37.51	668	100.0	7	694

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.30'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	37.50'	**31.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.72 cfs @ 12.11 hrs HW=35.58' TW=34.94' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.72 cfs of 1.00 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.72 cfs @ 3.68 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.99' TW=28.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

Inflow Area = 0.239 ac, 62.71% Impervious, Inflow Depth > 4.46" for 10 Yr 24 Hr(+15%) event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.089 af
Outflow = 1.03 cfs @ 12.13 hrs, Volume= 0.087 af, Atten= 12%, Lag= 2.7 min
Primary = 1.03 cfs @ 12.13 hrs, Volume= 0.087 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.19' @ 12.13 hrs Surf.Area= 600 sf Storage= 303 cf

Plug-Flow detention time= 24.2 min calculated for 0.087 af (98% of inflow)
Center-of-Mass det. time= 12.3 min (798.7 - 786.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	1,249 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.49	600	0.0	0	0
34.50	600	40.0	2	2
35.49	600	40.0	238	240
35.50	600	15.0	1	241
36.99	600	15.0	134	375
37.00	600	100.0	6	381
38.00	1,113	100.0	857	1,237
38.01	1,113	100.0	11	1,249

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	38.00'	**13.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.02 cfs @ 12.13 hrs HW=36.15' TW=34.94' (Dynamic Tailwater)
└1=**Culvert** (Passes 1.02 cfs of 1.46 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 1.02 cfs @ 5.17 fps)
  └3=**Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.49' TW=0.00' (Dynamic Tailwater)
└4=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Catch Basin #1

Inflow Area = 0.375 ac, 61.86% Impervious, Inflow Depth > 4.21" for 10 Yr 24 Hr(+15%) event
Inflow = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af
Outflow = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.0 min
Primary = 1.50 cfs @ 12.15 hrs, Volume= 0.132 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.87' @ 12.13 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**15.0" Round Culvert** L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.00' / 34.75' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.49 cfs @ 12.15 hrs HW=35.86' TW=35.61' (Dynamic Tailwater)
└1=**Culvert** (Outlet Controls 1.49 cfs @ 2.33 fps)

Summary for Pond 4P: Catch Basin #2

Inflow Area = 0.768 ac, 56.90% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr(+15%) event
Inflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af
Outflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.75' @ 12.55 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.30' / 34.10' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.88 cfs @ 12.11 hrs HW=35.38' TW=34.39' (Dynamic Tailwater)
└1=**Culvert** (Barrel Controls 2.88 cfs @ 3.42 fps)

Summary for Pond 5P: Concrete Galley 8x14 INFILTRATION

Inflow Area = 0.768 ac, 56.90% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr(+15%) event
Inflow = 2.93 cfs @ 12.11 hrs, Volume= 0.254 af
Outflow = 0.68 cfs @ 12.57 hrs, Volume= 0.251 af, Atten= 77%, Lag= 27.6 min
Discarded = 0.67 cfs @ 12.57 hrs, Volume= 0.251 af
Primary = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.72' @ 12.57 hrs Surf.Area= 0.071 ac Storage= 0.094 af

Plug-Flow detention time= 79.0 min calculated for 0.251 af (99% of inflow)
Center-of-Mass det. time= 71.3 min (865.5 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.90'	0.000 af	**24.00'W x 42.00'L x 3.67'H Field A** 0.085 af Overall - 0.085 af Embedded = 0.000 af x 40.0% Voids
#2A	33.90'	0.062 af	**Shea Leaching Chamber 8x14x3.7** x 9 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 9 Chambers in 3 Rows
#3	30.90'	0.035 af	**28.00'W x 46.00'L x 3.00'H Prismatoid** 0.089 af Overall x 40.0% Voids
#4	30.90'	0.007 af	**8.00'W x 32.00'L x 3.00'H Prismatoid** 0.018 af Overall x 40.0% Voids
#5	33.90'	0.010 af	**2.00'W x 148.00'L x 3.67'H Prismatoid** 0.025 af Overall x 40.0% Voids
#6B	33.90'	0.000 af	**8.00'W x 28.00'L x 3.67'H Field B** 0.019 af Overall - 0.019 af Embedded = 0.000 af x 40.0% Voids
#7B	33.90'	0.014 af	**Shea Leaching Chamber 8x14x3.7** x 2 Inside #6 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf
		0.128 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.90'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.82' Phase-In= 0.01'
#2	Primary	35.70'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.30' S= 0.0233 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	37.56'	**160.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.67 cfs @ 12.57 hrs HW=35.72' (Free Discharge)
└**1=Exfiltration** (Controls 0.67 cfs)

Primary OutFlow Max=0.00 cfs @ 12.57 hrs HW=35.72' TW=34.69' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 0.00 cfs @ 0.39 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drain Manhole #1

Inflow Area = 0.398 ac, 67.12% Impervious, Inflow Depth > 4.25" for 10 Yr 24 Hr(+15%) event
Inflow = 1.76 cfs @ 12.12 hrs, Volume= 0.141 af
Outflow = 1.76 cfs @ 12.12 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min
Primary = 1.76 cfs @ 12.12 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 34.96' @ 12.12 hrs
Flood Elev= 38.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.07'	**12.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.71 cfs @ 12.12 hrs HW=34.94' TW=33.93' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.71 cfs @ 3.16 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area = 0.768 ac, 56.90% Impervious, Inflow Depth = 0.00" for 10 Yr 24 Hr(+15%) event
Inflow = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.57 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 34.71' @ 12.54 hrs
Flood Elev= 39.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 34.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.57 hrs HW=34.69' TW=34.71' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 8P: Concrete Galley 8x14 STORAGE ONLY

[92] Warning: Device #4 is above defined storage
[80] Warning: Exceeded Pond 7P by 0.41' @ 12.70 hrs (0.46 cfs 0.010 af)

Inflow Area =	1.167 ac,	60.39% Impervious,	Inflow Depth >	1.45"	for 10 Yr 24 Hr(+15%) event
Inflow =	1.76 cfs @	12.12 hrs,	Volume=	0.141 af	
Outflow =	0.50 cfs @	12.50 hrs,	Volume=	0.140 af,	Atten= 72%, Lag= 22.8 min
Primary =	0.50 cfs @	12.50 hrs,	Volume=	0.140 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 34.73' @ 12.50 hrs Surf.Area= 0.055 ac Storage= 0.041 af

Plug-Flow detention time= 38.0 min calculated for 0.140 af (99% of inflow)
Center-of-Mass det. time= 32.6 min (835.3 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.30'	0.000 af	**16.00'W x 56.00'L x 3.67'H Field A** 0.075 af Overall - 0.075 af Embedded = 0.000 af x 40.0% Voids
#2A	33.30'	0.055 af	**Shea Leaching Chamber 8x14x3.7** x 8 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 8 Chambers in 2 Rows
#3	32.30'	0.011 af	**20.00'W x 60.00'L x 1.00'H Prismatoid** 0.028 af Overall x 40.0% Voids
#4	33.30'	0.010 af	**2.00'W x 144.00'L x 3.67'H Prismatoid** 0.024 af Overall x 40.0% Voids
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	**4.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.27' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	32.30'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	34.70'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.70' / 34.67' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#4	Secondary	39.80'	**160.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.50 cfs @ 12.50 hrs HW=34.73' TW=32.03' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.50 cfs @ 5.72 fps)
└─**2=Orifice/Grate** (Passes 0.50 cfs of 0.63 cfs potential flow)
└─**3=Culvert** (Barrel Controls 0.00 cfs @ 0.60 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=31.60' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: Drain Manhole #3

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 1.44" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af
Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.03' @ 12.50 hrs
Flood Elev= 39.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**12.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.60' / 31.10' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.50 cfs @ 12.50 hrs HW=32.03' TW=31.53' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.50 cfs @ 2.30 fps)

Summary for Pond 10P: Drain Manhole #4

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 1.44" for 10 Yr 24 Hr(+15%) event
Inflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af
Outflow = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 0.50 cfs @ 12.50 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.53' @ 12.50 hrs
Flood Elev= 36.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.10'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.10' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.50 cfs @ 12.50 hrs HW=31.53' TW=30.20' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.50 cfs @ 2.28 fps)

Summary for Pond 11P: Yard Drain #1

Inflow Area = 0.071 ac, 26.66% Impervious, Inflow Depth > 3.14" for 10 Yr 24 Hr(+15%) event
Inflow = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af
Outflow = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.11 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.14' @ 12.12 hrs
Flood Elev= 39.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.80'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.80' / 35.58' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.24 cfs @ 12.11 hrs HW=36.13' TW=35.85' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.24 cfs @ 1.98 fps)

Summary for Pond 12P: Yard Drain #2

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth > 1.82" for 10 Yr 24 Hr(+15%) event
Inflow = 0.12 cfs @ 12.19 hrs, Volume= 0.011 af
Outflow = 0.12 cfs @ 12.20 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.4 min
Primary = 0.12 cfs @ 12.20 hrs, Volume= 0.011 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 39.04' @ 12.20 hrs Surf.Area= 107 sf Storage= 2 cf

Plug-Flow detention time= 0.2 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (866.4 - 866.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	1,358 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	5	0	0
40.01	2,685	1,358	1,358

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**8.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.00' / 35.33' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	39.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	40.00'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=0.12 cfs @ 12.20 hrs HW=39.04' TW=35.55' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.12 cfs of 2.18 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.64 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=34.30' (Dynamic Tailwater)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: Yard Drain #3

Inflow Area = 0.514 ac, 47.23% Impervious, Inflow Depth > 3.62" for 10 Yr 24 Hr(+15%) event
Inflow = 1.76 cfs @ 12.14 hrs, Volume= 0.155 af
Outflow = 1.76 cfs @ 12.14 hrs, Volume= 0.155 af, Atten= 0%, Lag= 0.0 min
Primary = 1.76 cfs @ 12.14 hrs, Volume= 0.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 35.76' @ 12.53 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.74 cfs @ 12.14 hrs HW=35.61' TW=35.36' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.74 cfs @ 2.38 fps)

Summary for Pond 14P: Yard Drain #4

Inflow Area = 0.031 ac, 25.58% Impervious, Inflow Depth > 3.73" for 10 Yr 24 Hr(+15%) event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.09 hrs, Volume= 0.010 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.72' @ 12.09 hrs
Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=36.72' TW=35.37' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.13 cfs @ 1.26 fps)

Summary for Pond 15P: Subsurface Stone Infiltration

Inflow Area = 0.021 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.02 cfs @ 12.58 hrs, Volume= 0.009 af, Atten= 85%, Lag= 29.4 min
Discarded = 0.02 cfs @ 12.58 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.07' @ 12.58 hrs Surf.Area= 0.004 ac Storage= 0.004 af

Plug-Flow detention time= 111.7 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 111.0 min (856.8 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	0.007 af	**4.00'W x 40.00'L x 4.51'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.50'	**0.650 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 27.08' Phase-In= 0.01'
#2	Primary	32.00'	**88.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.02 cfs @ 12.58 hrs HW=30.07' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.50' TW=28.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Subsurface Stone Infiltration

Inflow Area = 0.019 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.03 cfs @ 12.44 hrs, Volume= 0.008 af, Atten= 73%, Lag= 21.3 min
Discarded = 0.03 cfs @ 12.44 hrs, Volume= 0.008 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.81' @ 12.44 hrs Surf.Area= 0.006 ac Storage= 0.003 af

Plug-Flow detention time= 51.1 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 50.1 min (795.8 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	0.004 af	**8.00'W x 35.00'L x 1.71'H Prismatoid** 0.011 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 31.72' Phase-In= 0.01'
#2	Primary	33.50'	**86.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.44 hrs HW=32.81' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.80' TW=28.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: Deep Sump CB #4

Inflow Area = 0.131 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 0.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.09' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.60'	**12.0" Round Culvert** L= 67.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.60' / 29.20' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=30.08' TW=29.52' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.69 cfs @ 2.66 fps)

Summary for Pond 18P: Deep Sump CB #5

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.64' @ 12.09 hrs
Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.25'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.25' / 29.20' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=29.63' TW=29.52' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.34 cfs @ 1.84 fps)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr(+15%) event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.55 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.31' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.54 cfs @ 12.09 hrs HW=30.30' TW=30.08' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.54 cfs @ 1.99 fps)

Summary for Pond 20P: Contech Jellyfish

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 12.64" for 10 Yr 24 Hr(+15%) event
Inflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af
Outflow = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min
Primary = 1.05 cfs @ 12.09 hrs, Volume= 0.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.53' @ 12.09 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.95'	**15.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 28.70' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.09 hrs HW=29.52' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.02 cfs @ 2.76 fps)

Summary for Pond 21P: Wetland Ponding Area

Inflow Area = 1.527 ac, 52.60% Impervious, Inflow Depth > 1.57" for 10 Yr 24 Hr(+15%) event
Inflow = 1.19 cfs @ 12.11 hrs, Volume= 0.200 af
Outflow = 0.44 cfs @ 13.61 hrs, Volume= 0.119 af, Atten= 63%, Lag= 90.1 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.44 cfs @ 13.61 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.65' @ 13.61 hrs Surf.Area= 2,746 sf Storage= 4,209 cf

Plug-Flow detention time= 216.1 min calculated for 0.119 af (59% of inflow)
Center-of-Mass det. time= 112.2 min (951.6 - 839.4)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	7,242 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,174	307.0	1,688	2,602	5,152
31.00	3,074	298.0	2,611	5,213	5,680
31.50	4,916	435.0	1,980	7,193	13,674
31.51	4,916	435.0	49	7,242	13,678

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Tertiary	30.30'	**15.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.30' / 30.20' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.44 cfs @ 13.61 hrs HW=30.65' TW=29.34' (Dynamic Tailwater)
↑**3=Culvert** (Barrel Controls 0.44 cfs @ 2.30 fps)

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=13,938 sf 18.32% Impervious Runoff Depth>3.40"
Flow Length=48' Tc=6.6 min CN=67 Runoff=1.23 cfs 0.091 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>5.59"
Flow Length=126' Tc=12.0 min CN=87 Runoff=1.75 cfs 0.158 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>3.61"
Tc=6.0 min CN=69 Runoff=0.80 cfs 0.058 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>4.91"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.56 cfs 0.051 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 73.74% Impervious Runoff Depth>5.71"
Tc=6.0 min CN=88 Runoff=1.00 cfs 0.076 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% Impervious Runoff Depth>5.94"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.53 cfs 0.118 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 83.39% Impervious Runoff Depth>6.29"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.48 cfs 0.117 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.01% Impervious Runoff Depth>5.93"
Flow Length=86' Tc=11.2 min CN=90 Runoff=1.68 cfs 0.151 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>4.47"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.35 cfs 0.026 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>2.88"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.19 cfs 0.017 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>3.40"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.25 cfs 0.019 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>5.14"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.18 cfs 0.013 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

Subcatchment14S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

Subcatchment15S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af

Subcatchment17S: Subcatchment17S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.44 cfs 0.037 af

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.70 cfs 0.059 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>3.08"
Flow Length=137' Tc=16.7 min CN=64 Runoff=1.40 cfs 0.139 af

Reach 1R: Swale Avg. Flow Depth=0.84' Max Vel=0.79 fps Inflow=1.75 cfs 0.158 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=1.68 cfs 0.158 af

Reach AP1: Wooded Depression Inflow=1.40 cfs 0.139 af
Outflow=1.40 cfs 0.139 af

Reach AP2: Shoulder of Road Inflow=1.68 cfs 0.158 af
Outflow=1.68 cfs 0.158 af

Reach AP3: Detention Pond Inflow=0.80 cfs 0.058 af
Outflow=0.80 cfs 0.058 af

Reach AP4: Rear of Site Inflow=0.56 cfs 0.051 af
Outflow=0.56 cfs 0.051 af

Reach AP5: Across Street Inflow=1.50 cfs 0.343 af
Outflow=1.50 cfs 0.343 af

Pond 1P: Bioretention#1 Peak Elev=36.08' Storage=178 cf Inflow=1.00 cfs 0.076 af
Primary=0.93 cfs 0.073 af Secondary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.073 af

Pond 2P: Bioretention#2 Peak Elev=37.00' Storage=382 cf Inflow=1.53 cfs 0.118 af
Primary=1.30 cfs 0.116 af Secondary=0.00 cfs 0.000 af Outflow=1.30 cfs 0.116 af

Pond 3P: Catch Basin #1 Peak Elev=36.58' Inflow=1.99 cfs 0.177 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=1.99 cfs 0.177 af

Pond 4P: Catch Basin #2 Peak Elev=36.51' Inflow=3.93 cfs 0.343 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=3.93 cfs 0.343 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=36.33' Storage=0.110 af Inflow=3.93 cfs 0.343 af
Discarded=0.76 cfs 0.306 af Primary=1.10 cfs 0.033 af Outflow=1.86 cfs 0.339 af

Pond 6P: Drain Manhole #1 Peak Elev=35.66' Inflow=2.22 cfs 0.190 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=2.22 cfs 0.190 af

Pond 7P: Drain Manhole #2 Peak Elev=35.71' Inflow=1.10 cfs 0.033 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.10 cfs 0.033 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=35.60' Storage=0.059 af Inflow=2.22 cfs 0.223 af
Primary=1.59 cfs 0.222 af Secondary=0.00 cfs 0.000 af Outflow=1.59 cfs 0.222 af

Pond 9P: Drain Manhole #3 Peak Elev=32.48' Inflow=1.59 cfs 0.222 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=1.59 cfs 0.222 af

Pond 10P: Drain Manhole #4 Peak Elev=31.95' Inflow=1.59 cfs 0.222 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.59 cfs 0.222 af

Pond 11P: Yard Drain #1 Peak Elev=36.67' Inflow=0.35 cfs 0.026 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.35 cfs 0.026 af

Pond 12P: Yard Drain #2 Peak Elev=39.05' Storage=4 cf Inflow=0.19 cfs 0.017 af
Primary=0.19 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.017 af

Pond 13P: Yard Drain #3 Peak Elev=36.62' Inflow=2.39 cfs 0.213 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' Outflow=2.39 cfs 0.213 af

Pond 14P: Yard Drain #4 Peak Elev=36.76' Inflow=0.18 cfs 0.013 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.18 cfs 0.013 af

Pond 15P: Subsurface Stone Infiltration Peak Elev=30.87' Storage=0.005 af Inflow=0.14 cfs 0.012 af
Discarded=0.02 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.012 af

Pond 16P: Subsurface Stone Infiltration Peak Elev=33.11' Storage=0.003 af Inflow=0.13 cfs 0.011 af
Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

Pond 17P: Deep Sump CB #4 Peak Elev=30.16' Inflow=0.90 cfs 0.075 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=0.90 cfs 0.075 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.72' Inflow=0.44 cfs 0.037 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.44 cfs 0.037 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.39' Inflow=0.70 cfs 0.059 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.70 cfs 0.059 af

Pond 20P: Contech Jellyfish Peak Elev=29.66' Inflow=1.50 cfs 0.343 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=1.50 cfs 0.343 af

Pond 21P: Wetland Ponding Area Peak Elev=30.96' Storage=5,086 cf Inflow=2.00 cfs 0.312 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=1.35 cfs 0.230 af Outflow=1.35 cfs 0.230 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.169 af Average Runoff Depth = 4.80"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=13,938 sf 18.32% Impervious Runoff Depth>4.56"
Flow Length=48' Tc=6.6 min CN=67 Runoff=1.65 cfs 0.122 af

Subcatchment2S: Subcatchment2S Runoff Area=14,773 sf 41.02% Impervious Runoff Depth>6.95"
Flow Length=126' Tc=12.0 min CN=87 Runoff=2.16 cfs 0.197 af

Subcatchment3S: Subcatchment3S Runoff Area=8,436 sf 21.48% Impervious Runoff Depth>4.80"
Tc=6.0 min CN=69 Runoff=1.07 cfs 0.077 af

Subcatchment4S: Subcatchment4S Runoff Area=5,429 sf 56.24% Impervious Runoff Depth>6.23"
Flow Length=87' Tc=13.2 min CN=81 Runoff=0.70 cfs 0.065 af

Subcatchment5S: Subcatchment5S Runoff Area=6,946 sf 73.74% Impervious Runoff Depth>7.08"
Tc=6.0 min CN=88 Runoff=1.22 cfs 0.094 af

Subcatchment6S: Subcatchment6S Runoff Area=10,412 sf 62.71% Impervious Runoff Depth>7.32"
Flow Length=60' Tc=6.0 min CN=90 Runoff=1.87 cfs 0.146 af

Subcatchment7S: Subcatchment7S Runoff Area=9,749 sf 83.39% Impervious Runoff Depth>7.68"
Flow Length=135' Tc=6.0 min CN=93 Runoff=1.79 cfs 0.143 af

Subcatchment8S: Subcatchment8S Runoff Area=13,276 sf 70.01% Impervious Runoff Depth>7.32"
Flow Length=86' Tc=11.2 min CN=90 Runoff=2.05 cfs 0.186 af

Subcatchment9S: Subcatchment15S Runoff Area=3,072 sf 26.66% Impervious Runoff Depth>5.76"
Flow Length=67' Slope=0.0160 '/' Tc=7.2 min CN=77 Runoff=0.45 cfs 0.034 af

Subcatchment10S: Subcatchment16S Runoff Area=3,155 sf 0.00% Impervious Runoff Depth>3.96"
Flow Length=83' Slope=0.0060 '/' Tc=12.7 min CN=62 Runoff=0.27 cfs 0.024 af

Subcatchment11S: Yard Drain #3 Runoff Area=2,881 sf 15.97% Impervious Runoff Depth>4.56"
Flow Length=60' Slope=0.0150 '/' Tc=6.8 min CN=67 Runoff=0.34 cfs 0.025 af

Subcatchment12S: Subcatchment18S Runoff Area=1,341 sf 25.58% Impervious Runoff Depth>6.48"
Flow Length=37' Slope=0.0190 '/' Tc=6.0 min CN=83 Runoff=0.22 cfs 0.017 af

Subcatchment13S: Back of Units 1 and 2 Runoff Area=918 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.015 af

Subcatchment14S: Back of Unit 3 Runoff Area=310 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

Subcatchment15S: East Side of Unit 4 Runoff Area=502 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.008 af

Subcatchment16S: Subcatchment16S Runoff Area=1,247 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.23 cfs 0.020 af

Subcatchment17S: Subcatchment17S Runoff Area=2,806 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.53 cfs 0.044 af

Subcatchment18S: Subcatchment18S Runoff Area=4,475 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.84 cfs 0.071 af

Subcatchment19S: Subcatchment19S Runoff Area=23,588 sf 18.01% Impervious Runoff Depth>4.19"
Flow Length=137' Tc=16.7 min CN=64 Runoff=1.92 cfs 0.189 af

Reach 1R: Swale Avg. Flow Depth=0.91' Max Vel=0.83 fps Inflow=2.16 cfs 0.197 af
n=0.150 L=140.0' S=0.0214 '/' Capacity=2.65 cfs Outflow=2.07 cfs 0.196 af

Reach AP1: Wooded Depression Inflow=1.92 cfs 0.189 af
Outflow=1.92 cfs 0.189 af

Reach AP2: Shoulder of Road Inflow=2.07 cfs 0.196 af
Outflow=2.07 cfs 0.196 af

Reach AP3: Detention Pond Inflow=1.07 cfs 0.077 af
Outflow=1.07 cfs 0.077 af

Reach AP4: Rear of Site Inflow=0.70 cfs 0.065 af
Outflow=0.70 cfs 0.065 af

Reach AP5: Across Street Inflow=2.40 cfs 0.478 af
Outflow=2.40 cfs 0.478 af

Pond 1P: Bioretention #1 Peak Elev=36.75' Storage=289 cf Inflow=1.22 cfs 0.094 af
Primary=1.06 cfs 0.092 af Secondary=0.00 cfs 0.000 af Outflow=1.06 cfs 0.092 af

Pond 2P: Bioretention #2 Peak Elev=37.27' Storage=561 cf Inflow=1.87 cfs 0.146 af
Primary=1.29 cfs 0.144 af Secondary=0.00 cfs 0.000 af Outflow=1.29 cfs 0.144 af

Pond 3P: Catch Basin #1 Peak Elev=37.51' Inflow=2.44 cfs 0.220 af
15.0" Round Culvert n=0.013 L=47.0' S=0.0053 '/' Outflow=2.44 cfs 0.220 af

Pond 4P: Catch Basin #2 Peak Elev=37.27' Inflow=4.86 cfs 0.429 af
15.0" Round Culvert n=0.013 L=36.0' S=0.0056 '/' Outflow=4.86 cfs 0.429 af

Pond 5P: Concrete Galley 8x14 INFILTRATION Peak Elev=36.86' Storage=0.125 af Inflow=4.86 cfs 0.429 af
Discarded=0.83 cfs 0.353 af Primary=1.90 cfs 0.070 af Outflow=2.70 cfs 0.423 af

Pond 6P: Drain Manhole #1 Peak Elev=36.79' Inflow=2.35 cfs 0.236 af
12.0" Round Culvert n=0.013 L=48.0' S=0.0056 '/' Outflow=2.35 cfs 0.236 af

Pond 7P: Drain Manhole #2 Peak Elev=36.75' Inflow=1.90 cfs 0.070 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=1.90 cfs 0.070 af

Pond 8P: Concrete Galley 8x14 STORAGE Peak Elev=36.26' Storage=0.073 af Inflow=3.62 cfs 0.305 af
Primary=2.10 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=2.10 cfs 0.304 af

Pond 9P: Drain Manhole #3 Peak Elev=32.75' Inflow=2.10 cfs 0.304 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0059 '/' Outflow=2.10 cfs 0.304 af

Pond 10P: Drain Manhole #4 Peak Elev=32.13' Inflow=2.10 cfs 0.304 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=2.10 cfs 0.304 af

Pond 11P: Yard Drain #1 Peak Elev=37.85' Inflow=0.45 cfs 0.034 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0055 '/' Outflow=0.45 cfs 0.034 af

Pond 12P: Yard Drain #2 Peak Elev=39.07' Storage=6 cf Inflow=0.27 cfs 0.024 af
Primary=0.27 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.024 af

Pond 13P: Yard Drain #3 Peak Elev=37.69' Inflow=3.00 cfs 0.269 af
15.0" Round Culvert n=0.013 L=48.0' S=0.0052 '/' Outflow=3.00 cfs 0.269 af

Pond 14P: Yard Drain #4 Peak Elev=37.28' Inflow=0.22 cfs 0.017 af
8.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=0.22 cfs 0.017 af

Pond 15P: Subsurface Stone Infiltration Peak Elev=31.61' Storage=0.006 af Inflow=0.17 cfs 0.015 af
Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

Pond 16P: Subsurface Stone Infiltration Peak Elev=33.39' Storage=0.004 af Inflow=0.15 cfs 0.013 af
Discarded=0.04 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.013 af

Pond 17P: Deep Sump CB #4 Peak Elev=30.24' Inflow=1.07 cfs 0.091 af
12.0" Round Culvert n=0.013 L=67.0' S=0.0060 '/' Outflow=1.07 cfs 0.091 af

Pond 18P: Deep Sump CB #5 Peak Elev=29.90' Inflow=0.53 cfs 0.044 af
12.0" Round Culvert n=0.013 L=3.0' S=0.0167 '/' Outflow=0.53 cfs 0.044 af

Pond 19P: Deep Sump CB #3 Peak Elev=30.47' Inflow=0.84 cfs 0.071 af
12.0" Round Culvert n=0.013 L=40.0' S=0.0050 '/' Outflow=0.84 cfs 0.071 af

Pond 20P: Contech Jellyfish Peak Elev=29.89' Inflow=2.40 cfs 0.478 af
15.0" Round Culvert n=0.013 L=42.0' S=0.0060 '/' Outflow=2.40 cfs 0.478 af

Pond 21P: Wetland Ponding Area Peak Elev=31.18' Storage=5,810 cf Inflow=2.73 cfs 0.426 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Tertiary=2.20 cfs 0.343 af Outflow=2.20 cfs 0.343 af

Total Runoff Area = 2.921 ac Runoff Volume = 1.481 af Average Runoff Depth = 6.08"
53.89% Pervious = 1.574 ac 46.11% Impervious = 1.347 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.65 cfs @ 12.10 hrs, Volume= 0.122 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
586	98	Paved roads w/curbs & sewers, HSG B
1,864	55	Woods, Good, HSG B
3,396	61	>75% Grass cover, Good, HSG B
611	80	>75% Grass cover, Good, HSG D
541	77	Woods, Good, HSG D
3,408	55	Woods, Good, HSG B
1,564	61	>75% Grass cover, Good, HSG B
1,600	98	Roofs, HSG B
368	98	Roofs, HSG D
13,938	67	Weighted Average
11,384		81.68% Pervious Area
2,554		18.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	32	0.0625	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	16	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
6.6	48	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 2.16 cfs @ 12.16 hrs, Volume= 0.197 af, Depth> 6.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	4,812	80	>75% Grass cover, Good, HSG D
	319	98	Paved roads w/curbs & sewers, HSG D
	2,823	98	Roofs, HSG D
*	186	98	Ledge Outcrop, HSG D
	3,901	80	>75% Grass cover, Good, HSG D
	2,732	98	Roofs, HSG D
	14,773	87	Weighted Average
	8,713		58.98% Pervious Area
	6,060		41.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	38	0.1000	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	17	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.1	71	0.0100	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
12.0	126	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
6,481	61	>75% Grass cover, Good, HSG B
143	55	Woods, Good, HSG B
1,812	98	Roofs, HSG B
8,436	69	Weighted Average
6,624		78.52% Pervious Area
1,812		21.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af, Depth> 6.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
*	2,343	98	Ledge Outcrop, HSG D
	73	77	Woods, Good, HSG D
	917	55	Woods, Good, HSG B
	1,386	61	>75% Grass cover, Good, HSG B
	710	98	Roofs, HSG B
	5,429	81	Weighted Average
	2,376		43.76% Pervious Area
	3,053		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	38	0.2100	3.12		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.8	7	0.2860	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
12.2	42	0.0120	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
13.2	87	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 0.094 af, Depth> 7.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,824	61	>75% Grass cover, Good, HSG B
14	98	Paved parking, HSG D
3,268	98	Paved parking, HSG B
1,840	98	Roofs, HSG B
6,946	88	Weighted Average
1,824		26.26% Pervious Area
5,122		73.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 1.87 cfs @ 12.09 hrs, Volume= 0.146 af, Depth> 7.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
687	61	>75% Grass cover, Good, HSG B
1,334	98	Paved parking, HSG B
2,813	98	Paved parking, HSG D
3,196	80	>75% Grass cover, Good, HSG D
2,382	98	Roofs, HSG D
10,412	90	Weighted Average
3,883		37.29% Pervious Area
6,529		62.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	20	0.0500	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.7	40	0.0100	0.93		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
2.4	60	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.143 af, Depth> 7.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,935	98	Roofs, HSG B
2,857	98	Paved parking, HSG B
1,047	61	>75% Grass cover, Good, HSG B
857	98	Roofs, HSG D
2,481	98	Paved parking, HSG D
572	80	>75% Grass cover, Good, HSG D
9,749	93	Weighted Average
1,619		16.61% Pervious Area
8,130		83.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	40	0.0175	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.0	60	0.0100	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
0.3	35	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	135	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 2.05 cfs @ 12.15 hrs, Volume= 0.186 af, Depth> 7.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

	Area (sf)	CN	Description
	1,788	61	>75% Grass cover, Good, HSG B
	4,412	98	Paved parking, HSG B
	1,219	98	Roofs, HSG B
	2,194	80	>75% Grass cover, Good, HSG D
*	1,608	98	Ledge Outcrop, HSG D
	39	98	Paved parking, HSG D
	2,016	98	Roofs, HSG D
	13,276	90	Weighted Average
	3,982		29.99% Pervious Area
	9,294		70.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
5.4	26	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
11.2	86	Total			

Summary for Subcatchment 9S: Subcatchment 15S

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af, Depth> 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,238	61	>75% Grass cover, Good, HSG B
1,015	80	>75% Grass cover, Good, HSG D
72	98	Roofs, HSG B
747	98	Roofs, HSG D
3,072	77	Weighted Average
2,253		73.34% Pervious Area
819		26.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	67	0.0160	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 10S: Subcatchment 16S

Runoff = 0.27 cfs @ 12.18 hrs, Volume= 0.024 af, Depth> 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,918	61	>75% Grass cover, Good, HSG B
237	80	>75% Grass cover, Good, HSG D
3,155	62	Weighted Average
3,155		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	83	0.0060	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 11S: Yard Drain #3

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,421	61	>75% Grass cover, Good, HSG B
460	98	Roofs, HSG B
2,881	67	Weighted Average
2,421		84.03% Pervious Area
460		15.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	60	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"

Summary for Subcatchment 12S: Subcatchment 18S

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 6.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
94	61	>75% Grass cover, Good, HSG B
904	80	>75% Grass cover, Good, HSG D
11	98	Roofs, HSG B
332	98	Roofs, HSG D
1,341	83	Weighted Average
998		74.42% Pervious Area
343		25.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	37	0.0190	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.2	37	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 13S: Back of Units 1 and 2

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
918	98	Roofs, HSG B
918		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 14S: Back of Unit 3

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
310	98	Roofs, HSG D
310		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 15S: East Side of Unit 4

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
500	98	Roofs, HSG B
2	98	Roofs, HSG D
502	98	Weighted Average
502		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 16S: Subcatchment 16S

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
1,247	98	Paved roads w/curbs & sewers, HSG B
1,247		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
2,230	98	Paved parking, HSG B
576	98	Paved parking, HSG D
2,806	98	Weighted Average
2,806		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 18S: Subcatchment 18S

Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af, Depth> 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
4,475	98	Paved parking, HSG B
4,475		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 1.92 cfs @ 12.24 hrs, Volume= 0.189 af, Depth> 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.53"

Area (sf)	CN	Description
4,147	98	Paved parking, HSG B
4,462	61	>75% Grass cover, Good, HSG B
102	98	Roofs, HSG B
14,877	55	Woods, Good, HSG B
23,588	64	Weighted Average
19,339		81.99% Pervious Area
4,249		18.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.0	100	0.0350	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.7	37	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.7	137	Total			

Summary for Reach 1R: Swale

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 6.95" for 50 Yr 24 Hr(+15%) event
Inflow = 2.16 cfs @ 12.16 hrs, Volume= 0.197 af
Outflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af, Atten= 4%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.83 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 6.9 min

Peak Storage= 349 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.91' , Surface Width= 5.47'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 2.65 cfs

0.00' x 1.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 140.0' Slope= 0.0214 '/'
Inlet Invert= 40.00', Outlet Invert= 37.00'

Summary for Reach AP1: Wooded Depression

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.542 ac, 18.01% Impervious, Inflow Depth > 4.19" for 50 Yr 24 Hr(+15%) event
Inflow = 1.92 cfs @ 12.24 hrs, Volume= 0.189 af
Outflow = 1.92 cfs @ 12.24 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Shoulder of Road

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.339 ac, 41.02% Impervious, Inflow Depth > 6.94" for 50 Yr 24 Hr(+15%) event
Inflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af
Outflow = 2.07 cfs @ 12.20 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP3: Detention Pond

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.720 ac, 49.10% Impervious, Inflow Depth > 0.54" for 50 Yr 24 Hr(+15%) event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP4: Rear of Site

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.125 ac, 56.24% Impervious, Inflow Depth > 6.23" for 50 Yr 24 Hr(+15%) event
Inflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af
Outflow = 0.70 cfs @ 12.18 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP5: Across Street

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 29.31" for 50 Yr 24 Hr(+15%) event
Inflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af
Outflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Bioretention #1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 0.159 ac, 73.74% Impervious, Inflow Depth > 7.08" for 50 Yr 24 Hr(+15%) event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.094 af
Outflow = 1.06 cfs @ 12.10 hrs, Volume= 0.092 af, Atten= 13%, Lag= 0.5 min
Primary = 1.06 cfs @ 12.10 hrs, Volume= 0.092 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.75' @ 12.49 hrs Surf.Area= 400 sf Storage= 289 cf

Plug-Flow detention time= 28.5 min calculated for 0.092 af (97% of inflow)
Center-of-Mass det. time= 13.5 min (793.2 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	33.99'	694 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.99	315	0.0	0	0
34.00	315	40.0	1	1
34.99	315	40.0	125	126
35.00	315	15.0	0	126
36.49	315	15.0	70	197
36.50	315	100.0	3	200
37.00	484	100.0	200	400
37.50	668	100.0	288	688
37.51	668	100.0	7	694

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.30'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	37.50'	**31.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.06 cfs @ 12.10 hrs HW=36.49' TW=35.24' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.06 cfs of 1.48 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.06 cfs @ 5.38 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=33.99' TW=28.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 2P: Bioretention #2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area =	0.239 ac, 62.71% Impervious, Inflow Depth > 7.32"	for 50 Yr 24 Hr(+15%) event		
Inflow =	1.87 cfs @	12.09 hrs, Volume=	0.146 af	
Outflow =	1.29 cfs @	12.09 hrs, Volume=	0.144 af, Atten= 31%, Lag= 0.3 min	
Primary =	1.29 cfs @	12.09 hrs, Volume=	0.144 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.27' @ 12.22 hrs Surf.Area= 738 sf Storage= 561 cf

Plug-Flow detention time= 19.5 min calculated for 0.144 af (99% of inflow)
Center-of-Mass det. time= 11.5 min (785.1 - 773.6)

Volume	Invert	Avail.Storage	Storage Description
#1	34.49'	1,249 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.49	600	0.0	0	0
34.50	600	40.0	2	2
35.49	600	40.0	238	240
35.50	600	15.0	1	241
36.99	600	15.0	134	375
37.00	600	100.0	6	381
38.00	1,113	100.0	857	1,237
38.01	1,113	100.0	11	1,249

Device	Routing	Invert	Outlet Devices
#1	Primary	34.58'	**8.0" Round Culvert** L= 33.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.58' / 34.40' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	34.75'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	37.70'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	38.00'	**13.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66
2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=1.28 cfs @ 12.09 hrs HW=37.06' TW=35.23' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.28 cfs of 1.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.28 cfs @ 6.52 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=34.49' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3P: Catch Basin #1

[80] Warning: Exceeded Pond 11P by 0.20' @ 12.10 hrs (0.59 cfs 0.005 af)

Inflow Area =	0.375 ac,	61.86% Impervious,	Inflow Depth >	7.02"	for 50 Yr 24 Hr(+15%) event
Inflow =	2.44 cfs @	12.14 hrs,	Volume=	0.220 af	
Outflow =	2.44 cfs @	12.14 hrs,	Volume=	0.220 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.44 cfs @	12.14 hrs,	Volume=	0.220 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.51' @ 12.20 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.00'	**15.0" Round Culvert** L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.00' / 34.75' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.14 hrs HW=37.34' TW=37.59' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 4P: Catch Basin #2

[80] Warning: Exceeded Pond 14P by 0.01' @ 12.30 hrs (0.12 cfs 0.001 af)

Inflow Area =	0.768 ac,	56.90% Impervious,	Inflow Depth >	6.69"	for 50 Yr 24 Hr(+15%) event
Inflow =	4.86 cfs @	12.11 hrs,	Volume=	0.429 af	
Outflow =	4.86 cfs @	12.11 hrs,	Volume=	0.429 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.86 cfs @	12.11 hrs,	Volume=	0.429 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.27' @ 12.18 hrs
Flood Elev= 38.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.30'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.30' / 34.10' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.77 cfs @ 12.11 hrs HW=36.94' TW=35.90' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.77 cfs @ 3.89 fps)

Summary for Pond 5P: Concrete Galley 8x14 INFILTRATION

[80] Warning: Exceeded Pond 4P by 0.01' @ 12.50 hrs (0.51 cfs 0.002 af)

Inflow Area =	0.768 ac, 56.90% Impervious, Inflow Depth > 6.69"	for 50 Yr 24 Hr(+15%) event		
Inflow =	4.86 cfs @ 12.11 hrs, Volume=	0.429 af		
Outflow =	2.70 cfs @ 12.22 hrs, Volume=	0.423 af, Atten= 44%, Lag= 6.2 min		
Discarded =	0.83 cfs @ 12.40 hrs, Volume=	0.353 af		
Primary =	1.90 cfs @ 12.21 hrs, Volume=	0.070 af		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.86' @ 12.40 hrs Surf.Area= 0.071 ac Storage= 0.125 af

Plug-Flow detention time= 69.4 min calculated for 0.422 af (98% of inflow)
Center-of-Mass det. time= 61.1 min (843.7 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.90'	0.000 af	**24.00'W x 42.00'L x 3.67'H Field A** 0.085 af Overall - 0.085 af Embedded = 0.000 af x 40.0% Voids
#2A	33.90'	0.062 af	**Shea Leaching Chamber 8x14x3.7** x 9 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 9 Chambers in 3 Rows
#3	30.90'	0.035 af	**28.00'W x 46.00'L x 3.00'H Prismatoid** 0.089 af Overall x 40.0% Voids
#4	30.90'	0.007 af	**8.00'W x 32.00'L x 3.00'H Prismatoid** 0.018 af Overall x 40.0% Voids
#5	33.90'	0.010 af	**2.00'W x 148.00'L x 3.67'H Prismatoid** 0.025 af Overall x 40.0% Voids
#6B	33.90'	0.000 af	**8.00'W x 28.00'L x 3.67'H Field B** 0.019 af Overall - 0.019 af Embedded = 0.000 af x 40.0% Voids
#7B	33.90'	0.014 af	**Shea Leaching Chamber 8x14x3.7** x 2 Inside #6 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf
		0.128 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	30.90'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 30.82' Phase-In= 0.01'
#2	Primary	35.70'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.70' / 34.30' S= 0.0233 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Primary	37.56'	**160.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
3.30 3.31 3.32

Discarded OutFlow Max=0.83 cfs @ 12.40 hrs HW=36.86' (Free Discharge)
└**1=Exfiltration** (Controls 0.83 cfs)

Primary OutFlow Max=1.96 cfs @ 12.21 hrs HW=36.63' TW=35.99' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 1.96 cfs @ 2.59 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 6P: Drain Manhole #1

[80] Warning: Exceeded Pond 1P by 0.04' @ 12.50 hrs (0.20 cfs 0.001 af)

Inflow Area =	0.398 ac,	67.12% Impervious,	Inflow Depth >	7.10"	for 50 Yr 24 Hr(+15%) event
Inflow =	2.35 cfs @	12.09 hrs,	Volume=	0.236 af	
Outflow =	2.35 cfs @	12.09 hrs,	Volume=	0.236 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.35 cfs @	12.09 hrs,	Volume=	0.236 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.79' @ 12.50 hrs
Flood Elev= 38.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.07'	**12.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.07' / 33.80' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.39 cfs @ 12.09 hrs HW=35.23' TW=34.59' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.39 cfs @ 3.04 fps)

Summary for Pond 7P: Drain Manhole #2

Inflow Area =	0.768 ac,	56.90% Impervious,	Inflow Depth =	1.09"	for 50 Yr 24 Hr(+15%) event
Inflow =	1.90 cfs @	12.21 hrs,	Volume=	0.070 af	
Outflow =	1.90 cfs @	12.21 hrs,	Volume=	0.070 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.90 cfs @	12.21 hrs,	Volume=	0.070 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.75' @ 12.50 hrs
Flood Elev= 39.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 34.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.91 cfs @ 12.21 hrs HW=35.99' TW=35.58' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.91 cfs @ 2.43 fps)

Summary for Pond 8P: Concrete Galley 8x14 STORAGE ONLY

[92] Warning: Device #4 is above defined storage
[80] Warning: Exceeded Pond 6P by 0.01' @ 12.70 hrs (0.31 cfs 0.004 af)
[80] Warning: Exceeded Pond 7P by 0.61' @ 13.30 hrs (0.91 cfs 0.022 af)

Inflow Area =	1.167 ac,	60.39% Impervious,	Inflow Depth >	3.14"	for 50 Yr 24 Hr(+15%) event
Inflow =	3.62 cfs @	12.20 hrs,	Volume=	0.305 af	
Outflow =	2.10 cfs @	12.44 hrs,	Volume=	0.304 af,	Atten= 42%, Lag= 14.4 min
Primary =	2.10 cfs @	12.44 hrs,	Volume=	0.304 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 36.26' @ 12.44 hrs Surf.Area= 0.055 ac Storage= 0.073 af

Plug-Flow detention time= 31.6 min calculated for 0.304 af (99% of inflow)
Center-of-Mass det. time= 28.4 min (807.3 - 779.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	33.30'	0.000 af	**16.00'W x 56.00'L x 3.67'H Field A** 0.075 af Overall - 0.075 af Embedded = 0.000 af x 40.0% Voids
#2A	33.30'	0.055 af	**Shea Leaching Chamber 8x14x3.7** x 8 Inside #1 Inside= 84.0"W x 36.0"H => 23.08 sf x 13.00'L = 300.0 cf Outside= 96.0"W x 44.0"H => 29.36 sf x 14.00'L = 411.0 cf 8 Chambers in 2 Rows
#3	32.30'	0.011 af	**20.00'W x 60.00'L x 1.00'H Prismatoid** 0.028 af Overall x 40.0% Voids
#4	33.30'	0.010 af	**2.00'W x 144.00'L x 3.67'H Prismatoid** 0.024 af Overall x 40.0% Voids
		0.076 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	**4.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.27' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Device 1	32.30'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	34.70'	**8.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.70' / 34.67' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#4	Secondary	39.80'	**160.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=2.09 cfs @ 12.44 hrs HW=36.25' TW=32.70' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.63 cfs @ 7.16 fps)
└─**2=Orifice/Grate** (Passes 0.63 cfs of 0.79 cfs potential flow)
└─**3=Culvert** (Inlet Controls 1.47 cfs @ 4.20 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=32.30' TW=31.60' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: Drain Manhole #3

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 3.13" for 50 Yr 24 Hr(+15%) event
Inflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af
Outflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.75' @ 12.49 hrs
Flood Elev= 39.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.60'	**12.0" Round Culvert** L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.60' / 31.10' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.44 hrs HW=32.70' TW=32.13' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.12 cfs @ 3.05 fps)

Summary for Pond 10P: Drain Manhole #4

Inflow Area = 1.167 ac, 60.39% Impervious, Inflow Depth > 3.13" for 50 Yr 24 Hr(+15%) event
Inflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af
Outflow = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af, Atten= 0%, Lag= 0.0 min
Primary = 2.10 cfs @ 12.44 hrs, Volume= 0.304 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 32.13' @ 12.44 hrs
Flood Elev= 36.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.10'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.10' / 30.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.44 hrs HW=32.13' TW=31.11' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 2.09 cfs @ 3.21 fps)

Summary for Pond 11P: Yard Drain #1

Inflow Area = 0.071 ac, 26.66% Impervious, Inflow Depth > 5.76" for 50 Yr 24 Hr(+15%) event
Inflow = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af
Outflow = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.10 hrs, Volume= 0.034 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.85' @ 12.20 hrs
Flood Elev= 39.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.80'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.80' / 35.58' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=36.78' TW=36.94' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 12P: Yard Drain #2

Inflow Area = 0.072 ac, 0.00% Impervious, Inflow Depth > 3.96" for 50 Yr 24 Hr(+15%) event
Inflow = 0.27 cfs @ 12.18 hrs, Volume= 0.024 af
Outflow = 0.27 cfs @ 12.19 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.6 min
Primary = 0.27 cfs @ 12.19 hrs, Volume= 0.024 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 39.07' @ 12.19 hrs Surf.Area= 183 sf Storage= 6 cf

Plug-Flow detention time= 0.3 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (843.5 - 843.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	1,358 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	5	0	0
40.01	2,685	1,358	1,358

Device	Routing	Invert	Outlet Devices
#1	Primary	36.00'	**8.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.00' / 35.33' S= 0.0134 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	39.00'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	40.00'	**100.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=0.26 cfs @ 12.19 hrs HW=39.07' TW=37.60' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.26 cfs of 1.58 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.26 cfs @ 0.84 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=39.00' TW=34.30' (Dynamic Tailwater)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: Yard Drain #3

[80] Warning: Exceeded Pond 3P by 0.32' @ 12.10 hrs (2.64 cfs 0.032 af)

Inflow Area =	0.514 ac,	47.23% Impervious,	Inflow Depth >	6.28"	for 50 Yr 24 Hr(+15%) event
Inflow =	3.00 cfs @	12.14 hrs,	Volume=	0.269 af	
Outflow =	3.00 cfs @	12.14 hrs,	Volume=	0.269 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.00 cfs @	12.14 hrs,	Volume=	0.269 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.69' @ 12.17 hrs
Flood Elev= 38.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.65'	**15.0" Round Culvert** L= 48.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.65' / 34.40' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 12.14 hrs HW=37.58' TW=37.17' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.96 cfs @ 2.41 fps)

Summary for Pond 14P: Yard Drain #4

Inflow Area =	0.031 ac,	25.58% Impervious,	Inflow Depth >	6.48"	for 50 Yr 24 Hr(+15%) event
Inflow =	0.22 cfs @	12.09 hrs,	Volume=	0.017 af	
Outflow =	0.22 cfs @	12.09 hrs,	Volume=	0.017 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.22 cfs @	12.09 hrs,	Volume=	0.017 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 37.28' @ 12.18 hrs
Flood Elev= 39.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.50'	**8.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 36.50' / 36.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.31 cfs @ 12.09 hrs HW=36.91' TW=36.65' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.31 cfs @ 1.99 fps)

Summary for Pond 15P: Subsurface Stone Infiltration

Inflow Area = 0.021 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.03 cfs @ 12.58 hrs, Volume= 0.014 af, Atten= 85%, Lag= 29.4 min
Discarded = 0.03 cfs @ 12.58 hrs, Volume= 0.014 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.61' @ 12.58 hrs Surf.Area= 0.004 ac Storage= 0.006 af

Plug-Flow detention time= 130.4 min calculated for 0.014 af (99% of inflow)
Center-of-Mass det. time= 122.9 min (862.9 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.50'	0.007 af	**4.00'W x 40.00'L x 4.51'H Prismatoid** 0.017 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	27.50'	**0.650 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 27.08' Phase-In= 0.01'
#2	Primary	32.00'	**88.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.03 cfs @ 12.58 hrs HW=31.61' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=27.50' TW=28.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 16P: Subsurface Stone Infiltration

Inflow Area = 0.019 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.04 cfs @ 12.44 hrs, Volume= 0.013 af, Atten= 73%, Lag= 21.3 min
Discarded = 0.04 cfs @ 12.44 hrs, Volume= 0.013 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 33.39' @ 12.44 hrs Surf.Area= 0.006 ac Storage= 0.004 af

Plug-Flow detention time= 56.9 min calculated for 0.013 af (100% of inflow)
Center-of-Mass det. time= 55.9 min (796.0 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	0.004 af	**8.00'W x 35.00'L x 1.71'H Prismatoid** 0.011 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	31.80'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 31.72' Phase-In= 0.01'
#2	Primary	33.50'	**86.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.04 cfs @ 12.44 hrs HW=33.39' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=31.80' TW=28.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 17P: Deep Sump CB #4

Inflow Area = 0.131 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.07 cfs @ 12.09 hrs, Volume= 0.091 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.24' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.60'	**12.0" Round Culvert** L= 67.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.60' / 29.20' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.05 cfs @ 12.09 hrs HW=30.23' TW=29.70' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.05 cfs @ 2.88 fps)

Summary for Pond 18P: Deep Sump CB #5

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.90' @ 12.51 hrs
Flood Elev= 34.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.25'	**12.0" Round Culvert** L= 3.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.25' / 29.20' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=29.79' TW=29.70' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.51 cfs @ 1.17 fps)

Summary for Pond 19P: Deep Sump CB #3

Inflow Area = 0.103 ac,100.00% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr(+15%) event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 30.47' @ 12.09 hrs
Flood Elev= 33.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	29.80'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.80' / 29.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.09 hrs HW=30.45' TW=30.23' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.82 cfs @ 2.14 fps)

Summary for Pond 20P: Contech Jellyfish

Inflow Area = 0.196 ac,100.00% Impervious, Inflow Depth > 29.31" for 50 Yr 24 Hr(+15%) event
Inflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af
Outflow = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min
Primary = 2.40 cfs @ 12.52 hrs, Volume= 0.478 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 29.89' @ 12.52 hrs
Flood Elev= 33.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	28.95'	**15.0" Round Culvert** L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 28.95' / 28.70' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.39 cfs @ 12.52 hrs HW=29.89' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.39 cfs @ 3.35 fps)

Summary for Pond 21P: Wetland Ponding Area

Inflow Area = 1.527 ac, 52.60% Impervious, Inflow Depth > 3.34" for 50 Yr 24 Hr(+15%) event
Inflow = 2.73 cfs @ 12.33 hrs, Volume= 0.426 af
Outflow = 2.20 cfs @ 12.69 hrs, Volume= 0.343 af, Atten= 19%, Lag= 21.7 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 2.20 cfs @ 12.69 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 31.18' @ 12.69 hrs Surf.Area= 3,677 sf Storage= 5,810 cf

Plug-Flow detention time= 121.0 min calculated for 0.343 af (81% of inflow)
Center-of-Mass det. time= 56.5 min (869.7 - 813.3)

Volume	Invert	Avail.Storage	Storage Description
#1	28.00'	7,242 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
28.00	619	194.0	0	0	619
29.00	1,245	250.0	914	914	2,610
30.00	2,174	307.0	1,688	2,602	5,152
31.00	3,074	298.0	2,611	5,213	5,680
31.50	4,916	435.0	1,980	7,193	13,674
31.51	4,916	435.0	49	7,242	13,678

Device	Routing	Invert	Outlet Devices
#1	Secondary	31.50'	**70.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	31.30'	**16.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#3	Tertiary	30.30'	**15.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.30' / 30.20' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=28.00' TW=0.00' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

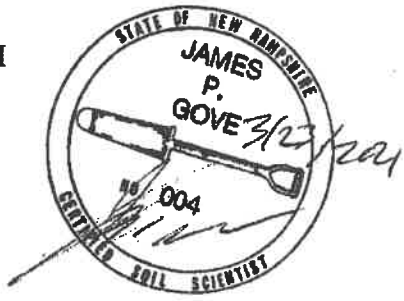
Tertiary OutFlow Max=2.20 cfs @ 12.69 hrs HW=31.18' TW=29.89' (Dynamic Tailwater)
└**3=Culvert** (Barrel Controls 2.20 cfs @ 3.37 fps)

APPENDIX III

Test Pit Logs

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA



Project	1169 &1171 Sagamore Avenue, Portsmouth, NH	
Client	Garrepy Planning Consultants, LLC	
GES Project No.	2021039	
MM/DD/YY Staff	03-23-2021	JP Gove, CSS # 004

Test Pit No.	**1**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	60"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Fill – 0-12"	10YR3/2	SL	Gr	Fr	None
Fill – 12-35"	10YR3/3	SL	Gr	Fr	None
Apb – 35-45"	10YR3/2	SL	Gr	Fr	None
Bwb – 45-60"	10YR4/3	SL	Om	Fr	None
Bedrock – 60"					

Test Pit No.	**2**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	55"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-55"	7.5YR3/4	SL	Gr	Fr	None
Rippable Bedrock – 55"					

Test Pit No.	**3**	Lot No.:	
ESHWT:	31"	WSPCD Group:	
Termination @	51"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-11"	10YR3/3	SL	Gr	Fr	None
Bw – 11-31"	10YR4/4	GRLS	Gr	Fr	None
Bw2 – 31-51"	7.5YR5/4	CBSL	Om	Fr	Yes
Rippable Bedrock – 51"					

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www.gesinc.biz

Test Pit No.	**4**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	33"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap - 0-11"	10YR3/2	SL	Gr	Fr	None
Bw – 11-33"	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 33"					

Test Pit No.	**5**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	22"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/3	SL	Gr	Fr	None
Bw – 10-22"	10YR4/4	CBSL	Gr	Fr	None
Bedrock – 22"					

Test Pit No.	**6**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	2"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-2"	10YR3/2	CBSL	Gr	Fr	None
Bedrock 2"					

Test Pit No.	**7**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	21"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
A – 0-21"	10YR3/3	CBSL	Gr	Fr	None
Bedrock – 21"					

Test Pit No.	**8**	Lot No.:	
ESHWT:	None Observed	WSPCD Group:	
Termination @	31"	Roots to:	
Refusal:	Yes	SCS Soil:	
Obs. Water:	none	HIS Type:	

Depth	Color	Texture	Structure	Consistence	Redox
Ap – 0-10"	10YR3/2	SL	Gr	Fr	None
Bw – 10-31"	10YR4/6	CBSL	Gr	Fr	None
Bedrock – 31"					

Legend:
GRLS = gravelly loamy sand
CBSL = cobbly sandy loam
SL= sandy loam
Gr = granular
Fr = friable
Om = massive
Ap = top soil
Bw = subsoil
Apb = buried topsoil
Bwb = buried subsoil

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project1169 Sagamore Avenue, Portsmouth
Client Garrepy Planning Consultants, LLC
GES Project No. 2021039
MM/DD/YY Staff 11-10-2021 JP Gove

Test Pit No. B1
ESHWT: 54
Termination @ 84
Refusal: 84
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–29"	10YR 4/4	GRS	OM	FR	NONE , Fill
29–33"	10YR 3/2	FSL	GR	FR	NONE, buried A
33–54"	10YR 5/6	FSL	GR	FR	NONE, buried B
54–84"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B2
ESHWT: 50
Termination @ 65
Refusal: 65
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–31"	10YR 4/4	GRS	OM	FR	NONE , Fill
31–35"	10YR 3/2	FSL	GR	FR	NONE, buried A
35–50"	10YR 5/6	FSL	GR	FR	NONE, buried B
50–65"	2.5Y 4/3	FSL	OM	FR	30%, C

Test Pit No. B3
ESHWT: 33
Termination @ 47
Refusal: 47
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–33"	10YR 4/4	GRS	OM	FR	NONE , Fill
33–47"	10YR 4/3	FSL	OM	FR	20%, buried A/B

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Test Pit No. B4
ESHWT: 42
Termination @ 60
Refusal: 60
Obs. Water: 50

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–21"	10YR 4/4	GRS	OM	FR	NONE , Fill
21–29"	10YR 3/2	FSL	GR	FR	NONE, buried A
29–42"	10YR 5/6	FSL	GR	FR	NONE, buried B
42–60"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B5
ESHWT: 47
Termination @ 62
Refusal: 62
Obs. Water: 60

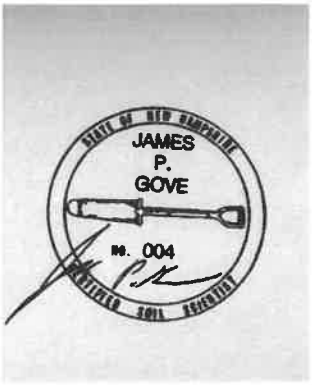
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 4/4	GRS	OM	FR	NONE , Fill
25–36"	10YR 3/2	FSL	GR	FR	NONE, buried A
36–47"	10YR 4/6	FSL	GR	FR	NONE, buried B
47–62"	2.5Y 5/3	FSL	OM	FR	30%, C

Test Pit No. B6
ESHWT: none
Termination @ 38
Refusal: 38
Obs. Water: none

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–20"	10YR 4/4	FSL	OM	FR	NONE , A/Fill
20–38"	10YR 5/6	FSL	GR	FR	NONE, B

Test Pit No. B7
ESHWT: none
Termination @ 49
Refusal: 49
Obs. Water: none

Depth	Color	Texture	Structure	Consistence
0–36"	10YR 3/3 - Fill	FSL	OM	FR
20–38"	10YR 5/6 – buried B	FSL	GR	FR



11-11-2021

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project – 1169 &1171 Sagamore Ave., Portsmouth, NH – TM 224, Lots 14 & 15.
Client - Jones & Beach Engineers, Inc.
GES Project No. 2021039
MM/DD/YY Staff 1-25-2022 JPG

Test Pit No. X1
ESHWT: n/a
Termination @ 20"
Refusal: 20"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12"	10YR 3/2	FSL	GR	FR	NONE , Ap
12–20"	10YR 4/4	FSL	GR	FR	NONE, Bw
20"	Bedrock				

Test Pit No. X2
ESHWT: n/a
Termination @ 36"
Refusal: 36"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6"	10YR 3/2	FSL	GR	FR	NONE , Ap
6–36"	10YR 4/6	FSL	GR	FR	NONE, Bw
36"	Bedrock				

Test Pit No. X3
ESHWT: n/a
Termination @ 57"
Refusal: 57"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–12"	10YR 3/2	FSL	GR	FR	NONE , Ap
12–57"	10YR 4/6	FSL	GR	FR	NONE, Bw
57"	Bedrock				

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Test Pit No. X4
ESHWT: n/a
Termination @ 75"
Refusal: n/a
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–70"	10YR 3/3	FSL	OM	FR	NONE , Fill
70-75"	10YR 4/6	FSL	GR	FR	NONE, Bw

Test Pit No. X5
ESHWT: 51"
Termination @ 66"
Refusal: 66"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–6"	10YR 3/3	LS	GR	FR	NONE , Fill
6–39"	10YR 5/6	LS	OM	FR	NONE, Fill
39–51"	10YR3/2	FSL	GR	FR	Buried Ap
51-66"	7.5YR4/6	FSL	GR	FR	5%, Bw
66"	Bedrock				

Test Pit No. X6
ESHWT: 51"
Termination @ 65"
Refusal: 65"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–5"	10YR 3/3	LS	GR	FR	NONE , Fill
5–51"	10YR 4/6	LS	OM	FR	NONE, Fill
51–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

Test Pit No. X7
ESHWT: 49"
Termination @ 65"
Refusal: 65"
Obs. Water: None

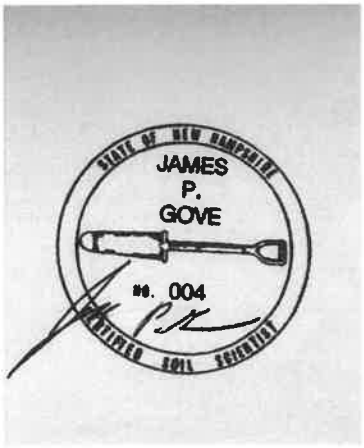
Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–10"	10YR 3/2	LS	GR	FR	NONE , Fill
10–49"	10YR 4/4	LS	OM	FR	NONE, Fill
49–65"	10YR3/2	FSL	GR	FR	5%, Buried Ap
65"	Bedrock				

Test Pit No. X8
ESHWT: n/a
Termination @ 58"
Refusal: 58"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–25"	10YR 3/3	LS	GR	FR	NONE , Fill
25–37"	10YR 3/2	FSL	GR	FR	NONE, Buried Ap
37–58"	10YR4/6	FSL	GR	FR	NONE, Bw
58"	Bedrock				

Test Pit No. X9
ESHWT: n/a
Termination @ 20"
Refusal: 20"
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox %, Layer
0–16"	10YR 3/2	FSL	GR	FR	NONE , Ap
16–20"	10YR 4/6	FSL	GR	FR	NONE, Bw
20"	Bedrock				



1-26-2022

APPENDIX IV

HISS Soil Note and Map

This soil map was prepared by a professional soil scientist and meets the technical standards of the SSSNNE Publication No. 1, High Intensity Soil Maps for NH, December 2017. Soil map was prepared on 4 April 2021. Soil map site was 1169 &1171 Sagamore Avenue, Portsmouth, NH.

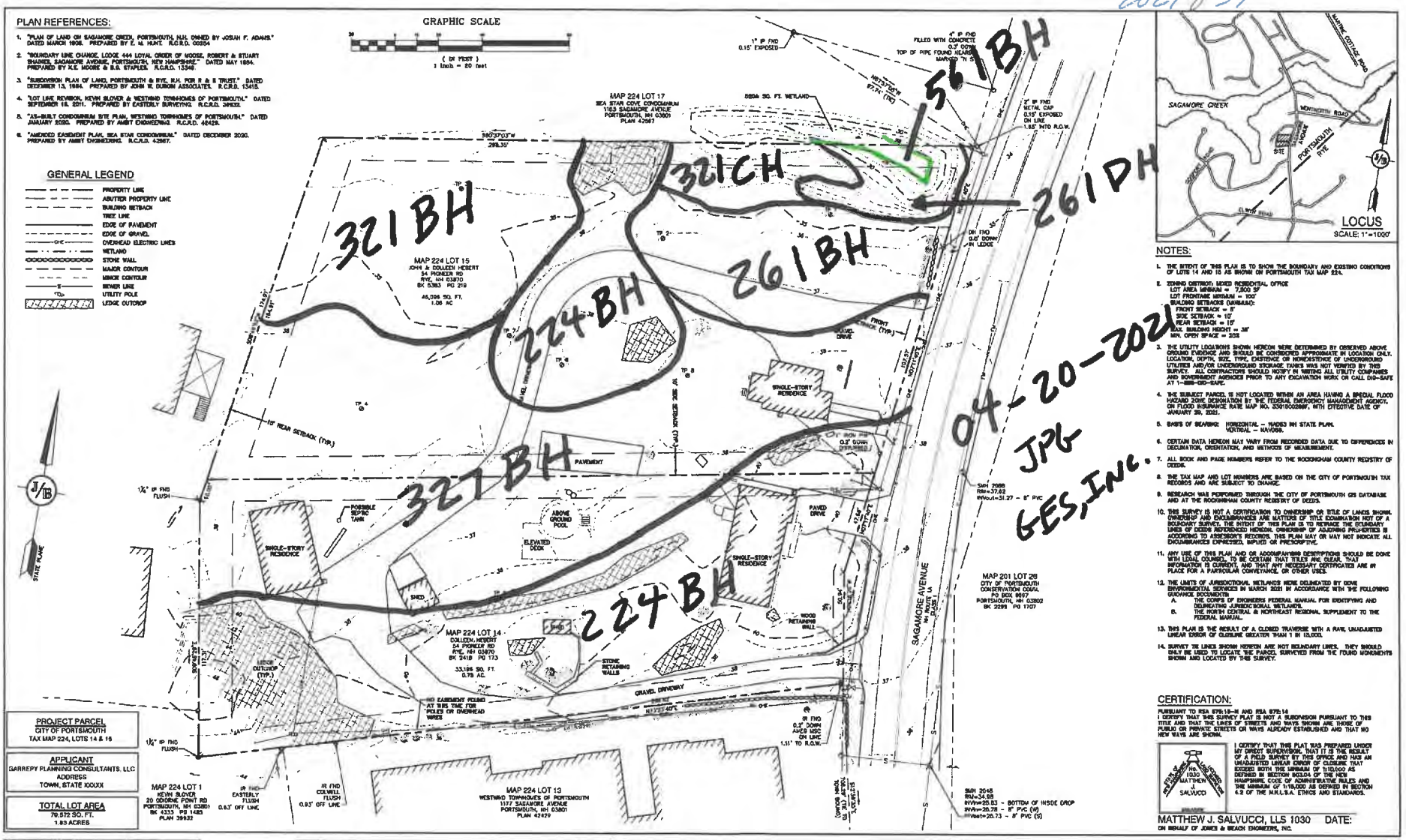
Soil Map Units were identified using the Key to Soil Types. The conversion of High Intensity Soil Map Unit to NRCS Soil Map Unit Name was based upon the observed soil profiles, as was hydrologic soil group, as taken from SSSNNE Special Publication No. 5.

Soil mapping was performed by James Gove, CSS # 004.

HISS Soil Map Unit	Soil Map Unit Name	Hydrologic Soil Group
224 (slope) H	Hollis-Rock Outcrop Complex	D
261 (slope) H	Made land – similar to Canton	B
321 (slope) H	Newfields	B
327 (slope) H	Chatfield Variant	B
561 (slope) H	Made land- similar to Walpole	C

B slope = 0-8%, C slope = 8-15%, D slope = 15-25%

2021039



NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 10'
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 20%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0259F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
5. BASIS OF BEARING: HORIZONTAL – NADS3 NH STATE PLANE
   VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR STATE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO MONUMENT THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY DOWE ENVIRONMENTAL SERVICES IN MARCH 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 676:16
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE, AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.M.L.S.A. ETHICS AND STANDARDS.

No. 1030 MATTHEW J. SALVUCCI

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
GARREPY PLANNING CONSULTANTS, LLC
ADDRESS
TOWN, STATE XXXXX

TOTAL LOT AREA
79,572 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21	
Checked: JAC	Scale: 1" = 20'	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
0	4/8/21	ISSUED FOR REVIEW	DJM

Designed and Produced in NH

Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	1169 & 1171 SAGAMORE AVENUE PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14 COLLEEN HEBERT 54 PIONEER RD RYE, NH 03870 BK 2418 PG 173 LOT 15 JOHN & COLLEEN HEBERT 54 PIONEER RD. RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 18
JBE PROJECT NO. 21047

APPENDIX V

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(1169 & 1171 Sagamore Ave)

Map Scale: 1:1,280 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	3.5	53.7%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	2.7	40.6%
699	Urban land	0.4	5.7%
Totals for Area of Interest		**6.6**	**100.0%**

APPENDIX VI

Extreme Precipitation Estimates

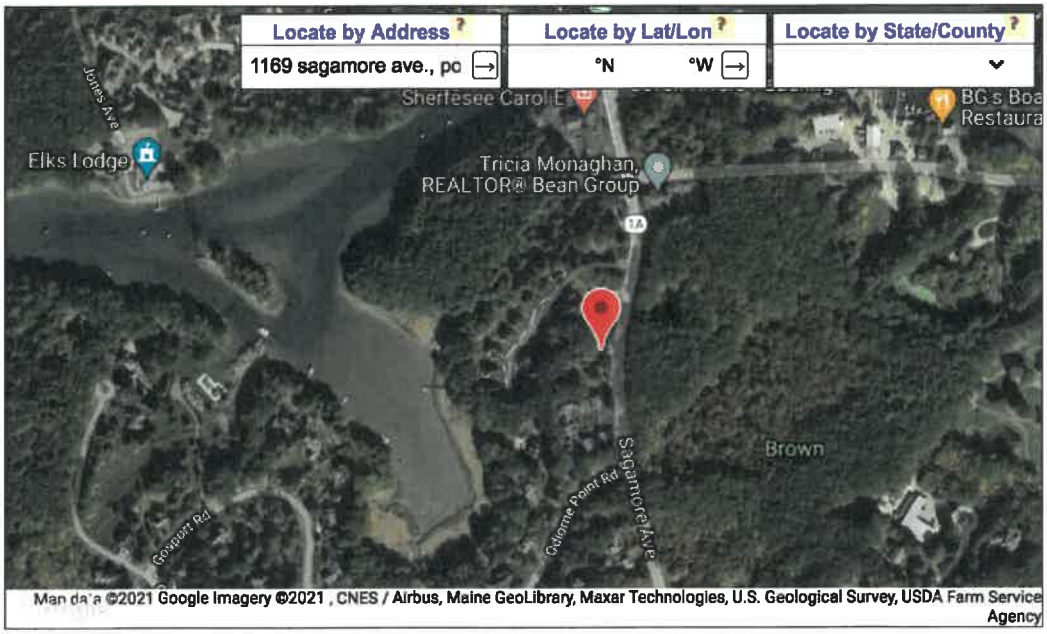
About this Project **Data & Products** **Daily Monitoring** **Documentation**

Select Product

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

Select Location Double-click the map to place a marker, or enter address or latitude/longitude.

Locate by Address	Locate by Lat/Lon	Locate by State/County
1169 sagamore ave., po	°N °W	



Select Options

Smoothing	Delivery
Yes	Popup

Submit

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This project is a joint collaboration between:

Northeast Regional Climate Center (NRCC) Cornell University

Natural Resources Conservation Service (NRCS) USDA NRCS

Contact: precip@cornell.edu

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	
Location	
Longitude	70.748 degrees West
Latitude	43.051 degrees North
Elevation	0 feet
Date/Time	Wed, 16 Jun 2021 12:03:11 -0400

Extreme Precipitation Estimates

+15%

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.67	2.94	**1yr**	2.36	2.82	3.24	3.96	4.57	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.30	**2yr**	0.89	1.18	1.52	1.94	2.49	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.08	4.60	**5yr**	3.61	4.42	5.07	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.90	**10yr**	1.26	1.73	2.24	2.91	3.76	4.88	5.55	**10yr**	4.32	5.34	6.12	7.14	8.01	**10yr**
25yr	0.48	0.77	0.97	1.34	1.78	2.35	**25yr**	1.54	2.15	2.79	3.65	4.76	6.19	7.13	**25yr**	5.48	6.85	7.85	9.07	10.09	**25yr**
50yr	0.54	0.87	1.11	1.55	2.09	2.78	**50yr**	1.80	2.54	3.31	4.35	5.69	7.42	8.62	**50yr**	6.56	8.29	9.48	10.87	12.02	**50yr**
100yr	0.60	0.97	1.26	1.79	2.44	3.28	**100yr**	2.10	3.00	3.93	5.19	6.80	8.88	10.42	**100yr**	7.86	10.02	11.46	13.03	14.33	**100yr**
200yr	0.68	1.11	1.44	2.07	2.85	3.87	**200yr**	2.46	3.54	4.65	6.17	8.12	10.65	12.60	**200yr**	9.42	12.11	13.85	15.63	17.08	**200yr**
500yr	0.81	1.33	1.73	2.51	3.52	4.81	**500yr**	3.03	4.42	5.82	7.76	10.28	13.53	16.20	**500yr**	11.97	15.58	17.81	19.89	21.57	**500yr**

3.70
5.61
7.12
8.53

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.34	1.69	2.26	2.50	**1yr**	2.00	2.41	2.88	3.21	3.94	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.81	2.33	3.07	3.47	**2yr**	2.72	3.33	3.84	4.56	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.72	3.80	4.20	**5yr**	3.36	4.04	4.74	5.56	6.26	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.80	2.38	3.05	4.38	4.88	**10yr**	3.88	4.69	5.47	6.44	7.22	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.74	3.52	4.78	5.91	**25yr**	4.23	5.68	6.69	7.83	8.72	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.53	2.12	2.35	3.05	3.91	5.41	6.82	**50yr**	4.79	6.56	7.77	9.10	10.06	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.47	**100yr**	1.74	2.41	2.63	3.39	4.31	6.10	7.87	**100yr**	5.40	7.57	9.04	10.58	11.63	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.81	**200yr**	1.97	2.75	2.94	3.74	4.74	6.86	9.09	**200yr**	6.07	8.74	10.50	12.32	13.45	**200yr**
500yr	0.69	1.02	1.31	1.91	2.72	3.36	**500yr**	2.34	3.29	3.42	4.26	5.39	8.01	10.98	**500yr**	7.09	10.56	12.80	15.09	16.30	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.98	3.18	**1yr**	2.64	3.06	3.59	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.43	3.72	**2yr**	3.03	3.58	4.11	4.86	5.64	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.54	3.26	4.36	4.98	**5yr**	3.85	4.79	5.40	6.40	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.62	1.99	**10yr**	1.39	1.94	2.29	3.11	3.97	5.36	6.23	**10yr**	4.74	5.99	6.85	7.87	8.79	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.97	4.08	5.18	7.75	8.38	**25yr**	6.86	8.05	9.20	10.38	11.45	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.61	5.02	6.36	9.69	10.50	**50yr**	8.57	10.10	11.51	12.78	14.01	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.76	4.40	6.19	7.83	12.11	13.16	**100yr**	10.71	12.65	14.40	15.76	17.15	**100yr**
200yr	0.93	1.41	1.78	2.58	3.60	4.70	**200yr**	3.10	4.59	5.37	7.63	9.63	15.17	16.51	**200yr**	13.43	15.87	18.04	19.43	20.98	**200yr**
500yr	1.16	1.73	2.22	3.23	4.59	6.11	**500yr**	3.96	5.97	6.97	10.10	12.71	20.46	22.28	**500yr**	18.11	21.43	24.31	25.62	27.41	**500yr**

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APPENDIX VII

Rip Rap Calculations

RIP RAP CALCULATIONS
Sagamore Avenue Condominiums
1169 & 1171 Sagamore Avenue
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
8/11/2021, Rev 9/20/2021, Rev 12/22/2021, Rev 1/28/2022, Rev 3/21/22, Rev 4/18/22, Rev 5/10/22

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.*
Aprons are sized for the 25-Year storm event.

TAILWATER < HALF THE D_o

$L_a = (1.8 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = L_a + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
15" HDPE (Pond 20P)	0.47	1.5	1.25	10.7	14	0.06

TAILWATER > HALF THE D_o

$L_a = (3.0 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = (0.4 \times L_a) + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
12" HDPE (Pond 10P)	0.63	1.59	1	11.8	8	0.06

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller	Size of Stone (Inches)			
Than the Given d_{50} Size	From		To	
100%	5		6	
85%	4		5	
50%	3		5	
15%	1		2	

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.5	Feet	6	Inches
% of Weight Smaller	Size of Stone (Inches)			
Than the Given d_{50} Size	From		To	
100%	9		12	
85%	8		11	
50%	6		9	
15%	2		3	

APPENDIX VIII

BMP Worksheets

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Bioretention #1 (1P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.16	ac	A = Area draining to the practice	
0.12	ac	A_I = Impervious area draining to the practice	
0.77	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.74	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.12	ac-in	WQV= 1" x Rv x A	
427	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
107	cf	25% x WQV (check calc for sediment forebay volume)	
320	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
430	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
18.0	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	D5	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA mod. 304.1 (see spec)
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Stage-Area-Storage for Pond 1P: Bioretention #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
33.99	315	0
34.04	315	6
34.09	315	13
34.14	315	19
34.19	315	25
34.24	315	32
34.29	315	38
34.34	315	44
34.39	315	50
34.44	315	57
34.49	315	63
34.54	315	69
34.59	315	76
34.64	315	82
34.69	315	88
34.74	315	95
34.79	315	101
34.84	315	107
34.89	315	113
34.94	315	120
34.99	315	126
35.04	315	128
35.09	315	131
35.14	315	133
35.19	315	135
35.24	315	138
35.29	315	140
35.34	315	143
35.39	315	145
35.44	315	147
35.49	315	150
35.54	315	152
35.59	315	154
35.64	315	157
35.69	315	159
35.74	315	161
35.79	315	164
35.84	315	166
35.89	315	169
35.94	315	171
35.99	315	173
36.04	315	176
36.09	315	178
36.14	315	180
36.19	315	183
36.24	315	185
36.29	315	187
36.34	315	190
36.39	315	192
36.44	315	195
36.49	315	197
36.54	329	213
36.59	345	230
36.64	362	247
36.69	379	266
36.74	396	285
36.79	413	306
36.84	430	327
36.89	447	349
36.94	464	371
36.99	481	395
37.04	499	419
37.09	517	445
37.14	536	471
37.19	554	498
37.24	572	527
37.29	591	556
37.34	609	586
37.39	628	617
37.44	646	648
37.49	664	681

Bottom of filter course = 35.0

Storage below = 126 cf

Riser Grate El. = 37.3
Storage below = 556 cf

WQV Required = 427 cf
WQV Provided = 556-126 = 430 cf > 427 cf

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **Bioretention #2 (2P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.24	ac	A = Area draining to the practice	
0.15	ac	A_I = Impervious area draining to the practice	
0.63	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.62	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.15	ac-in	WQV= 1" x Rv x A	
533	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
133	cf	25% x WQV (check calc for sediment forebay volume)	
400	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
	ft	Elevation of the top of the practice	
-		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	← yes
677	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ WQV
18.0	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	D5	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D_{FC} = Filter course thickness	12", or 18" if within GPA mod. 304.1 (see spec)
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Stage-Area-Storage for Pond 2P: Bioretention #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
34.49	600	0
34.54	600	12
34.59	600	24
34.64	600	36
34.69	600	48
34.74	600	60
34.79	600	72
34.84	600	84
34.89	600	96
34.94	600	108
34.99	600	120
35.04	600	132
35.09	600	144
35.14	600	156
35.19	600	168
35.24	600	180
35.29	600	192
35.34	600	204
35.39	600	216
35.44	600	228
35.49	600	240
35.54	600	244
35.59	600	249
35.64	600	253
35.69	600	258
35.74	600	263
35.79	600	267
35.84	600	272
35.89	600	276
35.94	600	281
35.99	600	285
36.04	600	289
36.09	600	294
36.14	600	298
36.19	600	303
36.24	600	308
36.29	600	312
36.34	600	317
36.39	600	321
36.44	600	326
36.49	600	330
36.54	600	334
36.59	600	339
36.64	600	343
36.69	600	348
36.74	600	353
36.79	600	357
36.84	600	362
36.89	600	366
36.94	600	371
36.99	600	375
37.04	621	405
37.09	646	437
37.14	672	470
37.19	697	504
37.24	723	540
37.29	749	577
37.34	774	615
37.39	800	654
37.44	826	695
37.49	851	737
37.54	877	780
37.59	903	824
37.64	928	870
37.69	954	917
37.74	980	965
37.79	1,005	1,015
37.84	1,031	1,066
37.89	1,057	1,118
37.94	1,082	1,172
37.99	1,108	1,226

Bottom of filter course = 35.5
Storage below = 240 cf

Riser Grate El. = 37.7
Storage below = 917 cf

WQV Required = 533 cf
WQV Provided = 917-240 = 677 cf

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Concrete Galley 8x14 (Subsurface infiltration basin, 5P)**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
0.77	ac	A = Area draining to the practice	
0.44	ac	A_I = Impervious area draining to the practice	
0.57	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.57	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.43	ac-in	WQV= 1" x Rv x A	
1,577	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
394	cf	25% x WQV (check calc for sediment forebay volume)	
		Method of pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
2,178	cf	V = Volume[1] (attach a stage-storage table)	≥ WQV
1,232	sf	A_{SA} = Surface area of the bottom of the pond	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
51.2	hours	I_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
33.90	feet	E_{BTM} = Elevation of the bottom of the basin	
30.82	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
29.57	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.08	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
4.3	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ 24"
	ft	D_T = Depth of trench, if trench proposed	4 - 10 ft
Yes	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←yes
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← yes
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥3:1
35.72	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
36.86	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
36.90	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Stage-Area-Storage for Pond 5P: Concrete Galley 8x14 INFILTRATION

Elevation (feet)	Surface (acres)	Storage (acre-feet)
30.90	0.035	0.000
31.00	0.035	0.001
31.10	0.035	0.003
31.20	0.035	0.004
31.30	0.035	0.006
31.40	0.035	0.007
31.50	0.035	0.009
31.60	0.035	0.010
31.70	0.035	0.011
31.80	0.035	0.013
31.90	0.035	0.014
32.00	0.035	0.016
32.10	0.035	0.017
32.20	0.035	0.018
32.30	0.035	0.020
32.40	0.035	0.021
32.50	0.035	0.023
32.60	0.035	0.024
32.70	0.035	0.026
32.80	0.035	0.027
32.90	0.035	0.028
33.00	0.035	0.030
33.10	0.035	0.031
33.20	0.035	0.033
33.30	0.035	0.034
33.40	0.035	0.035
33.50	0.035	0.037
33.60	0.035	0.038
33.70	0.035	0.040
33.80	0.035	0.041
33.90	0.071	0.043
34.00	0.071	0.045
34.10	0.071	0.048
34.20	0.071	0.051
34.30	0.071	0.054
34.40	0.071	0.057
34.50	0.071	0.059
34.60	0.071	0.062
34.70	0.071	0.065
34.80	0.071	0.068
34.90	0.071	0.071
35.00	0.071	0.073
35.10	0.071	0.076
35.20	0.071	0.079
35.30	0.071	0.082
35.40	0.071	0.084
35.50	0.071	0.087
35.60	0.071	0.090
35.70	0.071	0.093
35.80	0.071	0.096
35.90	0.071	0.098
36.00	0.071	0.101
36.10	0.071	0.104
36.20	0.071	0.107
36.30	0.071	0.110
36.40	0.071	0.112
36.50	0.071	0.115
36.60	0.071	0.118
36.70	0.071	0.121
36.80	0.071	0.124
36.90	0.071	0.126
37.00	0.071	0.127
37.10	0.071	0.127
37.20	0.071	0.127
37.30	0.071	0.128
37.40	0.071	0.128
37.50	0.071	**0.128**

Bottom of basin = 33.9
Storage below = 0.043 ac-ft = 1873 cf

WQV Required = 1,577 cf
WQV Provided = 4,051 cf - 1,873 cf = 2,178 cf > 1,577 cf
(see below calculations)

Overflow invert = 35.7
Storage below = 0.093 ac-ft = 4051 cf

APPENDIX IX

Jellyfish Design Information

CONTECH
ENGINEERED SOLUTIONS

CONTECH Stormwater Solutions Inc. Engineer:	JBS
Date Prepared:	**5/4/2022**

Site Information

Project Name	**Sagamore Avenue Condominiums**	
Project State	**NH**	
Project City	**Portsmouth**	
Site Designation	**Jellyfish**	
Total Drainage Area, Ad	**0.19**	ac
Post Development Impervious Area, Ai	**0.19**	ac
Pervious Area, Ap	**0.00**	ac
% Impervious	**100%**	
Runoff Coefficient, Rc	**0.95**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**29,485**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**138**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**40**	in

Jelly Fish Sizing Parameters

Mass to be Captured by Fitler Vault	**110**	lbs
Water Quality Flow to be treated by Filter Vault	**0.18**	cfs

Method to Use **FLOW BASED**

Summary		
Flow	Required Size	**JF4-1-1**
	Treatment Flow Rate provided:	0.20 cfs

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.19	ac	A = Area draining to the practice
0.19	ac	A_I = Impervious area draining to the practice
1.00	decimal	I = Percent impervious area draining to the practice, in decimal form
0.95	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.18	ac-in	WQV= 1" x Rv x A
655	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.95	inches	Q = Water quality depth. Q = WQV/A
100	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.0	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.009	inches	Ia = Initial abstraction. Ia = 0.2S
.	minutes	T_c = Time of Concentration
650.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.183	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

This sheet is for the design of the Jellyfish filter system. System is designed to only treat runoff from Sagamore Ave., as all other impervious runoff directed toward it is already treated.

APPENDIX X

Pre- and Post-Construction Watershed Plans

MATCHLINE – SEE INSET

LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND (X)
- TC PATH
- WETLANDS
- HISS SOILS [224BH]
- FLOW ARROW

INSET (1" = 30')

MATCHLINE – SEE MAIN PLAN VIEW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: DJM	Draft: DJM	Date: 3/25/21
Checked: PSL	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
7	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
6	4/18/22	REVISED DRAINAGE	DJM
5	3/21/22	REVISED PER CITY COMMENTS	DJM
4	2/23/22	REVISED PER NHDOT COMMENTS	DJM
3	2/9/22	REVISED PER TAC AND REVIEW ENGINEER COMMENTS	DJM

Designed and Produced in NH
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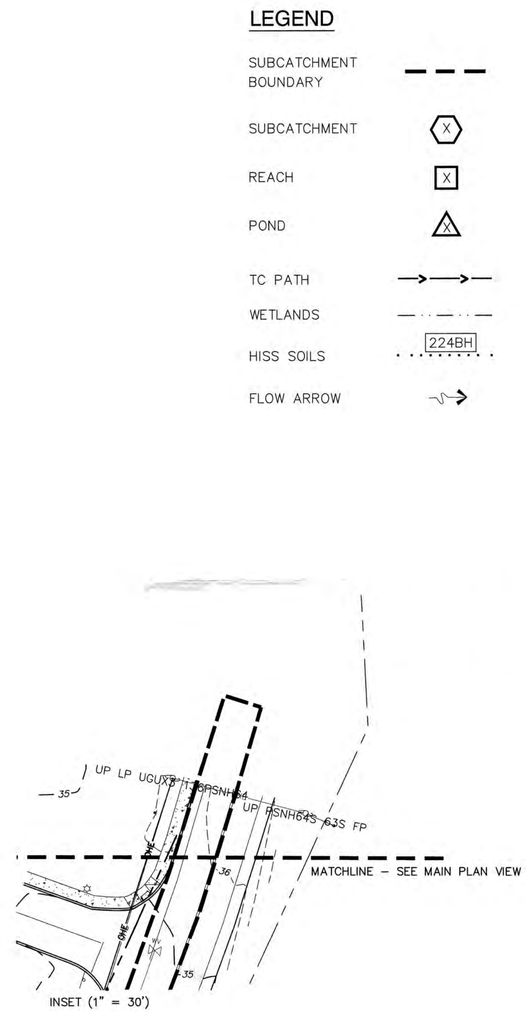
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **EXISTING WATERSHED PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. **21047**



LEGEND

- SUBCATCHMENT BOUNDARY
- SUBCATCHMENT (X)
- REACH [X]
- POND (X)
- TC PATH
- WETLANDS
- HISS SOILS [224BH]
- FLOW ARROW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: DJM	Draft: DJM	Date: 3/25/21
Checked: PSL	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
7	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
6	4/18/22	REVISED DRAINAGE	DJM
5	3/21/22	REVISED PER CITY COMMENTS	DJM
4	2/23/22	REVISED PER NHDOT COMMENTS	DJM
3	2/9/22	REVISED PER TAC AND REVIEW ENGINEER COMMENTS	DJM

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Plan Name: **PROPOSED WATERSHED PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE

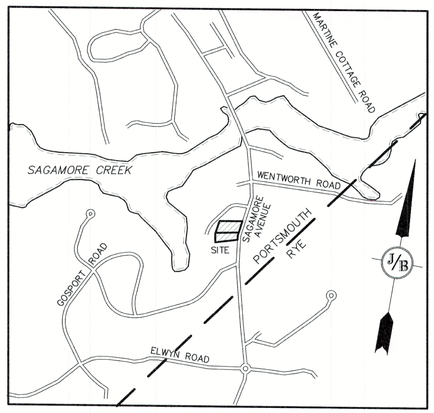
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. **21047**

CONDOMINIUM SITE PLAN
"SAGAMORE AVENUE CONDOMINIUMS"
TAX MAP 224, LOTS 14 & 15
1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
X	X	POURED CONCRETE CURB
D		SILT FENCE
S	S	DRAINAGE LINE
G	G	SEWER LINE
W	W	GAS LINE
WS	WS	WATER LINE
OHE	OHE	WATER SERVICE
UGE	UGE	OVERHEAD ELECTRIC
UD	UD	UNDERGROUND ELECTRIC
F	F	GUARDRAIL
	W	UNDERDRAIN
		FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	PAVEMENT SPOT GRADE
100.00	100.00	SPOT GRADE
100.00 / 99.50	100.00 / 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
TP1		TEST PIT
PT		FAILED TEST PIT
	M	MONITORING WELL
1		PERC TEST
		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
	S	DRAIN MANHOLE
	S	SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 1000'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
C1	DEMOLITION PLAN
C2	CONDOMINIUM SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	OFFSITE IMPROVEMENTS PLAN
C5	UTILITY PLAN
P1	SEWER PLAN AND PROFILE
L1	LANDSCAPE PLAN
L2	LIGHTING PLAN
D1-D6	DETAIL SHEET
E1	EROSION AND SEDIMENT CONTROL DETAILS
T1-T4	TRUCK TURNING PLAN
H1	HIGHWAY ACCESS PLAN

CIVIL ENGINEER / SURVEYOR
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GOVE ENVIRONMENTAL SERVICES, INC.
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LM LAND DESIGN, LLC
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BRENTWOOD, NH 03833
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CONTACT: LISE MCNAUGHTON

WATER
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DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
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PORTSMOUTH, NH 03801
CONTACT: BRIAN GOETZ, P.E.
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TELEPHONE
FAIRPOINT COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(603) 427-5525
CONTACT: JOE CONSIDINE

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

"SAGAMORE AVENUE CONDOMINIUMS", PORTSMOUTH, NH
JBE # 21047 REVISION 17, 7/27/22

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
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PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
CS
SHEET 1 OF 22
JBE PROJECT NO. 21047

PLAN REFERENCES:

1. "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
2. "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13349.
3. "SUBDIVISION PLAN OF LAND, PORTSMOUTH & RYE, N.H. FOR R & S TRUST." DATED DECEMBER 13, 1984. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 13415.
4. "LOT LINE REVISION, KEVIN SLOVER & WESTWND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 39932.
5. "AS-BUILT CONDOMINIUM SITE PLAN, WESTWND TOWNHOMES OF PORTSMOUTH." DATED JANUARY 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42429.
6. "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

GENERAL LEGEND

PROPERTY LINE
ABUTTER PROPERTY LINE
BUILDING SETBACK
TREE LINE
EDGE OF PAVEMENT
EDGE OF GRAVEL
OVERHEAD ELECTRIC LINES
WETLAND
STONE WALL
MAJOR CONTOUR
MINOR CONTOUR
SEWER LINE
UTILITY POLE
LEDGE OUTCROP

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 feet

MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

MAP 224 LOT 17
SEA STAR COVE CONDOMINIUM
1163 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42567

MAP 224 LOT 15
JOHN & COLLEEN HEBERT
54 PIONEER RD
RYE, NH 03870
BK 5383 PG 219
46,096 SQ. FT.
1.06 AC

MAP 224 LOT 14
COLLEEN HEBERT
54 PIONEER RD
RYE, NH 03870
BK 2418 PG 173
33,196 SQ. FT.
0.76 AC.

MAP 224 LOT 10-1
KEVIN SLOVER
20 ODIORNE POINT RD
PORTSMOUTH, NH 03801
BK 4333 PG 1485
PLAN 39932

MAP 224 LOT 13
WESTWIND TOWNHOMES OF PORTSMOUTH
1177 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42429

MAP 201 LOT 26
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 0[illegible]
BK 2299 PG 1[illegible]

1" IP FND 0.15' EXPOSED
4" IP FND FILLED WITH CONCRETE 0.3' DOWN TOP OF PIPE FOUND NEARBY MARKED "N S"
EXISTING UNDERGROUND ELECTRIC SERVICE
EXISTING UTILITY POLE WITH DROP
RIGHT OF WAY PER PLAN REF. 1
2" IP FND METAL CAP 0.15' EXPOSED ON LINE 1.65' INTO R.O.W.
N67°57'08"W 97.74' (TIE)
APPROXIMATE BURIED WETLAND LOCATION
520± SQ. FT. WETLAND
100' BUFFER FROM OFFSITE WETLAND (TYP.)
OFFSITE WETLAND
25' VEGETATED BUFFER STRIP
S80°37'03"W 298.35'
N06°41'40"E 68.25'
DH FND 0.8' DOWN IN LEDGE
APPROXIMATE AREA OF OLD FILL AND BURIED TOPSOIL
GRAVEL DRIVE
15' FRONT SETBACK (TYP.)
EXISTING 12" CAST IRON WATER MAIN
S08°49'52"W 174.91'
184.91'
15' REAR SETBACK (TYP.)
GRAVEL DRIVEWAY
10' SIDE SETBACK (TYP.)
SINGLE-STORY RESIDENCE
11" MAPLE
1" IRON PIN 0.2' DOWN DISTURBED
EXISTING WATER SERVICE WITH SHUTOFF
N71°40'E 100.82'
N79°16'50"E 305.92'
PAVEMENT
1¼" IP FND FLUSH
POSSIBLE SEPTIC TANK
ABOVE GROUND POOL
ELEVATED DECK
SHED
PAVED DRIVE
EXISTING UTILITY POLE
SAGAMORE AVENUE
NH ROUTE 1A
CLASS I
N71°40'E 47.81'
N69°16'20"W 30.99'
WOOD RETAINING WALL
7" ORNAMENTAL TREE
5" CHERRY
SMH 2088
RIM=37.62
EX. 3" & 4" FM INV. IN UNKNOWN
INVout=31.27 – 8" PVC
SMH 2048
RIM=34.98
INVin=25.83 – BOTTOM OF INSIDE DROP
INVin=25.78 – 8" PVC (W)
INVout=25.73 – 8" PVC (S)
S69°49'29"W 117.31'
LEDGE OUTCROP (TYP.)
STONE RETAINING WALLS
GRAVEL DRIVEWAY
N73°23'40"E 296.83'
EXISTING GATE VALVE AND FIRE HYDRANT
EXISTING UTILITY POLE
IR FND 0.2' DOWN AMES MSC ON LINE 1.11' TO R.O.W.
TBM – NAIL IN UP EL = 37.72
NO EASEMENT FOUND AT THIS TIME FOR POLES OR OVERHEAD WIRES
IR FND EASTERLY FLUSH 0.63' OFF LINE
EXISTING UTILITY POLE
IR FND COLWELL FLUSH 0.93' OFF LINE
1¼" IP FND FLUSH
N26°39'35"E 126.62' (TIE TO TOWN BOUND)
TWIN 20" OAK
TWIN 16" OAK
TRIPLE 12" OAK
TWIN 9"x18" OAK
TRIPLE 10" OAK
321 BH
321 CH
261 BH
261-DH
561 BH
224 BH
327 BH
TP 1 – TP 7, TP X1 – TP X7, TP B1 – TP B7

LOCUS
SCALE: 1"=1000'
MARTINE COTTAGE ROAD
SAGAMORE CREEK
WENTWORTH ROAD
SAGAMORE AVENUE
PORTSMOUTH RYE
SITE
GOSPORT ROAD
ELWYN ROAD

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND BUFFER = 100' FROM WETLANDS > 10,000 S.F. IN AREA
   MAX. BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 25%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
5. BASIS OF BEARING:
   HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.

HISS SOIL NOTE

THIS SOIL MAP WAS PREPARED BY A PROFESSIONAL SOIL SCIENTIST AND MEETS THE TECHNICAL STANDARDS OF THE SSSNNE PUBLICATION NO. 1, HIGH INTENSITY SOIL MAPS FOR NH, DECEMBER 2017. SOIL MAP WAS PREPARED ON 4 APRIL 2021. SOIL MAP SITE WAS 1169 & 1171 SAGAMORE AVENUE, PORTSMOUTH, NH.

SOIL MAP UNITS WERE IDENTIFIED USING THE KEY TO SOIL TYPES. THE CONVERSION OF HIGH INTENSITY SOIL MAP UNIT TO NRCS SOIL MAP UNIT NAME WAS BASED UPON THE OBSERVED SOIL PROFILES, AS WAS HYDROLOGIC SOIL GROUP, AS TAKEN FROM SSSNNE SPECIAL PUBLICATION NO. 5.

SOIL MAPPING WAS PERFORMED BY JAMES GOVE, CSS # 004.

HISS SOIL MAP UNIT	SOIL MAP UNIT NAME	HYDROLOGIC SOIL GROUP
224 (SLOPE) H	HOLLIS–ROCK OUTCROP COMPLEX	D
261 (SLOPE) H	MADE LAND – SIMILAR TO CANTON	B
321 (SLOPE) H	NEWFIELDS	B
327 (SLOPE) H	CHATFIELD VARIANT	B
561 (SLOPE) H	MADE LAND– SIMILAR TO WALPOLE	C

B SLOPE = 0–8%, C SLOPE = 8–15%, D SLOPE = 15–25%

CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE – No. 1030 – MATTHEW J. SALVUCCI – LICENSED LAND SURVEYOR – SIGNATURE

7/27/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

STATE OF NEW HAMPSHIRE – JAMES P. GOVE – 004 – CERTIFIED SOIL SCIENTIST

STATE OF NEW HAMPSHIRE – JAMES P. GOVE – No. 0051 – CERTIFIED WETLAND SCIENTIST

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER – 7/27/22

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 | LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C1
SHEET 2 OF 22
JBE PROJECT NO. 21047

DEMOLITION NOTES:

1. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
2. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
3. ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
4. ALL EXISTING UTILITIES SHALL BE TERMINATED AT THE PROPERTY LINE, UNLESS OTHERWISE NOTED ON THE PLANS, IN CONFORMANCE WITH LOCAL, STATE AND UTILITY COMPANY STANDARDS, SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES PRIOR TO THE START OF WORK.
5. EXISTING WATERLINES TO BE REMOVED SHALL BE CAPPED AT EXISTING WATERMAIN.
6. ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
7. SEE LANDSCAPE PLAN FOR "TREES TO BE SAVED" AND DETAILS ASSOCIATED WITH LANDSCAPED AREAS.
8. THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
9. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
10. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. SILT FENCE SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
11. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.
12. SEPTIC LINES ARE TO BE CLEANED OUT AND REMOVED. SEPTIC TANK IS TO BE PUMPED, PUNCTURED, AND FILLED WITH SAND, AND SEPTIC TANK AND LEACH FIELD SHALL BE REMOVED IN ACCORDANCE WITH NHDES STANDARDS. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.

REMOVE ANY OFF-SITE FILL AND REPLACE WITH FINE SANDY LOAM UP TO EXISTING GRADE. REPLANT ANY OFF-SITE VEGETATION THAT IS CUT IN THE PROCESS.
EXISTING UNDERGROUND ELECTRIC SERVICE TO BE REROUTED AFTER COORDINATING WITH PROPERTY OWNER WHOM IT IS SERVICING
EXISTING OVERHEAD ELECTRIC SERVICE TO BE REROUTED AFTER COORDINATING WITH PROPERTY OWNER WHOM IT IS SERVICING
EXISTING UTILITY POLE WITH DROP
RIGHT OF WAY PER PLAN REF. 1
MATCHLINE SEE INSET, THIS SHEET
EXISTING WHITE BIRCH TO REMAIN
EXISTING OAK TO REMAIN
TREELINE REPRESENTING PROPOSED LIMIT OF CLEARING
APPROXIMATE BURIED WETLAND LOCATION
520± SQ. FT. WETLAND
TREES TO REMAIN
TREELINE REPRESENTING PROPOSED LIMIT OF CLEARING
RELOCATE UTILITY POLE PER SHEET C4 AFTER COORDINATING REROUTING OF ELECTRIC SERVICES WITH PROPERTY OWNERS WHOM IT IS SERVICING
LEDGE OUTCROP TO BE REMOVED UP TO PROPERTY LINE
100' BUFFER FROM OFFSITE WETLAND
TREES TO BE REMOVED
TREE TO BE REMOVED
SAWCUT LINE FOR OFFSITE IMPROVEMENTS (SEE SHEET C4)
TREES TO REMAIN
FIRST FOUR TREES IN THIS ROW TO BE REMOVED AND REPLACED WITH SIMILAR TREES AFTER CONSTRUCTION FOUR TREES TO NORTH TO REMAIN SEE SHEET L1
FINE LAWN AREA
TREES TO BE REMOVED
TREE TO BE REMOVED
LEDGE OUTCROP TO BE REMOVED
APPROXIMATE AREA OF OLD FILL AND BURIED TOPSOIL REMOVE ENTIRE DEPTH OF FILL AND REPLACE WITH FINE SANDY LOAM UP TO PROPOSED GRADE, BOTTOM OF PROPOSED DRAINAGE SYSTEM, OR BOTTOM OF FOUNDATION BACKFILL LAYER AS APPLICABLE.
GRAVEL DRIVE TO BE REMOVED
EXISTING 12" CAST IRON WATER MAIN
GRAVEL DRIVEWAY TO BE REMOVED
TREE AND BUILDING ACCESSORIES TO BE REMOVED
SINGLE-STORY RESIDENCE TO BE REMOVED
WATER SHUTOFF AND SERVICE TO BE REMOVED BUT CONTRACTOR TO REUSE SAME TAPPING LOCATION FOR WATER MAIN THROUGH SITE
SECTION OF 12" CAST IRON WATER MAIN TO BE REPLACED IF NECESSARY (SEE SHEET C5) CONTRACTOR TO NOTIFY AND OBTAIN PERMISSION FROM PORTSMOUTH DEPARTMENT OF PUBLIC WORKS BEFORE PERFORMING THIS WORK
TREES TO BE REMOVED
PAVEMENT TO BE REMOVED
PAVEMENT
LOT LINE TO BE VACATED
EXISTING WATER SERVICE WITH SHUTOFF
SAWCUT LINE (VARIABLE DEPENDING UPON EXTENT TO WHICH THE WATER MAIN MUST BE REPLACED AS DESCRIBED ON SHEET C5)
TREE TO BE REMOVED
SMH 2088
RIM=37.62
EX. 3" & 4" FM INV. IN UNKNOWN
INVout=31.27 - 8" PVC
EXISTING OAK TO REMAIN
POSSIBLE SEPTIC TANK SEE NOTE #12
ABOVE GROUND POOL
ELEVATED DECK
POOL AND STRUCTURE TO BE REMOVED
HOUSE TO BE REMOVED
PAVED DRIVE TO BE REMOVED
EXISTING UTILITY POLE TO BE RELOCATED
SAWCUT LINE
SINGLE-STORY RESIDENCE TO BE REMOVED
RETAINING WALL TO BE REMOVED
SHED AND PAVEMENT TO BE REMOVED
SHED
SINGLE-STORY RESIDENCE
SAGAMORE AVENUE NH ROUTE 1A CLASS I
TREE TO BE REMOVED
SAWCUT LINE
OVERHEAD ELECTRIC SERVICE TO BE REMOVED
LEDGE OUTCROP TO REMAIN
SHED TO BE REMOVED
LEDGE OUTCROP TO BE REMOVED
WOOD RETAINING WALL TO BE REMOVED
EXISTING WATER SERVICE WITH SHUTOFF TO BE REMOVED
LEDGE OUTCROP (TYP.)
TREES TO BE REMOVED
STONE RETAINING WALLS TO BE REMOVED
TREES TO REMAIN
GRAVEL DRIVEWAY TO BE REMOVED
EXISTING GATE VALVE AND FIRE HYDRANT TO REMAIN
EXISTING UTILITY POLE TO REMAIN
TBM - NAIL IN UP EL = 37.72
NO EASEMENT FOUND AT THIS TIME FOR POLES OR OVERHEAD WIRES
TREES TO BE REMOVED
EXISTING UTILITY POLE
TREELINE REPRESENTING PROPOSED LIMIT OF CLEARING
SMH 2048
RIM=34.98
INVin=25.83 - BOTTOM OF INSIDE DROP
INVin=25.78 - 8" PVC (W)
INVout=25.73 - 8" PVC (S)

REMOVE EXISTING CURBING UP TO R.O.W LINE, THEN PROCEED AS DIRECTED ON SHEET C4 AND PER DETAIL ON SHEET D2
"SPONSOR A HIGHWAY" SIGN TO BE RELOCATED
RELOCATE UTILITY POLES (TYP. X2) SEE SHEET C4
REROUTE OVERHEAD ELECTRIC ACCORDING TO PROPOSED UTILITY POLE LOCATIONS
MAILBOX TO BE RELOCATED
EXISTING DRIVEWAY
SAWCUT LINE FOR OFFSITE IMPROVEMENTS (SEE SHEET C4)
RIGHT OF WAY PER PLAN REF. 1
MATCHLINE - SEE LEFT
RELOCATE UTILITY
INSET
1 INCH = 20 FEET

STATE PLANE

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE - PAIGE S. LIBBEY No.16670 - LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DEMOLITION PLAN
Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
DM-1
SHEET 3 OF 22
JBE PROJECT NO. 21047

PLAN REFERENCES:

1. "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
2. "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13349.
3. "SUBDIVISION PLAN OF LAND, PORTSMOUTH & RYE, N.H. FOR R & S TRUST." DATED DECEMBER 13, 1984. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 13415.
4. "LOT LINE REVISION, KEVIN SLOVER & WESTWIND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 39932.
5. "AS-BUILT CONDOMINIUM SITE PLAN, WESTWIND TOWNHOMES OF PORTSMOUTH." DATED JANUARY 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42429.
6. "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

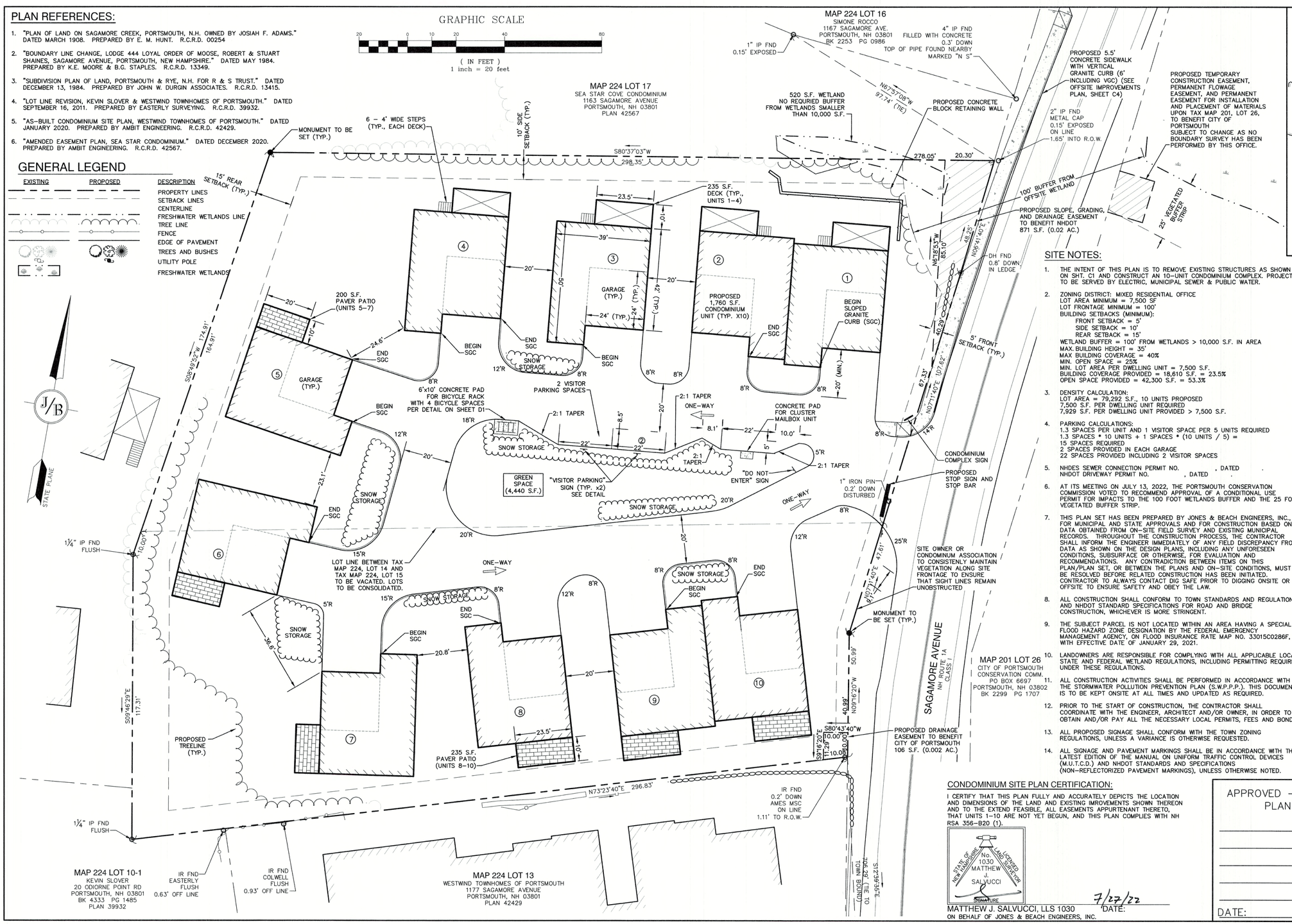
GRAPHIC SCALE

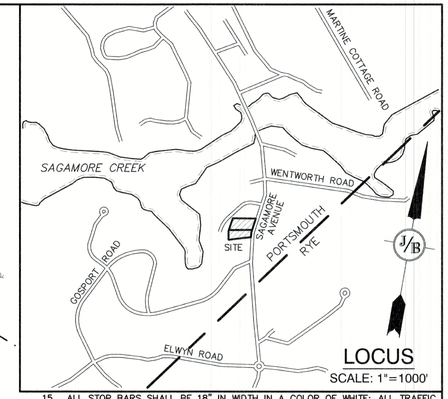
20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TREE LINE
		FENCE
		EDGE OF PAVEMENT
		TREES AND BUSHES
		UTILITY POLE
		FRESHWATER WETLANDS





SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE EXISTING STRUCTURES AS SHOWN ON SHT. C1 AND CONSTRUCT AN 10–UNIT CONDOMINIUM COMPLEX. PROJECT TO BE SERVED BY ELECTRIC, MUNICIPAL SEWER & PUBLIC WATER.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE
   LOT AREA MINIMUM = 7,500 SF
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 5'
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND BUFFER = 100' FROM WETLANDS > 10,000 S.F. IN AREA
   MAX BUILDING HEIGHT = 35'
   MAX BUILDING COVERAGE = 40%
   MIN. OPEN SPACE = 25%
   MIN. LOT AREA PER DWELLING UNIT = 7,500 S.F.
   BUILDING COVERAGE PROVIDED = 18,610 S.F. = 23.5%
   OPEN SPACE PROVIDED = 42,300 S.F. = 53.3%
3. DENSITY CALCULATION:
   LOT AREA = 79,292 S.F., 10 UNITS PROPOSED
   7,500 S.F. PER DWELLING UNIT REQUIRED
   7,929 S.F. PER DWELLING UNIT PROVIDED > 7,500 S.F.
4. PARKING CALCULATIONS:
   1.3 SPACES PER UNIT AND 1 VISITOR SPACE PER 5 UNITS REQUIRED
   1.3 SPACES * 10 UNITS + 1 SPACES * (10 UNITS / 5) =
   15 SPACES REQUIRED
   2 SPACES PROVIDED IN EACH GARAGE
   22 SPACES PROVIDED INCLUDING 2 VISITOR SPACES
5. NHDES SEWER CONNECTION PERMIT NO. , DATED
   NHDOT DRIVEWAY PERMIT NO. , DATED .
6. AT ITS MEETING ON JULY 13, 2022, THE PORTSMOUTH CONSERVATION COMMISSION VOTED TO RECOMMEND APPROVAL OF A CONDITIONAL USE PERMIT FOR IMPACTS TO THE 100 FOOT WETLANDS BUFFER AND THE 25 FOOT VEGETATED BUFFER STRIP.
7. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON–SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON–SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
8. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
9. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
10. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
11. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
12. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
13. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
14. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON–REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
15. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
16. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
17. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
18. ALL ARCHITECTURAL BLOCK RETAINING WALLS ARE TO BE DESIGNED AND STAMPED BY THE MANUFACTURER'S STRUCTURAL ENGINEER. CONTRACTOR TO COORDINATE WITH APPROVED MANUFACTURER PRIOR TO INSTALLATION.
19. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
20. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
21. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
22. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
23. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
24. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG–SAFE AT 1–888–DIG–SAFE.
25. BASIS OF BEARING:
    HORIZONTAL – NH STATE PLANE. VERTICAL – NAVD88.
26. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
27. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
28. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
29. AN ACCESS EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.
30. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
31. ON–SITE SALT STORAGE IS PROHIBITED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.
32. LANDOWNERS OR CONDOMINIUM ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTAINING DRIVEWAY SIGHT LINES.
33. FOR ONE YEAR THE APPLICANT SHALL MONITOR THE SITE WHERE INVASIVE SPECIES ARE TO BE REMOVED IN ORDER TO DETERMINE THE SUCCESS OF THE REMOVAL AND THE HEALTH OF THE NEW WETLAND PLANTINGS WITHIN THE BUFFER. THE NEW PLANTINGS SHALL HAVE A GREATER THAN 80% SUCCESS RATE AFTER ONE YEAR. IF NOT APPLICANT SHALL REPLANT.
34. NOFA STANDARDS FOR LAND CARE SHALL BE USED AND ONLY ORGANIC LAND MANAGEMENT TECHNIQUES SHALL BE USED WITHIN THE WETLAND AND WETLAND BUFFER AREAS.

CONDOMINIUM SITE PLAN CERTIFICATION:

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMROVEMENTS SHOWN THEREON AND TO THE EXTEND FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT UNITS 1–10 ARE NOT YET BEGUN, AND THIS PLAN COMPLIES WITH NH RSA 356–B20 (1).

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE: 7/27/22
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	Project No.: 21047

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

Civil Engineering Services

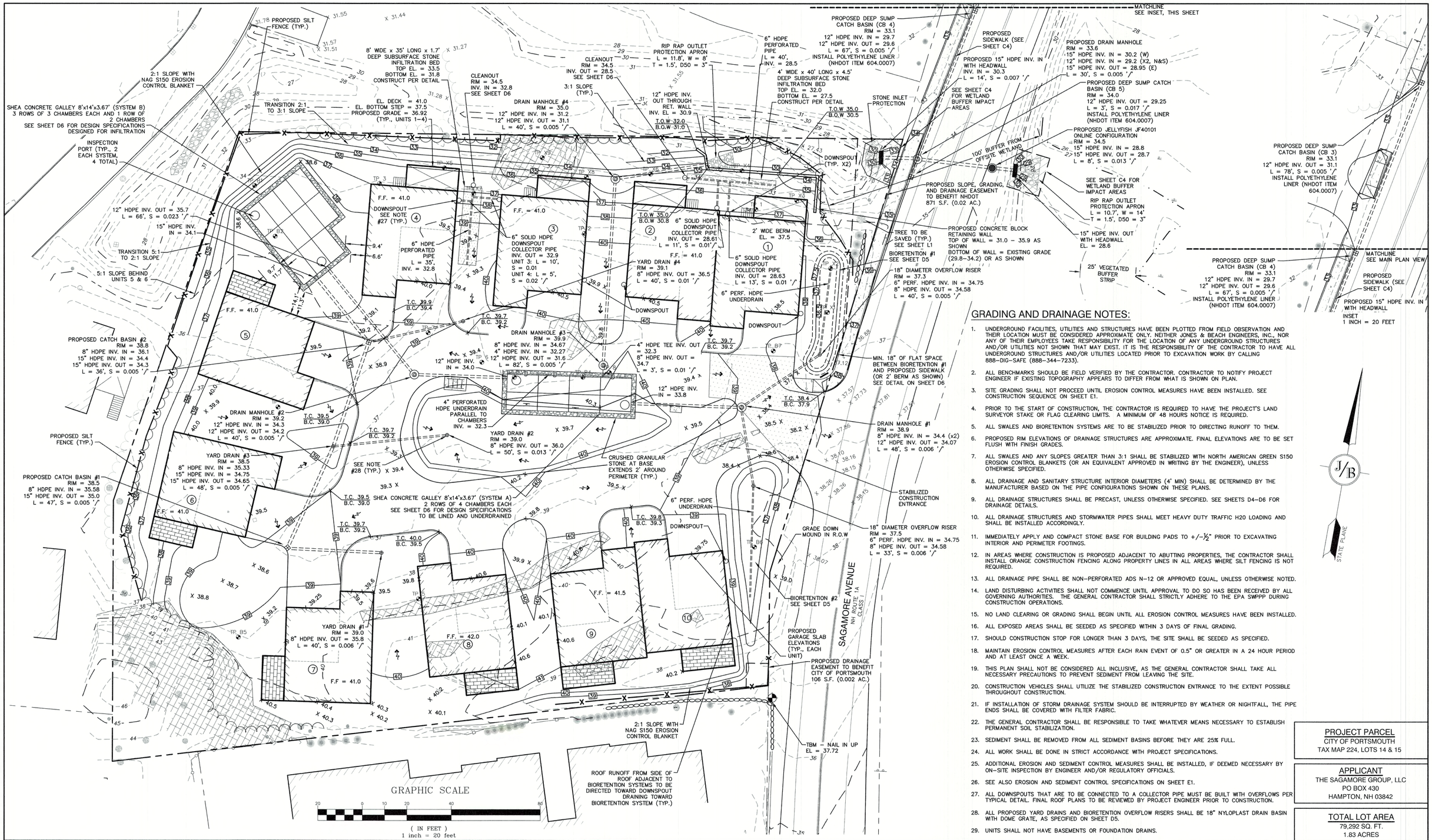
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **CONDOMINIUM SITE PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C2
SHEET 4 OF 22
JBE PROJECT NO. 21047



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888–DIG–SAFE (888–344–7233).
2. ALL BENCHMARKS SHOULD BE FIELD VERIFIED BY THE CONTRACTOR. CONTRACTOR TO NOTIFY PROJECT ENGINEER IF EXISTING TOPOGRAPHY APPEARS TO DIFFER FROM WHAT IS SHOWN ON PLAN.
3. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
5. ALL SWALES AND BIORETENTION SYSTEMS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
6. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
7. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
8. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEETS D4–D6 FOR DRAINAGE DETAILS.
10. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
11. IMMEDIATELY APPLY AND COMPACT STONE BASE FOR BUILDING PADS TO +/–½" PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
12. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
13. ALL DRAINAGE PIPE SHALL BE NON–PERFORATED ADS N–12 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
14. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
15. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
16. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
17. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
18. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
19. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
20. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
21. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
22. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
23. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
24. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
25. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON–SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
26. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
27. ALL DOWNSPOUTS THAT ARE TO BE CONNECTED TO A COLLECTOR PIPE MUST BE BUILT WITH OVERFLOWS PER TYPICAL DETAIL. FINAL ROOF PLANS TO BE REVIEWED BY PROJECT ENGINEER PRIOR TO CONSTRUCTION.
28. ALL PROPOSED YARD DRAINS AND BIORETENTION OVERFLOW RISERS SHALL BE 18" NYLOPLAST DRAIN BASIN WITH DOME GRATE, AS SPECIFIED ON SHEET D5.
29. UNITS SHALL NOT HAVE BASEMENTS OR FOUNDATION DRAINS.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Drawing Name: 21047-PLAN.dwg	Date: 3/25/21
	Project No.: 21047

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STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER — 7/27/22

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
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15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **GRADING AND DRAINAGE PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C3
SHEET 5 OF 22
JBE PROJECT NO. 21047

NEW ENGLAND CONSERVATION/WILDLIFE MIX

BOTANICAL NAME	COMMON NAME	INDICATOR
ELYMUS VIRGINCUS	VIRGINIA WILD RYE	FACW-
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
ANDROPOGEN GERARDII	BIG BLUESTEM	FAC
FESTUCA RUBRA	RED FESCUE	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
PANICUM VIRGATUM	SWITCH GRASS	FAC
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
DESMODIUM CANADENSE	SHOWY TICK TREFOIL	FAC
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
BIDENS FRONDOSA	BEGGAR TICKS	FACW
EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	FAC
RUDBECKIA HIRTA	BLACK EYED SYSAN	FACU-
ASTER PILOSUS	HEATH (OR HAIRY) ASTER	UPL
SOLIDAGO JUNCEA	EARLY GOLDENROD	

WETLAND BUFFER IMPACT SUMMARY

300 S.F. TEMPORARY IMPACT TO WETLAND BUFFER ON LOT 15, ALL OUTSIDE OF VEGETATED BUFFER STRIP

270 S.F. TEMPORARY IMPACT TO WETLAND BUFFER ON LOT 26, ALL WITHIN 25' VEGETATED BUFFER STRIP

570 S.F. TOTAL TEMPORARY IMPACT TO WETLAND BUFFER (INCLUDING 270 S.F. TOTAL TEMPORARY IMPACT TO 25' VEGETATED BUFFER STRIP)

WORK IN RIGHT OF WAY, AS WELL AS REMOVAL OF INVASIVE PLANTS AND NEW PLANTINGS ARE PERMITTED IN WETLAND BUFFER WITHOUT A CONDITIONAL USE PERMIT. THESE ACTIVITIES ARE NOT COUNTED IN THE ABOVE CALCULATIONS.

SEED MIX NOTES:

1. APPLICATION RATE: 25 LBS/ACRE, 1750 SQ. FT./LB
2. PLACE THE "NEW ENGLAND CONSERVATION/WILDLIFE MIX" ACROSS THE BOTTOM OF THE DETENTION POND AFTER CONSTRUCTION IS COMPLETE.
3. THIS MIX CAN BE APPLIED BY HYDRO-SEEDING (NO TACKIFIERS), BY MECHANICAL SPREADER, OR BY HAND. LIGHTLY RAKE OR ROLL AFTER SOWING TO INCREASE SEED TO SOIL CONTACT. APPLY ON A CLEAN, WEED FREE SEED BED, BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE FALL DORMANT SEEDING.
4. SOURCE: NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002. PHONE: 413-548-8000. EMAIL: INFO@NEWP.COM, WEB: WWW.NEWP.COM

MAP 224 LOT 17
SEA STAR COVE CONDOMINIUM
1163 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
PLAN 42567

MAP 224 LOT 16
SIMONE ROCCO
1167 SAGAMORE AVE.
PORTSMOUTH, NH 03801
BK 2253 PG 0986

MAP 201 LOT 26
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2299 PG 1707

SAGAMORE AVENUE
NH ROUTE 1A
CLASS I

1163 SAGAMORE AVENUE
"SEA STAR COVE"
PRIVATE ROAD

STATE PLANE

APPROXIMATE ABUTTER PROPERTY LINE (TYP.)

300 S.F. PROPOSED TEMPORARY BUFFER IMPACT ON LOT 15

PROPOSED RELOCATED UTILITY POLE AND DROP DOWNS

CLEAR TREES IN RIGHT OF WAY AS NECESSARY FOR SIDEWALK (TYP.)

5.5' CONCRETE SIDEWALK WITH VERTICAL GRANITE CURB (6" WIDE INCLUDING CURB)

100' WETLAND BUFFER

PROPOSED DRAIN MANHOLE #5 (SEE SHEET C3)

SEE SHEET C5, NOTE #39 IN CASE OF DIRECT CONFLICT BETWEEN PROPOSED DRAINAGE AND EXISTING UTILITIES

SIDEWALK SHALL BE AT TOP OF CURB, 6" ABOVE GRADE OF ROAD AND BE SLOPED 1% TO DRAIN AWAY FROM ROAD (TYP.)

FACE OF CURB TO BE 16' OFF CENTERLINE

PROPOSED "JELLYFISH" JF4-1-1 SEE SHEET C3

REVEGETATE AREA AFTER CULVERT IS INSTALLED

SAWCUT LINE (TYP., VARIABLE DEPENDING UPON EXTENT TO WHICH WATER MAIN MUST BE REPLACED PER NOTE ON SHEET C5)

CONTRACTOR TO SAWCUT ONLY BEYOND SOLID WHITE LINE EXCEPT WHERE NECESSARY FOR PROPOSED SEWER MAIN AND CULVERT. IF CONTRACTOR MUST SAWCUT INTO TRAVEL LANE EXCEPT AT THESE TWO LOCATIONS, PROJECT ENGINEER SHALL BE NOTIFIED PRIOR TO ROAD EXCAVATION

25' VEGETATED BUFFER STRIP

FORESTED WETLAND SURROUNDING POND

PROPOSED CATCH BASIN #5 SEE SHEET C3

ALL PROPOSED STRUCTURES IN SAGAMORE AVE. RIGHT OF WAY SHALL MEET OR EXCEED NHDOT STANDARDS (TYP.)

PROVIDE 2" R-10 FOAM BOARD INSULATION BETWEEN EXISTING FORCEMAIN AND PROPOSED CULVERT

EDGE OF WETLAND (TYP.)

REMOVE INVASIVE PLANTS FROM THIS AREA AND RESEED WITH "NEW ENGLAND CONSERVATION/WILDLIFE MIX", AS SPECIFIED ABOVE

270 S.F. PROPOSED TEMPORARY BUFFER IMPACT ON LOT 26

JAPANESE KNOTWEED TO BE REMOVED AND TREES TO BE SAVED IN THIS AREA

PROPOSED RELOCATED UTILITY POLES (TYP. X2) REROUTE OVERHEAD ELECTRIC AS SHOWN

TIP DOWN, NO TRUNCATED DOME (TYP.)

CATCH BASIN #3 SEE SHEET C3

PROPOSED RELOCATED MAILBOX

CATCH BASIN #4 SEE SHEET C3

TIP DOWN, NO TRUNCATED DOME

PROPOSED RELOCATED "SPONSOR A HIGHWAY" SIGN

TIP DOWN WITH DETECTABLE WARNING PANEL BEFORE STREET INTERSECTION

CURBING BEYOND PROPERTY LINE TO REMAIN (TYP.)

RECONFIGURE DRIVEWAY CURB CUTS FOR SPECIFIED WIDTHS

REGRADE DRIVEWAY CURB CUTS FOR NO MORE THAN 2% SLOPE IN FIRST 6'

B.C. 33.7 ±
T.C. 34.2 ±

COORDINATE WITH "SEA STAR COVE" PROPERTY OWNER OR CONDOMINIUM ASSOCIATION PRIOR TO WORK ON THIS DRIVEWAY, INCLUDING RELOCATION OF OVERHEAD ELECTRIC

EXISTING CONCRETE SIDEWALK & TIP DOWNS

REMOVE EXISTING CURBING AT PROPOSED LANDING AND ADDITIONALLY ANOTHER 3' BEYOND LANDING, THEN INSTALL NEW CURBING BEYOND LANDING AS DEPICTED ON SHEET D2 IN ORDER TO TIP DOWN FROM TOP OF CURB TO FINISHED GRADE OF LANDING WITH TRUNCATED DOME.

ALL WORK IN DOT RIGHT OF WAY NEEDS TO BE INSPECTED BY PROJECT ENGINEER.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
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1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
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PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

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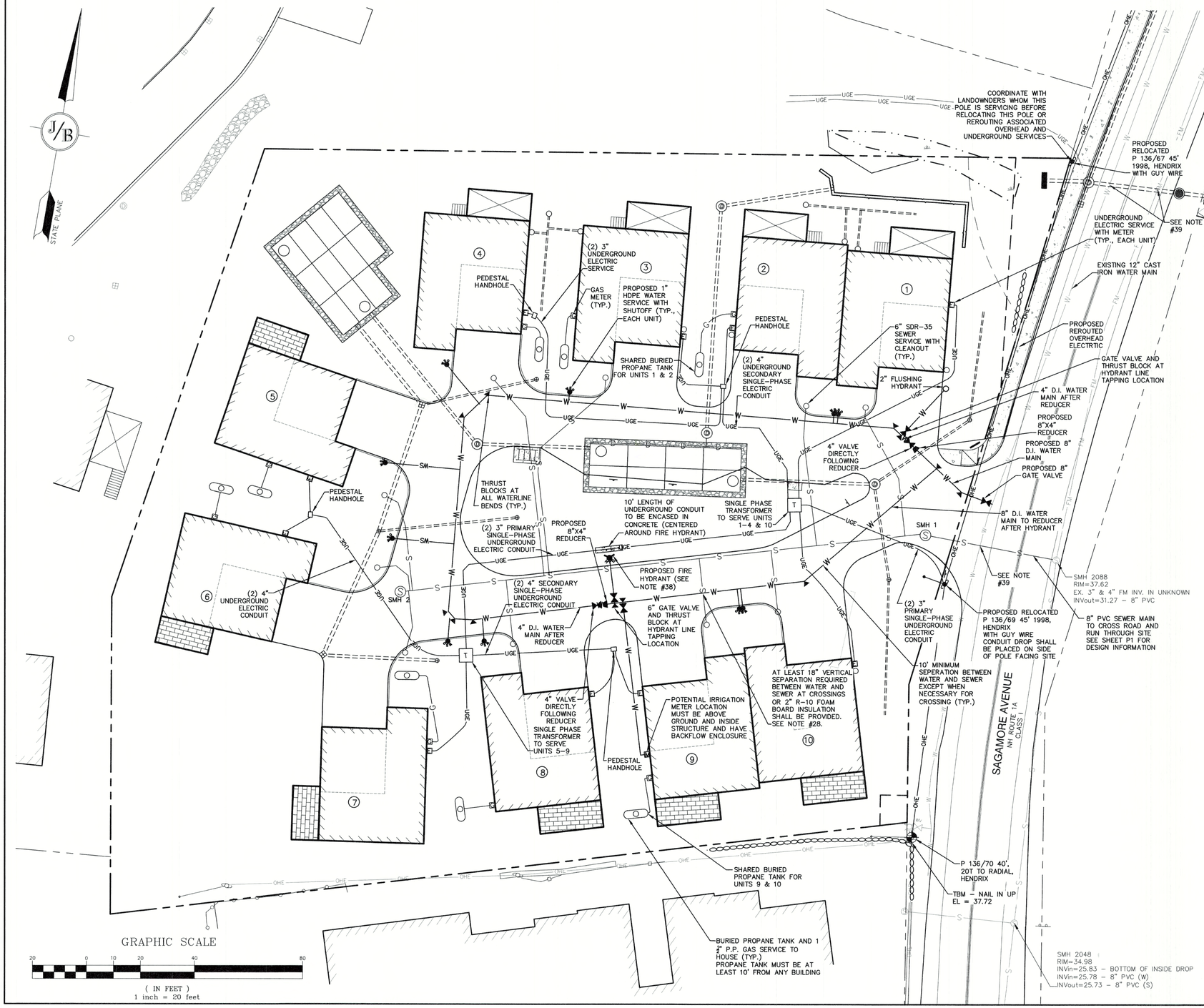
Plan Name: OFFSITE IMPROVEMENTS PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C4
SHEET 6 OF 22
JBE PROJECT NO. 21047



UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE CITY STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDINGS TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA, CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS AND SERVICES.
14. SANITARY SEWER FLOW CALCULATIONS:
    10 – THREE BEDROOM UNITS @ 150 GPD/BEDROOM = 4,500 GPD
    IRRIGATION USE = 1,000 GPD ±
15. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
16. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
17. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
18. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
19. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
20. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND HYDRANTS.
21. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
22. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV-WQ 700. ADOPTED ON 10-15-14.
26. ENV-WQ 704.06 GRAVITY SEWER PIPE TESTING: GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW-PRESSURE AIR TESTS CONFORMING WITH ASTM F1417-92(2005) OR UNI-B-6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
27. ENV-WQ 704.17 SEWER MANHOLE TESTING: SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES FROM AN EXISTING OR PROPOSED WATER LINE, EXCEPT THAT WHERE 18" VERTICAL SEPARATION CANNOT BE ACHIEVED (AS DEPICTED ON SHEET P1), PROVIDE TWO INCHES R-10 FOAM BOARD INSULATION ABOVE THE SEWER AND BELOW THE WATER LINE.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 6-INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
33. AN AS-BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT.
34. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
35. SHOP DRAWINGS TO BE SUBMITTED TO CITY OF PORTSMOUTH FOR REVIEW AND APPROVAL.
36. NEW DUCTILE IRON WATER LINE SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING FOR THE FULL LENGTH. ALL WATER LINE JOINTS SHALL HAVE THREE (3) BRASS WEDGES PER JOINT. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH WATER DEPARTMENT (JIM TOW AT 603-766-1439) PRIOR TO WATER LINE INSTALLATION.
37. IF IRRIGATION IS TO BE USED, THE PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY THE PORTSMOUTH CITY PLANNER, CITY ENGINEER, AND THE WATER DEPARTMENT PRIOR TO INSTALLATION.
38. LAY WATER MAIN WITH FIRE HYDRANT AT HIGH SPOT TO ALLOW FOR AIR TO BE RELEASED DURING FILLING OF THE WATER MAIN.
39. CONTRACTOR TO DIG TEST PITS AT CROSSING OF PROPOSED SEWER AND EXISTING WATER MAIN, AND AT CROSSINGS OF PROPOSED DRAINAGE PIPE WITH EXISTING WATER MAIN AND FORCEMAIN. IF THE EXISTING WATER MAIN IS IN CONFLICT WITH THE PROPOSED SEWER, OR IF EXISTING WATER OR FORCEMAIN ARE IN CONFLICT WITH THE PROPOSED DRAINAGE PIPE, NOTIFY PROJECT ENGINEER AND PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AND OBTAIN PERMISSION FROM PORTSMOUTH DPW AND REPLACE SECTION OF 12" CAST IRON WATER MAIN AS NECESSARY TO AVOID DIRECT CONFLICT BETWEEN WATER AND SEWER, OR TO REPLACE SECTION OF 12" CAST IRON WATER MAIN OR 3" & 4" FORCEMAIN AS NECESSARY TO AVOID DIRECT CONFLICT WITH PROPOSED DRAINAGE PIPE.
40. AN EASEMENT SHALL BE GRANTED TO THE CITY OF PORTSMOUTH FOR VALVE ACCESS AND LEAK DETECTION OF THE WATER MAIN, SHUTOFFS, AND METERS ON THE PROPERTY. EASEMENT DESCRIPTION MUST BE APPROVED BY THE CITY'S LEGAL DEPARTMENT AND ACCEPTED BY THE CITY COUNCIL.

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
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Stratham, NH 03885
Civil Engineering Services
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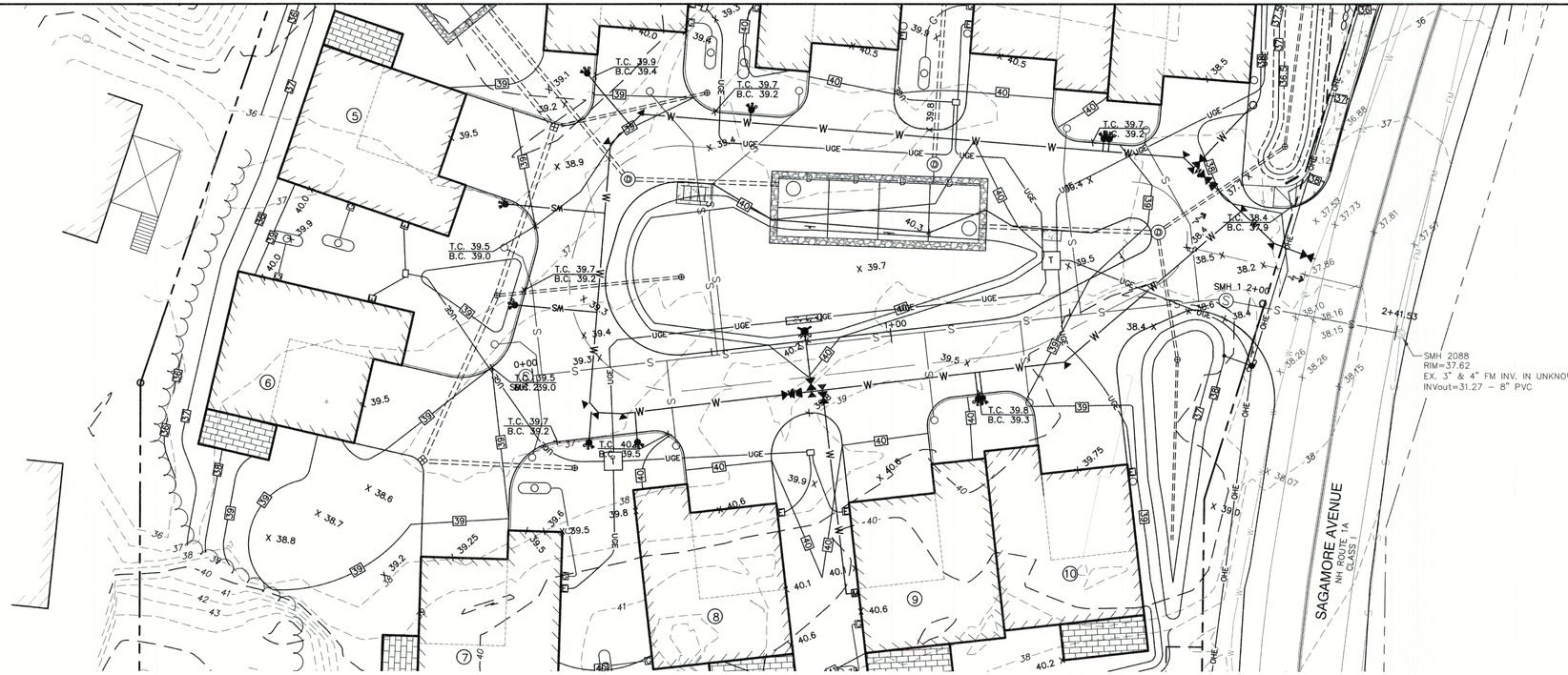
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

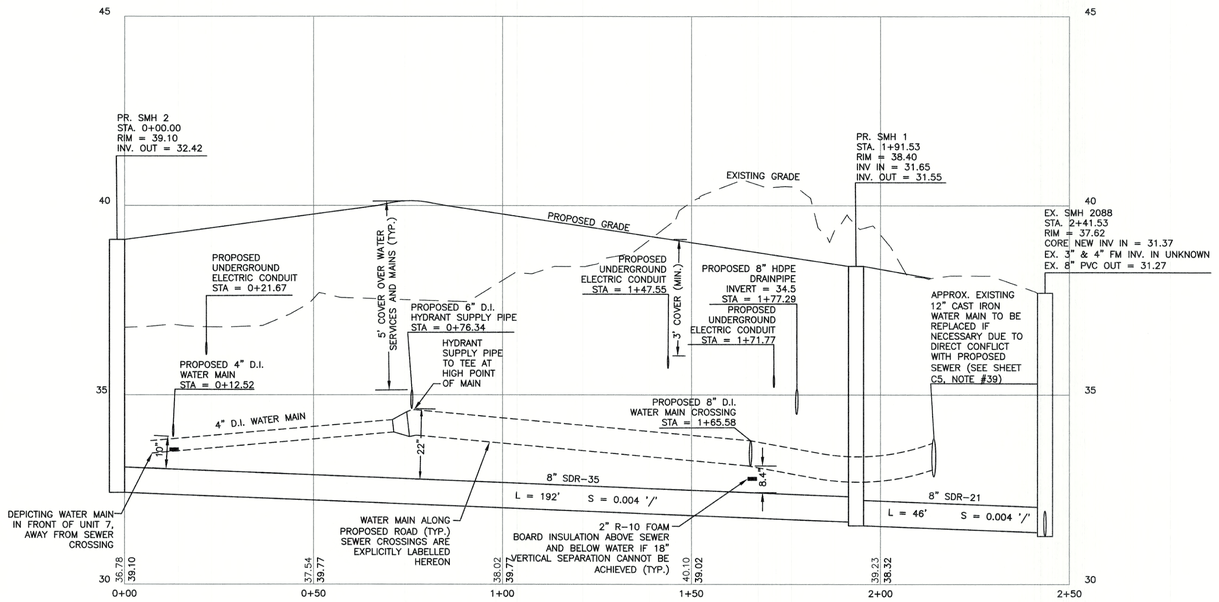
Plan Name: UTILITY PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
C5
SHEET 7 OF 22
JBE PROJECT NO. 21047





GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.

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603-772-4746
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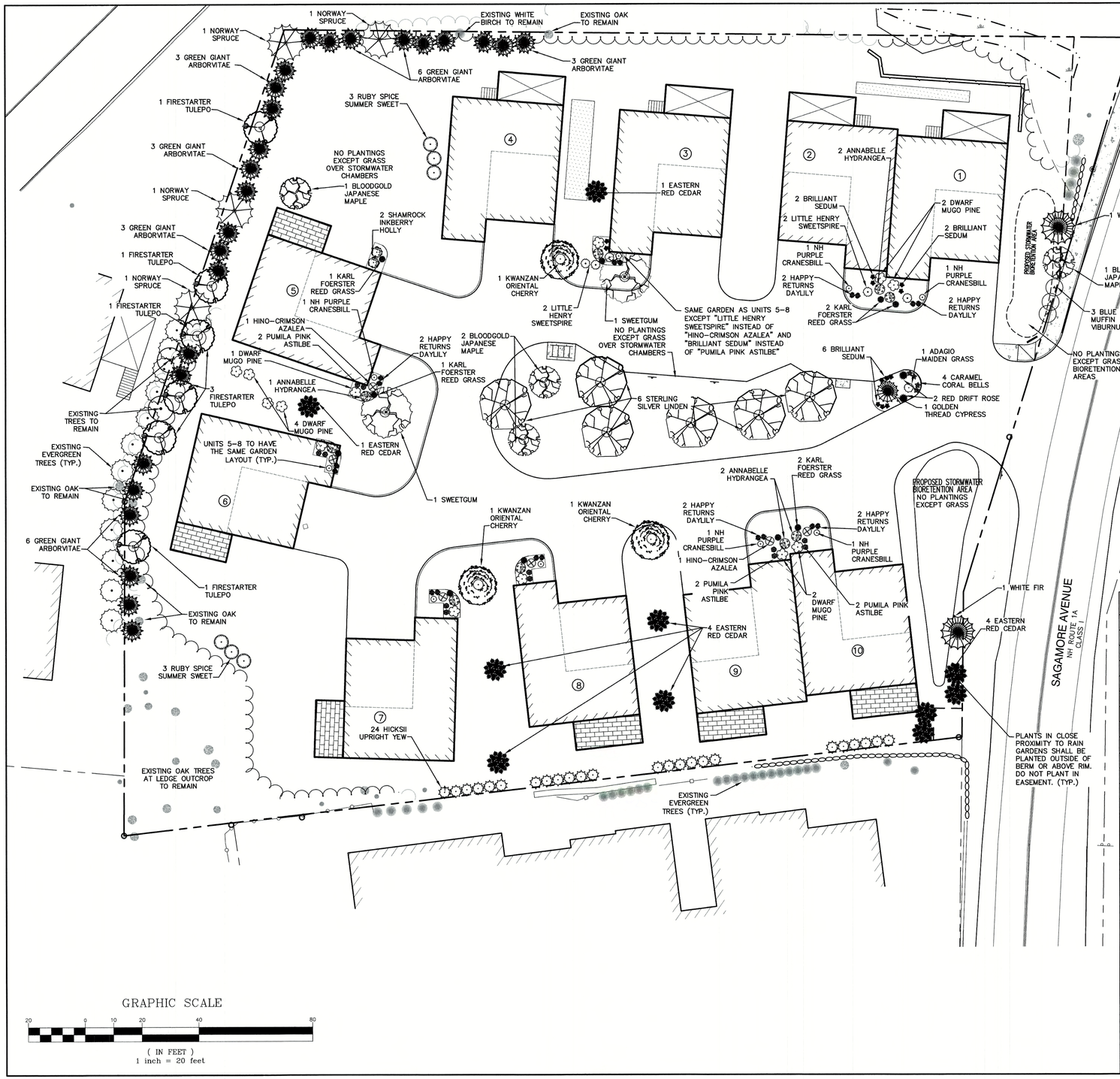
Plan Name: PLAN AND SEWER PROFILE

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
P1
SHEET 8 OF 22
JBE PROJECT NO. 21047



LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
5. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
6. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
7. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
8. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
9. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
10. THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
11. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
12. ALL LANDSCAPING SHALL MEET THE CITY OF PORTSMOUTH STANDARDS AND REGULATIONS.
13. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
14. ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO "WEEDBLOCK" BY EASY GARDENER OR DEWITT WEED BARRIER.
15. ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 9" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
16. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
17. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
18. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
19. ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
20. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED, AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
21. SEE TYPICAL PLANTING DETAILS ON SHEET D4.

PLANTING LIST

Trees			
Quantity	Botanical Name	Common Name	Size
2	Abies concolor	WHITE FIR	7-8 ft. ht.
4	Acer palmatum 'Bloodgood'	BLOODGOOD JAPANESE MAPLE	15 Gallon
10	Juniperus virginiana	EASTERN RED CEDAR	7-8 ft. ht.
2	Liquidambar styraciflua	SWEETGUM	2.5" Caliper
6	Nyssa sylvatica 'Firestarter'	FIRESTARTER TUPELO	4.5" Caliper
4	Picea abies	NORWAY SPRUCE	10-12 ft. ht.
3	Prunus serrulata 'Kwanzan'	KWANZAN ORIENTAL CHERRY	2" Caliper
24	Taxus x media 'Hicksii'	HICKSII UPRIGHT YEW	6-7 ft. ht.
26	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	10-12 ft. ht.
6	Tilia tomentosa 'Sterling'	STERLING SILVER LINDEN	3" Caliper
Shrubs			
6	Azalea indicum 'Hino Crimson'	HINO CRIMSON AZALEA	3 Gallon
1	Chamaecyparis pisifera 'Aurea'	GOLDEN THREAD CYPRESS	7 Gallon
6	Clethra alnifolia 'Ruby Spice'	RUBY SPICE SUMMER SWEET	5 Gallon
9	Hydrangea arborescens 'Annabelle'	ANNABELLE HYDRANGEA	5 Gallon
2	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 Gallon
5	Itea virginica 'Sprich Little Henry'	LITTLE HENRY SWEETSPIRE	3 Gallon
13	Pinus mugo 'Compacta'	DWARF MUGO PINE	5 Gallon
2	Rosa 'Red Drift'	RED DRIFT ROSE	3 Gallon
3	Viburnum dentatum 'Christom'	BLUE MUFFIN VIBURNUM	5 Gallon
Perennials			
12	Astilbe chinensis pumila	PUMILA PINK ASTILBE	1 Gallon
10	Calamagrostis x acutiflora 'Karl Foerster'	KARL FOERSTER REED GRASS	2 Gallon
9	Geranium sanguineum 'New Hampshire Purple'	NH PURPLE CRANESBILL	1 Gallon
18	Hemerocallis 'Happy Returns'	HAPPY RETURNS DAYLILY	1 Gallon
4	Heuchera micrantha 'Caramel'	CARAMEL CORALBELLS	1 Gallon
1	Miscanthus sinensis 'Adagio'	ADAGIO MAIDEN GRASS	2 Gallon
12	Sedum spectabile 'Brilliant'	BRILLIANT SEDUM	1 Gallon

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
L1
SHEET 9 OF 22
JBE PROJECT NO. 21047

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
●	1	P5	Single	EMM-E02-LED-E1-5WQ-SO-FL-BK-7030 / VA6105 / ARP5L416ABK
⊕	10	W	SINGLE	66411/ WALL MTD 9' AFG

Invue

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

ARP ALUMINUM ROUND TAPERED DECORATIVE

FEATURES
- Tapered aluminum shaft spun from seamless 6063 alloy aluminum
- T6 four-bolt anchorage configuration provided
- Anchor bolt per ASTM F1554 Grade 55 with (2) hex nuts, (2) flat washers
- Cast 356 alloy aluminum base with access door
- 10' - 22' mounting heights
- Tenon mount only

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and overflexion of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Cooper Lighting Sandoval Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Cooper Lighting Solutions or visit www.cooperlighting.com for available options, accessories and ordering information.

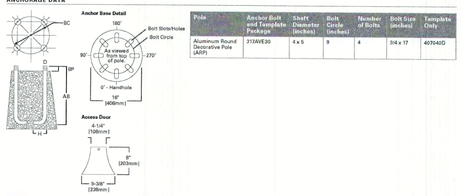
ORDERING INFORMATION

SAMPLE NUMBER: ARP5L316ASZ2

Product Family	Shaft Size (inches)*	Wall Thickness (inches)	Pole Top Diameter (inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Options (Add as Suffix)
ARP=Aluminum Round Tapered Decorative	5=5"	**L**=0.156" **M**=0.188"	2=3" O.D. ‡ 4=4-1/2" O.D. 6=4" O.D. ‡	10=10' 12=12' 14=14' 16=16' 18=18' † 20=22' †	A=Aluminum (Round 4-Bolt Pole)	**AP**=Grey **BA**=Anodized Bronze **BK**=Black **BZ**=Bronze **CA**=Anodized Clear **DA**=Anodized Black **DP**=Dark Platinum **GM**=Graphite Metallic **GN**=Hartford Green **WH**=White	2=2-3/8" O.D. Tenon (4" Long) 3=3" O.D. Tenon (4" Long)	**X**=None	**C**=Convenience Outlet ‡ **E**=GFCI Convenience Outlet ‡ **G**=Ground Lug **V**=Vibration Dampener †

NOTES: 1. All shaft sizes nominal. 2. Vibration damper recommended over 18 feet set suffix "V" to catalog number. 3. Specify outlet location. Receptacle not included, provision only. 4. Provides 3"O.D. pole top suited for Arbor Post Top. 5. Provides 4" OD pole top suited for LucaScape post tops.

ANCHORAGE DATA



Pole	Anchor Bolt and Template Package	Shaft Diameter (inches)	Bolt Circle (inches)	Number of Bolts	Bolt Size (inches)	Template Only
Aluminum Round Decorative Pole (ARP)	317AWE30	4 x 5	9	4	3/4 x 17	407040D

COOPER Lighting Solutions

TD513016EN
August 28, 2019 10:22 AM

LIGHTING AND ELECTRICAL NOTES:

1. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
2. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
3. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
4. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
5. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
6. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

Invue

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

DESCRIPTION

The EPIC Collection delivers custom luminaire flexibility with high quality, yet availability expectations of standard specification grade product. The EPIC Collection can be dressed to suit any application. Recognizing evolving environmental and legislative trends, the EPIC Collection delivers world class LED optical and performance solutions to the decorative luminaire marketplace.

SPECIFICATION FEATURES

Construction
TOP: Cast aluminum top housing attaches to cast aluminum mounting arm hub with four stainless steel fasteners. One-piece silicone gasket between mounting hub and top casting seals out moisture and contaminants. (See the mounting accessories section for a full selection of mounting arms. (Only these arms are compatible with the Epic luminaire). MIDSECTION: Continuous silicone gaskets seal lens to top casting and shade. The mid section features cast aluminum construction and stainless steel assembly. SHADES: Heavy gauge precision spun aluminum shades offer superior surface finish and consistency in form. DOORFRAME: Die-cast aluminum 1/8" thick door and doorframe seal to underside of shade with a thick wall continuous silicone gasket. Mounting hub ships attached to mounting arm.

Optics
Choice of twelve patented, high-efficiency AccuLED Optic™ technology manufactured from injection-molded acrylic. Optics are precisely designed to shape the optics, maximizing efficiency and application spacing. AccuLED Optic technology, creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and nominal 70 CRI. Optional 3000K CCT and 5000K CC. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2, SL3 or SL4 optics.

Electrical
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less that 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common - and differential – mode surge protection. LightBARs feature and IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21. Occupancy sensor and dimming options available.

Finish
Housing is finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightBAR™ cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.Options to meet Buy American Act requirements

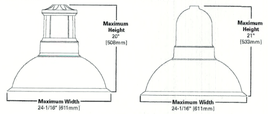
Warranty
Five-year warranty.

ECM/EMM
EPIC MEDIUM LED

1 - 4 LightBARs
Solid State LED

DECORATIVE AREA LUMINAIRE

DIMENSIONS



See configurations for more detailed information.

CERTIFICATION DATA
UL/cUL Listed
DesignLights Consortium® Qualified*
IP66 LightBARs
LM79 / LM80 Compliant
3G Vibration Tested
ISO 9001

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V 50/60Hz, 347V/60Hz, 480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

EPA
Effective Projected Area: (Sq. Ft.) 0.94

SHIPPING DATA
Approximate Net Weight:
45 lbs. (20 kgs.)

COOPER Lighting Solutions

*www.designlights.org

TD500038EN
December 8, 2021 2:28 PM

LED wall luminaire - partially shielded **BEGA**

Application
This LED wall luminaire has a partially shielded light source and is designed for the down lighting of interior and exterior locations with glare-free illumination.

Materials
Luminaire housing constructed of die-cast and spun marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy
Three-ply opal glass
High temperature silicone gasket
NRTL listed to North American Standards, suitable for wet locations
Protection class IP 44
Weight: 4 Obs

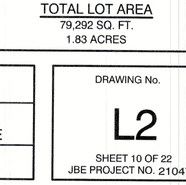
Electrical
Operating voltage 120-277VAC
Minimum start temperature -20°C
LED module wattage 8.0W
System wattage 12W
Controllability 0-10V dimmable
Color rendering index Ra > 90
Luminaire lumens 724 lumens (3000K)
L/lifetime at Ta = 25° C 500,000 h (L70)
L/lifetime at Ta = 40° C 268,000 h (L70)

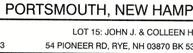
LED color temperature
☐ 4000K - Product number = **K4**
☐ 3500K - Product number = **K35**
☐ 3000K - Product number = **K3**
☐ 2700K - Product number = **K27**

BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details

Finish
All BEGA standard finishes are matte, textured polyester powder coat with minimum 3 mil thickness.
Available colors ☐ Black (BLK) ☐ White (WHT) ☐ RAL: ☐ Bronze (BRZ) ☐ Silver (SLV) ☐ CUS.:

Type:
BEGA Product:
Project:
Modified:





BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805)684-0533 info@bega-us.com
Due to the dynamic nature of lighting products and the associated technologies, luminaire data on this sheet is subject to change at the discretion of BEGA North America. For the most current technical data, please refer to bega-us.com
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GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21	
Checked: JAC	Scale: AS NOTED	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

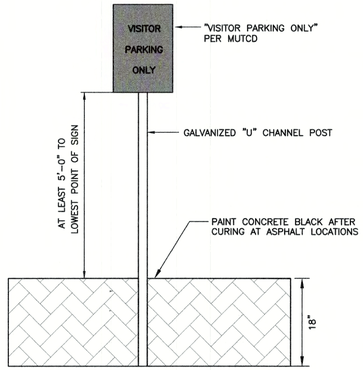
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **LIGHTING PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

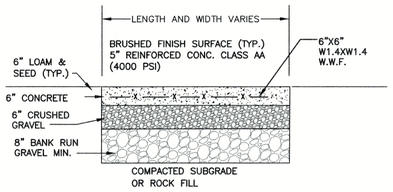
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
L2
SHEET 10 OF 22
JBE PROJECT NO. 21047



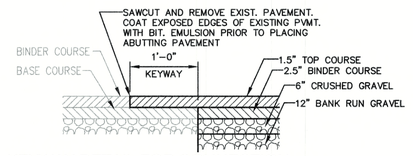
VISITOR PARKING SIGN

NOT TO SCALE



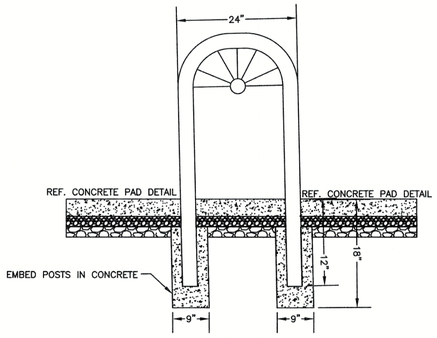
CONCRETE PAD DETAIL

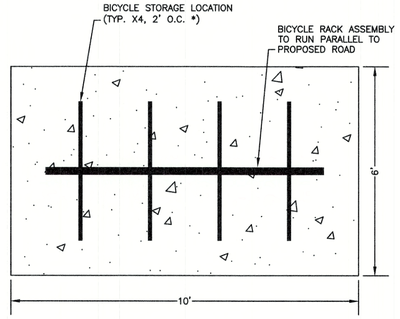
NOT TO SCALE



KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

NOT TO SCALE

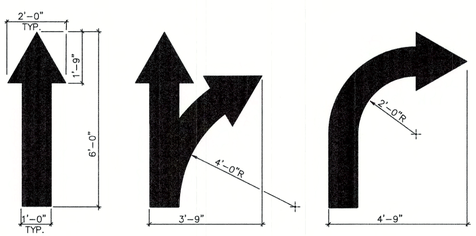




BICYCLE RACK PLAN VIEW (NOT TO SCALE)
* SEPARATION BETWEEN BICYCLE LOCATIONS MAY VARY PER PRODUCT SPECIFICATIONS AS LONG AS 4 BICYCLES CAN BE STORED ON 6'x10' CONCRETE PAD.

BICYCLE RACK

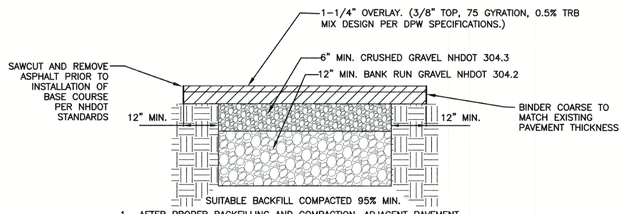
NOT TO SCALE



NOTES:
1. ALL FLOW ARROWS TO BE SOLID YELLOW REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.
2. REVERSE ARROWS FOR OPPOSITE DIRECTION OF FLOW.

PAINTED TRAFFIC ARROWS

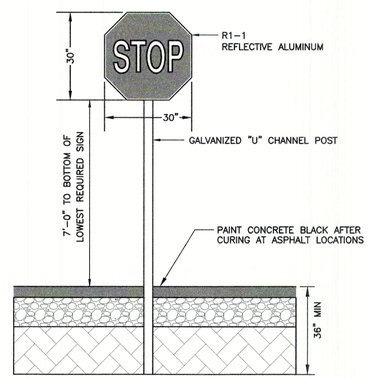
NOT TO SCALE



1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
5. GRAVEL COMPACTIONS TO MEET 95% MINIMUM.
6. PAVEMENT REPAIRS IN SAGAMORE AVE. RIGHT OF WAY TO MEET NHDOT STANDARDS.
7. WHERE WORK IMPACTS SAGAMORE AVE. TRAVEL LANE, MILL AND INLAY FOR FULL WIDTH OF LANE MAY BE REQUIRED.

TYPICAL PAVEMENT REPAIR DETAIL

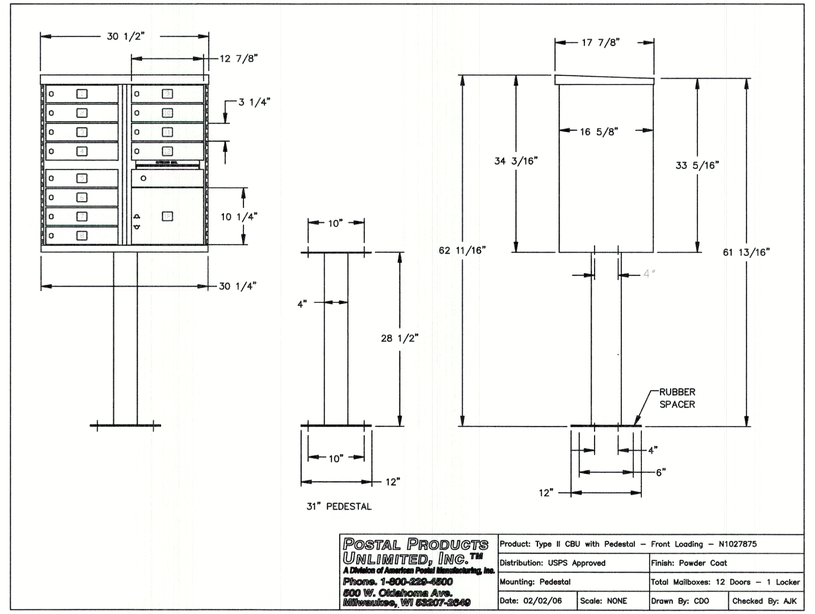
NOT TO SCALE



STOP SIGN (R1-1)

NOT TO SCALE

NOTES:
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 – TRAFFIC SIGNS.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.



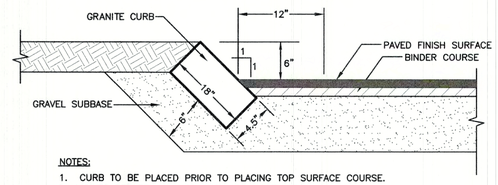
CLUSTER MAILBOX UNIT DETAIL

NOT TO SCALE

NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

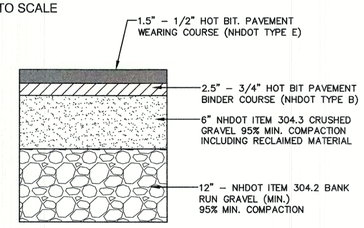
NOT TO SCALE



NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPED GRANITE CURB

NOT TO SCALE



TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No.16670 — LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

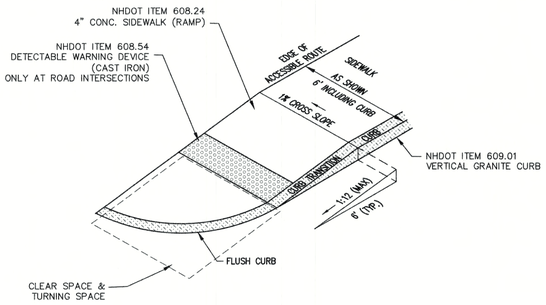
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
D1
SHEET 11 OF 22
JBE PROJECT NO. 21047

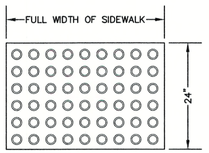


NOTES:

1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8.3%
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.
8. WHERE A CHANGE IN DIRECTION IS REQUIRED TO UTILIZE A CURB RAMP, A TURNING SPACE SHALL BE PROVIDED AT THE BASE AND/OR THE TOP OF THE CURB RAMP. TURNING SPACES SHALL BE PERMITTED TO OVERLAP CLEAR SPACES.
9. TURNING SPACE MAXIMUM CROSS SLOPE IS 2% IN ANY DIRECTION.
10. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4'X4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN CROSSWALK, AND OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. THE CLEAR SPACE MAY OVERLAP TURNING SPACES, DETECTABLE WARNING SURFACES AND DROP CURBS.

ACCESSIBLE CURB RAMP (NHDOT TYPE 1)

NOT TO SCALE



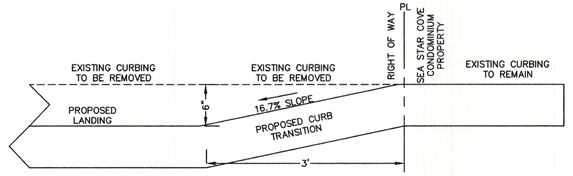
DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH THE FOLLOWING:

A. TRUNCATED DOMES SHALL HAVE A BASE DIAMETER OF 0.9" (MIN.) AND 1.4" (MAX.), A TOP DIAMETER OF 50% OF THE BASE DIAMETER MINIMUM TO 65% OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2".
B. THE DETAIL PROVIDED IS NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING DEVICE DETAIL IS FOR ILLUSTRATION ONLY. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 2' MINIMUM IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUDING ANY FLARED SIDES. THE WIDTH OF THE DETECTABLE WARNING FIELD INCLUDES A CONCRETE BORDER, IF PROVIDED. PLACEMENT AND ORIENTATION SHALL BE IN COMPLIANCE WITH THE PLANS AND DETAILS.
C. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. IF REQUIRED, THE BORDER SHALL NOT EXCEED 2" IN WIDTH OR 6" ALONG ROADWAY EDGE/CURB. THE BORDER DIMENSION SHALL BE MEASURED FROM THE INSIDE EDGE OF THE RADIUS.
D. ON SLOPES OF 5% OR GREATER, THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE LOWER GRADE BREAK ON THE RAMP RUN. WHERE DOMES ARE ARRAYED RADIALLY, THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING. ON SLOPES LESS THAN 5% DOME ORIENTATION IS LESS CRITICAL AND MAY DIFFER FROM PERPENDICULAR OR RADIAL ALIGNMENT TO THE GRADE BREAK.
E. TRUNCATED DOMES SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6" MINIMUM AND 2.4" MAXIMUM, AND A BASE-TO-BASE SPACING OF .65" MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.
F. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET, HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.
G. DETECTABLE WARNING PANELS SHALL BE CAST IRON WITH NO SURFACE COATING AND SHALL BE ALLOWED TO TRANSITION TO THEIR NATURAL PATINA.

TRUNCATED DOMES TO BE PLACED IN SIDEWALK BASE IN PUBLIC TRAFFIC AREAS.

DETECTABLE WARNING PANEL WITH TRUNCATED DOMES

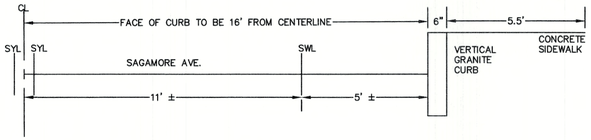
NOT TO SCALE



CONTRACTOR SHALL NOT REMOVE ANY CURBING BEYOND SEA STAR COVE CONDOMINIUM PROPERTY LINE. THE CURBING AT THE PROPOSED TIP DOWN LANDING AND 3' BEYOND IT IN THE DIRECTION OF THE SEA STAR COVE PROPERTY LINE SHALL BE REMOVED. THEN 3' OF NEW CURBING SHALL BE SET IMMEDIATELY FOLLOWING THE TIP DOWN LANDING AT A 16.7% SLOPE IN ORDER TO TRANSITION FROM THE GRADE OF THE EXISTING CURBING TO THE GRADE OF THE PROPOSED TIP DOWN LANDING.

CURB TRANSITION AT SEA STAR COVE R.O.W LINE

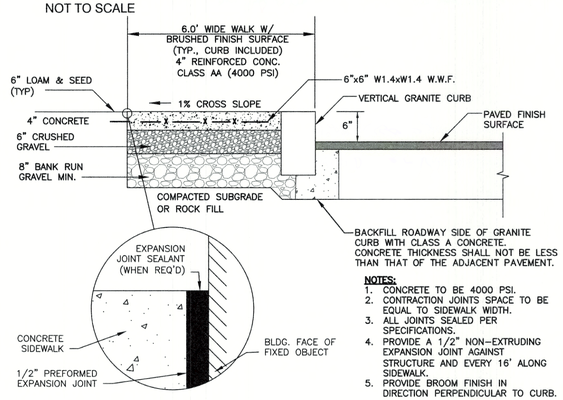
NOT TO SCALE



THE INTENT OF THIS DETAIL IS TO ILLUSTRATE THE LOCATION OF THE PROPOSED SIDEWALK IN RELATION TO THE CROSS SECTION OF SAGAMORE AVE. SEE BELOW CONCRETE SIDEWALK WITH VERTICAL GRANITE CURB DETAIL AS WELL

SAGAMORE AVE AND CONCRETE SIDEWALK CROSS SECTION

NOT TO SCALE

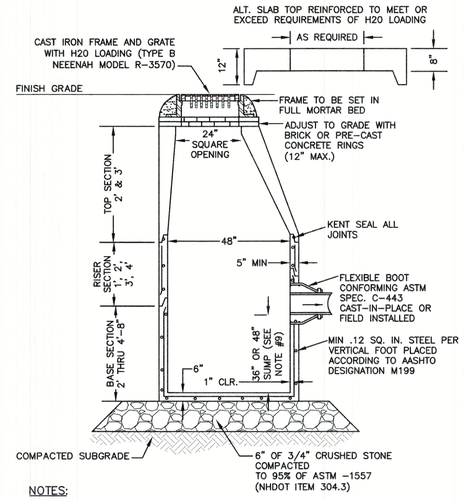


NOTES:

1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB

NOT TO SCALE

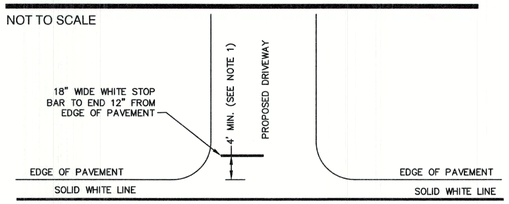


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL CATCH BASIN FRAMES AND GRATES SHALL BE NHDOT CATCH BASIN TYPE ALTERNATE 1 OR NEENAH R-3570 OR APPROVED EQUAL (24"x24" TYPICAL). CATCH BASIN FRAME AND GRATE IN NHDOT RIGHT OF WAY MUST BE TYPE B.
8. STANDARD CATCH BASIN FRAME AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.
9. CATCH BASINS CALLED OUT AS A "DEEP SUMP CATCH BASIN" SHALL HAVE A 48" SUMP; ALL OTHER CATCH BASINS SHALL HAVE A 36" SUMP.
10. INSTALL POLYETHYLENE LINER (NHDOT ITEM 604.0007) IN PROPOSED CATCH BASINS IN SAGAMORE AVE. RIGHT OF WAY.
11. PROPOSED CATCH BASINS WITHIN SAGAMORE AVE. RIGHT OF WAY SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 604.

CATCH BASIN

NOT TO SCALE

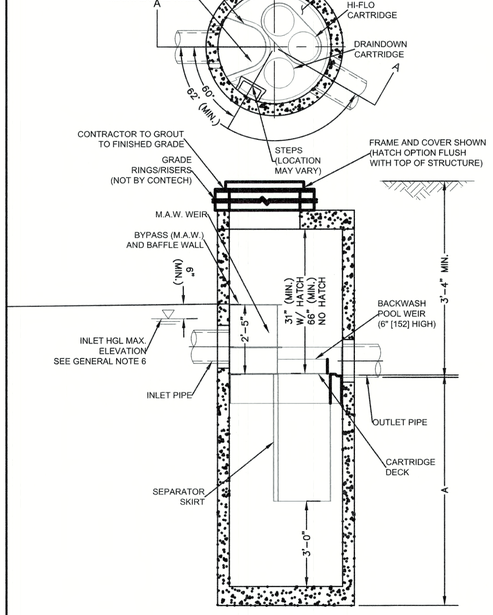


NOTES:

1. LOCATION OF STOP BAR MAY VARY DUE TO INTERSECTION SIGHT DISTANCE AND VEHICLE TURNING RADIUS AND MAY NOT ALWAYS COINCIDE WITH THE LOCATION OF THE STOP SIGN.
2. END STOP BAR 12" FROM EDGE OF PAVEMENT.
3. STOP BARS, WORDS, LANE LINES, SYMBOLS AND ARROWS SHALL BE THERMOPLASTIC.
4. SOLID WHITE LINE AND DOUBLE SOLID YELLOW LINE SHALL NOT BREAK AT THE PROPOSED DRIVEWAY.

NHDOT PAVEMENT MARKINGS

NOT TO SCALE



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

HATCH
(36" Ø CAST INTO SLAB)
NOT TO SCALE

GENERAL NOTES:

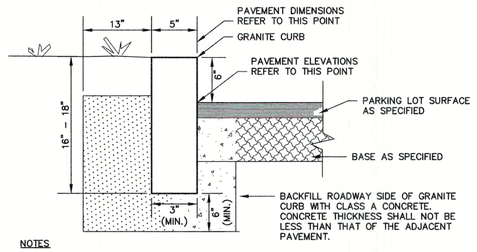
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3' [305], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. INLET HGL NOT TO EXCEED 6" [152] BELOW THE TOP OF THE M.A.W. DURING THE PEAK DESIGN STORM, OR 10-YEAR STORM (WHICHEVER IS GREATER).
7. INLET PIPE INVERT ELEVATION VARIES FROM 1" TO 6" [25 TO 152] ABOVE THE OUTLET PIPE INVERT.
8. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
9. THE DIFFERENCE IN THE INLET AND OUTLET PIPE ELEVATIONS FOR RETROFIT INSTALLATIONS TO EXISTING STORM DRAIN PIPES SHALL BE EQUAL TO THE SLOPE OVER THE DIAMETER OF THE MANHOLE; NOT THE EXCEED 6" [152] IN VERTICAL DIFFERENTIAL BETWEEN INLET AND OUTLET PIPES.
10. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.
11. ALTERNATE UNITS ARE SHOWN IN [mm].

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. WHEN ACTIVATED PRIOR TO SITE STABILIZATION, CONTRACTOR TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ACCORDING TO THE PROVISIONS IN THE ACTIVATION CHECKLIST AND THE QUOTED SCOPE OF WORK. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (800) 338-1122.

CONTECT "JELLYFISH" JF4-01-01

NOT TO SCALE



NOTES

1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. PROPOSED VERTICAL GRANITE CURB WITHIN NHDOT RIGHT OF WAY SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 609.

VERTICAL GRANITE CURB

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21	
Checked: JAC	Scale: AS NOTED	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

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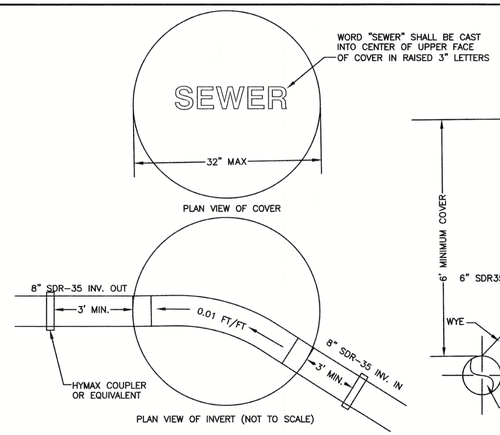
STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED PROFESSIONAL ENGINEER

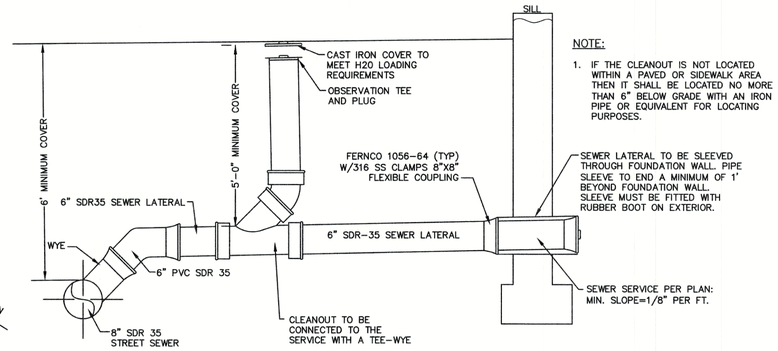
REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
D2
SHEET 12 OF 22
JBE PROJECT NO. 21047



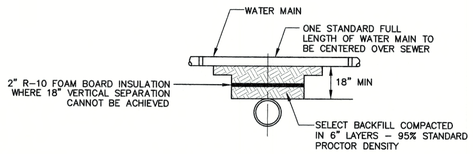


NOTE:

1. IF THE CLEANOUT IS NOT LOCATED WITHIN A PAVED OR SIDEWALK AREA THEN IT SHALL BE LOCATED NO MORE THAN 6" BELOW GRADE WITH AN IRON PIPE OR EQUIVALENT FOR LOCATING PURPOSES.

HOUSE SEWER SERVICE

NOT TO SCALE

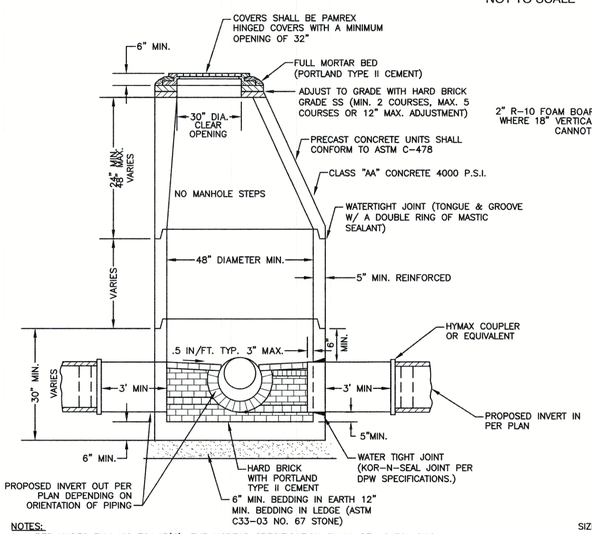


SEPARATION NOTES:

1. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
2. WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN PIPES. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE

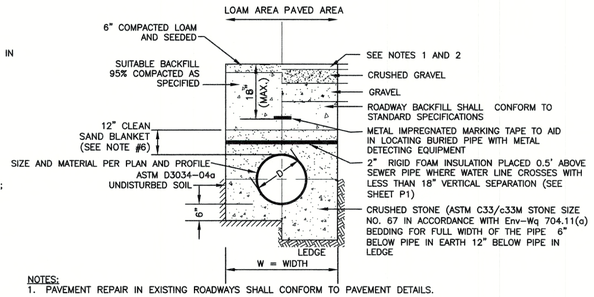


NOTES:

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).
10. ON-SITE SEWER MANHOLE COVERS WILL NEED TO BE PURCHASED BY THE APPLICANT. THE CITY OF PORTSMOUTH WILL NOT BE PROVIDING THESE.

PORTSMOUTH SEWER MANHOLE

NOT TO SCALE

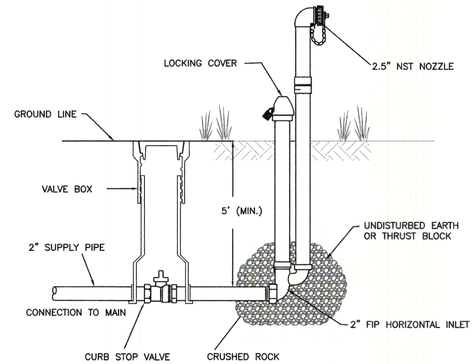


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4', PURSUANT TO DES WAIVER BEING ISSUED.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

SEWER TRENCH

NOT TO SCALE

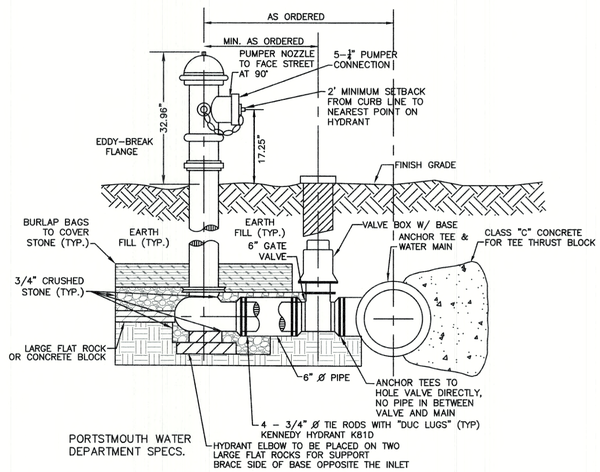


POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 5' BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER. DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE AS MANUFACTURED BY KUPFERLE FOUNDRY CO., ST. LOUIS, MO, OR APPROVED EQUAL.

INLET PRESSURE (PSI)	FLOW RATE (GPM)
75	675
100	742
125	800
150	856

FLUSHING HYDRANT DETAIL

NOT TO SCALE



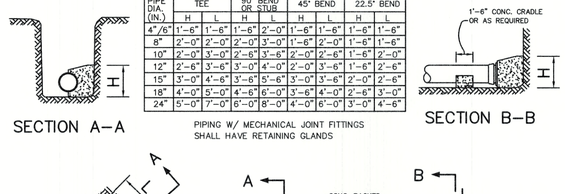
PORTSTMOUTH WATER DEPARTMENT SPECS.

NOTES

1. ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
2. HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
3. MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING GLANDS AS MADE BY EBBA OR APPROVED EQUAL.
4. NATIONAL STANDARD THREAD.
5. HYDRANT AND ALL VALVES SHALL OPEN RIGHT
6. ANCHOR TEES SHALL HOLD VALVE DIRECTLY WITH NO PIPE IN BETWEEN VALVE AND MAIN.

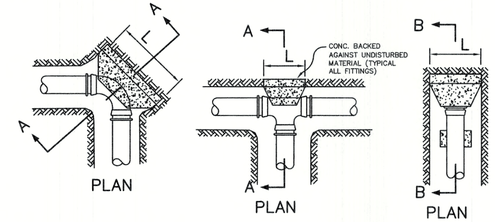
HYDRANT INSTALLATION

NOT TO SCALE



CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"

PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS



THRUST BLOCK DETAILS

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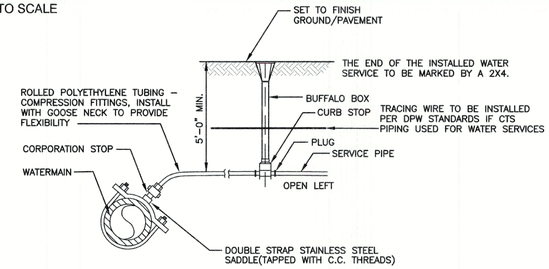
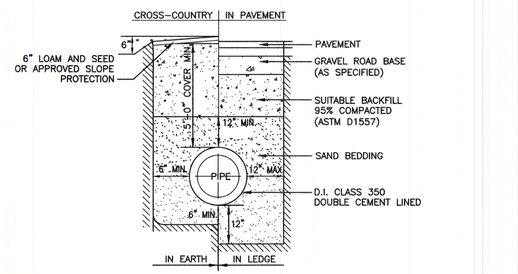


WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



WATER SYSTEM TRENCH

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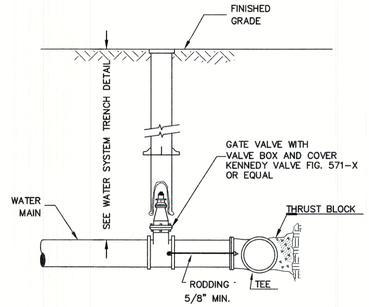

BURIED GATE VALVE DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No.16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
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13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
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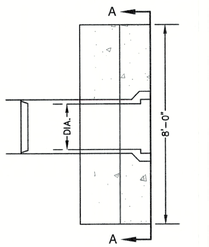
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

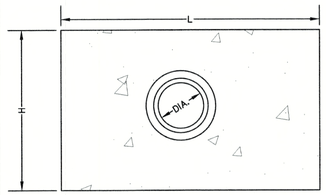
Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

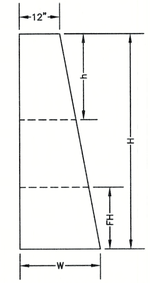
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
D3
SHEET 13 OF 22
JBE PROJECT NO. 21047





SECTION A-A



LONGITUDINAL SECTION

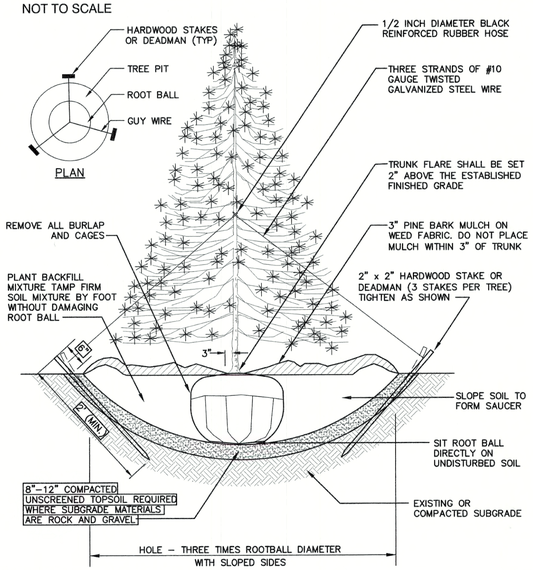
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

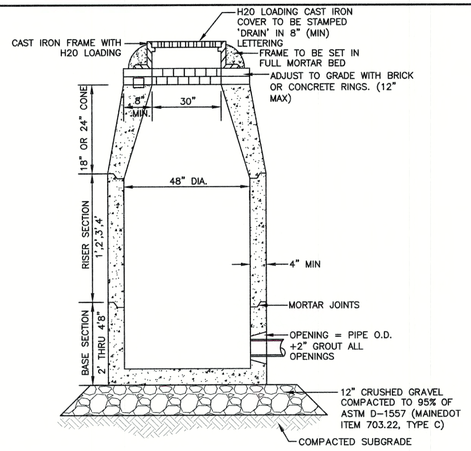
PRECAST CONCRETE HEADWALL

NOT TO SCALE



EVERGREEN PLANTING

NOT TO SCALE

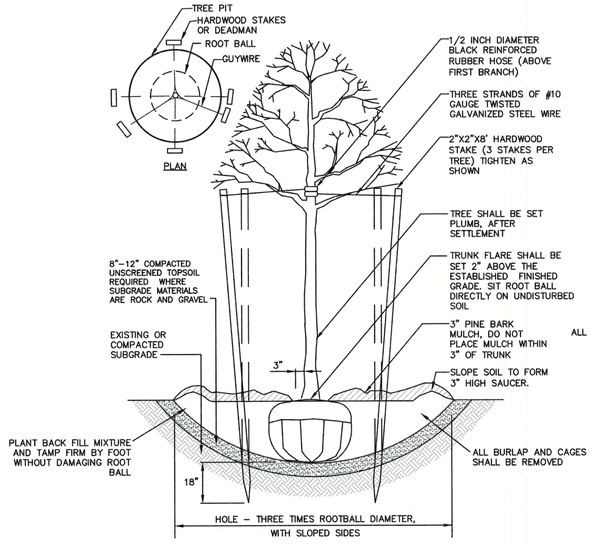


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING.
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL DRAIN MANHOLE FRAMES AND GRATES SHALL BE NEENAH R-1798 OR APPROVED EQUAL (30" DIA. TYPICAL).
8. STANDARD FRAME(S) AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.

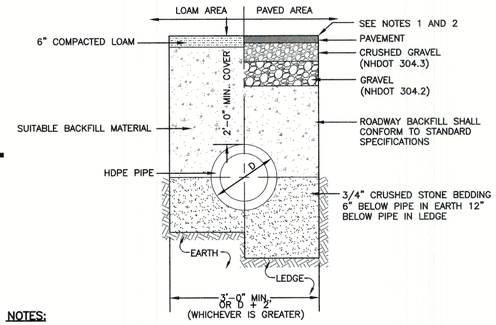
DRAIN MANHOLE (4' DIAM.)

NOT TO SCALE



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE

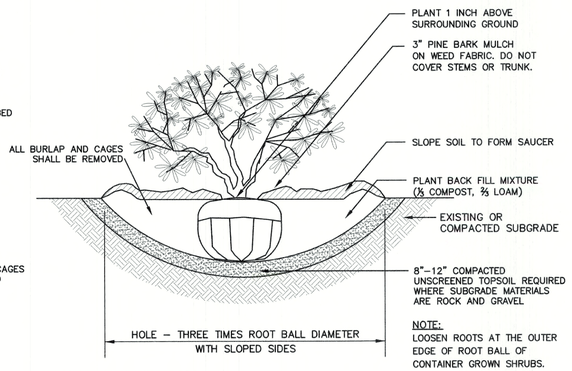


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

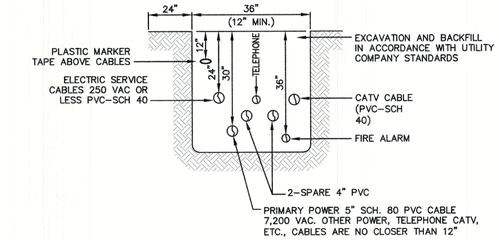
DRAINAGE TRENCH

NOT TO SCALE



SHRUB PLANTING

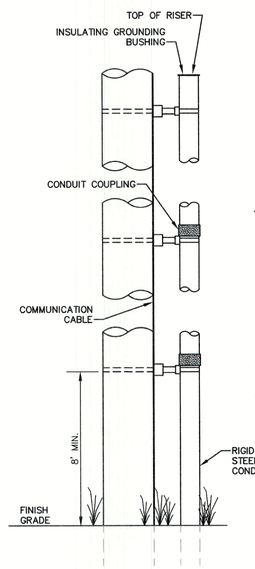
NOT TO SCALE

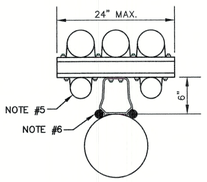


NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

UTILITY TRENCH

NOT TO SCALE





NOTES:

1. CONDUIT STANDOFF BRACKETS TO BE USED WITH METAL CONDUIT ONLY.
2. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISH GRADE.
3. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10 FT. SECTION OF CONDUIT WITH THE BRACKET PLACED JUST BELOW THE RISER CONDUIT COUPLING.
4. A BRACKET SHALL ALSO BE PLACED TO HOLD THE ROD OF THE RISER CONDUIT.
5. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT.
6. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.

MATERIALS:

QUANTITY AS NEEDED	ALUMA-FORM
CONDUIT STANDOFF BRACKET	6-CSO
4-WAY T-SLOT (CUT TO REQUIRED LENGTH)	4WT-48
CONDUIT STRAP KITS	2" STK-2
	2.5" STK-2.5
	3" STK-3
	3.5" STK-3.5
	4" STK-4
	5" STL-5
	6" STK-6

UTILITY POLE RISER DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21	
Checked: JAC	Scale: AS NOTED	Project No.: 21047	
Drawing Name: 21047-PLAN.dwg			

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PAIGE S. LIBBEY No.16570 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
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Civil Engineering Services
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PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No. D4

SHEET 14 OF 22
JBE PROJECT NO. 21047

BIORETENTION SYSTEM ELEVATIONS

BIORETENTION	SIZE OF BOTTOM (S.F.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	ELEV. G	SHWT	LEDGE
1	322	37.50	37.30	36.50	35.00	34.75	34.25	34.00	VARIES	VARIES
2	600	38.00	37.70	37.00	35.50	35.25	34.75	34.50	VARIES	VARIES

* SEE NOTE #4 UNDER DESIGN CONSIDERATIONS

SAND SPECIFICATION

SIEVE SIZE	% BY WEIGHT
3/8"	100
#4	95–100
#8	80–100
#16	50–85
#30	25–60
#60	10–30
#100	2–10
#200	0–5

TOPSOIL SPECIFICATION

LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE.

MULCH SPECIFICATION

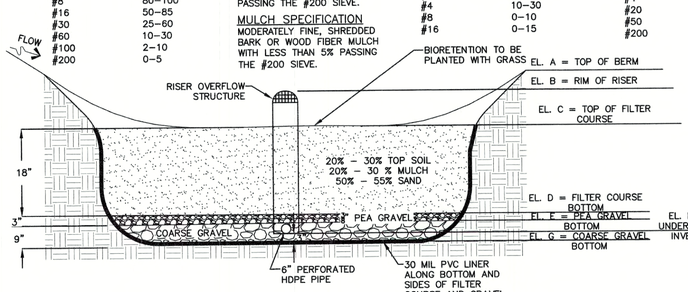
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

PEA GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1/2"	100
3/8"	85–100
#4	10–30
#8	0–10
#16	0–15

COARSE GRAVEL SPECIFICATION

SIEVE SIZE	% BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5



DESIGN CONSIDERATIONS

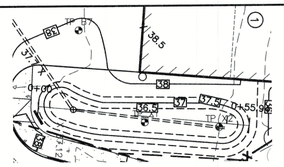
1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
4. REMOVE LEDGE TO AT LEAST 6" BELOW BOTTOM OF COARSE GRAVEL LAYER IF ENCOUNTERED.

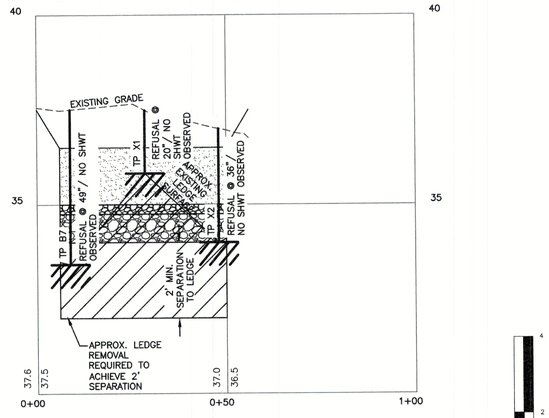
MAINTENANCE REQUIREMENTS:

1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
5. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.
6. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

BIORETENTION SYSTEM WITH UNDERDRAIN

NOT TO SCALE

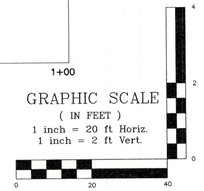


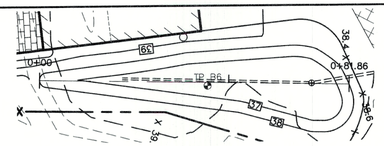


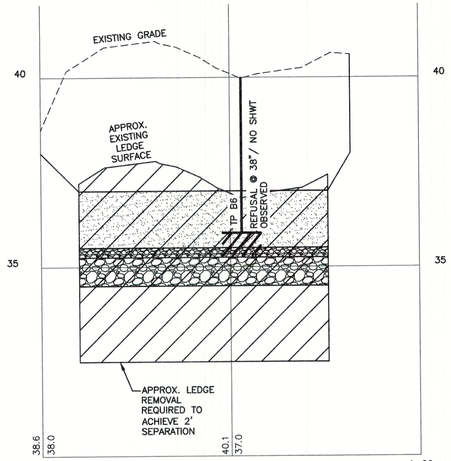
BIORETENTION #1 PROFILE

LEDGE PROFILE SHALL BE CONSIDERED APPROXIMATE AND CONTRACTOR SHALL REMOVE LEDGE TO THE EXTENT NECESSARY IN ORDER TO ACHIEVE 2' OF SEPARATION TO THE STONE BASE.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.



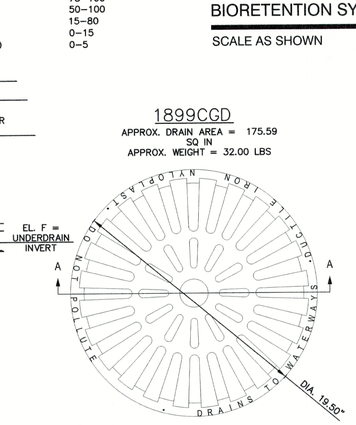


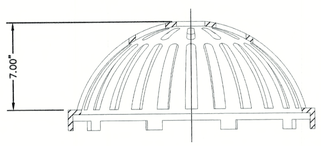


BIORETENTION #2 PROFILE

BIORETENTION SYSTEM LEDGE PROFILES

SCALE AS SHOWN



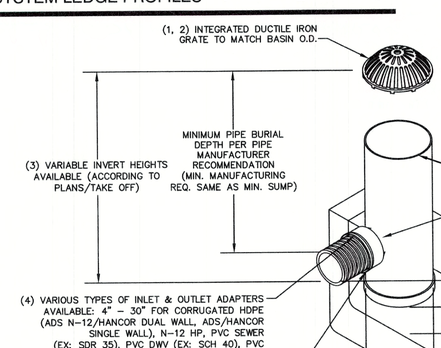


SECTION A-A

NOTES:
1. DIMENSIONS ARE FOR REFERENCE ONLY
2. ACTUAL DIMENSIONS MAY VARY
3. DIMENSIONS ARE IN INCHES
4. QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70–50–05
5. PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
6. LOCKING DEVICE AVAILABLE UPON REQUEST

18" NYLOPLAST DOME GRATE

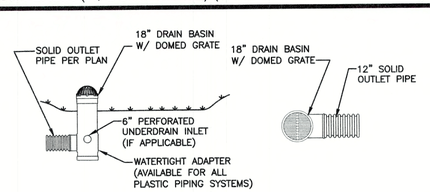
NOT TO SCALE



NYLOPLAST DRAIN BASIN (W/ DOME GRATE) (YARD DRAIN SPECIFICATION)

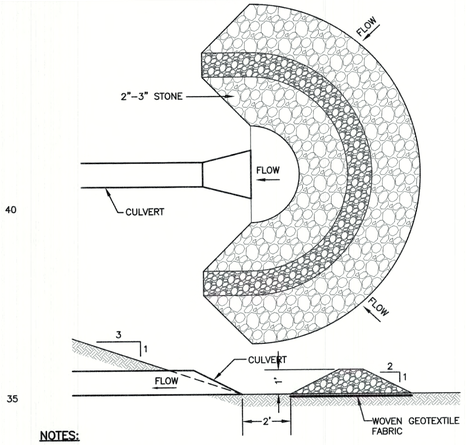
NOTES:
1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001–110–045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001–110–065.
4 – DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N–12/HANCOR DUAL WALL), N–12 HP, & PVC SEWER (4" – 24").
5 – ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001–110–012.
6 – 8" – 30" DOME GRATES HAVE NO LOAD RATING.

NOT TO SCALE



NYOPLAST DRAIN BASIN AND INLINE DRAIN (BIORETENTION RISER SPECIFICATION)

NOT TO SCALE



NOTES:
1. TEMPORARY CULVERT INLET PROTECTION CHECK DAMS SHALL BE CONSTRUCTED OF 2–3" STONE OVER WOVEN GEOTEXTILE FABRIC.
2. INLET PROTECTION MEASURES SHALL BE INSTALLED AT THE OPENINGS OF ALL EXISTING AND PROPOSED CULVERTS LOCATED BELOW (DOWNSTREAM) FROM AND WITHIN 100' OF THE PROJECT SITE.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
4. STRUCTURES SHALL BE REMOVED WHEN THE SITE IS STABILIZED WITH VEGETATION AND THE CHANNEL SHALL BE SMOOTHED AND REVEGETATED.

TEMPORARY CULVERT INLET PROTECTION CHECK DAM

NOT TO SCALE

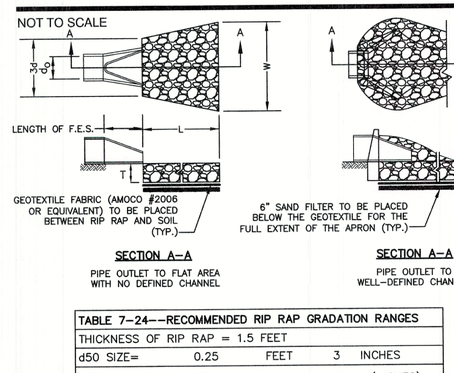


TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES			
THICKNESS OF RIP RAP = 1.5 FEET			
d50 SIZE=	0.25	FEET	3 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM		TO
100%	5		6
85%	4		5
50%	3		5
15%	1		2

NOTES:
1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHOULD BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
6. MAINTENANCE: THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

RIP RAP OUTLET PROTECTION APRON

NOT TO SCALE

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Checked: JAC	Scale: AS NOTED
Date: 3/25/21	Project No.: 21047
Drawing Name: 21047-PLAN.dwg	

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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No. 16870 – LICENSED PROFESSIONAL ENGINEER

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13	4/18/22	DRAINAGE REVISIONS	DJM

Designed and Produced in NH
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Stratham, NH 03885
Civil Engineering Services
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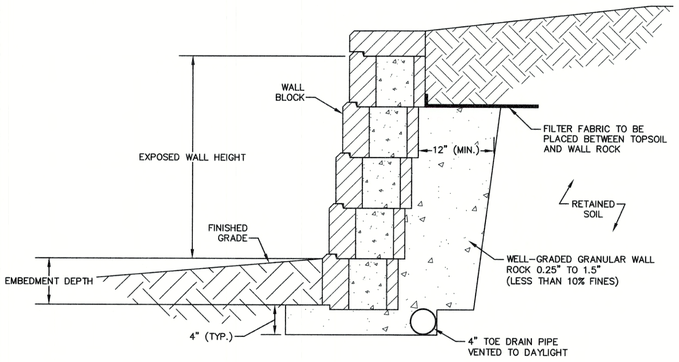
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

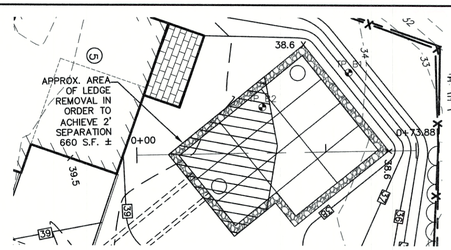
DRAWING No.
D5
SHEET 15 OF 22
JBE PROJECT NO. 21047

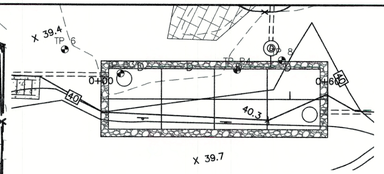


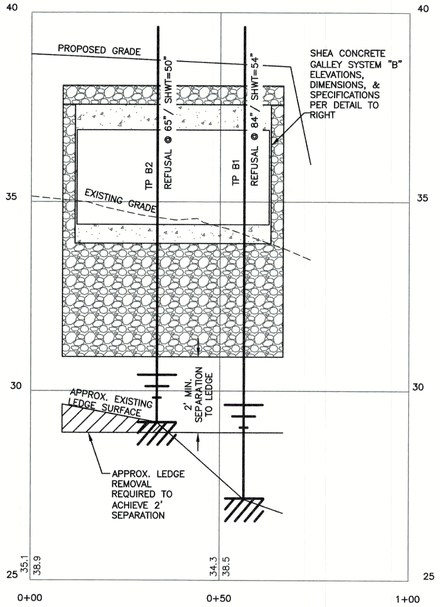
THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A STRUCTURAL ENGINEER LISENCED IN THE STATE OF NEW HAMPSHIRE TO DESIGN ANY WALL THAT HAS A HEIGHT OVER 4.0'. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF ANY RETAINING WALL OF ANY TYPE ABOVE THIS HEIGHT. THIS DETAIL IS INTENDED TO PROVIDE AN EXAMPLE OF THE RETAINING WALL FOR PLANNING PURPOSES ONLY AND IS SPECIFICALLY NOT INTENDED FOR USE BY THE CONTRACTOR IN ANY CONSTRUCTION-RELATED ACTIVITY FOR A WALL GREATER THAN 4.0' IN HEIGHT.

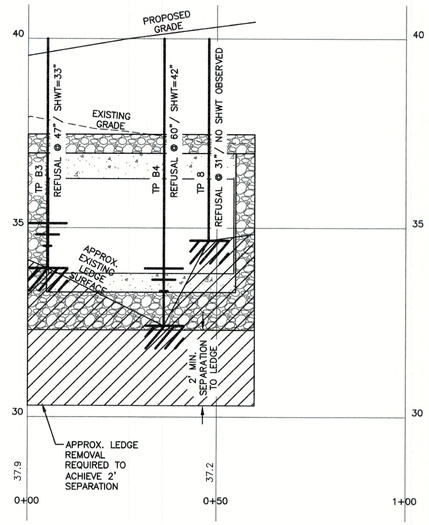
TYPICAL GRAVITY WALL DETAIL

NOT TO SCALE





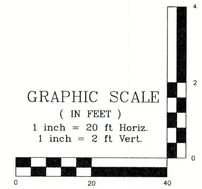




SYSTEM "A" PROFILE

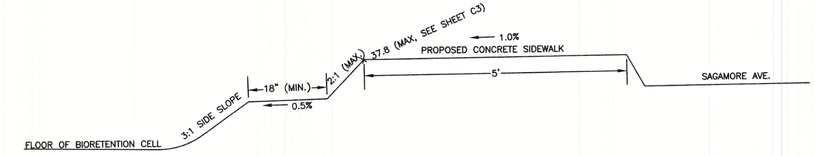
LEDGE PROFILE SHALL BE CONSIDERED APPROXIMATE AND CONTRACTOR SHALL REMOVE LEDGE TO THE EXTENT NECESSARY IN ORDER TO ACHIEVE 2' OF SEPARATION TO THE STONE BASE.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.



SHEA CONCRETE GALLEY 8X14 LEDGE PROFILES

SCALE AS SHOWN



1. AT LEAST 18" OF "FLAT" SPACE (0.5% SLOPED TOWARD THE BIORETENTION CELL) SHALL BE PROVIDED BETWEEN THE RIM OF THE BIORETENTION CELL AND THE SIDE SLOPE OF THE SIDEWALK.
2. THIS DETAIL IS INTENDED TO DEPICT SITUATIONS IN WHICH THE PROPOSED GRADE OF THE SIDEWALK IS HIGHER THAN THE TOP OF THE BIORETENTION CELL. WHERE THE PROPOSED GRADE OF THE SIDEWALK IS LOWER THAN THE TOP OF THE BIORETENTION CELL, A STANDARD 2' BERM SHALL BE PROVIDED.

BIORETENTION #1 / SIDEWALK INTERFACE

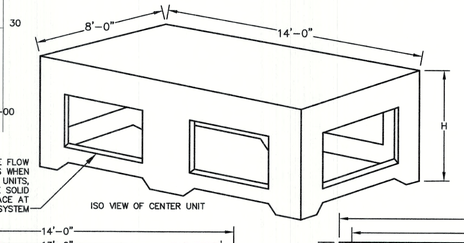
NOT TO SCALE

CONTRACTOR ORDER SCHEDULE				
	FLOW-THROUGH HOLES ON ALL SIDES	NO FLOW-THROUGH HOLES ON ONE 8' SIDE	NO FLOW-THROUGH HOLES ON ONE 14' SIDE	NO FLOW-THROUGH HOLES ON ONE 8' AND ONE 14' SIDE
SYSTEM A	0	0	4	4
SYSTEM B	2	3	1	5

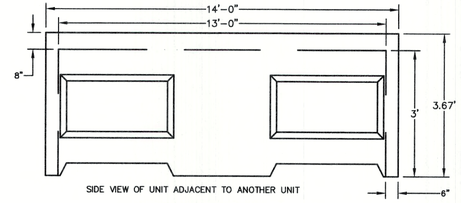
ELEVATION SCHEDULE							
	EL. A	EL. B	EL. C	EL. D	EL. E	EL.F	EL.G
SYSTEM A	> 39.0	36.97	36.3	34.7	33.3	32.3	32.3
SYSTEM B	> 38.6	37.57	36.9	35.8	33.9	N/A	30.9

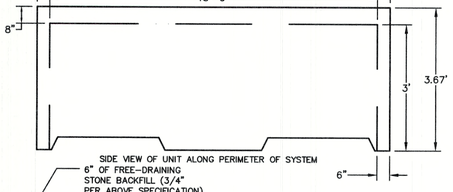
STONE BACKFILL SPECIFICATION

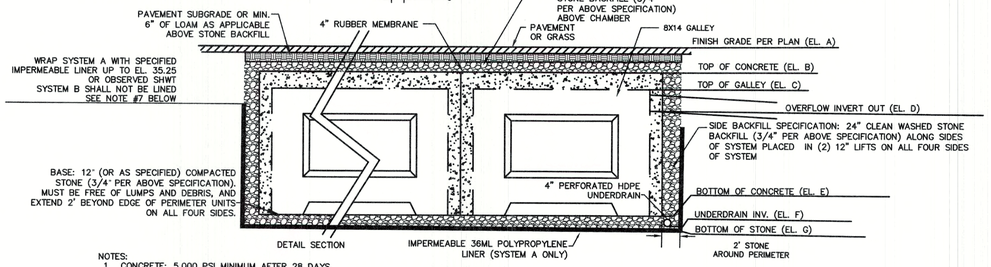
SIEVE SIZE	% BY WEIGHT
1"	100
¾"	90-100
⅜"	40-90
#8	23-49
#200	2-8



HEIGHT(H)	VOLUME(EA)	WEIGHT
3'-0"	300CF	16,600#



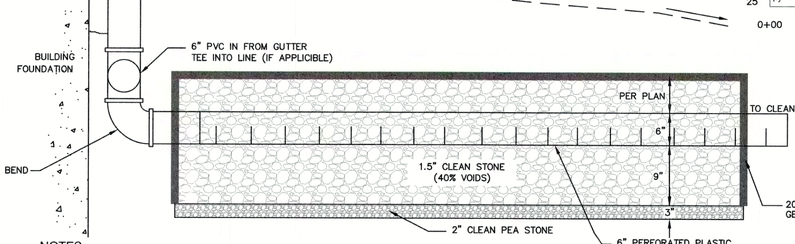




NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR AASHTO HS-20 LOAD, 0 TO 5FT COVER. CAN BE DESIGNED FOR ADDITIONAL COVER IF REQUIRED.
3. STANDARD SLAB DESIGN WITHSTANDS 40KIP OUTRIGGER LOAD ON A 24" SQUARE PAD WITH 24" COVER OVER SLAB.
4. CORE HOLE FOR MORTAR JOINT AT INVERT IN LOCATION(S). PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT
5. COMPACT SUBGRADE TO A BEARING CAPACITY OF AT LEAST 2000 PSF PRIOR TO PLACEMENT OF SYSTEM.
6. SYSTEM "A" IS PROPOSED IN THE MIDDLE OF THE SITE AND DESIGNED FOR DETENTION ONLY. SYSTEM "B" IS PROPOSED IN THE NORTHWEST CORNER OF THE SITE AND DESIGNED FOR DETENTION AND INFILTRATION. SEE SHEET C3 FOR OUTLINE. USE 3' MODEL FOR BOTH SYSTEMS.
7. CONTRACTOR TO PLACE SYSTEM "A" AND EXTEND ABOVE-SPECIFIED IMPERMEABLE LINER ON SYSTEM "A" UP TO SEASONAL HIGH WATER TABLE AT ELEVATION NOTED ABOVE. CITY STAFF OR REVIEW ENGINEER SHALL WITNESS INSTALLATION OF LINER.
8. GALLEY 8X14 UNITS THAT ARE ADJACENT TO OTHER GALLEY 8X14 UNITS ON ALL SIDES SHALL HAVE FLOW THROUGH HOLES ON ALL SIDES. UNITS THAT ARE NOT ADJACENT TO OTHER UNITS ON AT LEAST ONE SIDE SHALL HAVE A SOLID CONCRETE FACE ON THE SIDES ON THE UNIT THAT ARE NOT ADJACENT TO OTHER UNITS (ALONG PERIMETER OF SYSTEM).
9. LEDGE SHALL BE REMOVED TO AN ELEVATION AT LEAST 2-FEET BELOW BOTTOM OF STONE BASE AND REPLACED WITH GRANULAR MATERIAL.

SHEA CONCRETE PRODUCTS "GALLEY 8x14"

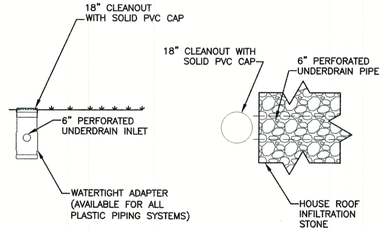
NOT TO SCALE



NOTES:
1. ONCE THE SYSTEM HAS BEEN CONSTRUCTED, IT SHOULD BE TESTED BY INSERTING A GARDEN HOSE INTO THE INLET AND ALLOWING THE WATER TO RUN FOR A MINIMUM OF ONE (1) HOUR. THE WATER SHOULD STAY UNDERGROUND WITHIN THE GRAVEL. IF WATER COMES OUT OF THE OVERFLOW, THE SYSTEM SHOULD BE FURTHER INSPECTED AND POSSIBLY REPLACED. THIS PROCEDURE SHOULD BE PERFORMED EVERY YEAR DURING THE FALL INSPECTION.
2. IN THE SPRING AND FALL, VISUALLY INSPECT THE AREA AROUND THE SYSTEM AND REPAIR ANY EROSION. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. RE-MULCH ANY VOID AREAS BY HAND AS NEEDED. ALSO INSPECT THE ROOF COLLECTION AND PIPING AND CLEAN AND REPAIR AS NECESSARY.
3. DO NOT PLANT DEEP ROOTED TREES AND SHRUBS WITHIN 5' OF THE SYSTEM.
4. KEEP HEAVY VEHICLES FROM DRIVING OR PARKING OVER THE SYSTEM.
5. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
6. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
7. THE DOWNSPOUT DRAIN LEADING INTO THE INFILTRATION PRACTICE AS WELL AS THE PERFORATED PVC UNDERDRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDINGS. SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.
8. OVERFLOWS ARE TO BE INSTALLED ON EXTERIOR DOWNSPOUT LEADERS ONLY.
9. LEDGE SHALL BE REMOVED TO AT LEAST 2' BELOW BOTTOM OF INFILTRATION PRACTICE.

HOUSE ROOF INFILTRATION DETAIL

NOT TO SCALE



PERFORATED UNDERDRAIN CLEANOUT DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.19870 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

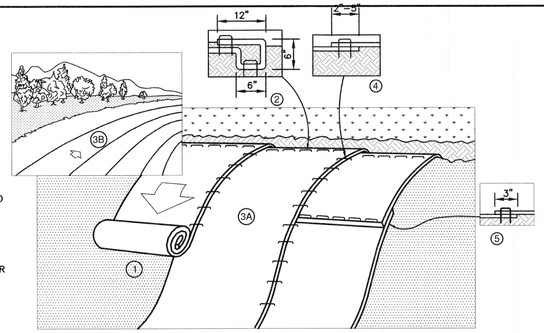
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE
Owner of Record:	LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
D6
SHEET 16 OF 22
JBE PROJECT NO. 21047

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.



NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

NORTH AMERICAN GREEN
14649 HIGHWAY 41 NORTH
EVANSVILLE, INDIANA 47725
1-800-772-2040

EROSION CONTROL BLANKET SLOPE INSTALLATION
NORTH AMERICAN GREEN (800) 772-2040

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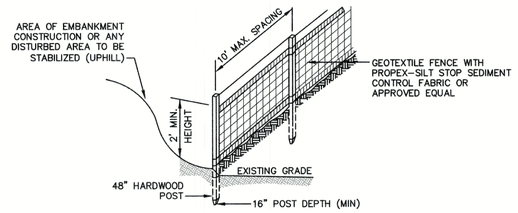
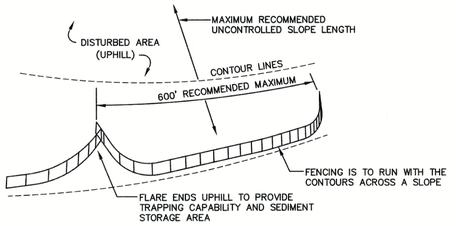




CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.
7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE

NOT TO SCALE

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
      NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

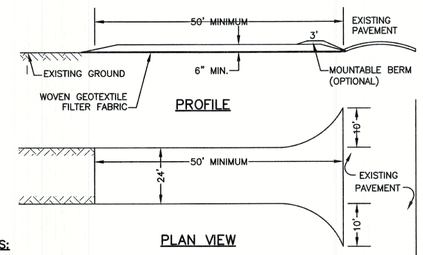
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) (INCLUDING RAIN GARDENS AND UNDERGROUND DETENTION SYSTEM) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
7. STRIP LOAM AND PAVEMENT PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS.
9. PREPARE BUILDING PADS TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE DRIVEWAYS AND ROADWAY WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING ALL DRIVEWAYS AND ROADWAY WITH 'FINISH' COURSE.
18. DRIVEWAYS AND ROADWAY SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — PAIGE S. LIBBEY No. 16670 — LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

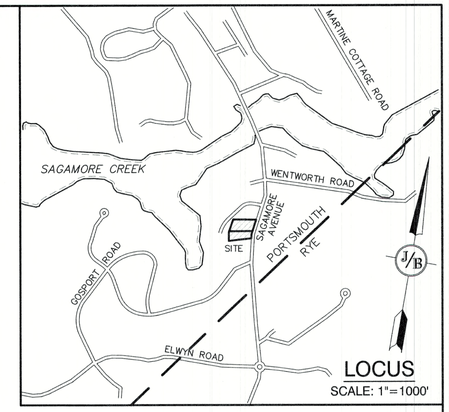
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

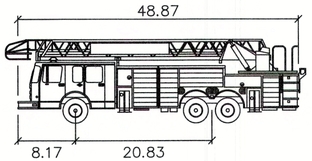
Plan Name: EROSION AND SEDIMENT CONTROL DETAILS

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
E1
SHEET 17 OF 22
JBE PROJECT NO. 21047





Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

= VEHICLE BODY
= FRONT WHEELS
= REAR WHEELS

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER

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FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **TRUCK TURNING PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

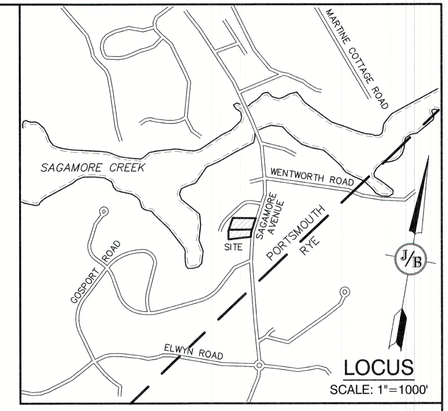
Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

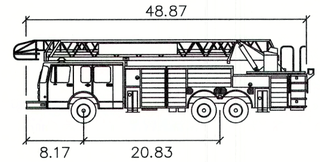
DRAWING No.
T1
SHEET 18 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet





Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

LEGEND:

= VEHICLE BODY
= FRONT WHEELS
= REAR WHEELS

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
THE SAGAMORE GROUP, LLC
PO BOX 430
HAMPTON, NH 03842

TOTAL LOT AREA
79,292 SQ. FT.
1.83 ACRES

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
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Plan Name: **TRUCK TURNING PLAN**

Project: SAGAMORE AVENUE CONDOMINIUMS
1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE

Owner of Record: LOT 14: COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173; LOT 15: JOHN J. & COLLEEN HEBERT, 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
T2
SHEET 19 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

LEGEND:

	=	VEHICLE BODY
	=	FRONT WHEELS
	=	REAR WHEELS

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
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STATE OF NEW HAMPSHIRE – PAIGE S. LIBBY No.16670 – LICENSED PROFESSIONAL ENGINEER – 3/29/22

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DRAWING No.
T3
SHEET 20 OF 22
JBE PROJECT NO. 21047

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

LEGEND:

	=	VEHICLE BODY
	=	FRONT WHEELS
	=	REAR WHEELS

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 224, LOTS 14 & 15

APPLICANT
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STATE OF NEW HAMPSHIRE
PAIGE S. LIDSEY No.16870 LICENSED
PROFESSIONAL ENGINEER

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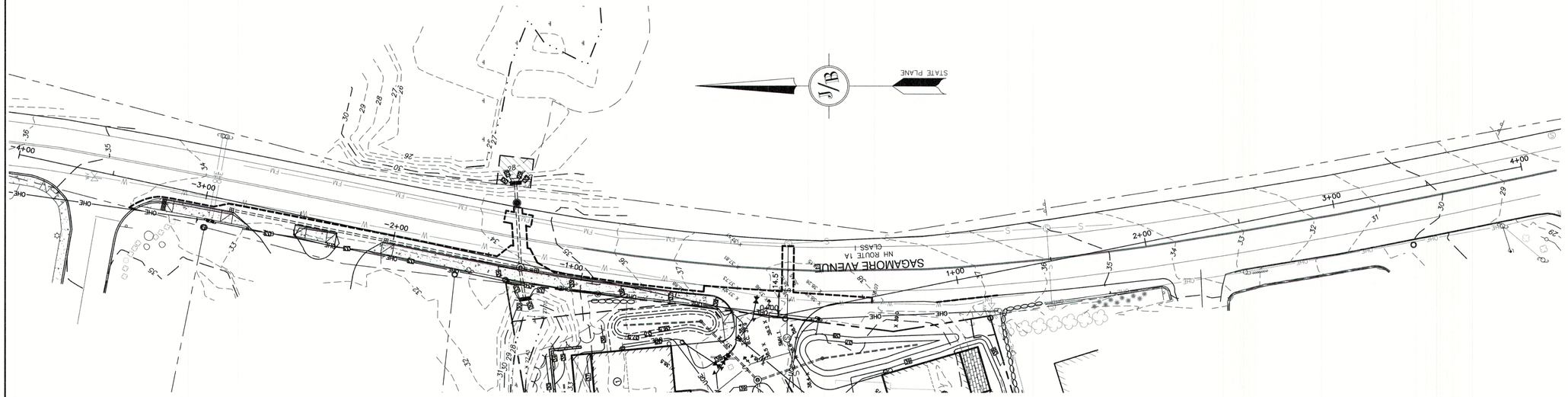
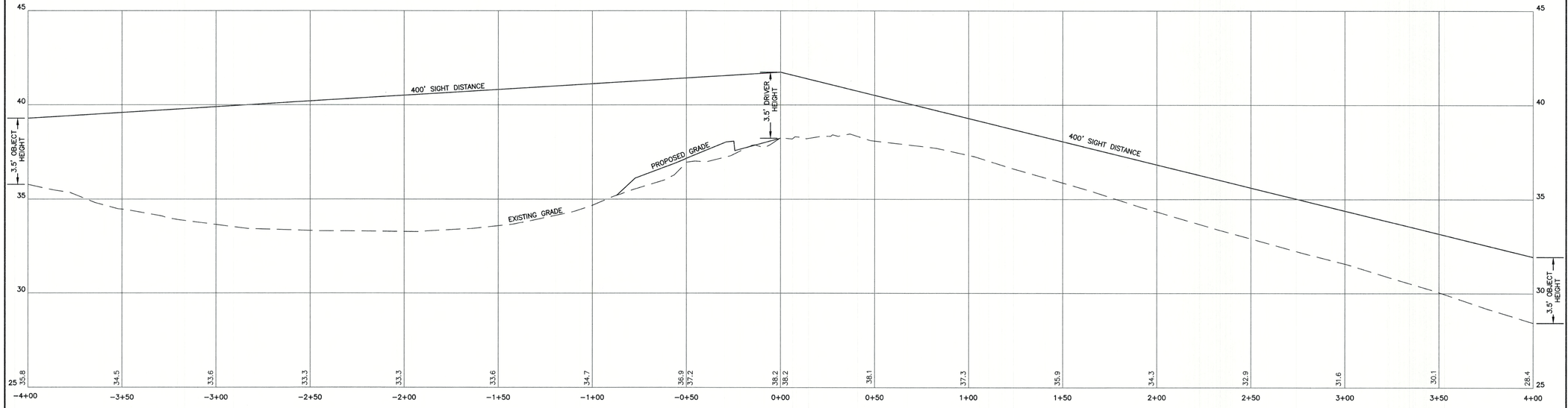
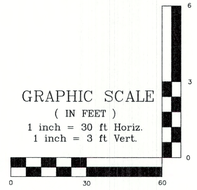
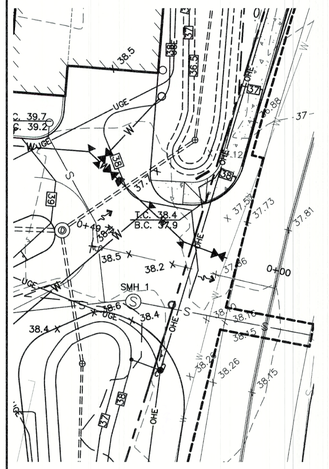
DRAWING No.
T4
SHEET 21 OF 22
JBE PROJECT NO. 21047

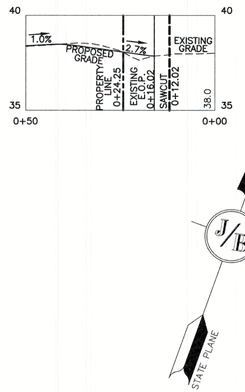


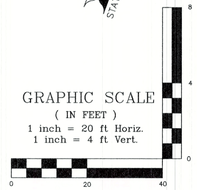


SIGHT DISTANCE PLAN AND PROFILE (SCALE AS SHOWN)









DRIVEWAY PLAN AND PROFILE (SCALE AS SHOWN)

Design: JAC	Draft: DJM	Date: 3/25/21
Checked: JAC	Scale: AS NOTED	Project No.: 21047
Drawing Name: 21047-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16570
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
17	7/27/22	ADDED CON COMM APPROVAL CONDITIONS	DJM
16	7/13/22	OFFSITE IMPROVEMENTS PLAN REVISIONS	DJM
15	6/28/22	REVISED FOR CON COMM SUBMISSION	DJM
14	5/10/22	REVISED PER NHDOT, TAC, AND REVIEW ENGINEER COMMENTS	DJM
13	4/18/22	DRAINAGE REVISIONS	DJM

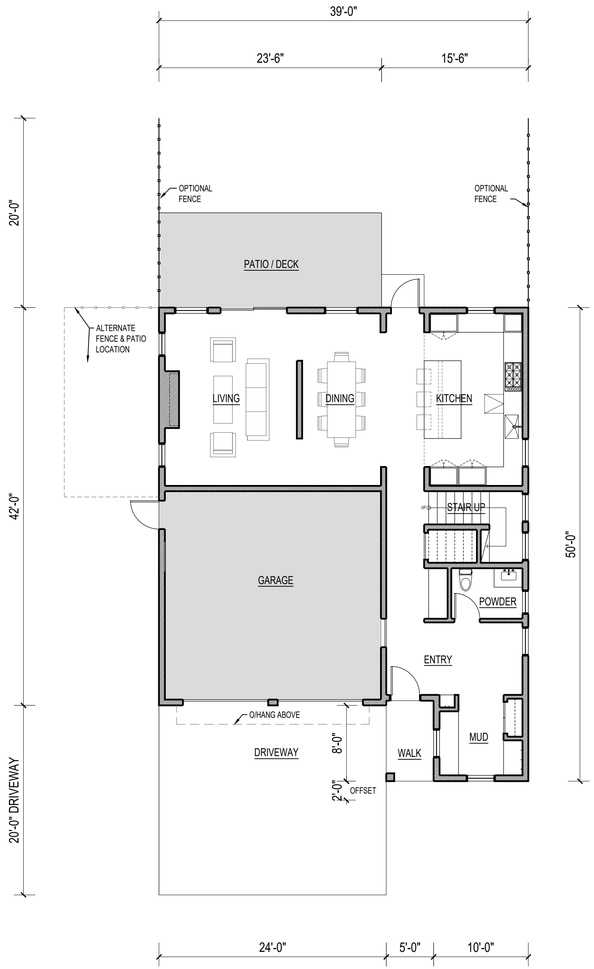
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services 603-772-4746
PO Box 219 FAX: 603-772-0227
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN	
Project:	SAGAMORE AVENUE CONDOMINIUMS 1169 & 1171 SAGAMORE AVE., PORTSMOUTH, NEW HAMPSHIRE	
Owner of Record:	LOT 14: COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173	LOT 15: JOHN J. & COLLEEN HEBERT 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.
H1
SHEET 22 OF 22
JBE PROJECT NO. 21047

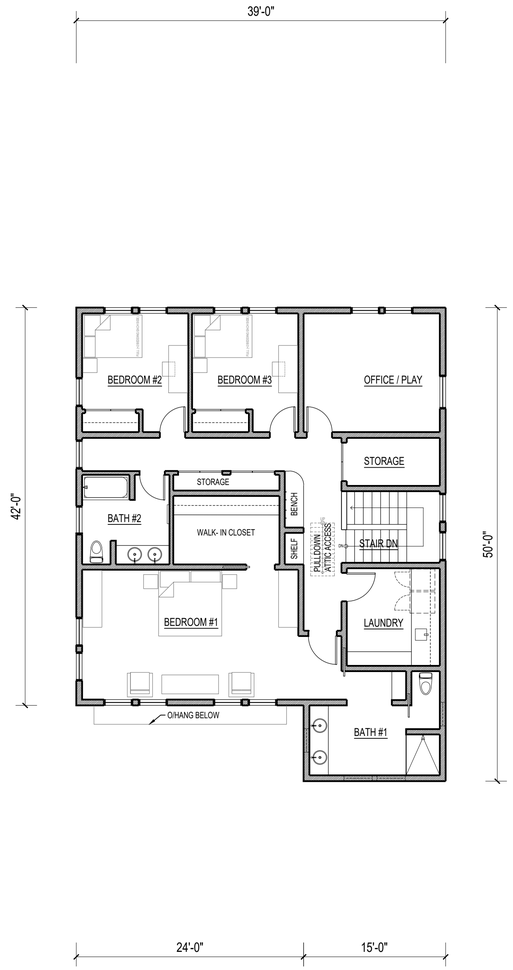
SINGLE DETATCHED

TYPE MAY MIRROR



1 FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT



2 SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

EXAMPLE UNIT GROSS FLOOR AREA	
FIRST FLOOR:	1,130 SF
SECOND FLOOR:	1,700 SF
TOTAL	2,830 SF

0 4' 8' 16'

SCALE: 1/8" = 1'-0"

KHAVARI ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

SINGLE FAMILY UNIT PLANS

1169 & 1171 SAGAMORE RD

PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

TYP. SINGLE FAMILY UNIT FLOOR PLANS

A-01

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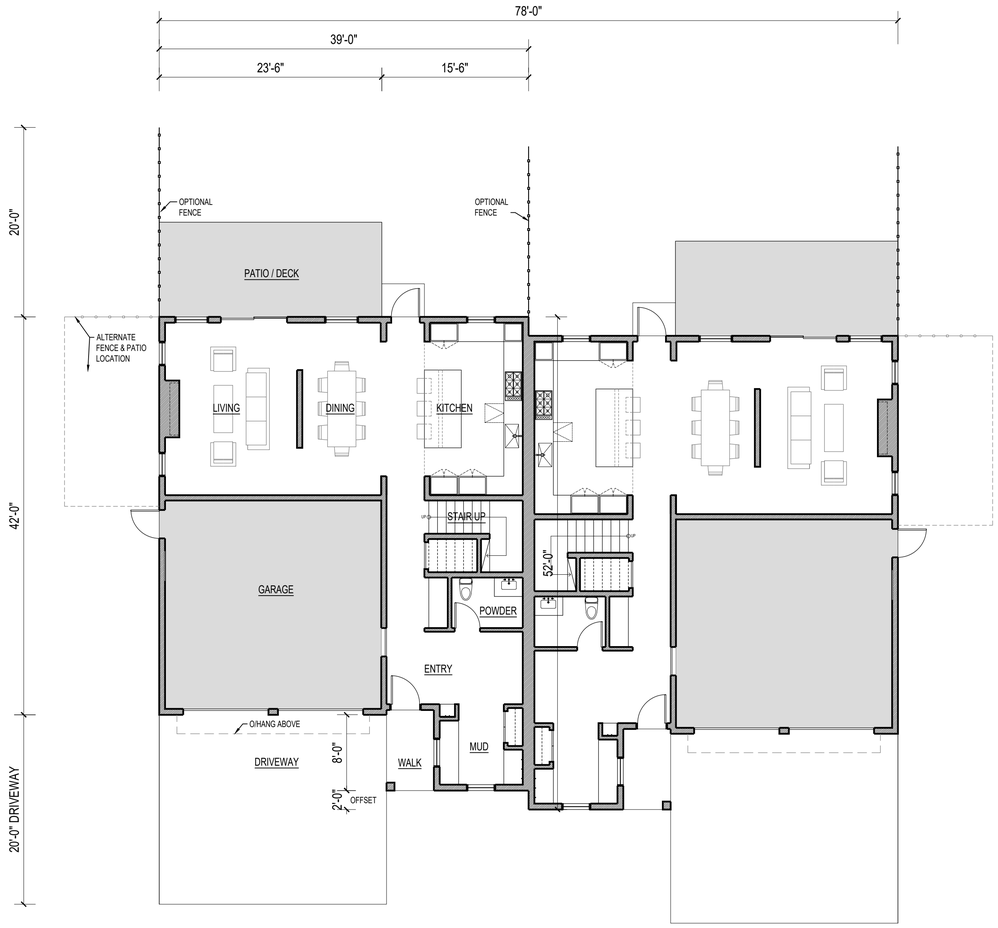
DUPLEX

TYPE MAY MIRROR

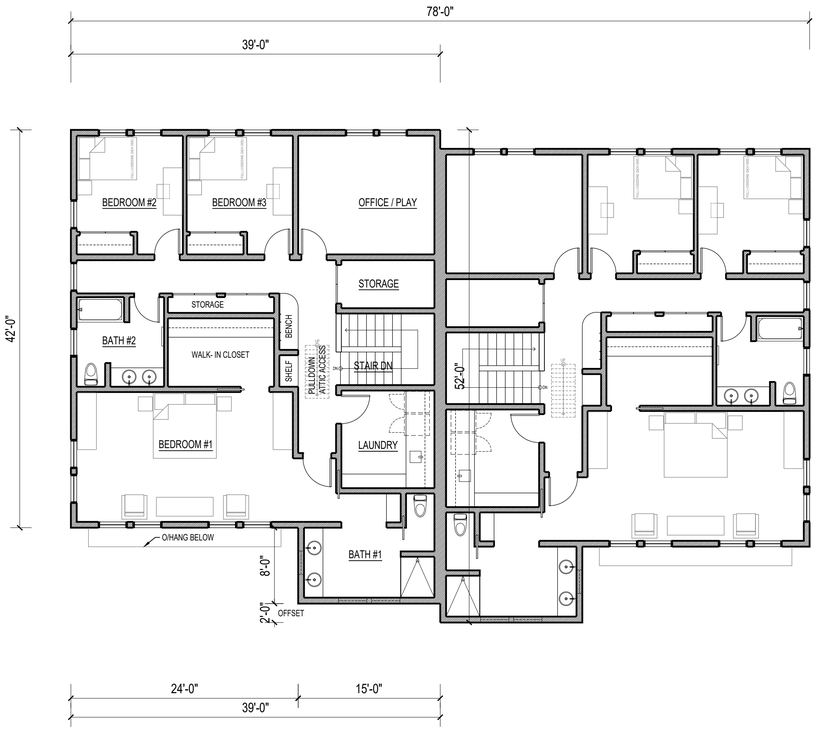


1 FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

FIRST FLOOR CONCEPT PLAN

1/8" = 1'-0" MIRRORED ADJ. UNIT



2 SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" EXAMPLE UNIT

SECOND FLOOR CONCEPT PLAN

1/8" = 1'-0" MIRRORED ADJ. UNIT

EXAMPLE UNIT GROSS FLOOR AREA	
FIRST FLOOR:	1,130 SF
SECOND FLOOR:	1,700 SF
TOTAL	2,830 SF

0 4' 8' 16'

SCALE: 1/8" = 1'-0"

KHAVARI ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

DUPLEX UNIT PLANS

1169 & 1171 SAGAMORE RD

PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

TYP. DUPLEX UNIT FLOOR PLANS

A-02

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1 SINGLE FAMILY UNIT
EXTERIOR RENDERING

2 DUPLEX UNITS
EXTERIOR RENDERING

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
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PRELIMINARY
EXTERIOR RENDERING

1169 & 1171 SAGAMORE RD
PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

EXTERIOR RENDERING - EXAMPLE SINGLE & DUPLEX UNITS

A-03

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A - FRONT ELEVATION

B - SIDE ELEVATION

C - REAR ELEVATION

D - SIDE ELEVATION

1 TYPICAL RESIDENTIAL UNIT - ELEVATIONS

3/16" = 1'-0"

KHAVARI
ARCHITECTS

40 HARRISON AVENUE
PORTSMOUTH, NH 03801

603 502 0985
KHAVARI.COM

PRELIMINARY

EXTERIOR ELEVATIONS

1169 & 1171 SAGAMORE RD
PORTSMOUTH, NH 03801

CONCEPT

ISSUE:

FOR REVIEW	06.23.2021
FOR REVIEW	08.23.2021
FOR REVIEW	03.22.2022

EXTERIOR ELEVATIONS - TYP. RESIDENTIAL UNIT

A-04

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ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

July 19, 2022

Peter Stith, Principal Planner
Planning Department
1 Junkins Avenue, 3rd Floor
Portsmouth, NH

Re: Peer Review for Proposed Sagamore Avenue Condominiums – Review 6
Portsmouth Tax Map 224, Lots 14 & 15
Altus Project No. 5261

Transmitted via email to: pmstith@cityofportsmouth.com

Dear Peter:

In accordance with the Three-Party Services agreement between the City of Portsmouth, The Sagamore Group, LLC and Altus Engineering, Inc. (Altus) dated October 6, 2021, Altus has reviewed the revised plans prepared by Jones & Beach Engineers, Inc. (JBE):

- Plan set titled "Condominium Site Plan "Sagamore Avenue Condominiums" Tax Map 224, Lots 14 & 15, 1169 & 1171 Sagamore Avenue, Portsmouth, NH", dated July 13, 2022

At the direction of City Staff, Altus was requested to comment on the location of the "Jellyfish" treatment device.

Following Altus' July 11, 2022 review and the Conservation Commission meeting, JBE relocated the "Jellyfish" to the east side of Sagamore Avenue. The structure is now off the pavement, in the roadway shoulder. The proposed location eliminates our concerns for noise and conflicts with the curbing. Altus has no further concerns with the design as presented.

Peter Stith, Principal Planner
Planning Department
July 19, 2022

Please contact me directly if you have any questions or need further assistance.

Respectfully submitted,

ALTUS ENGINEERING, INC.

Eric D. Weinrieb, PE
President

Ecopy: Michael Garrepy
Paige Libbey, PE
Beverly Zendt, Planning Director
David Desfosses

wde/5261-review 5.DOCX

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

NEW HAMPSHIRE 200

July 20, 2022

Rick Chellman, Chair
Portsmouth Planning Board
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

RE: 70 Pleasant Point Drive – Katara, LLC – Tax Map 207 Lot 15
Project #47307.01

Dear Mr. Chellman,

On behalf of our client, Katara, LLC, please find a Wetland Conditional Use Permit submission relative to the above-referenced project. The following materials have been uploaded to Viewpoint and are included in this submission:

- **Invasive Species Removal Report, prepared by Terrain Planning & Design LLC;**
- **Drainage Analysis (1 copy); and**
- **Site Plans entitled "Site Renovation Plans, 70 Pleasant Point Drive, Portsmouth, New Hampshire", prepared by TFMoran, Inc., dated May 25, 2022, Last Revised June 27, 2022 (1 copy at 22"x34").**

Project Description

The project includes the demolition and removal of the existing home and constructing a new two-story, 2,306 SF, single family dwelling at 70 Pleasant Point Drive. The existing lot (Tax Map 207 Lot 15) is approximately .642 acres and currently contains a single-story residence with a shed and water access. The site is within the Single Residence B (SRB) Zone and is adjacent to the Piscataqua River.

Associated improvements include but are not limited to access, grading, utilities, stormwater management system, and landscaping. The project proposes a 3,306 SF building footprint and total of 3,642 SF of impervious area within the 100' wetland buffer. Approximately 20,582 SF of disturbance is required to facilitate the development.

The new home is proposed 53.9' from the adjacent Wetland. This will replace the existing home which is 44.7' from the adjacent wetland. The project received unanimous favorable recommendation from the Portsmouth Conservation Commission during their July meeting and is currently under review by the New Hampshire Department of Environmental Services for both Wetland and Shoreland Impacts.

70 Pleasant Point Drive – Katara, LLC – Tax Map 207 Lot 15 **July 18, 2022**
Project #47307.01

We appreciate your consideration of these matters and look forward to presenting this project to you at the August 18th Planning Board Meeting.

Respectfully,
TFMoran, Inc.

Jason Cook
Civil Project Engineer

JKC/jcc

cc: Katara, LLC
Joshua Butkus, Maugel Destefano Architects (via jbutkus@maugel.com)
Marcos Cintra, Auger Building Company (via marcos@augerbuildingcompany.com)
Eric Buck, Terrain Planning & Design (via eric@terrainplanning.com)

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

NEW HAMPSHIRE 200

Letter of Authorization

I, Rebecca Rowe, of Katara, LLC, 274 Miller Avenue, Portsmouth, NH, hereby authorize TFMoran, Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, to act on my behalf concerning property owned by Katara, LLC, located on 70 Pleasant Point Drive, Portsmouth, NH, known as Tax Map 207, Lot 15.

I hereby appoint TFMoran, Inc. as my agent to act on my behalf in the review process, to include any required signatures.

Rebecca J. Rowe
Client Name

5/24/2022
Date

Witness

Date

TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110
T(603) 472-4488 www.tfmoran.com

TFMoran, Inc. Seacoast Division
170 Commerce Way–Suite 102, Portsmouth, NH 03801
T(603) 431-2222

terrain
planning & design llc

May 19, 2022

Peter Britz
Environmental Planner/Sustainability Coordinator
City of Portsmouth NH

Re: 70 Pleasant Point Drive Portsmouth NH

Dear Peter:

This letter is intended to address recommendations for invasive species removal and native plant restoration along the shorefront of 70 Pleasant Point Drive. The site is .65 acres with an existing, non-conforming, single family residence that is planned to be torn down and rebuilt. Accompanying the house construction project is the conversion of existing impervious driveway and hardscape surfaces into new permeable driveway and outdoor patio spaces. The project also includes introduction of native plantings along the shoreline and around the home, as well as the transition of a large lawn area into a native, low maintenance grass and ground cover mix mix.

The property sits on the Piscataqua River with almost 336 feet of frontage. A majority of the site is a level plateau that perches above the shoreline. A majority of the site sits within the 100ft buffer and the 250ft NH DES Shoreland protection zone. There is a drastic slope along the southerly shore frontage from the relatively flat part of the site to the tide line. This slope is covered in a mix of ornamental, native and invasive plantings.

Acting as good stewards the owners have asked that we put together an invasive species analysis and plan for removal and replacement. Enclosed is an outline of our findings as well as recommendations for new native plants to be installed.

Respectfully Submitted,

Eric R. Buck

Eric R. Buck, PLA, ASLA
Owner/ Landscape Architect
Terrain Planning & Design LLC

Our list of existing invasive plant species can be found below. We propose removing invasive species by low-impact manual hand pulling methods whenever possible. During our inventory a majority of the invasives we found had stems less than 1" in diameter. This means they likely have minimal root mass in the slope. However, should larger plants be discovered during the removal process, we recommend a cut & dab herbicide application by licensed applicators. This method of removal for larger specimens will greatly reduce the chance of erosion along the shoreline. All existing erosion shall be stabilized and any soil disturbed during planting will be seeded with native conservation/ wetlands mix.

Likely Invasive species identified:

- *Celastrus orbiculatus,* Asiatic Bittersweet
- *Fallopia japonica,* Japanese Knotweed
- *Rosa multiflora,* Multiflora Rose
- *Deutzia scabra*, Fuzzy Deutzia

Recommended Native Plantings:

- *Amelanchier laevis* Shadblow Serviceberry
- *Clethra alnifolia* Summersweet
- *Cornus amonum* Silky Dogwood
- *Cornus racemosa* Gray Dogwood
- *Ilex vertilicillata* Winterberry
- *Rosa virginiana* Virginia Rose

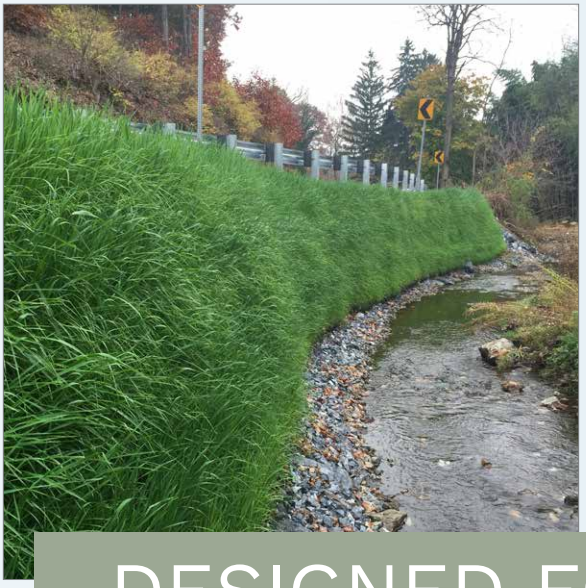
Whenever possible native plantings should be installed via a live staking method, rather than as field grown plant material with a root ball. This will avoid added erosion on the slope caused by excavation of the soil to place the plants. Should the existing slope not have sufficient soil for live staking method to take place, erosion control tubes filled with growing medium are to be staked to the slope and live staking should be placed into the soil socks. Enclosed are specifications for recommended soil medium and erosion sock type and method.

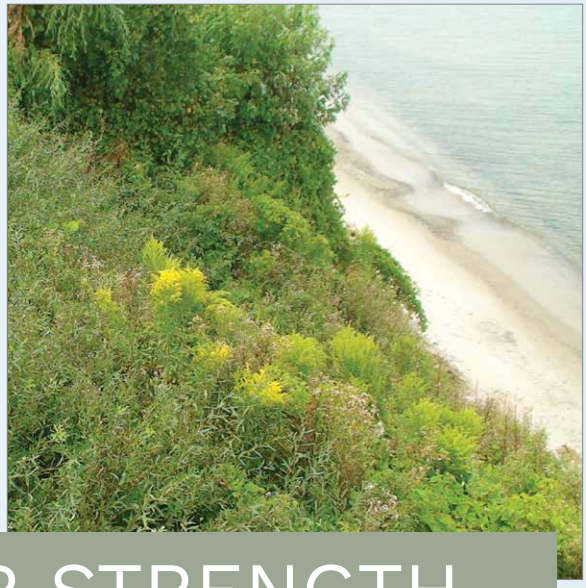
Below are images of the area that was inventoried.

filtrexx®
SUSTAINABLE TECHNOLOGIES

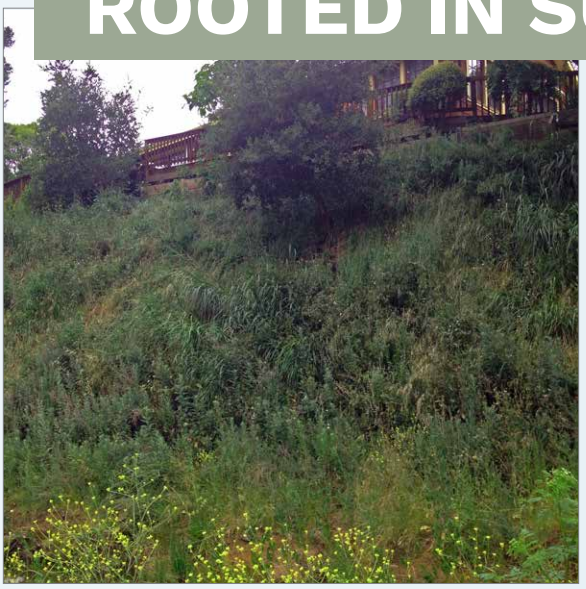
GREENLOXX®

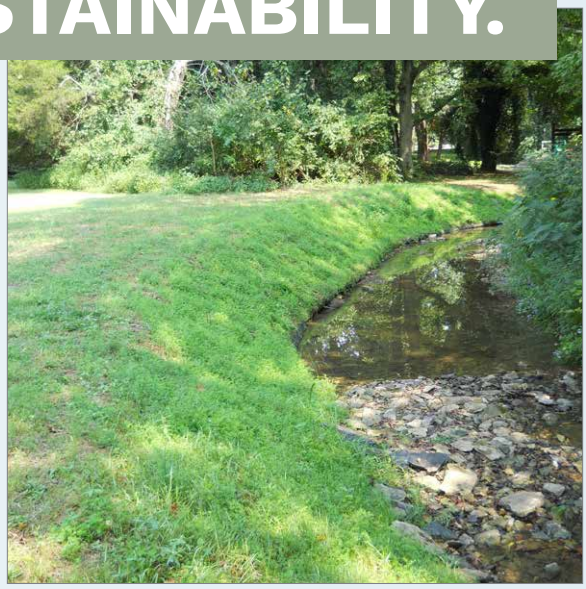
VEGETATED WALL & SLOPE SYSTEMS





DESIGNED FOR STRENGTH.
ROOTED IN SUSTAINABILITY.





GreenLoxx® vegetated systems allow for the restoration of eroded or damaged slopes, riparian waterways, shoreline banks, and more.

Create attractive, naturally vegetated landscapes without the use of hard concrete materials on your restoration projects.

GREENLOXX SYSTEM COMPARISON

System Name	MSE	Slope Degree	Anchors	FLW Geogrid	GroSoxx® Size	Purpose
GreenLoxx VSF Vegetated Slope Facing	No	up to 60°	Yes	Yes	8″x3′	Protect slope surface from erosion
GreenLoxx MSE Mechanically Stabilized Earth	Yes	70° - 90°	No	Yes	12″x2′	Gain back land
GreenLoxx MSE - RSS Reinforced Soil Slope	Yes	50° - 70°	No	Yes	12″x2′	Gain back land

GREENLOXX COMPONENTS

GroSoxx: Durable mesh is filled with Certified GrowingMedia™ as the basis to quickly establish vegetation.

FLW Geogrid: Used to wrap layers of GroSoxx. Biaxial pattern provides strength and features a 2″x2″ opening to eliminate cutting the grid for planting.

Soil Anchors: Used in GreenLoxx VSF to secure layers of geogrid and GroSoxx.

Vegetation: Options include pre-seeded GroSoxx, live staking, broadcast seeding, or plugs.

GROSOXX

GEOGRID + ANCHORS

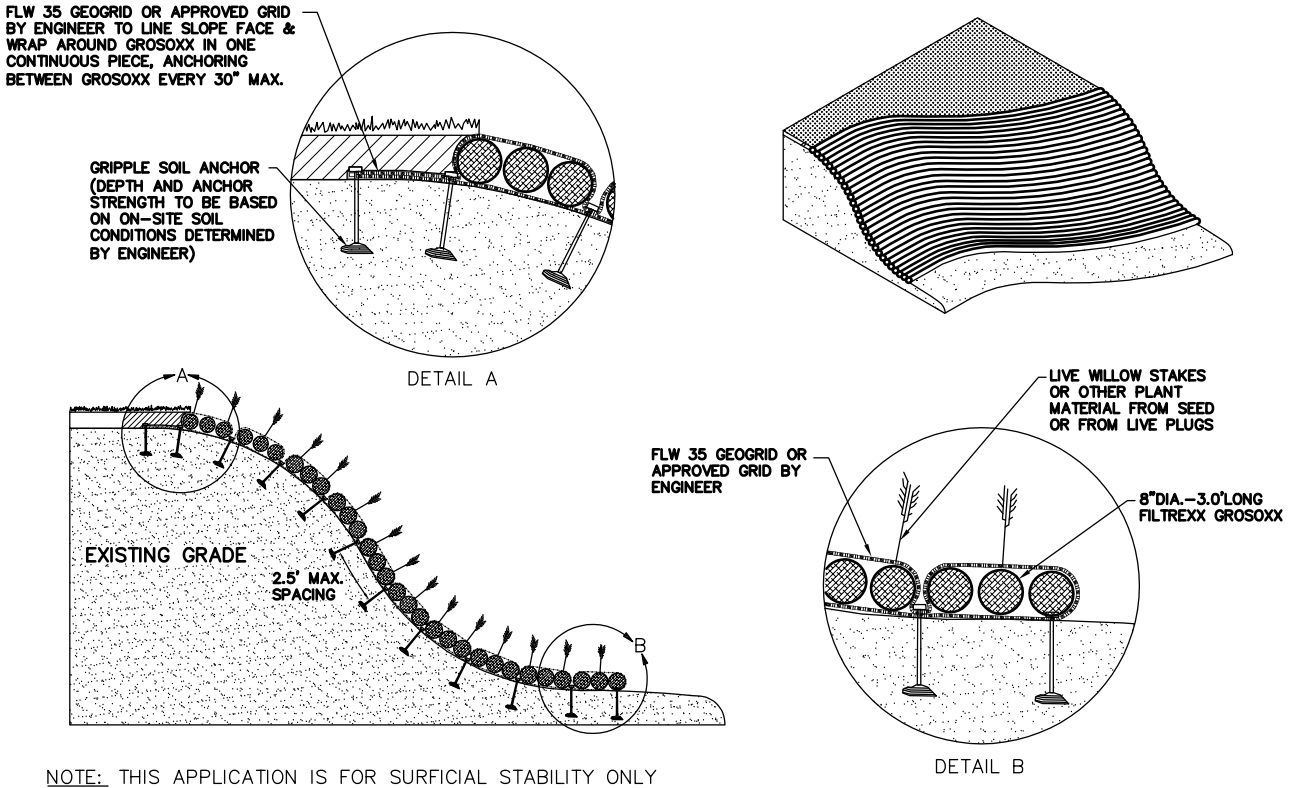
GroSoxx is the basis of GreenLoxx systems for quickly establishing vegetation on shorelines, banks, walls, and slopes. GroSoxx uses Durable mesh, filled with certified, composted GrowingMedia™ to provide a stable and fertile environment for plant growth. The use of GroSoxx for wall infill speeds construction, eliminates waste, prevents weeds from taking root, and offers a safer installation process. Available pre-seeded throughout, or plant after construction is complete. GroSoxx provides the highest amount of facial growing material in each application, maximizing environmental benefits.

Vegetation Options

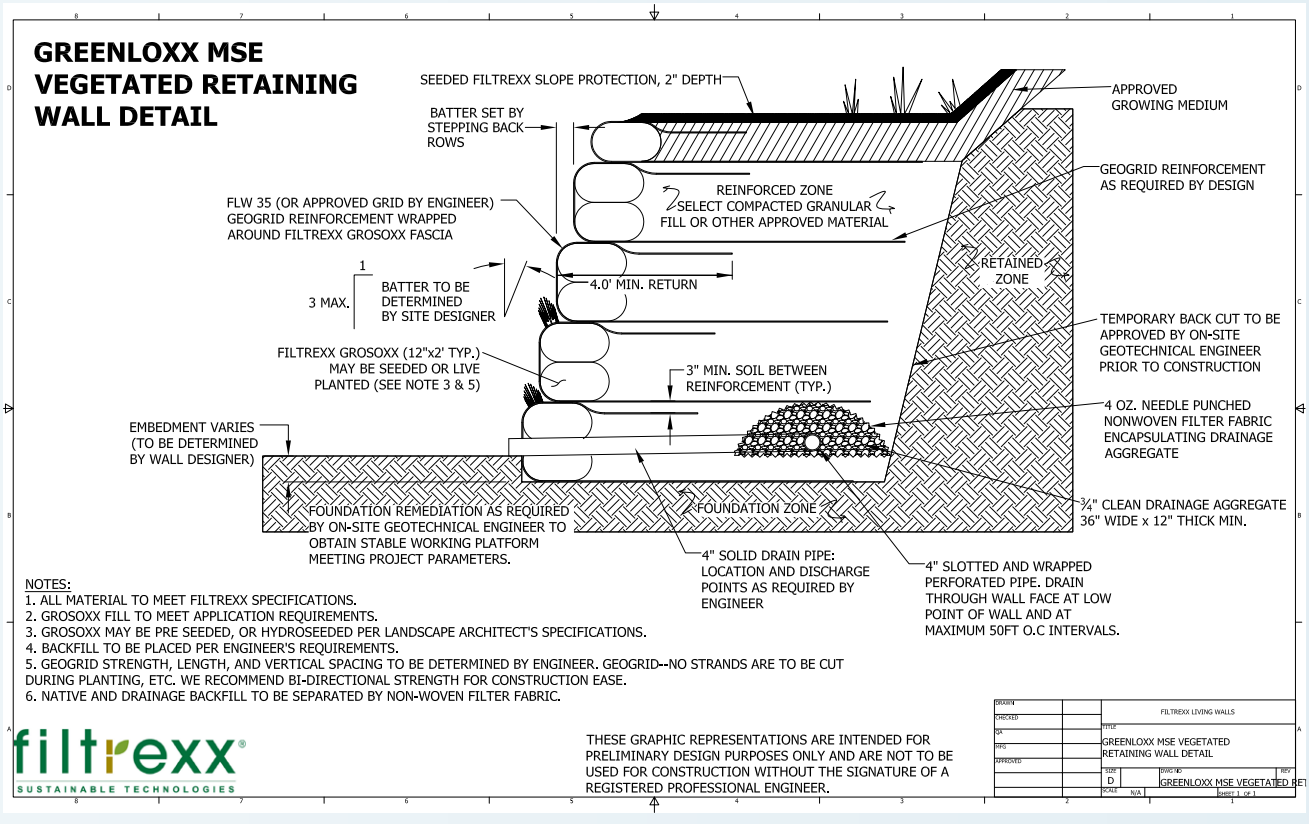
- Grasses, including natives
- Vines and ground cover
- Wildflowers
- Perennials and annuals
- Woody vegetation from live stakes or pots (2″ diameter or less so that grids are not cut in planting)

DESIGN DRAWINGS

Refer to Design Specifications and CADs for complete application, design, installation, and maintenance documentation at **www.filtrexx.com/specs**



filtrexx SUSTAINABLE TECHNOLOGIES	**These graphic representations are intended for preliminary design purposes only and are not to be used for construction without the signature of a registered professional engineer.**	**SCALE: NONE**	**GREENLOXX VEGETATED SLOPE FACING DETAIL (STYLE 1)**



NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. GROSOXX FILL TO MEET APPLICATION REQUIREMENTS.
3. GROSOXX MAY BE PRE SEEDED, OR HYDROSEEDED PER LANDSCAPE ARCHITECT'S SPECIFICATIONS.
4. BACKFILL TO BE PLACED PER ENGINEER'S REQUIREMENTS.
5. GEOGRID STRENGTH, LENGTH, AND VERTICAL SPACING TO BE DETERMINED BY ENGINEER. GEOGRID--NO STRANDS ARE TO BE CUT DURING PLANTING, ETC. WE RECOMMEND BI-DIRECTIONAL STRENGTH FOR CONSTRUCTION EASE.
6. NATIVE AND DRAINAGE BACKFILL TO BE SEPARATED BY NON-WOVEN FILTER FABRIC.

filtrexx SUSTAINABLE TECHNOLOGIES

THESE GRAPHIC REPRESENTATIONS ARE INTENDED FOR PRELIMINARY DESIGN PURPOSES ONLY AND ARE NOT TO BE USED FOR CONSTRUCTION WITHOUT THE SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER.

FILTREXX LIVING WALLS
GREENLOXX MSE VEGETATED RETAINING WALL DETAIL
SIZE D
GREENLOXX MSE VEGETATED RET
SCALE N/A
SHEET 1 OF 1

GREENLOXX VEGETATED SLOPE FACING (VSF)

BEFORE

GreenLoxx VSF is typically used to protect the face of the slope or bank from erosion. Requires minimal base preparation/excavation, and no backfill. FLW Geogrid is wrapped over the GroSoxx and secured with soil anchors.

- Lightweight components
- Immediate protection from toe cutting & sloughing
- Establish and reinforce vegetation under intense hydraulic pressure
- Drains freely, less hydrostatic pressure

Project location: Lake Erie shoreline, Rocky River, OH

INSTALLATION

AFTER, 4 MONTHS

AFTER, 1 YEAR

GREENLOXX MECHANICALLY STABILIZED EARTH (MSE)

BEFORE

GreenLoxx MSE is typically used to build a more vertical, structural wall. GroSoxx are stacked in courses wrapped in FLW Geogrid and tied back into the compacted fill behind the face of the wall.

Note: For slopes from 50° - 70°, the GreenLoxx MSE Vegetated Retaining Wall - Reinforced Soil Slope (RSS) alternate design is used.

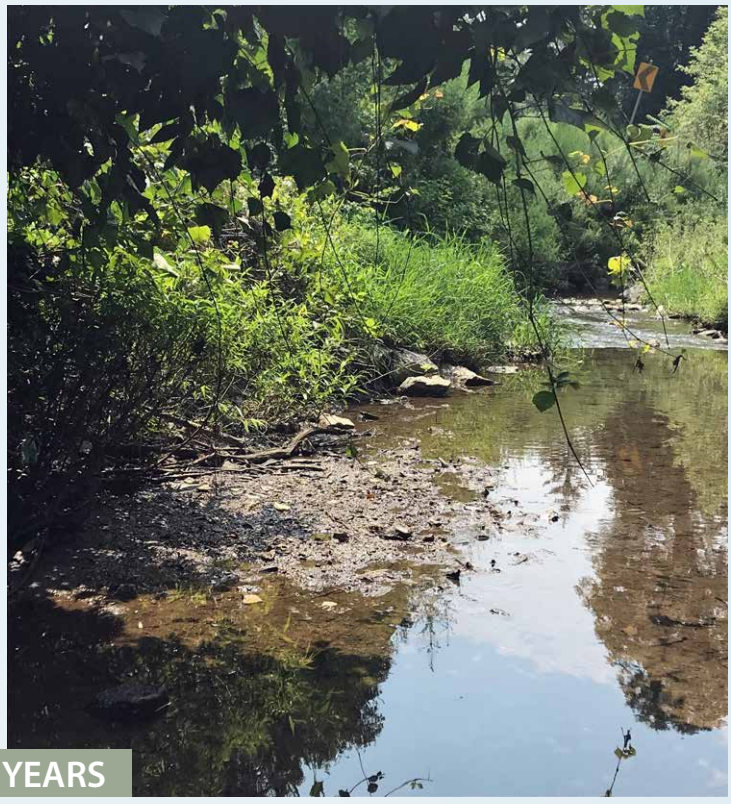
- Lightweight components
- Withstands high flow velocities—ideal for sensitive riparian areas
- Safer & more flexible installation than block walls

Project location: Roadway along Spring Creek, Harrisburg, PA

INSTALLATION

AFTER, 2 MONTHS

AFTER, 3 YEARS



SUSTAINABILITY BENEFITS

Our compost-based GreenLoxx systems are designed for environmental benefits and can have a significant impact on your project's sustainability.

Vegetated Wall & Slope Benefits[1]

- Reduction of the Urban Heat Island Effect
- Improved Exterior Air Quality
- Noise Reduction
- Increased Green Space, Biodiversity and Habitat
- Forage for Native Pollinators
- Urban Agriculture
- On-Site Wastewater Treatment
- Improved Health and Well-Being
- Aesthetic Improvements
- Local Job Creation

Carbon Footprint Reduction[2]

There are three key ways in which compost-based GreenLoxx systems can significantly lower a site's carbon footprint:

- Methane avoidance resulting from diverting organics from landfills
- Carbon sequestration by permanent vegetation
- Carbon sequestration by storing carbon in the soil

This GreenLoxx MSE project on the Chattahoochee River has the following impact:

- 656,000 lbs of Organics Diverted from Landfills
- 1,148,000 lbs of CO_2e Methane Avoidance
- 205 lbs of CO_2 Sequestered in Vegetation
- 110,700 lbs of CO_2 Sequestered in Soil

This is the equivalent of offsetting the greenhouse gas emissions of 121 passenger vehicles driven for one year.[2]

Treating Stormwater Runoff[2]

With approximately 50% organic matter, a high porosity, and high relative surface area, compost has the ability to absorb significant volumes of water.

This GreenLoxx MSE project, restoring a bluff on Lake Michigan, not only provides habitat and beauty, it can also absorb significant amounts of stormwater. Each linear ft of 12-in GroSoxx (1 square foot) can absorb up to 4 gallons of water. Utilizing 2,000 ft of 12-in GroSoxx, this wall has the potential to absorb up to 8,000 gallons of rainfall per event.[2]

In other applications, replacing a traditional concrete block wall with a permeable GreenLoxx system on a site with a stormwater retention basin or bioretention system, may allow engineering and construction of a smaller stormwater retention basin or bioretention system, and/or increased absorption of area rainfall, and may also contribute to LEED Green Building Credits.

Filtrexx Environmental Sustainability Benefits

Filtrexx GroSoxx® uses **locally recycled organic materials** inside of photodegradable or biodegradable mesh. Diverting these organic materials from landfills and applying them to the soil means a reduction in greenhouse gas emissions. **For every 1,000' of 12" GroSoxx used, 160,000 lbs of organic materials are diverted and your carbon footprint is reduced by 307,000 lbs CO_2e.** This is the equivalent of offsetting the greenhouse gas emissions of **29 passenger vehicles** driven for one year. In addition, the potential water absorption equals up to **4,000 gallons, per rainfall event**.[2]

Sources: [1]Green Roofs for Healthy Cities, "About Green Walls". [2]Filtrexx TechLink Research Summary #3335.

PROJECT PROFILE: STREAMBANK RESTORATION

Columbia, SC

A Richland County stream had heavily eroded banks, and residents had begun voicing concerns to the County about the loss of land. Richland County took on the project in order to restore the lost real estate. The engineer originally proposed using turf reinforcement mats, but that would have meant taking away even more land to create the necessary slope angle. "The County was looking for a design that would allow for the streambanks to be built back up quickly, almost vertically in some locations, and a design that would also look very natural," said Allison Steele, Stormwater Engineer for Richland County. "The whole point of the project was to give them their yards back." Engineering firm CDM Smith decided to use the GreenLoxx system, not only for its verticality, but also for its ease of installation in a forested environment. The GroSoxx used in the GreenLoxx system mold to fit around trees, eliminating the need to clear cut. Filtrexx® Certified℠ Installers Eco-FX, Inc. (Charlotte, NC) and Coogler Construction, Inc. (Ballentine, SC) teamed up for the custom installation. Together they installed approximately 600 feet of streambank, and the work was completed in about two weeks. GreenLoxx can be installed with or without mechanical reinforcement—this project used both. The GroSoxx were pre-seeded with an annual cover crop. The team returned in spring to plant several hundred native plants for permanent stabilization.

BEFORE

INSTALLATION

AFTER

Use GreenLoxx Systems for a variety of applications and industries

PROMOTES GROWTH

APPLICATIONS

- STREAMBANKS
- STEEP SLOPES
- SHORELINES
- RETAINING WALLS
- ROADSIDE SLOPES

INDUSTRIES

- MUNICIPALITIES
- RESIDENTIAL/HOA
- LANDSCAPING
- CONSERVATION DISTRICTS

Contact Filtrexx for availability and system packages.

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SUSTAINABLE TECHNOLOGIES

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DESIGN SPECIFICATION

5.2 GrowingMedia™

filtrexx® SUSTAINABLE TECHNOLOGIES

PURPOSE & DESCRIPTION

Composted products used for Filtrexx **GrowingMedia™** shall be weed free and derived from a well-decomposed source of organic matter. The composted products shall be produced using an aerobic composting process meeting USEPA CFR 503 regulations (In Canada: M.O.E. 101, C.C.M.E. Type "A" and Type "AA" regulations), including time and temperature data indicating effective weed seed, pathogen and insect larvae kill. The composted products shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures:

Section

A. PH – 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost"

B. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.

C. GrowingMedia to be used with Filtrexx® Soxx™ where seeding and/or live stakes are specified; on low grade slopes where vegetation establishment is the priority; or where rainwater absorption, water holding capacity, runoff reduction and infiltration are the priority shall meet the following particle size distribution. Examples include Soxx for Runoff Diversion, Channel Protection, Bank Stabilization, Severe Slope Stabilization, Vegetated Retaining Walls, Vegetated Gabion, Filtration System, Compost Vegetated Cover, Compost Erosion Control Blanket™, Compost Storm Water Blanket™, Compost Engineered Soil, Compost Bioretention System, Green Roof GrowingMedia.

Particle Sizes - 100% passing a 2 in (50mm) sieve, 99% passing a 1 in (25mm) sieve, minimum of 60% passing a ½ in (12.5mm) sieve in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification".

D. Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.

E. Material feedstocks shall not contain wood materials that have been treated or painted, contain preservatives or adhesives, or are composed of engineered wood products.

F. A sample shall be submitted to the Engineer for approval prior to being used and must comply with all local, state and federal regulations.

Option A: Erosion Control

For vegetated non Soxx applications where slope grades are greater than 3:1, where sheet runoff rate or velocity may be high, or rainfall rate/intensity may be high.

Substitution for Section C. Particle Size of GrowingMedia shall use the following particle size distribution specification: 99% passing a 1 in (25mm) sieve, maximum of 50% passing a 1/2 in (12.5mm) sieve.

Option B: Non-vegetated Temporary Erosion Control

For non-vegetated non Soxx applications where slope grades are greater than 3:1, where sheet runoff rate or velocity may be high, or rainfall rate/intensity may be high.

Substitution for Section C. Particle Size of GrowingMedia shall use the following particle size distribution specification: 99% passing a 3 in (75mm) sieve and a maximum of 30% passing a 1/2 in (12.5mm) sieve.

Rationale for Options: Research conducted at The University of Georgia and Auburn University (Faucette et al, 2006; Faucette, 2006) to evaluate the performance of particle sizes in compost erosion control blankets found that distributions with predominantly small particles absorbed more rainfall, reduced a greater volume of runoff, increased the delay of runoff commencement, and exhibited greater vegetation growth, relative to compost erosion control blankets with large particle sizes. However, compost erosion control blankets with distributions of predominantly large particles slowed runoff rate and reduced soil loss prior to vegetation establishment over compost erosion control blankets with smaller particles sizes.

FIELD APPLICATION PHOTO REFERENCES

GrowingMedia Sample

ADDITIONAL INFORMATION

For other references on this topic, including additional research reports and trade magazine and press coverage, visit the Filtrexx website at filtrexx.com

Filtrexx International, Technical Support
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Project #47307.01

DRAINAGE ANALYSIS REPORT

F O R

Site Renovation Plans

70 Pleasant Point Drive
Portsmouth, New Hampshire
Rockingham County

Tax Map 207, Lot 15

Owned by and Prepared for Katara, LLC

May 25, 2022

Prepared By:

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the development of a single-family residential house on 70 Pleasant Point Drive. The existing lot is approximately 0.642 acres and currently contains a single-family residence. The site is within the Single Residence B Zone and Flood Plain Overlay District and is adjacent to the Piscataqua River on both the southeast and southwest side.

The project proposes to remove the existing dwelling and replace with a new modern 2-story dwelling. Associated improvements include, but are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a 2,605 SF building footprint and total of 3,546 SF of impervious area within the property lines and approximately 19,907 SF of disturbance to facilitate the development.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, reduce runoff volume, reduce the risk of erosion and sedimentation, and improve stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, 25 year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00[1] was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A, Table 1). Due to the project's location within the Coastal/Great Bay Region community, the design rainfall increases the Cornell rates by 15% to address projected storm surge, sea level rise, and precipitation events per Env-Wq 1503.08(l). Design standards were taken from the New Hampshire Stormwater Manual, December 2008[2].

	24-HOUR RAINFALL RATES	
Storm-Event (year)	Northeast Regional Climate Center Extreme Precipitation (in)	Design Rainfall (in)
2	3.21	3.69
10	4.86	5.59
25	6.17	7.10
50	7.38	8.49

Table 1 – 24-Hour Rainfall Rates

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is

[1] HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.
[2] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

determined by calculating the time it takes runoff to travel this route under one of three hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified per the NRCS Web Soil (see Appendix B for detail and soil locations). The soils are composed of Urban land – canton complex (HSG A). These soils are classified as well-drained.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, loam was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The highest Estimated Seasonal High-Water Table (ESWT) observed was at: elevation 10.17' at the location of the proposed bioretention system.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by four subcatchments composing two watersheds, which flows towards the Piscataqua River. Pre-development subcatchment areas are depicted on the attached plan entitled "Pre-Development Drainage Map," Sheet DRAIN-01 in Appendix H.

Stormwater runoff from the site primarily infiltrates into the well-drained soils on-site. The remaining stormwater runoff discharges primarily towards the Piscataqua River (EPR) while the remaining runoff is directed to the neighboring properties to the north of the site (POI-1).

In the pre-development condition, the total impervious area is 3,642 SF over a total drainage analysis area of 27,965 SF.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by two watersheds divided into many subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled "Post-Development Drainage Map," sheet DRAIN-02 in Appendix I.

In the post-development condition, the total impervious area is 3,561 SF over a total drainage analysis area of 27,965 SF. The total impervious area decreases from the existing amount. Impervious area from the project consists of a 2,605 SF footprint residential building and associated improvements. One rain garden is proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, 25 year, and 50-year 24-hour Type III storm events for all discharge. Table 3 summarizes the pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

POINT OF INTEREST		TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CFS) DESIGN STORM			
		2-year	10-year	25-year	50-year
POI-1	Pre	0.0	0.1	0.2	0.3
	Post	0.0	0.1	0.1	0.2
Piscataqua River	Pre	0.3	1.1	1.8	2.5
	Post	0.3	0.9	1.6	2.3

Table 2 - Pre- and Post- Development Peak Runoff Rate Comparison

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM 2-year
POI-1	Pre	87
	Post	87
Piscataqua River	Pre	1,437
	Post	1,220

Table 3 - Pre- and Post- Development Peak Runoff Volume Comparison

The proposed project reduces peak rates of runoff compared to existing conditions for all storm events, in accordance with AoT regulations and Portsmouth stormwater regulations. Additionally, per NHDES, the 2-year 24-hour storm does not result in an increased peak flow rate and reduces volume within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices D and F summarize all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices E and G provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

There were three warning messages for the 10-year storm event related to the proposed rain garden:

- *[87] Warning: Pond ST Oscillations may require smaller dt or Finer Routing (severity=114)*
- *[87] Warning: Pond ST2 Oscillations may require smaller dt or Finer Routing (severity=88)*
- *[87] Warning: Pond ST3: Oscillations may require smaller dt or Finer Routing (severity=156)*

There was one warning message for the 10-year storm event related to the proposed pervious patio and:

- *[87] Warning: Pond PVP Oscillations may require smaller dt or Finer Routing (severity=282)*

Warning 87 is related to the dt and fine routing were adjusted to minimize the severity of this occurrence. The oscillation occurs as the water drains down to the surface of the subsurface

infiltration basins (See Figure 1). Oscillation warnings less than 100 are considered minor. All oscillation errors occur outside of the peak runoff and therefore are not a significant factor in the calculations.

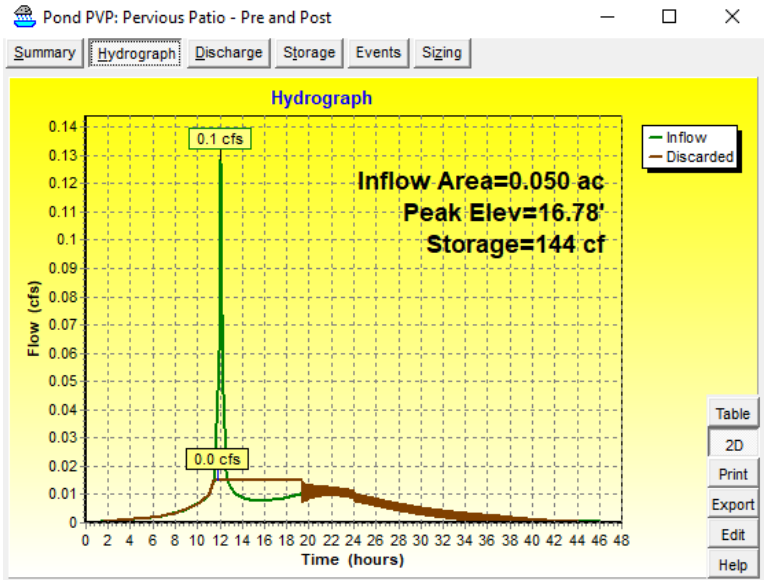

Figure 1: View of the Hydrographs with Oscillation Warning

6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and Portsmouth stormwater management regulations.

6.1 – PORTSMOUTH STORMWATER MANAGEMENT STANDARDS

The following regulatory requirements are provided to show project conformance to the applicable criteria of Portsmouth Stormwater Management Performance Standards defined in the Portsmouth Zoning Ordinance Section 10.1018.10. All regulations are met.

All construction activities and uses of buildings, structures, and land within wetlands and wetland buffers shall be carried out so as to minimize the volume and rate of stormwater runoff, the amount of erosion, and the export of sediment from the site. All such activities shall be conducted in accordance with Best Management Practices for stormwater management including but not limited to:

1. New Hampshire Stormwater Manual, NHDES, current version.
2. Best Management Practices to Control Non-point Source Pollution: A Guide for Citizens and City Officials, NHDES, January 2004.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008[3] to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.

- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt barrier if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3” of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
    a) Base course gravels are installed in areas to be paved.
    b) A minimum of 85% vegetated growth has been established.
    c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
    d) Erosion control blankets have been properly installed.

[3] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
    a) Drainage is structured to minimize any offsite increase in runoff

2. Treatment BMP's are established to ensure the water quality.

3. Maintenance schedules are set to safeguard the long-term working of the stormwater BMP's.

7.3 – BEST MANAGEMENT PRACTICE EFFICIENCIES

Appendix E of Volume 2 of the New Hampshire Stormwater [4] lists the pollutant removal efficiencies of various BMP's. All proposed BMP's meet all state and Portsmouth requirements for total suspended solids (TSS) and pollutant removal, Total Nitrogen (TN), and Total Phosphorous (TP).

Bioretention Systems have a 90% TSS removal efficiency, 65% TN removal efficiency, and 65% TP efficiency.

8.0 – GENERAL CONSTRUCTION SEQUENCING

To minimize erosion and sedimentation due to construction, construction shall follow this general construction sequence.

Modifications to the sequence necessary due to the contractor's schedule shall include appropriate temporary and permanent erosion and sedimentation control measures.

The contractor shall schedule work such that any construction area is stabilized within 45 days of initial disturbance except as noted below. No more than 5 acres of disturbed land shall be unstabilized at any one time.

The project shall be managed so that it meets the requirements and intent of RSA 430:53 and chapter ARG 3800 relative to invasive species.

Do not traffic exposed soil surface of infiltration systems with construction equipment. If feasible, perform excavations with equipment positioned outside the limits of the infiltration components of the system.

Do not discharge sediment-laden waters from construction activities (runoff, water from excavations) to stormwater bmp's. Stormwater runoff must be directed to temporary practices until stormwater bmp's are stabilized.

Do not place stormwater bmp's into service until the contributing areas have been fully stabilized.

[4] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

After the infiltration system is excavated to the final design elevation, the floor should be deeply tilled with a rotary tiller or disc harrow to restore the infiltration rates, followed by a pass with a leveling drag.

1. Notify easement owners prior to commencement of work.
2. Install all perimeter erosion protection measures as indicated on the plans prior to the commencement of construction.
3. Stormwater treatment ponds and swales shall be installed before rough grading the site.
4. During construction every effort shall be made to manage surface runoff quality.
5. Daily, or as required, construct temporary berms, drains, ditches, silt barriers, sediment traps, etc. Mulch and seed as required. (temporary seed mixture of winter rye applied at a rate of 2.5 lbs/1000 sf shall be used).
6. Conduct major earthwork, including clearing and grubbing, within the limits of work. All cut and fill slopes shall be seeded within 72 hours after grading.
7. All stripped topsoil and other earth materials shall be stockpiled outside the immediate work and 100' buffer. A silt barrier shall be constructed around these piles in a manner to provide access and avoid sediment outside of the work area.
8. Construct building pad and commence new building construction.
9. Construct temporary diversions as required.
10. Begin permanent and temporary installation of seed and mulch.
11. Perform earthwork necessary to establish rough grading around driveway. Manage exposed soil surfaces to avoid transporting sediments into wetlands.
12. Install subsurface utilities (water, sewer, gas, electric, communications, drainage, drainage facilities, etc.).
13. Construct proposed driveway, rain gardens, gravel wetlands and drainage swales. All ditches, swales, and gravel wetlands shall be fully stabilized prior to directing flow to them.
14. Complete building and all off-site improvements.
15. Complete seeding and mulching. Seed to be applied with broadcast spreader or by hydro-seeding, then rolled, raked, or dragged to assure seed/soil contact.
16. Remove temporary erosion control measures after seeded areas have become firmly established and site improvements are complete.
17. During the course of the work and upon completion, the contractor shall remove all sediment deposits, either on or off site, including catch basins, and sumps, drain pipes and ditches, curb lines, along silt barriers, etc. Resulting from soil and/or construction operations.
18. See winter construction sequence for work conducted after October 15th.

9.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and Portsmouth stormwater management regulations. Further, the surface water peak runoff rate is reduced in the 2-year, 10-year, 25-year, and 50-year storm. The project has been designed in accordance with NHDES and Portsmouth regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc. Seacoast Division

Jason Cook
Civil Project Engineer

JKC/jcc

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APPENDIX A – EXTREME PRECIPITATION RATES

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	
Location	
Longitude	70.746 degrees West
Latitude	43.068 degrees North
Elevation	0 feet
Date/Time	Mon, 18 Apr 2022 11:32:07 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.23	2.90	3.75	4.86	5.53	**10yr**	4.30	5.32	6.09	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.54	2.15	2.78	3.64	4.74	6.17	7.10	**25yr**	5.46	6.83	7.81	9.02	10.05	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.77	**50yr**	1.79	2.53	3.30	4.33	5.67	7.38	8.58	**50yr**	6.54	8.25	9.43	10.81	11.97	**50yr**
100yr	0.60	0.97	1.25	1.78	2.43	3.27	**100yr**	2.09	2.99	3.92	5.17	6.77	8.85	10.37	**100yr**	7.83	9.98	11.39	12.96	14.26	**100yr**
200yr	0.68	1.11	1.43	2.05	2.84	3.85	**200yr**	2.45	3.53	4.63	6.14	8.09	10.60	12.54	**200yr**	9.38	12.06	13.76	15.54	17.00	**200yr**
500yr	0.80	1.32	1.72	2.50	3.50	4.79	**500yr**	3.02	4.40	5.79	7.72	10.23	13.47	16.13	**500yr**	11.92	15.51	17.68	19.77	21.47	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.33	1.69	2.25	2.48	**1yr**	1.99	2.38	2.87	3.20	3.91	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.33	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.09	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.73	3.78	4.18	**5yr**	3.35	4.02	4.72	5.53	6.23	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.80	2.38	3.05	4.36	4.85	**10yr**	3.86	4.66	5.43	6.40	7.18	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.75	3.52	4.74	5.87	**25yr**	4.20	5.64	6.62	7.77	8.66	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.16	**50yr**	1.52	2.12	2.34	3.06	3.91	5.36	6.76	**50yr**	4.75	6.50	7.69	9.01	9.99	**50yr**
100yr	0.53	0.81	1.01	1.46	2.01	2.46	**100yr**	1.73	2.41	2.62	3.40	4.32	6.03	7.80	**100yr**	5.34	7.50	8.92	10.47	11.53	**100yr**
200yr	0.59	0.89	1.13	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.76	4.76	6.77	8.99	**200yr**	5.99	8.64	10.34	12.17	13.33	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.28	3.41	4.28	5.40	7.89	10.84	**500yr**	6.99	10.43	12.56	14.89	16.15	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.97	3.17	**1yr**	2.63	3.05	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.71	**2yr**	3.03	3.57	4.10	4.84	5.62	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.59	1.89	2.54	3.26	4.34	4.97	**5yr**	3.84	4.78	5.38	6.39	7.17	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.94	2.29	3.11	3.97	5.34	6.22	**10yr**	4.72	5.98	6.84	7.86	8.77	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.58	**25yr**	1.77	2.52	2.96	4.08	5.17	7.74	8.37	**25yr**	6.85	8.05	9.20	10.36	11.43	**25yr**
50yr	0.67	1.03	1.28	1.84	2.47	3.14	**50yr**	2.13	3.07	3.61	5.02	6.35	9.69	10.50	**50yr**	8.57	10.10	11.51	12.76	13.99	**50yr**
100yr	0.79	1.20	1.50	2.17	2.98	3.83	**100yr**	2.57	3.74	4.39	6.18	7.81	12.11	13.17	**100yr**	10.72	12.66	14.41	15.74	17.13	**100yr**
200yr	0.93	1.40	1.77	2.57	3.58	4.68	**200yr**	3.09	4.57	5.36	7.61	9.61	15.19	16.53	**200yr**	13.44	15.89	18.08	19.41	20.97	**200yr**
500yr	1.16	1.72	2.21	3.21	4.57	6.07	**500yr**	3.94	5.94	6.96	10.07	12.67	20.50	22.33	**500yr**	18.14	21.48	24.39	25.60	27.40	**500yr**

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APPENDIX B – SITE-SPECIFIC SOIL SURVEY & NRCS WEB SOIL REPORT

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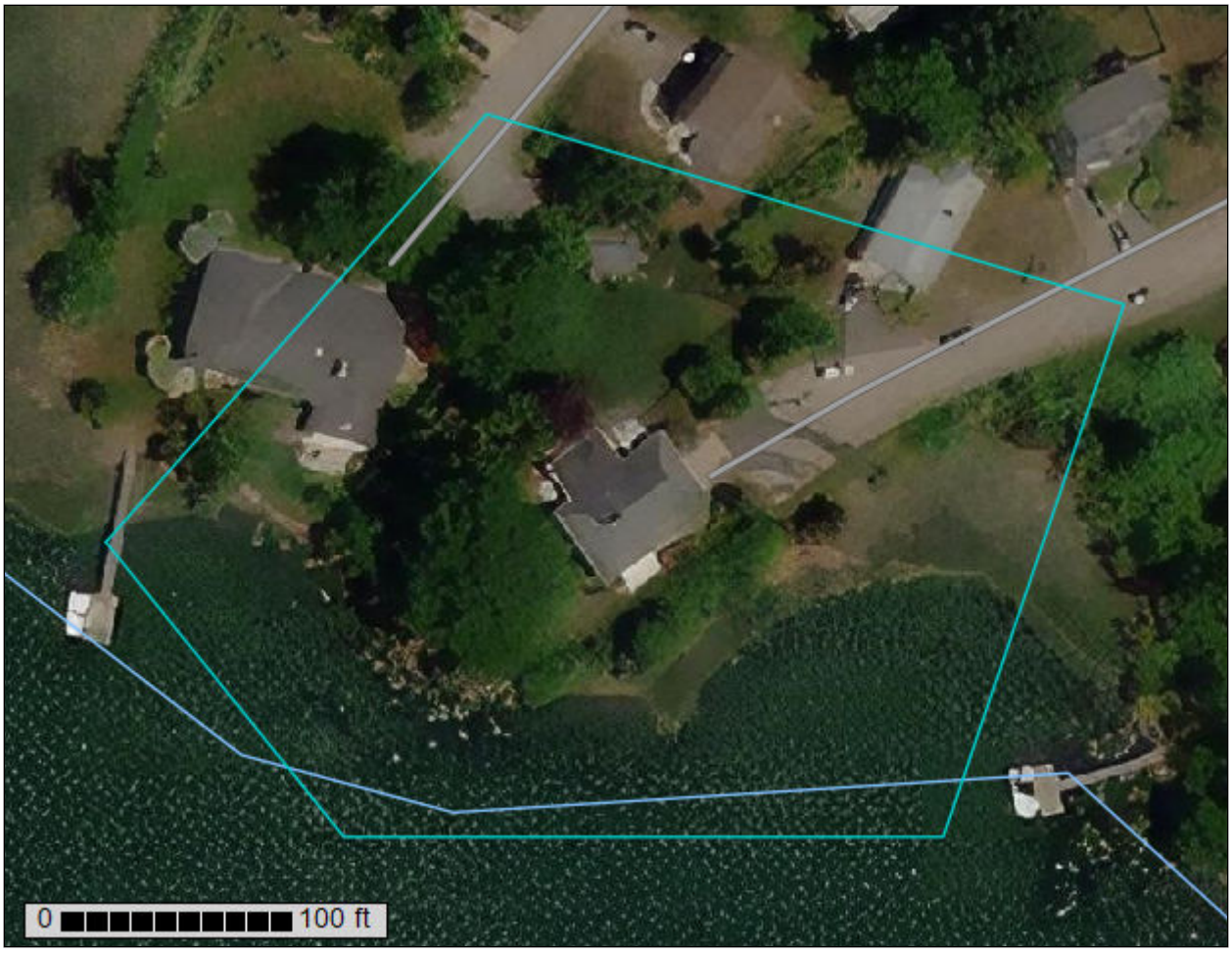
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

70° 44' 48" W
70° 44' 40" W
43° 4' 7" N
43° 4' 4" N
357790
357800
357810
357820
357830
357840
357850
357860
357870
357880
357890
357900
357910
357920
357930
357940
357950
357960
4769930
4769920
4769910
4769900
4769890
4769880
4769870
4769860
4769850
4769840
4769830
799
Pleasant Point Dr
W
Soil Map may not be valid at this scale.
Map Scale: 1:805 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
10
20
40
60
Feet
0
35
70
140
210
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	1.3	59.0%
W	Water	0.9	41.0%
Totals for Area of Interest		**2.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces

Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 9cq3
Elevation: 200 to 2,610 feet
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX C – TEST PIT LOGS & INFILTRATION TEST DATA

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Test Pit Report

For

70 Pleasant Point Drive,

Portsmouth, NH

Prepared For

Katara, LLC

47307.01

PREPARED BY

TFMoran, Inc.

48 Constitution Drive

Bedford, NH 03110

April 6th, 2022

Test Pit # 1 April 6th, 2022

0 – 8 10YR 3/4 Dark Yellowish Brown, Loam, High Organic Concentration, Blocky, Friable,

8 – 21 10YR 5/8 Yellowish Brown, Silt Loam, > 15% Angular Rock Fragments, Friable, Homogeneous, Granular

21 – 28 10YR 6/8 Brownish Yellow, Sandy Loam, > 15% Rounded Cobbles, Friable, Blocky

28 – 37 10YR 6/4 Light Yellowish Brown, Fine Sand, Single Grained, Homogenous

37 – 48 10YR 7/3 Very Pale Brown, Very Fine Sand, Single Grained, Homogenous

48 – 61 2.5Y 5/4 Light Olive Brown, Sandy Clay Loam, > 50% Angular Rock Fragments, Decaying Bedrock

REDOX OBS: 57 – 61 10R 4/8 Red (Oxidization of Iron)

Soil Series: Canton

OBSWT: > 61” Below Grade

ESHWT: 57” Below Grade

Roots: 0 – 23” Below Grade

Ledge: 33” Below Grade & 61” below Grade

Test Pit # 2 April 6th, 2022

0 – 9 10YR 3/3 Dark Brown, Loam, Organic Horizon, Friable, Blocky

9 – 19 2.5Y 4/3 Olive Brown, Loamy Sand, Friable, Common Gravels, Granular

19 – 36 10YR 5/6 Yellowish Brown, Loamy Sand, Common Gravels, Heterogeneous, Massive

36 – 58 2.5Y 6/4 Light Yellowish Brown, Sandy Loam, Blocky, Medium Grain Size, Few Cobbles

58 – 68 10YR 7/6 Yellow, Medium Sand, Heterogeneous, loose, Single Grained

REDOX OBS: 43” Below Grade 7.5YR 5/8 Strong Brown

<u>Soil Series:</u> Canton

OBSWT: > 68” Below Grade

ESHWT: 43” Below Grade

Roots: 8 – 26” Below Grade

Ledge: 50” Below Grade & 68” below Grade

Test Pit # 3 April 6th, 2022

0 – 8 10YR 3/2 Very Dark Grayish Brown, Loam, Organic Horizon, Friable, Blocky

8 – 24 2.5Y 5/6 Light Olive Brown, Sandy Loam, Massive,

24 – 40 2.5Y 7/4 Pale Brown, Loamy Sand, Friable, Granular, Homogenous, Very Few Cobbles

40 – 88 10YR 5/4 Yellowish Brown, Loamy Sand, > 15% Angular Rock Fragments, Homogenous Soils, Platy, Decaying Bedrock

REDOX OBS: 70” Below Grade 2.5YR 4/8 Red

<u>Soil Series:</u> Canton

OBSWT: > 88” Below Grade

ESHWT: 70” Below Grade

Roots: 20 – 24” Below Grade

Ledge: 62” Below Grade

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 48.0 cm

Depth to Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 48-22 = 26

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	36	-	-		-	-	-	-	-	-	-	-			
2	0.5	26	0.00050145	32	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
3	1	26	0.00050145	27.6	4.4	0.008	1	20	10560	5.295318	2.085	94.2	0.000501	0.0003	5.293	2.084	3.408	1.342
4	1.5	26	0.00050145	23.2	4.4	0.008	1	20	10560	5.295318	2.085	94.2	0.000501	0.0003	5.293	2.084	3.408	1.342
5	2	26	0.00050145	19.2	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
6	2.5	26	0.00050145	15.3	3.9	0.008	1	20	9360	4.693577	1.848	94.2	0.000501	0.0003	4.691	1.847	3.021	1.189
7	3	26	0.00050145	11.2	4.1	0.008	1	20	9840	4.934274	1.943	94.2	0.000501	0.0003	4.932	1.942	3.176	1.250
8	3.5	26	0.00050145	7.2	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
9	4	26	0.00050145	3.3	3.9	0.008	1	20	9360	4.693577	1.848	94.2	0.000501	0.0003	4.691	1.847	3.021	1.189
Average Ksat based on readings 2-7											1.887					1.886		1.215

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water D-d)

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer

Project No: 45407.12
Project Name: 437 Lafatette Road - Portsmouth, NH

Date: 4/6/2022
Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 43.0 cm
Depth to Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 43-13 = 30

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	37	-	-		-	-	-	-	-	-	-	-			
2	0.5	30	0.0003998	34.5	2.5	0.008	1	20	6000	2.398782	0.9444	99.2	0.000400	0.0003	2.398	0.9439	1.645	0.648
3	1	30	0.0003998	32.2	2.3	0.008	1	20	5520	2.206879	0.8689	99.2	0.000400	0.0003	2.206	0.8684	1.514	0.596
4	1.5	30	0.0003998	30	2.2	0.008	1	20	5280	2.110928	0.8311	99.2	0.000400	0.0003	2.110	0.8307	1.448	0.570
5	2	30	0.0003998	27.9	2.1	0.008	1	20	5040	2.014977	0.7933	99.2	0.000400	0.0003	2.014	0.793	1.382	0.544
6	2.5	30	0.0003998	26	1.9	0.008	1	20	4560	1.823074	0.7177	99.2	0.000400	0.0003	1.822	0.717	1.250	0.492
7	3	30	0.0003998	23.9	2.1	0.008	1	20	5040	2.014977	0.7933	99.2	0.000400	0.0003	2.014	0.793	1.382	0.544
8	3.5	30	0.0003998	22	1.9	0.008	1	20	4560	1.823074	0.7177	99.2	0.000400	0.0003	1.822	0.717	1.250	0.492
Average Ksat based on readings 2,4-8											0.7555					0.755		0.518

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 34.0 cm

Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 34-12 = 22

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	38.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	22	0.000651	34.6	3.4	0.008	1	20	8160	5.31216	2.091	108.2	0.000651	0.0003	5.308	2.090	2.727	1.074
3	1	22	0.000651	32.3	2.3	0.008	1	20	5520	3.59352	1.415	108.2	0.000651	0.0003	3.591	1.414	1.845	0.726
4	2	22	0.000651	27.8	4.5	0.017	1	20	5400	3.5154	1.384	108.2	0.000651	0.0003	3.513	1.383	1.805	0.710
5	2.5	22	0.000651	25.8	2.0	0.008	1	20	4800	3.1248	1.230	108.2	0.000651	0.0003	3.123	1.229	1.604	0.632
6	3	22	0.000651	23.9	1.9	0.008	1	20	4560	2.96856	1.169	108.2	0.000651	0.0003	2.966	1.168	1.524	0.600
7	3.5	22	0.000651	22.0	1.9	0.008	1	20	4560	2.96856	1.169	108.2	0.000651	0.0003	2.966	1.168	1.524	0.600
8	4	22	0.000651	20.2	1.8	0.008	1	20	4320	2.81232	1.107	108.2	0.000651	0.0003	2.810	1.106	1.444	0.568
9	4.5	22	0.000651	18.5	1.7	0.008	1	20	4080	2.65608	1.046	108.2	0.000651	0.0003	2.654	1.045	1.363	0.537
											1.123					1.122		1.123

* NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer

Hole #1	1.9
Hole #2	0.8
Hole #3	1.1
Average	**1.3**

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 93.4 cm
Depth to Impervious Layer or ESHWT = 243.8 cm

23" Down in the hole = 35+23*2.54
96 in (From Ground Surface

H= D-d = 35-15=20

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	34.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	30.5	3.5	0.008	1	20	8400	6.3252	2.4902	150.4	0.000753	0.0003	6.329	2.492	2.311	0.910
3	1	20	0.000753	26.5	4.0	0.008	1	20	9600	7.2288	2.8460	150.4	0.000753	0.0003	7.233	2.848	2.641	1.040
4	1.5	20	0.000753	23.0	3.5	0.008	1	20	8400	6.3252	2.4902	150.4	0.000753	0.0003	6.329	2.492	2.311	0.910
5	2	20	0.000753	19.8	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
6	2.5	20	0.000753	16.4	3.4	0.008	1	20	8160	6.14448	2.4191	150.4	0.000753	0.0003	6.148	2.421	2.245	0.884
7	3	20	0.000753	13.2	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
8	3.5	20	0.000753	10.0	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
Average Ksat based on readings 1-6											2.3717					2.373		0.867

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 98.4 cm 23" Down in the hole = 40+23*2.54

Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 40-20 =20

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s*	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	40	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	36.7	3.3	0.008	1	20	7920	5.96376	2.3479	145.4	0.000753	0.0003	5.968	2.349	2.241	0.882
3	1	20	0.000753	33.6	3.1	0.008	1	20	7440	5.60232	2.2056	145.4	0.000753	0.0003	5.606	2.207	2.105	0.829
4	1.5	20	0.000753	30.2	3.4	0.008	1	20	8160	6.14448	2.4191	145.4	0.000753	0.0003	6.148	2.421	2.309	0.909
5	2	20	0.000753	27.7	2.5	0.008	1	20	6000	4.518	1.7787	145.4	0.000753	0.0003	4.521	1.780	1.698	0.668
6	2.5	20	0.000753	24.6	3.1	0.008	1	20	7440	5.60232	2.2056	145.4	0.000753	0.0003	5.606	2.207	2.105	0.829
7	3	20	0.000753	21.8	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
8	3.5	20	0.000753	19	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
9	4	20	0.000753	16.2	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
Average Ksat based on readings 1-3											2.0456					2.047		0.769

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 84.4 cm 23" Down in the hole = 26+23*2.54

Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 26-13 = 13

											Approximate Glover Solution		Glover Solution						
																if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow		Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr		cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	32.0	-	-		-	-		-	-	-	-	-	-			
2	0.5	13	0.001436	28.0	4.0	0.008	1	20	9600		13.7856	5.427	159.4	0.001436	0.0003	13.786	5.428	3.249	1.279
3	1	13	0.001436	23.4	4.6	0.008	1	20	11040		15.85344	6.242	159.4	0.001436	0.0003	15.854	6.242	3.736	1.471
4	1.5	13	0.001436	19.1	4.3	0.008	1	20	10320		14.81952	5.834	159.4	0.001436	0.0003	14.820	5.835	3.493	1.375
5	2	13	0.001436	14.8	4.3	0.008	1	20	10320		14.81952	5.834	159.4	0.001436	0.0003	14.820	5.835	3.493	1.375
6	2.5	13	0.001436	10.4	4.4	0.008	1	20	10560		15.16416	5.970	159.4	0.001436	0.0003	15.165	5.970	3.574	1.407
7	3	13	0.001436	5.8	4.6	0.008	1	20	11040		15.85344	6.242	159.4	0.001436	0.0003	15.854	6.242	3.736	1.471
Average Ksat based on readings 3-6												5.880					5.880		1.386

* NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer

Hole #1	2.4
Hole #2	2
Hole #3	5.9
Average	**3.4**

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 88.3 cm 19" Down in the hole = 40+19*2.54

Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 40-8=32

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	18.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	32	0.00036064	14.8	3.2	0.008	1	20	7680	2.769736	1.0904	155.6	0.000360	0.0002	2.768	1.090	1.435	0.565
3	1	32	0.00036064	11.5	3.3	0.008	1	20	7920	2.856291	1.1245	155.6	0.000360	0.0002	2.855	1.124	1.480	0.583
4	1.5	32	0.00036064	8.2	3.3	0.008	1	20	7920	2.856291	1.1245	155.6	0.000360	0.0002	2.855	1.124	1.480	0.583
5	2	32	0.00036064	4.8	3.4	0.008	1	20	8160	2.942845	1.1586	155.6	0.000360	0.0002	2.941	1.158	1.525	0.600
6	2.5	32	0.00036064	0.6	4.2	0.008	1	20	10080	3.635279	1.4312	155.6	0.000360	0.0002	3.633	1.430	1.883	0.742
Average Ksat based on readings 1-6											1.1245					1.124		0.583

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 79.3 cm 19" Down in the hole = 31+19*2.54

Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 31-10=21

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s*	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	38	-	-		-	-	-	-	-	-	-	-			
2	0.5	21	0.000669	35.7	2.3	0.008	1	20	5520	3.69288	1.4539	164.6	0.000699	0.0002	3.859	1.519	1.362	0.536
3	1	21	0.000669	33.2	2.5	0.008	1	20	6000	4.014	1.5803	164.6	0.000699	0.0002	4.194	1.651	1.481	0.583
4	1.5	21	0.000669	30.8	2.4	0.008	1	20	5760	3.85344	1.5171	164.6	0.000699	0.0002	4.026	1.585	1.421	0.560
5	2	21	0.000669	28	2.8	0.008	1	20	6720	4.49568	1.7700	164.6	0.000699	0.0002	4.697	1.849	1.658	0.653
6	2.5	21	0.000669	25.7	2.3	0.008	1	20	5520	3.69288	1.4539	164.6	0.000699	0.0002	3.859	1.519	1.362	0.536
7	3	21	0.000669	23.2	2.5	0.008	1	20	6000	4.014	1.5803	164.6	0.000699	0.0002	4.194	1.651	1.481	0.583
8	3.5	21	0.000669	20.8	2.4	0.008	1	20	5760	3.85344	1.5171	164.6	0.000699	0.0002	4.026	1.585	1.421	0.560
Average Ksat based on readings 1-3											1.5297					1.598		1.530

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Project No: 47307.01 Date: 4/6/2022

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 77.3 cm 19" Down in the hole = 29+19*2.54

Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 29-12 =17

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s*	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	35	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	32.4	2.6	0.008	1	20	6240	4.69872	1.8499	166.6	0.000753	0.0003	4.702	1.851	1.576	0.620
3	1	20	0.000753	29.9	2.5	0.008	1	20	6000	4.518	1.7787	166.6	0.000753	0.0003	4.521	1.780	1.515	0.597
4	1.5	20	0.000753	27.2	2.7	0.008	1	20	6480	4.87944	1.9210	166.6	0.000753	0.0003	4.883	1.922	1.636	0.644
5	2	20	0.000753	24.9	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
6	2.5	20	0.000753	22.6	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
7	3	20	0.000753	20.4	2.2	0.008	1	20	5280	3.97584	1.5653	166.6	0.000753	0.0003	3.978	1.566	1.333	0.525
8	3.5	20	0.000753	18.1	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
Average Ksat based on readings 1-3											1.6187					1.620		1.619

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Hole #1	1.1
Hole #2	1.5
Hole #3	1.6
Average	**1.4**

APPENDIX D – PRE-DEVELOPMENT CALCULATIONS

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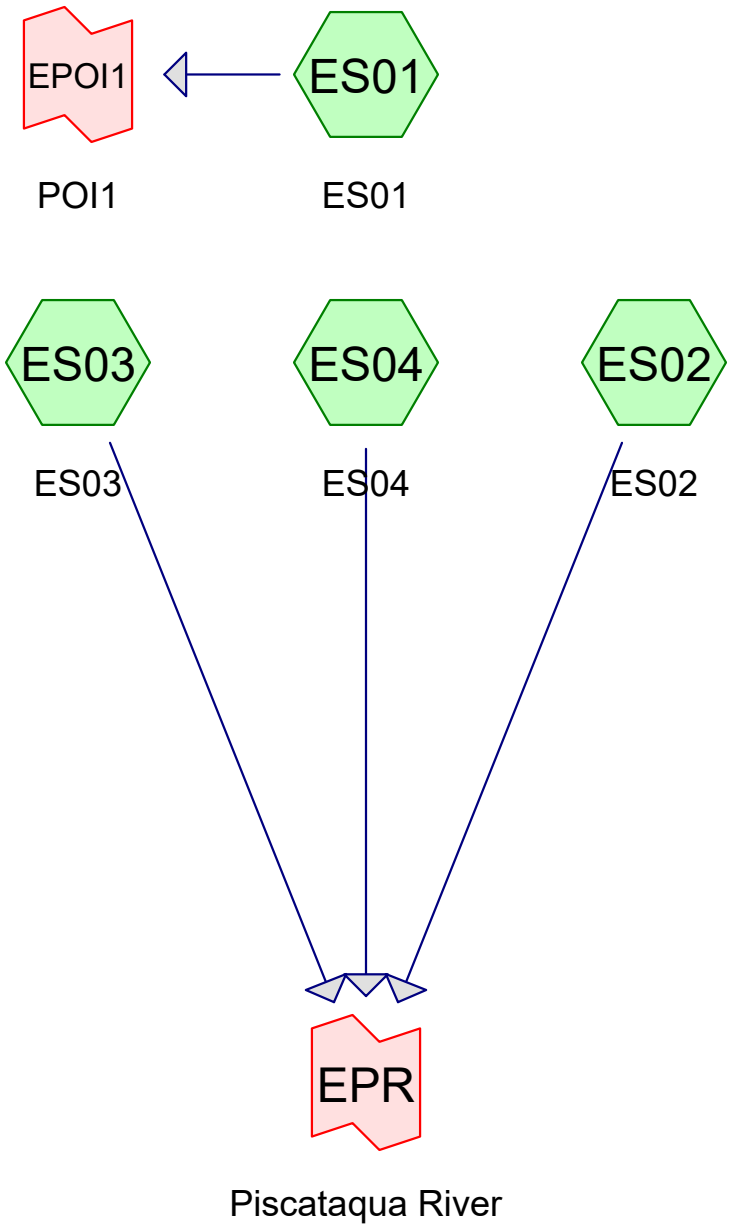
Existing



Subcat Reach Pond Link

Routing Diagram for Pre and Post
Prepared by {enter your company name here}, Printed 5/24/2022
HydroCAD® 10.10-6a s/n 00866 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 yr	Type III 24-hr		Default	24.00	1	3.69	2
2	10 yr	Type III 24-hr		Default	24.00	1	5.59	2
3	25 yr	Type III 24-hr		Default	24.00	1	7.10	2
4	50 yr	Type III 24-hr		Default	24.00	1	8.49	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.142	35	Brush, Fair, HSG A (ES02, ES03, ES04)
0.435	49	Pasture/grassland/range, Fair, HSG A (ES01, ES02, ES03, ES04)
0.120	98	Paved parking, HSG A (ES02, ES03, ES04)
0.057	98	Roofs, HSG A (ES01, ES03, ES04)
0.005	43	Woods/grass comb., Fair, HSG A (ES01)
0.759	**58**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.759	HSG A	ES01, ES02, ES03, ES04
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.759		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.142	0.000	0.000	0.000	0.000	0.142	Brush, Fair	ES02, ES03, ES04
0.435	0.000	0.000	0.000	0.000	0.435	Pasture/grassland/range, Fair	ES01, ES02, ES03, ES04
0.120	0.000	0.000	0.000	0.000	0.120	Paved parking	ES02, ES03, ES04
0.057	0.000	0.000	0.000	0.000	0.057	Roofs	ES01, ES03, ES04
0.005	0.000	0.000	0.000	0.000	0.005	Woods/grass comb., Fair	ES01
0.759	**0.000**	**0.000**	**0.000**	**0.000**	**0.759**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=0.24"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.0 cfs 0.002 af

Subcatchment ES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=0.96"
Flow Length=120' Tc=6.0 min CN=67 Runoff=0.2 cfs 0.020 af

Subcatchment ES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=0.31"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.0 cfs 0.008 af

Subcatchment ES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=0.66"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.1 cfs 0.005 af

Link EPOI1: POI1 Inflow=0.0 cfs 0.002 af
Primary=0.0 cfs 0.002 af

Link EPR: Piscataqua River Inflow=0.3 cfs 0.033 af
Primary=0.3 cfs 0.033 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.035 af Average Runoff Depth = 0.56"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=0.95"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.1 cfs 0.008 af

Subcatchment ES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=2.23"
Flow Length=120' Tc=6.0 min CN=67 Runoff=0.6 cfs 0.046 af

Subcatchment ES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=1.08"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.3 cfs 0.028 af

Subcatchment ES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=1.74"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.2 cfs 0.014 af

Link EPOI1: POI1 Inflow=0.1 cfs 0.008 af
Primary=0.1 cfs 0.008 af

Link EPR: Piscataqua River Inflow=1.1 cfs 0.088 af
Primary=1.1 cfs 0.088 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.096 af Average Runoff Depth = 1.52"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=1.72"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.2 cfs 0.015 af

Subcatchment ES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=3.39"
Flow Length=120' Tc=6.0 min CN=67 Runoff=1.0 cfs 0.070 af

Subcatchment ES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=1.91"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.6 cfs 0.049 af

Subcatchment ES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=2.77"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.3 cfs 0.022 af

Link EPOI1: POI1 Inflow=0.2 cfs 0.015 af
Primary=0.2 cfs 0.015 af

Link EPR: Piscataqua River Inflow=1.8 cfs 0.141 af
Primary=1.8 cfs 0.141 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.157 af Average Runoff Depth = 2.48"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=2.55"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.3 cfs 0.023 af

Subcatchment ES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=4.53"
Flow Length=120' Tc=6.0 min CN=67 Runoff=1.3 cfs 0.094 af

Subcatchment ES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=2.78"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.8 cfs 0.071 af

Subcatchment ES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=3.82"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.4 cfs 0.031 af

Link EPOI1: POI1 Inflow=0.3 cfs 0.023 af
Primary=0.3 cfs 0.023 af

Link EPR: Piscataqua River Inflow=2.5 cfs 0.196 af
Primary=2.5 cfs 0.196 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.218 af Average Runoff Depth = 3.46"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

APPENDIX E – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 yr	Type III 24-hr		Default	24.00	1	5.59	2

Summary for Subcatchment ES01: ES01

Runoff = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af, Depth= 0.95"
Routed to Link EPOI1 : POI1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
166	98	Roofs, HSG A
225	43	Woods/grass comb., Fair, HSG A
4,279	49	Pasture/grassland/range, Fair, HSG A
4,670	50	Weighted Average
4,504		96.45% Pervious Area
166		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	85	0.0235	0.18		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"

Summary for Subcatchment ES02: ES02

Runoff = 0.6 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.23"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
4,121	98	Paved parking, HSG A
738	35	Brush, Fair, HSG A
5,987	49	Pasture/grassland/range, Fair, HSG A
10,846	67	Weighted Average
6,725		62.00% Pervious Area
4,121		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	48	0.1250	0.31		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
0.4	51	0.0660	1.94		**Sheet Flow, Sheet Flow 2** Smooth surfaces n= 0.011 P2= 3.21"
0.2	21	0.1900	2.18		**Shallow Concentrated Flow, Shallow Concentrated 1** Woodland Kv= 5.0 fps
2.8					**Direct Entry, Direct Entry**
6.0	120	Total			

Summary for Subcatchment ES03: ES03

Runoff = 0.3 cfs @ 12.15 hrs, Volume= 0.028 af, Depth= 1.08"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
650	98	Paved parking, HSG A
1,660	98	Roofs, HSG A
5,154	35	Brush, Fair, HSG A
5,849	49	Pasture/grassland/range, Fair, HSG A
13,313	52	Weighted Average
11,003		82.65% Pervious Area
2,310		17.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
0.2	41	0.2190	3.28		**Shallow Concentrated Flow, Shallow Concentrated 1** Short Grass Pasture Kv= 7.0 fps
8.5	141	Total			

Summary for Subcatchment ES04: ES04

Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.014 af, Depth= 1.74"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
463	98	Paved parking, HSG A
656	98	Roofs, HSG A
283	35	Brush, Fair, HSG A
2,814	49	Pasture/grassland/range, Fair, HSG A
4,216	61	Weighted Average
3,097		73.46% Pervious Area
1,119		26.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.1500	2.21		**Sheet Flow, Sheet Flow 1** Smooth surfaces n= 0.011 P2= 3.21"
0.1	26	0.0100	2.99	0.30	**Channel Flow, Channel 1** Area= 0.1 sf Perim= 1.3' r= 0.08' n= 0.009 PVC, smooth interior
0.2	48	0.2900	3.77		**Shallow Concentrated Flow, Shallow Concentrated 1** Short Grass Pasture Kv= 7.0 fps
5.6					**Direct Entry, Direct Entry**
6.0	93	Total			

Summary for Link EPOI1: POI1

Inflow Area = 0.107 ac, 3.55% Impervious, Inflow Depth = 0.95" for 10 yr event
Inflow = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af
Primary = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link EPR: Piscataqua River

Inflow Area = 0.651 ac, 26.61% Impervious, Inflow Depth = 1.62" for 10 yr event
Inflow = 1.1 cfs @ 12.11 hrs, Volume= 0.088 af
Primary = 1.1 cfs @ 12.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX F – POST-DEVELOPMENT CALCULATIONS

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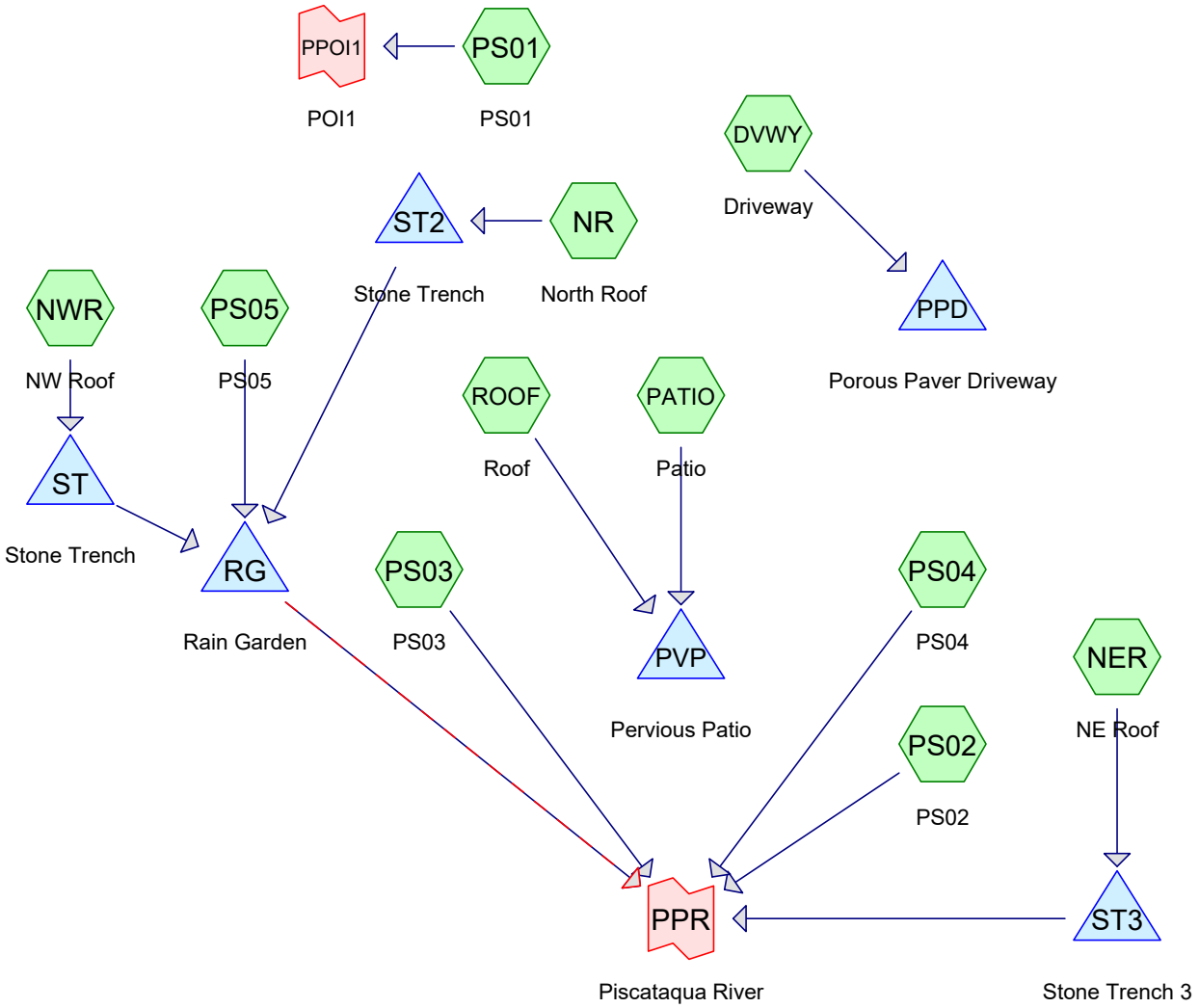

Subcat Reach Pond Link

Routing Diagram for Pre and Post
Prepared by {enter your company name here}, Printed 5/24/2022
HydroCAD® 10.10-6a s/n 00866 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 yr	Type III 24-hr		Default	24.00	1	3.69	2
2	10 yr	Type III 24-hr		Default	24.00	1	5.59	2
3	25 yr	Type III 24-hr		Default	24.00	1	7.10	2
4	50 yr	Type III 24-hr		Default	24.00	1	8.49	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.513	49	Pasture/grassland/range, Fair, HSG A (PS01, PS02, PS03, PS04, PS05)
0.138	98	Paved parking, HSG A (DVWY, PS01, PS02)
0.026	98	Pervious Patio, HSG A (PATIO)
0.013	98	Retaining Wall & Steps, HSG A (PS03)
0.005	98	Retaining Wall & Walkway, HSG A (PS05)
0.004	98	Retaining Wall and Steps, HSG A, (PS04)
0.059	98	Roofs, HSG A (NER, NR, NWR, ROOF)
0.759	**65**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.759	HSG A	DVWY, NER, NR, NWR, PATIO, PS01, PS02, PS03, PS04, PS05, ROOF
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.759		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.513	0.000	0.000	0.000	0.000	0.513	Pasture/grassland/range, Fair	PS01, PS02, PS03, PS04, PS05
0.138	0.000	0.000	0.000	0.000	0.138	Paved parking	DVWY, PS01, PS02
0.026	0.000	0.000	0.000	0.000	0.026	Pervious Patio	PATIO
0.013	0.000	0.000	0.000	0.000	0.013	Retaining Wall & Steps	PS03
0.005	0.000	0.000	0.000	0.000	0.005	Retaining Wall & Walkway	PS05
0.004	0.000	0.000	0.000	0.000	0.004	Retaining Wall and Steps	PS04
0.059	0.000	0.000	0.000	0.000	0.059	Roofs	NER, NR, NWR, ROOF
0.759	**0.000**	**0.000**	**0.000**	**0.000**	**0.759**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>3.44"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.016 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.006 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.002 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.002 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>3.44"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.007 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=0.27"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.0 cfs 0.002 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=0.80"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.2 cfs 0.017 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=0.34"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.0 cfs 0.005 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=0.31"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.0 cfs 0.002 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=0.38"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.0 cfs 0.001 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.007 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.016 af
Outflow=0.0 cfs 0.016 af

Pond PVP: Pervious Patio Peak Elev=16.61' Storage=75 cf Inflow=0.1 cfs 0.014 af
Outflow=0.0 cfs 0.014 af

Pond RG: Rain Garden Peak Elev=14.02' Storage=88 cf Inflow=0.1 cfs 0.003 af
Discarded=0.0 cfs 0.003 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.003 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.0 cfs 0.002 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.002 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.0 cfs 0.002 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.002 af

Pond ST3: Stone Trench 3 Peak Elev=19.01' Storage=42 cf Inflow=0.1 cfs 0.006 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.004 af Outflow=0.1 cfs 0.006 af

Link PPOI1: POI1 Inflow=0.0 cfs 0.002 af
Primary=0.0 cfs 0.002 af

Link PPR: Piscataqua River Inflow=0.3 cfs 0.028 af
Primary=0.3 cfs 0.028 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.067 af Average Runoff Depth = 1.06"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>5.32"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.024 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.009 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.003 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.004 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>5.32"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.012 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=1.01"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.1 cfs 0.007 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=1.98"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.6 cfs 0.043 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=1.15"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.2 cfs 0.016 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=1.08"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.1 cfs 0.006 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=1.22"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.1 cfs 0.005 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.011 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.024 af
Outflow=0.0 cfs 0.024 af

Pond PVP: Pervious Patio Peak Elev=16.78' Storage=144 cf Inflow=0.1 cfs 0.022 af
Outflow=0.0 cfs 0.022 af

Pond RG: Rain Garden Peak Elev=14.38' Storage=153 cf Inflow=0.1 cfs 0.008 af
Discarded=0.0 cfs 0.005 af Primary=0.0 cfs 0.004 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.008 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.1 cfs 0.004 af
Discarded=0.0 cfs 0.002 af Primary=0.0 cfs 0.002 af Outflow=0.0 cfs 0.004 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.0 cfs 0.003 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.003 af

Pond ST3: Stone Trench 3 Peak Elev=19.02' Storage=42 cf Inflow=0.1 cfs 0.009 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.007 af Outflow=0.1 cfs 0.009 af

Link PPOI1: POI1 Inflow=0.1 cfs 0.007 af
Primary=0.1 cfs 0.007 af

Link PPR: Piscataqua River Inflow=0.9 cfs 0.076 af
Primary=0.9 cfs 0.076 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.138 af Average Runoff Depth = 2.19"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>6.82"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.031 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.2 cfs 0.011 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.004 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.005 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>6.82"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.015 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=1.81"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.1 cfs 0.012 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=3.08"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.9 cfs 0.066 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=2.00"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.4 cfs 0.029 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=1.91"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.1 cfs 0.010 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=2.09"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.1 cfs 0.008 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.014 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.031 af
Outflow=0.0 cfs 0.031 af

Pond PVP: Pervious Patio Peak Elev=16.94' Storage=207 cf Inflow=0.2 cfs 0.028 af
Outflow=0.0 cfs 0.029 af

Pond RG: Rain Garden Peak Elev=14.43' Storage=166 cf Inflow=0.2 cfs 0.014 af
Discarded=0.0 cfs 0.005 af Primary=0.2 cfs 0.009 af Secondary=0.0 cfs 0.000 af Outflow=0.2 cfs 0.014 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.1 cfs 0.005 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.003 af Outflow=0.1 cfs 0.005 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.1 cfs 0.004 af
Discarded=0.0 cfs 0.002 af Primary=0.0 cfs 0.002 af Outflow=0.1 cfs 0.004 af

Pond ST3: Stone Trench 3 Peak Elev=19.02' Storage=42 cf Inflow=0.2 cfs 0.011 af
Discarded=0.0 cfs 0.002 af Primary=0.2 cfs 0.009 af Outflow=0.2 cfs 0.011 af

Link PPOI1: POI1 Inflow=0.1 cfs 0.012 af
Primary=0.1 cfs 0.012 af

Link PPR: Piscataqua River Inflow=1.6 cfs 0.123 af
Primary=1.6 cfs 0.123 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.205 af Average Runoff Depth = 3.24"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>8.21"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.038 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.2 cfs 0.014 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.005 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.006 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>8.21"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.018 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=2.67"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.2 cfs 0.017 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=4.18"
Flow Length=145' Tc=6.0 min CN=64 Runoff=1.2 cfs 0.090 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=2.89"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.5 cfs 0.041 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=2.78"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.2 cfs 0.014 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=3.01"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.2 cfs 0.012 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=8.25"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.016 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=1 cf Inflow=0.0 cfs 0.038 af
Outflow=0.0 cfs 0.038 af

Pond PVP: Pervious Patio Peak Elev=17.10' Storage=271 cf Inflow=0.2 cfs 0.034 af
Outflow=0.0 cfs 0.034 af

Pond RG: Rain Garden Peak Elev=14.45' Storage=172 cf Inflow=0.2 cfs 0.019 af
Discarded=0.0 cfs 0.005 af Primary=0.3 cfs 0.014 af Secondary=0.0 cfs 0.000 af Outflow=0.3 cfs 0.019 af

Pond ST: Stone Trench Peak Elev=14.72' Storage=0.000 af Inflow=0.1 cfs 0.006 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.004 af Outflow=0.1 cfs 0.006 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.1 cfs 0.005 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.003 af Outflow=0.1 cfs 0.005 af

Pond ST3: Stone Trench 3 Peak Elev=19.03' Storage=42 cf Inflow=0.2 cfs 0.014 af
Discarded=0.0 cfs 0.002 af Primary=0.2 cfs 0.012 af Outflow=0.2 cfs 0.014 af

Link PPOI1: POI1 Inflow=0.2 cfs 0.017 af
Primary=0.2 cfs 0.017 af

Link PPR: Piscataqua River Inflow=2.3 cfs 0.172 af
Primary=2.3 cfs 0.172 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.271 af Average Runoff Depth = 4.29"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

APPENDIX G – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 yr	Type III 24-hr		Default	24.00	1	5.59	2

Summary for Subcatchment DVWY: Driveway

Runoff = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af, Depth> 5.32"
Routed to Pond PPD : Porous Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
2,397	98	Paved parking, HSG A
2,397		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry, Direct Entry**

Summary for Subcatchment NER: NE Roof

Runoff = 0.1 cfs @ 12.00 hrs, Volume= 0.009 af, Depth= 5.35"
Routed to Pond ST3 : Stone Trench 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
871	98	Roofs, HSG A
871		100.00% Impervious Area

Summary for Subcatchment NR: North Roof

Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.003 af, Depth= 5.35"
Routed to Pond ST2 : Stone Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
288	98	Roofs, HSG A
288		100.00% Impervious Area

Summary for Subcatchment NWR: NW Roof

Runoff = 0.1 cfs @ 12.00 hrs, Volume= 0.004 af, Depth= 5.35"
Routed to Pond ST : Stone Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
359	98	Roofs, HSG A
359		100.00% Impervious Area

Summary for Subcatchment PATIO: Patio

Runoff = 0.0 cfs @ 21.94 hrs, Volume= 0.012 af, Depth> 5.32"
Routed to Pond PVP : Pervious Patio

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	1,136	98	Pervious Patio, HSG A
	1,136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry, Direct Entry**

Summary for Subcatchment PS01: PS01

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 1.01"
Routed to Link PPOI1 : POI1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
133	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,265	49	Pasture/grassland/range, Fair, HSG A
3,398	51	Weighted Average
3,265		96.09% Pervious Area
133		3.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	63	0.0630	0.25		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
1.7					**Direct Entry, Direct Entry**
6.0	63	Total			

Summary for Subcatchment PS02: PS02

Runoff = 0.6 cfs @ 12.10 hrs, Volume= 0.043 af, Depth= 1.98"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
3,489	98	Paved parking, HSG A
0	98	Roofs, HSG A
7,773	49	Pasture/grassland/range, Fair, HSG A
0	35	Brush, Fair, HSG A
11,262	64	Weighted Average
7,773		69.02% Pervious Area
3,489		30.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	78	0.0770	0.28		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
0.3	22	0.0450	1.41		**Sheet Flow, Sheet Flow 2** Smooth surfaces n= 0.011 P2= 3.21"
0.1	18	0.0555	4.78		**Shallow Concentrated Flow, Shallow Concentrated 1** Paved Kv= 20.3 fps
0.2	27	0.1850	2.15		**Shallow Concentrated Flow, Shallow Concentrated 2** Woodland Kv= 5.0 fps
0.7					**Direct Entry, Direct Entry**
6.0	145	Total			

Summary for Subcatchment PS03: PS03

Runoff = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af, Depth= 1.15"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	577	98	Retaining Wall & Steps, HSG A
	6,910	49	Pasture/grassland/range, Fair, HSG A
	7,487	53	Weighted Average
	6,910		92.29% Pervious Area
	577		7.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	71	0.0600	0.25		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
1.2					**Direct Entry, Direct Entry**
6.0	71	Total			

Summary for Subcatchment PS04: PS04

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 1.08"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	168	98	Retaining Wall and Steps, HSG A,
	0	98	Roofs, HSG A
	2,555	49	Pasture/grassland/range, Fair, HSG A
	0	35	Brush, Fair, HSG A
	2,723	52	Weighted Average
	2,555		93.83% Pervious Area
	168		6.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	68	0.1760	0.26		**Sheet Flow, Sheet Flow 1**
					Grass: Dense n= 0.240 P2= 3.21"
1.6					**Direct Entry, Direct Entry**
6.0	68	Total			

Summary for Subcatchment PS05: PS05

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Depth= 1.22"
Routed to Pond RG : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	222	98	Retaining Wall & Walkway, HSG A
	1,861	49	Pasture/grassland/range, Fair, HSG A
	2,083	54	Weighted Average
	1,861		89.34% Pervious Area
	222		10.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	35	0.1070	0.27		**Sheet Flow, Sheet Flow**
					Grass: Short n= 0.150 P2= 3.21"
3.8					**Direct Entry, Direct Entry**
6.0	35	Total			

Summary for Subcatchment ROOF: Roof

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.011 af, Depth= 5.35"
Routed to Pond PVP : Pervious Patio

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
1,041	98	Roofs, HSG A
1,041		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Summary for Pond PPD: Porous Paver Driveway

Inflow Area = 0.055 ac,100.00% Impervious, Inflow Depth > 5.32" for 10 yr event
Inflow = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af
Outflow = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 9.70' @ 21.94 hrs Surf.Area= 2,099 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (1,455.9 - 1,455.9)

Volume	Invert	Avail.Storage	Storage Description
#1	10.95'	210 cf	**Subbase (Irregular)**Listed below (Recalc) -Impervious 2,099 cf Overall x 10.0% Voids
#2	10.70'	210 cf	**Pea Stone (Irregular)**Listed below (Recalc) -Impervious 525 cf Overall x 40.0% Voids
#3	9.70'	840 cf	**Rock Reservoir (Irregular)**Listed below (Recalc) 2,099 cf Overall x 40.0% Voids
		1,259 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.95	2,099	257.0	0	0	2,099
11.95	2,099	257.0	2,099	2,099	2,356

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.70	2,099	257.0	0	0	2,099
10.95	2,099	257.0	525	525	2,163

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.70	2,099	257.0	0	0	2,099
10.70	2,099	257.0	2,099	2,099	2,356

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.70'	**0.650 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.0 cfs @ 21.94 hrs HW=9.70' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Summary for Pond PVP: Pervious Patio

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 5.34" for 10 yr event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.0 cfs @ 11.85 hrs, Volume= 0.022 af, Atten= 88%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.85 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 16.78' @ 12.76 hrs Surf.Area= 1,000 sf Storage= 144 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.4 min (1,151.9 - 1,115.6)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	100 cf	**Subbase (Irregular)**Listed below (Recalc) -Impervious 1,000 cf Overall x 10.0% Voids
#2	18.75'	100 cf	**Pea Stone (Irregular)**Listed below (Recalc) -Impervious 250 cf Overall x 40.0% Voids
#3	16.42'	932 cf	**Rock Reservoir (Irregular)**Listed below (Recalc) 2,330 cf Overall x 40.0% Voids
		1,132 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.00	1,000	212.1	0	0	1,000
20.00	1,000	212.1	1,000	1,000	1,212

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.75	1,000	212.1	0	0	1,000
19.00	1,000	212.1	250	250	1,053

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
16.42	1,000	212.1	0	0	1,000
18.75	1,000	212.1	2,330	2,330	1,494

Device	Routing	Invert	Outlet Devices
#1	Discarded	16.42'	**0.650 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.0 cfs @ 11.85 hrs HW=16.46' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Summary for Pond RG: Rain Garden

Inflow Area = 0.063 ac, 31.83% Impervious, Inflow Depth = 1.62" for 10 yr event
Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.008 af
Outflow = 0.0 cfs @ 12.46 hrs, Volume= 0.008 af, Atten= 71%, Lag= 25.3 min
Discarded = 0.0 cfs @ 11.45 hrs, Volume= 0.005 af
Primary = 0.0 cfs @ 12.46 hrs, Volume= 0.004 af
Routed to Link PPR : Piscataqua River
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link PPR : Piscataqua River

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 14.38' @ 12.46 hrs Surf.Area= 115 sf Storage= 153 cf

Plug-Flow detention time= 390.0 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 390.9 min (1,217.7 - 826.8)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	99 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) -Impervious
#2	12.25'	40 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 201 cf Overall x 20.0% Voids
#3	11.25'	46 cf	**Crushed Stone (Irregular)** Listed below (Recalc) 115 cf Overall x 40.0% Voids
		185 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	115	44.1	0	0	115
14.50	296	64.2	99	99	290

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
12.25	115	44.1	0	0	115
14.00	115	44.1	201	201	192

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
11.25	115	44.1	0	0	115
12.25	115	44.1	115	115	159

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**6.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.00' / 10.00' S= 0.0244 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Discarded	11.25'	**0.700 in/hr Exfiltration over Horizontal area**
#3	Secondary	15.10'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

#4	Device 1	14.40'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	14.20'	**2.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 11.45 hrs HW=11.29' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.46 hrs HW=14.38' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.0 cfs of 1.1 cfs potential flow)
  ├**4=Grate** (Controls 0.0 cfs)
  └**5=Orifice** (Orifice Controls 0.0 cfs @ 1.50 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=11.25' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond ST: Stone Trench

Inflow Area = 0.008 ac,100.00% Impervious, Inflow Depth = 5.35" for 10 yr event
Inflow = 0.1 cfs @ 12.00 hrs, Volume= 0.004 af
Outflow = 0.0 cfs @ 12.00 hrs, Volume= 0.004 af, Atten= 5%, Lag= 0.0 min
Discarded = 0.0 cfs @ 7.00 hrs, Volume= 0.002 af
Primary = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af
Routed to Pond RG : Rain Garden

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 14.71' @ 12.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 105.7 min (846.4 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	13.70'	0.000 af	**3.00'W x 14.70'L x 1.00'H Prismatoid** 0.001 af Overall x 40.0% Voids
#2	14.70'	0.000 af	**3.00'W x 14.70'L x 0.20'H Prismatoid**-Impervious 0.000 af Overall x 0.0% Voids
		0.000 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.70'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	14.70'	**16.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.0 cfs @ 7.00 hrs HW=13.71' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.00 hrs HW=14.71' TW=13.02' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.28 fps)

Summary for Pond ST2: Stone Trench

Inflow Area = 0.007 ac,100.00% Impervious, Inflow Depth = 5.35" for 10 yr event
Inflow = 0.0 cfs @ 12.00 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 12.00 hrs, Volume= 0.003 af, Atten= 7%, Lag= 0.0 min
Discarded = 0.0 cfs @ 7.80 hrs, Volume= 0.001 af
Primary = 0.0 cfs @ 12.00 hrs, Volume= 0.001 af
Routed to Pond RG : Rain Garden

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 18.23' @ 12.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 116.9 min (857.6 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.22'	0.000 af	**3.00'W x 14.70'L x 1.00'H Prismatoid** 0.001 af Overall x 40.0% Voids
#2	18.22'	0.000 af	**3.00'W x 14.70'L x 0.20'H Prismatoid**-Impervious 0.000 af Overall x 0.0% Voids
		0.000 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.22'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	18.22'	**16.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.0 cfs @ 7.80 hrs HW=17.23' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.00 hrs HW=18.23' TW=13.02' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.25 fps)

Summary for Pond ST3: Stone Trench 3

Inflow Area = 0.020 ac,100.00% Impervious, Inflow Depth = 5.35" for 10 yr event
Inflow = 0.1 cfs @ 12.00 hrs, Volume= 0.009 af
Outflow = 0.1 cfs @ 12.00 hrs, Volume= 0.009 af, Atten= 1%, Lag= 0.0 min
Discarded = 0.0 cfs @ 3.05 hrs, Volume= 0.002 af
Primary = 0.1 cfs @ 12.00 hrs, Volume= 0.007 af
Routed to Link PPR : Piscataqua River

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 19.02' @ 12.00 hrs Surf.Area= 33 sf Storage= 42 cf

Plug-Flow detention time= 172.2 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 173.3 min (914.0 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.75'	42 cf	**2.00'W x 16.60'L x 1.25'H Prismatoid**
#2	19.00'	0 cf	**2.00'W x 16.65'L x 0.20'H Prismatoid**-Impervious 7 cf Overall x 0.0% Voids
		42 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.75'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	19.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.0 cfs @ 3.05 hrs HW=17.77' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.00 hrs HW=19.02' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.1 cfs @ 0.32 fps)

Summary for Link PPOI1: POI1

Inflow Area = 0.078 ac, 3.91% Impervious, Inflow Depth = 1.01" for 10 yr event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link PPR: Piscataqua River

Inflow Area = 0.576 ac, 23.83% Impervious, Inflow Depth = 1.57" for 10 yr event
Inflow = 0.9 cfs @ 12.10 hrs, Volume= 0.076 af
Primary = 0.9 cfs @ 12.10 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX H – PRE-DEVELOPMENT DRAINAGE MAP

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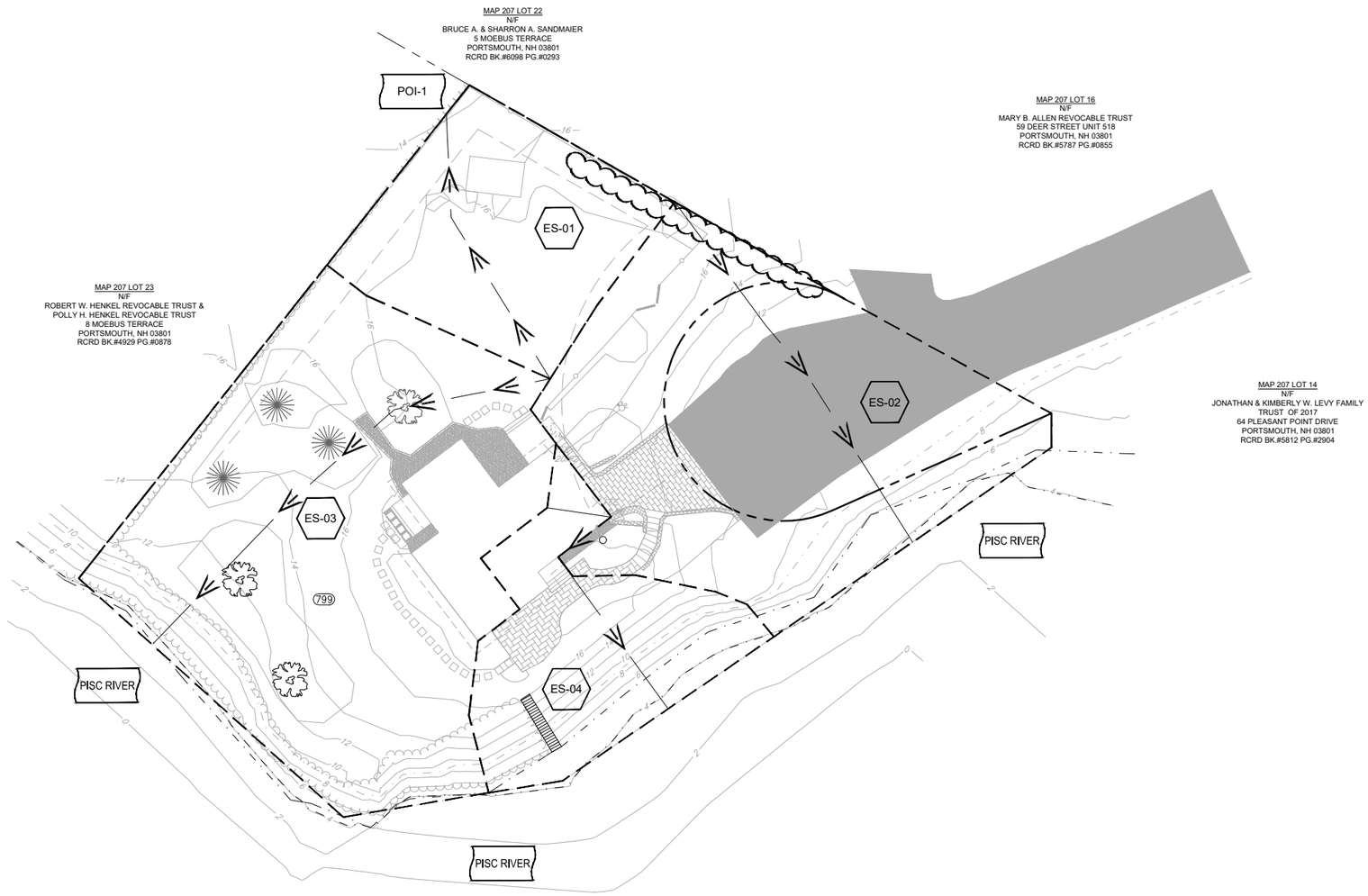

LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- XXX — SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- ES-1 — SUBCATCHMENT AREA
- EP-1 — POND, CULVERT, OR CATCH BASIN
- ER-1 — REACH

SOIL LEGEND
(PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND–CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

PRE-DEVELOPMENT DRAINAGE MAP

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

MAY 25, 2022

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

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FILE		DR	JKC	FB	–	
47307.01		CK	JCC	CADFILE	47307-01_PRE-DEV	DRAIN-01

May 25, 2022 - 8:22am
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APPENDIX I – POST-DEVELOPMENT DRAINAGE MAP

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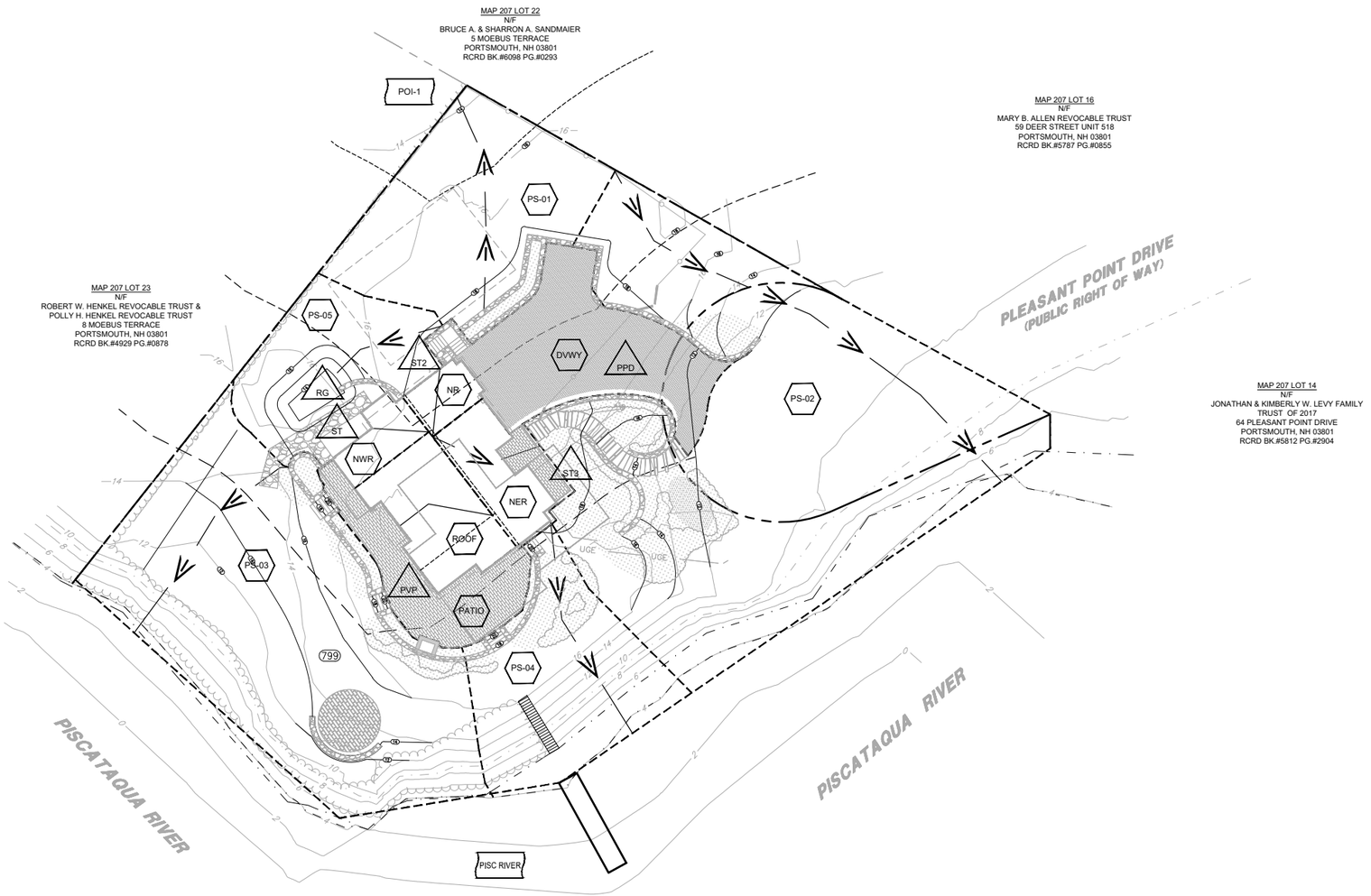

LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- XXX — SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- PS-1 — SUBCATCHMENT AREA
- PP-1 — POND, CULVERT, OR CATCH BASIN
- PR-1 — REACH

SOIL LEGEND
(PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND–CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

POST-DEVELOPMENT DRAINAGE MAP

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

MAY 25, 2022

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FILE					
47307.01	DR	JKC	FB	–	DRAIN–02
	CK	JCC	CADFILE	47307–01_POST–DEV	

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SITE RENOVATION PLANS

70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE

MAY 25, 2022
LAST REVISED JUNE 27, 2022

GENERAL INFORMATION

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MAP 207 LOT 15
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CIVIL ENGINEERING/SURVEYOR
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170 COMMERCE WAY, SUITE 102
PORTSMOUTH, NH 03801
(603) 431-2222

VICINITY PLAN

HORIZONTAL SCALE 1"=500'
500 250 0 500

INDEX OF SHEETS

SHEET	SHEET TITLE
C-00	COVER
C-01	NOTES & LEGEND
S-01	EXISTING CONDITIONS PLAN
C-02	SITE PREPARATION & DEMOLITION
C-03	SITE PLAN
C-04	GRADING & DRAINAGE
C-05	DETAILS
REFERENCE PLANS BY ASSOCIATED PROFESSIONALS	
–	ARCHITECTURAL ELEVATION PLAN
–	LANDSCAPING PLAN – TERRAIN PLANNING & DESIGN

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
PORTSMOUTH PLANNING BOARD WETLAND CONDITIONAL USE PERMIT	–	–	–
NHDES WETLAND DREDGE AND FILL PERMIT	–	–	–
NHDES SHORELAND WATER QUALITY PROTECTION ACT PERMIT	–	–	–

APPROVED BY THE CITY OF PORTSMOUTH PLANNING BOARD

ON _____

BOARD MEMBER _____ *AND*

BOARD MEMBER _____

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15
COVER
70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE
OWNED BY
KATARA, LLC

SCALE: NTS **MAY 25, 2022**

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14960
LICENSED PROFESSIONAL ENGINEER

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REV	DATE	DESCRIPTION	DR	CK
1	6/22/22	REVISIONS PER TOWN COMMENTS	JKC	JCC

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	47307.01	CK	JCC	CADFILE	47307-01_COVER	C-00

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LEGEND

PROPOSED

- PROPERTY LINE
- ZONING LINE
- EASEMENT
- BASELINE
- FLOODPLAIN
- EDGE OF WATERBODY
- EDGE OF WETLAND
- SETBACK (WETLAND)
- SETBACK (STRUCTURE)
- SETBACK (PARKING)
- SETBACK (LANDSCAPE)
- GRAVEL ROAD
- EOP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- CC — CONCRETE CURB
- ICC — INTEGRATED CONCRETE CURB
- BIT — BITUMINOUS ASPHALT CURB
- CCB — CAPE COD BERM
- SAWCUT
- BUILDING
- BUILDING ROOF OVERHANG
- BUILDING FOUNDATION
- BUILDING ENTRANCE
- OVERHEAD DOOR
- TREE LINE
- FENCE (CHAIN LINK)
- FENCE (WIRE)
- FENCE (STOCKADE)
- GUARDRAIL
- STONE WALL
- RETAINING WALL
- SILT FENCE
- SILT SOCK
- SOIL BOUNDARY
- LIMIT OF GRADING
- CONTOUR
- SPOT GRADE — TC100.50 / BC100.00 OR X 100.00
- PARKING COUNT — ##
- DSLY — YELLOW DOUBLE SOLID LINE
- SSLY — YELLOW SINGLE SOLID LINE
- SSLW — WHITE SINGLE SOLID LINE
- SBLW — WHITE SINGLE BROKEN LINE
- STOP BAR
- CROSSWALK
- ACCESSIBLE PARKING SYMBOL
- PAVEMENT ARROW
- TRAFFIC FLOW ARROW (NOT PAINTED)
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SIGN (PYLON)
- SIGN (MONUMENT)
- BOLLARD
- D — DUMPSTER PAD

PROPOSED

- CONCRETE
- GRAVEL
- HEAVY DUTY PAVEMENT
- CONSTRUCTION ENTRANCE
- SNOW STORAGE
- RIPRAP
- INLET PROTECTION
- FLOW ARROW
- DRAIN LINE
- DRAINAGE SWALE
- STORMWATER BMP
- S — SEWER LINE
- FM — SEWER FORCE MAIN LINE
- W — WATER LINE
- G — GAS LINE
- OHE — OVERHEAD UTILITY LINE
- UGE — UNDERGROUND UTILITY LINE
- CATCH BASIN
- DRAIN INLET
- OUTLET CONTROL STRUCTURE
- ROOF DRAIN
- DRAIN CLEANOUT
- DRAIN MANHOLE
- FARED END SECTION
- SEWER CLEAN OUT
- SEWER MANHOLE
- SEWER VENT
- DRAIN/SEWER/WATER PLUG OR CAP
- HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER GATE VALVE
- WATER SHUTOFF
- THRUST BLOCK
- WATER METER
- WATER MANHOLE
- WELL
- GAS GATE VALVE
- GAS SHUT OFF
- GAS METER
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRAFFIC CONTROL CABINET
- ELECTRIC HANDHOLE
- ELECTRIC PULL BOX
- ELECTRIC METER
- FLOOD LIGHT
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- T — TRANSFORMER PAD
- B-# — BORING LOCATION
- TP-# — TEST PIT LOCATION
- IT-# — INFILTRATION TEST LOCATION
- MW-# — MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BC	BOTTOM OF CURB
BIT	BITUMINOUS
BK/PG	BOOK & PAGE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICE
BS	BOTTOM OF SLOPE
BW	BOTTOM OF WALL
CONC	CONCRETE
COORD	COORDINATE
DIA	DIAMETER
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FND	FOUNDATION
HP	HIGH POINT
INV	INVERT ELEVATION
IT	INFILTRATION TEST
L	LENGTH
LF	LINEAR FEET
LSA	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
N/F	NOW OR FORMERLY
NHFG	NEW HAMPSHIRE FISH & GAME
NTS	NOT TO SCALE
OC	ON CENTER
PAVE	PAVEMENT
PERF	PERFORATED
PROP	PROPOSED
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
REM	REMOVE
RET	RETAIN
RIM	RIM ELEVATION
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SW	SIDEWALK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
WCR	ACCESSIBLE WHEELCHAIR RAMP
W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

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DIG SAFE — CALL 811 OR 1-888-DIG-SAFE — DIGSAFE.COM — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
3. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING BOARD.
4. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
5. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
6. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
7. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
8. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
9. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
10. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
11. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
12. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
13. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
14. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
15. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
16. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
17. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS OF 7 AM AND 6 PM, MONDAY THROUGH FRIDAY IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE CITY OF PORTSMOUTH, NEW HAMPSHIRE.
    F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    L. VERIFY LAYOUT OF PROPOSED BUILDING FOUNDATIONS WITH ARCHITECT AND THAT PROPOSED FOUNDATION MEETS PROPERTY LINE AND/OR WETLAND SETBACKS PRIOR TO COMMENCING ANY FOUNDATION CONSTRUCTION.
    M. AN AS-BUILT PLAN WILL BE REQUIRED AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER CITY REGULATIONS.
    N. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    O. AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
3. COORDINATE WITH STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
4. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
5. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
6. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
7. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
8. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
9. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED SURFACE.
10. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
11. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603.
12. NO FILL SHALL BE PLACED IN ANY WETLAND AREA OR OTHER AREAS THAN SHOWN ON THE GRADING PLAN.
13. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
14. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
15. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
11. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
12. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
13. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
14. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
15. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
16. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
17. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	PRIVATE
SEWER	CITY SEWER
WATER	CITY WATER
GAS	NOT AVAILABLE
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS
CABLE	COMCAST

STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14956 — LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	DR	CK
1	6/27/22	NO REVISIONS TO THIS SHEET		

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

NOTES & LEGEND

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

SCALE: NTS **MAY 25, 2022**

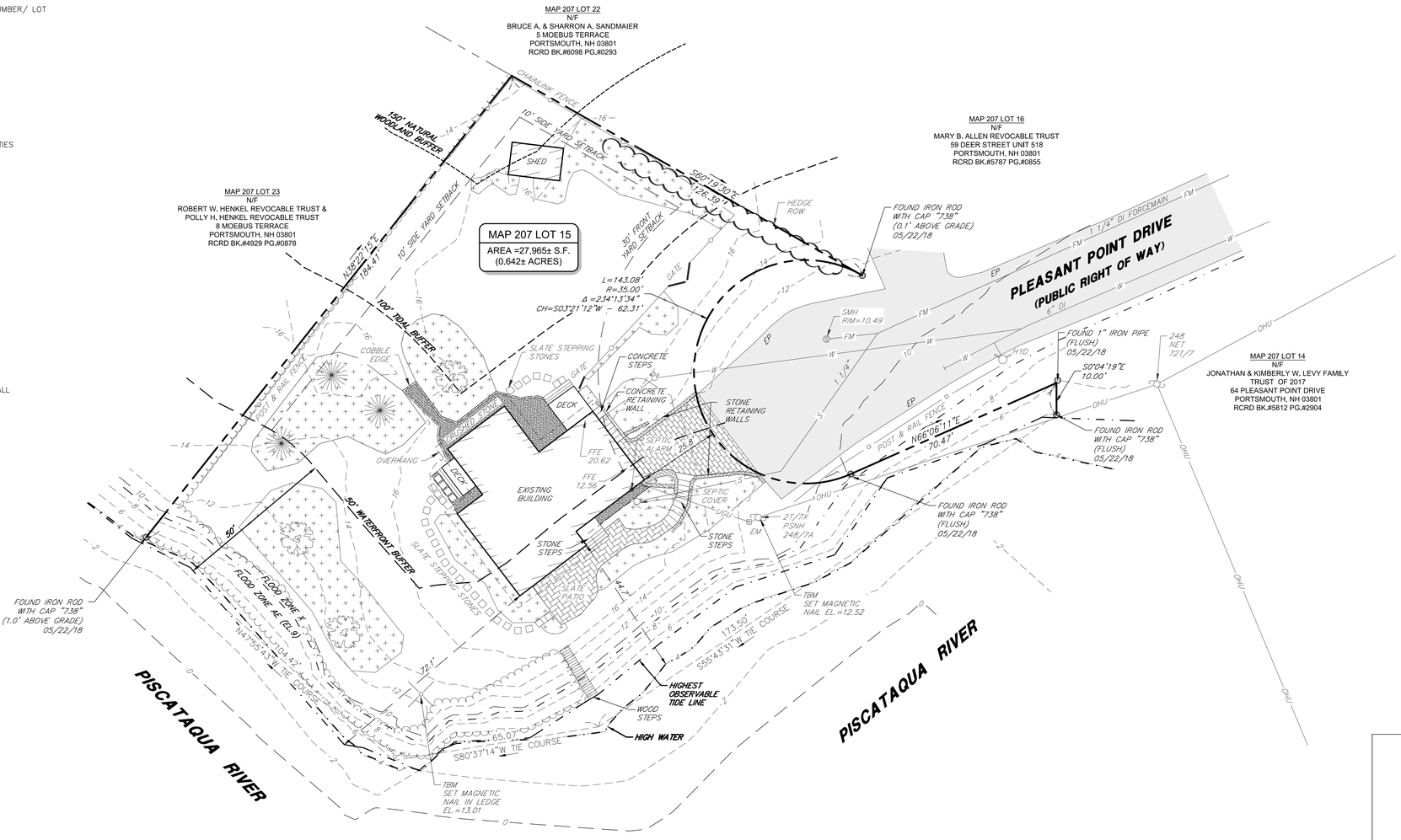
TFM — Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

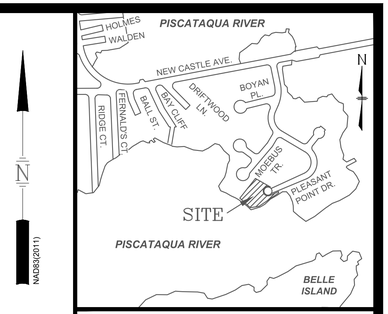
FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307-01_NOTES&LEGEND	C-01

Jun 28, 2022 - 3:32pm
P:\MSC Projects\47307 - Pleasant Point Dr - Portsmouth\47307-01 - Katara - 70 Pleasant Point Drive\Design\PRODUCTION DRAWINGS\47307-01_Notes&Legend.dwg

LEGEND:

BK/PG	BOOK & PAGE
CH	CHORD
DI	DUCTILE IRON PIPE
EL.	ELEVATION
EM⊠	ELECTRIC METER
EP	EDGE OF PAVEMENT
FFE	FINISHED FLOOR ELEVATION
L	LENGTH
NET	NEW ENGLAND TELEPHONE
PSNH	PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
N/F	NOW OR FORMERLY
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
S.F.	SQUARE FEET
SMH	SEWER MANHOLE
TBM	TEMPORARY BENCH MARK
Δ	CENTRAL ANGLE
MAP 47 LOT 11	ASSESSOR'S MAP NUMBER/ LOT NUMBER
	PROPERTY LINE
-6-	EXISTING CONTOUR
	POST & RAIL FENCE
	CHAINLINK FENCE
	TREE LINE
-S-	SEWER LINE
-FM-	FORCE MAIN
-W-	WATER LINE
-OHU-	OVERHEAD UTILITIES
-UGU-	UNDERGROUND UTILITIES
	DECIDUOUS TREE
	EVERGREEN TREE
S	SEWER MANHOLE
	UTILITY POLE
HYD	HYDRANT
	WATER SHUTOFF
	BRICK DRIVEWAY
	SLATE PATIO
	LANDSCAPED AREA
	CRUSHED STONE
	PAVED AREA
	STONE RETAINING WALL
	COBBLE EDGE





LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE SINGLE RESIDENCE B (SRB) ZONING DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 207 AS LOT 15.
3. THE PARCEL IS GRAPHICALLY LOCATED IN FLOOD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AND SPECIAL FLOOD HAZARD ZONE AE (EL.9), AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP) INSURANCE RATE MAP (FIRM), COUNTY OF ROCKINGHAM, NEW HAMPSHIRE, PANEL 278 OF 681, VERSION NUMBER 2.3.2.1, MAP NUMBER 33015C0278F, MAP REVISED JANUARY 29, 2021.
4. OWNER OF RECORD:
   MAP 207 LOT 15
   KATARA, LLC
   274 MILLER AVENUE
   PORTSMOUTH, NH 03801
   RCRD BK.#6290 PG.#1229
5. TOTAL PARCEL AREA:
   27,965± S.F.
   (0.642± ACRES)
6. ZONING REQUIREMENTS:

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	15,000 S.F.	27,965± S.F.
LOT AREA PER DWELLING UNIT:	15,000 S.F.	27,965± S.F.
CONTINUOUS STREET FRONTAGE:	100 FT	213.5 FT
DEPTH:	100 FT	142 FT
MINIMUM YARD DIMENSIONS:		
FRONT:	30 FT	25.8 FT
SIDE:	10 FT	44.7 FT
REAR:	30 FT	72.1 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT		
SLOPED ROOF:	35 FT	
FLAT ROOF:	30 FT	
ROOF APPURTENANCE HEIGHT:	8 FT	
BUILDING COVERAGE:	20%	9.2%
MINIMUM OPEN SPACE:	40%	86.4%

7. UTILITIES SHOWN HEREON ARE BASED ON OBSERVED EVIDENCE, RECORD PLANS AND THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW) PROVIDED GIS INFORMATION. LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE DEPICTED AND THEREFORE ARE APPROXIMATE ONLY. CONTACT DIGSAFE @ 1-888-DIGSAFE TO VERIFY UTILITIES.
8. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
9. THE PURPOSE OF THIS PLAN IS TO SHOW THE TOPOGRAPHY AND CURRENT SITE FEATURES OF TAX MAP 207 LOT 15.
10. THE BOUNDARY OF THE LOCUS PROPERTY IS BASED ON PLAN REFERENCE 1. THIS OFFICE COMPLETED A TOPOGRAPHIC AND EXISTING FEATURES SURVEY ONLY.
11. HORIZONTAL DATUM IS NAD83 PER STATIC GPS OBSERVATIONS. VERTICAL DATUM IS NAVD88 PER GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 2 FEET.
12. PARCEL IS SUBJECT TO THE RIGHTS AND RESTRICTIONS AS DESCRIBED IN RCRD BK.#2776 PG.#1029.

PLAN REFERENCES:

1. "STANDARD BOUNDARY SURVEY OF TAX MAP 207 – LOT 15 FOR DONNA LYN TAMAROFF 70 PLEASANT POINT DRIVE CITY OF PORTSMOUTH COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC., DATED OCTOBER 2012. RCRD PLAN #D-37460.
2. "PLAN OF LOTS, NEWCASTLE AVENUE, PORTSMOUTH, N.H. FOR ROBERT A. MOEBUS & HENRY C. SIVIK" BY JOHN W. DURGIN, CIVIL ENGINEERS, DATED OCTOBER 1952. RCRD PLAN #02160-B.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN MAY 2018. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE No. 844 COREY J. COLWELL LICENSED LAND SURVEYOR

LICENSED LAND SURVEYOR

2022-05-23
DATE

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20 10 0 20
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR.	CK.

TAX MAP 207 LOT 15

EXISTING CONDITIONS PLAN
FOR PROPERTY AT
70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
KATARA, LLC

SCALE: 1" = 20' (22x34)
1" = 40' (11x17)
SEPTEMBER 7, 2021

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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Fax (603) 431-0910
www.tfmoran.com

FILE	DR	ID	FB	549	S-1
47307.01	CK	JCC	CADFILE		

May 23, 2022 - 9:10am
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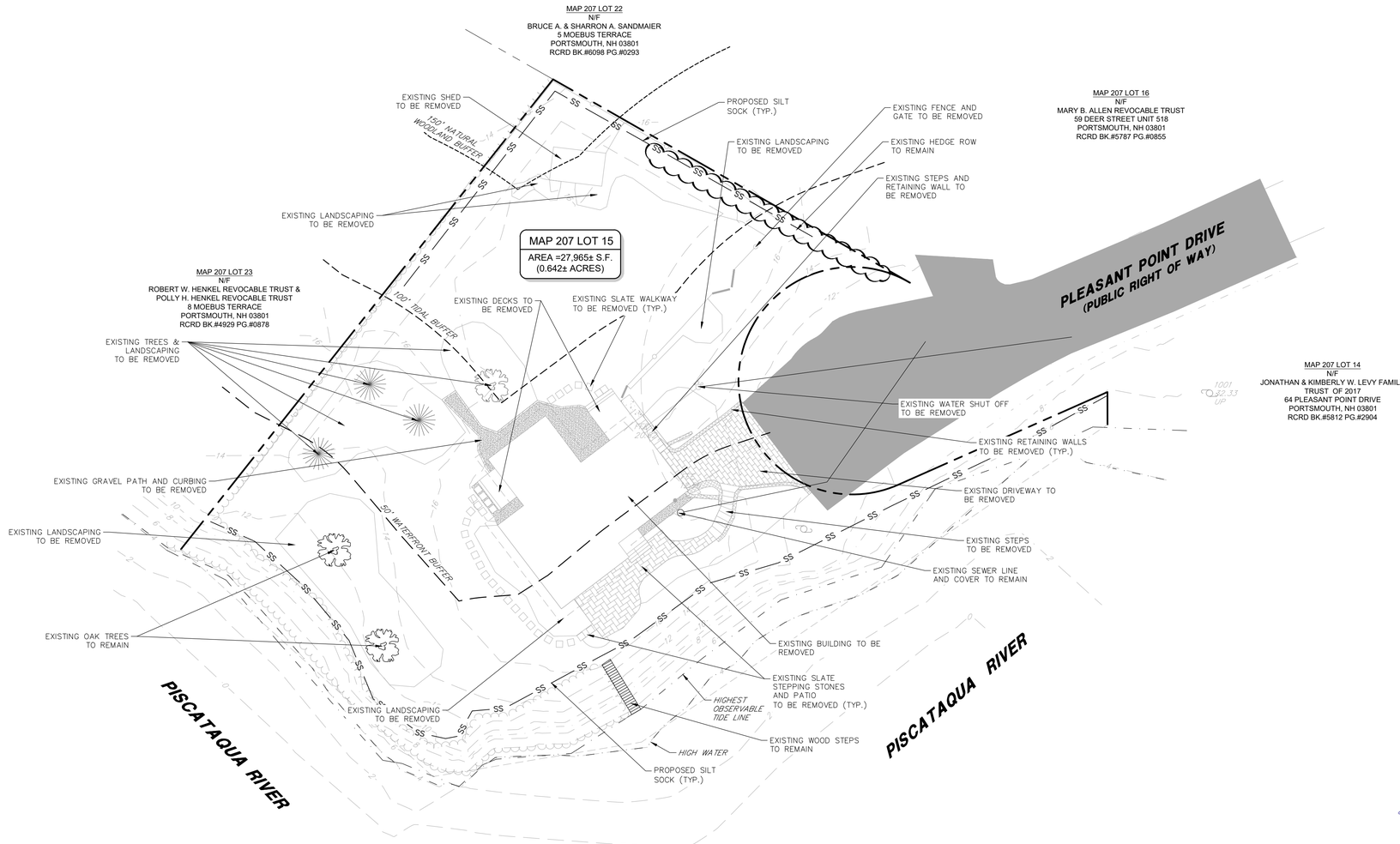
ROCK BLASTING AND WATER QUALITY NOTES

1. IDENTIFY DRINKING WATER WELLS LOCATED WITHIN 2000 FEET OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.

2. ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING, AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.
   A. LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
      (1) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
      (2) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
      (3) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF SITE DISPOSAL.
      (4) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
      (5) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
      (6) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING, AND COLUMN RISE NEED TO BE ATTENDED TO.
   B. EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
      (1) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
      (2) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
   C. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
   D. MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
      (1) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
      (2) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
   E. SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
      (1) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
         - STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
         - SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
         - LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
         - INSPECT STORAGE AREAS WEEKLY.
         - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
         - WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
         - SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      (2) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         - EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
         - PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
         - HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
         - USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
         - PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      (3) THE TRAINING OF ONSITE EMPLOYEES AND THE ON SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
      (4) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING, AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES (NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD DWGB 22 6: "BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT"OR ITS SUCCESSOR DOCUMENT).



HORIZONTAL SCALE 1"=20'
20 10 0 20

NOTES

1. SEE NOTES ON SHEET C-01.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
4. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
5. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
6. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
7. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
8. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARC 3800 RELATIVE TO INVASIVE SPECIES.

DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

1. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
2. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
4. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
6. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
7. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND 100' BUFFER. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
8. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
9. CONSTRUCT TEMPORARY DIVERSIONS AS REQUIRED.
10. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
11. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND DRIVEWAY. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS.
12. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
13. CONSTRUCT PROPOSED DRIVEWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
14. COMPLETE BUILDING AND ALL OFF-SITE IMPROVEMENTS.
15. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO-SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
17. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
18. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

SITE PREPARATION & DEMOLITION

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34")

MAY 25, 2022

JOHN J. McTIGUE No. 14960 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV	DATE	DESCRIPTION	DR	CK
1	6/22/22	REVISED PER TOWN COMMENTS	JKC	JCC

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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Bedford, NH 03110
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FILE		DR	JKC	FB	–	
	47307.01	CK	JCC	CADFILE	47307-01_SITE PREP	C-02

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CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

NAD 83

Jun 28, 2022 - 3:35pm
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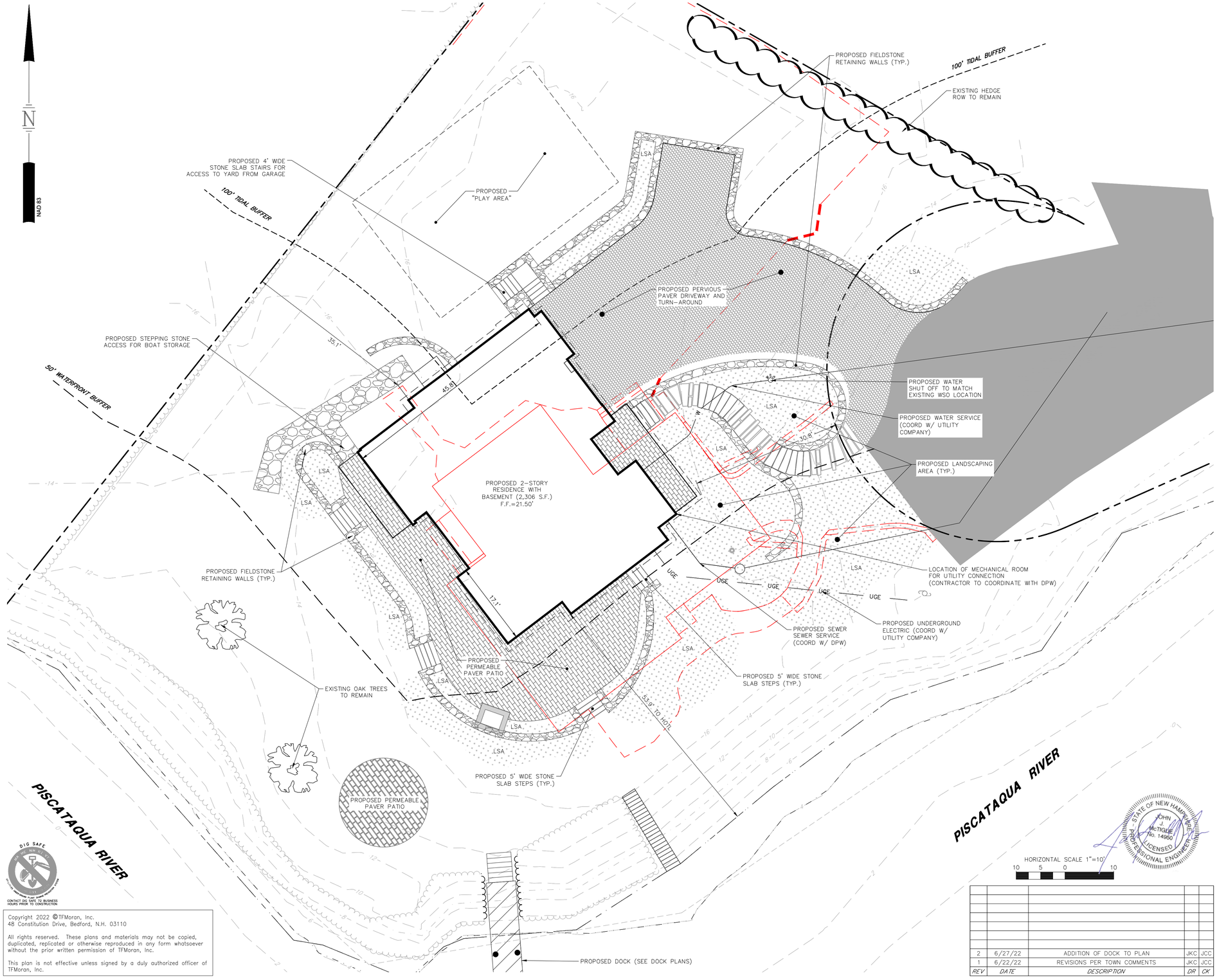

SITE DATA

ZONED: SINGLE RESIDENCE B (SRB)
EXISTING USE: SINGLE RESIDENCE
PROPOSED USE: SINGLE RESIDENCE

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	15,000 SF (0.34± AC)	27,965 SF (0.642± AC)
LOT FRONTAGE	100 FT	213.5 FT
DEPTH	100 FT	142 FT
MINIMUM YARD DIMENSIONS:		
FRONT	30 FT	30.8 FT
SIDE	10 FT	44.7 FT
REAR	30 FT	72.1 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT		
SLOPED ROOF	35 FT	35 FT
ROOF APPURTENANCE HEIGHT	8 FT	>8 FT
LOT COVERAGE	20%	12.70%
MINIMUM OPEN SPACE	40%	87.30%

NOTES

1. SEE NOTES ON SHEET C-01.

PRE-CONSTRUCTION IMPERVIOUS AREA	
EXISTING DWELLING	1,971 S.F.
DRIVEWAY	512 S.F.
SLATE PATIO	442 S.F.
DECKS	202 S.F.
RETAINING WALLS	113 S.F
STEPS	211 S.F.
SHED	166 S.F.
CONCRETE PAD	25 S.F.
DOCK	N/A
TOTAL	**3,642 S.F.**
IMPERVIOUS COVERAGE = 13.02%	(3,642 S.F. / 27,965 S.F. * 100%)

POST-CONSTRUCTION IMPERVIOUS AREA	
PROPOSED DWELLING	2,605 S.F.
DRIVEWAY (PERVIOUS PAVERS)	N/A
PERVIOUS PATIO	N/A
DECKS	N/A
RETAINING WALLS	684 S.F.
STEPS	257 S.F.
SHED	N/A
CONCRETE PAD	N/A
DOCK	96 S.F.
TOTAL	**3,642 S.F.**
IMPERVIOUS COVERAGE = 13.02%	(3,642 S.F. / 27,965 S.F. * 100%)

EXISTING FEATURES TO BE REMOVED

HORIZONTAL SCALE 1"=10'
10 5 0 10

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

SITE PLAN

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34")

MAY 25, 2022

STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14966 — LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	DR	CK
2	6/27/22	ADDITION OF DOCK TO PLAN	JKC	JCC
1	6/22/22	REVISIONS PER TOWN COMMENTS	JKC	JCC

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307-01_SITE LAYOUT	C-03

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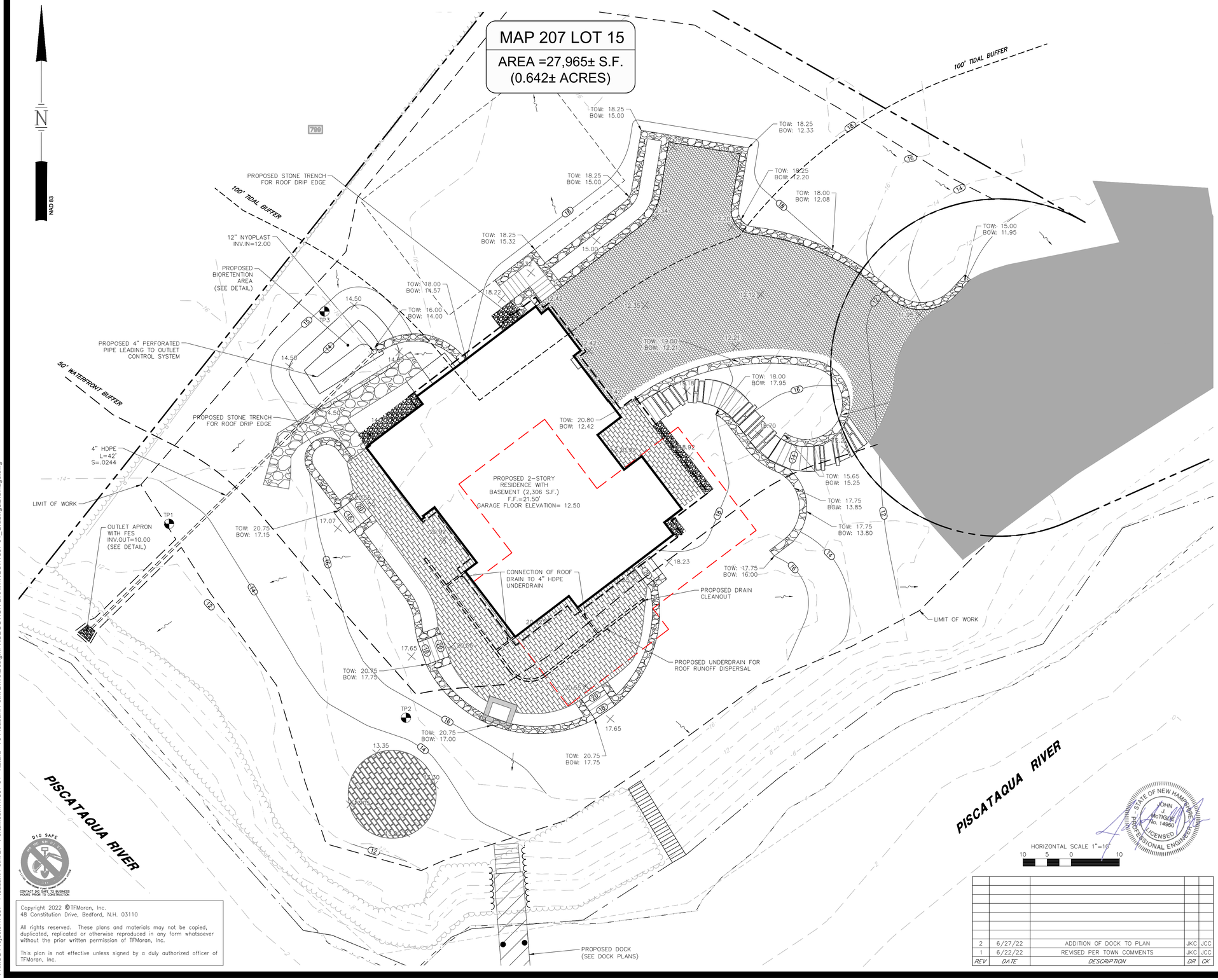

NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. PROPOSED SPOT GRADES ARE PROVIDED TO THE NEAREST 0.05. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES.
4. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
5. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM. COORDINATE SUBDRAINAGE SYSMTEM DESIGN WITH THE ENGINEER OF RECORD.

TEST PIT & INFILTRATION TEST

BMP	TEST PIT #	APPROX GROUND	BOTTOM OF POND	INFILTRATION TEST		TEST PIT	
		ELEV	ELEV	ELEV	DEPTH (IN)	ELEV	DEPTH (MIN)
	1	13.1	–	13.1	16.4	13.1	61"
	2	15.8	–	12.8	36.2	15.8	68"
BIORETENTION SYSTEM #1	3	16.1	13.0	14.1	32.1	16.1	62"

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

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STATE OF NEW HAMPSHIRE
JOHN C. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	DR	CK
2	6/27/22	ADDITION OF DOCK TO PLAN	JKC	JCC
1	6/22/22	REVISED PER TOWN COMMENTS	JKC	JCC

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

GRADING & DRAINAGE

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34")

MAY 25, 2022

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FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307-01_GRADING&DRAINAGE	C-04

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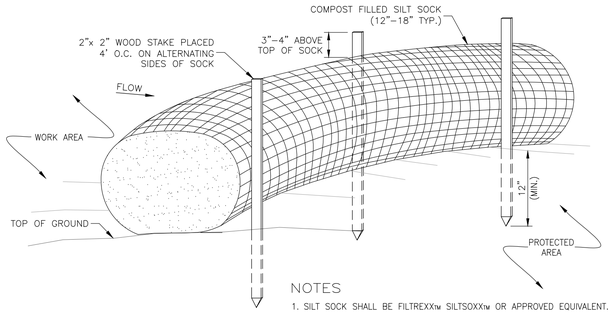
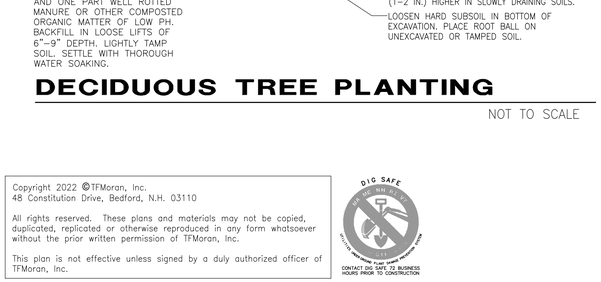


NOTES

1. SILT SOCK SHALL BE FILTREXXтм SILTSOXXтм OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

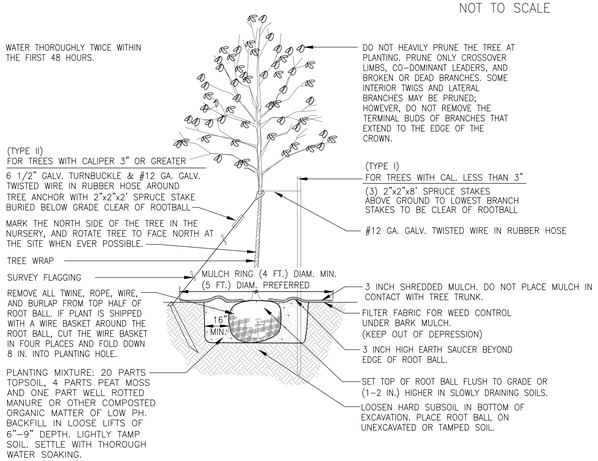
SILT SOCK

NOT TO SCALE



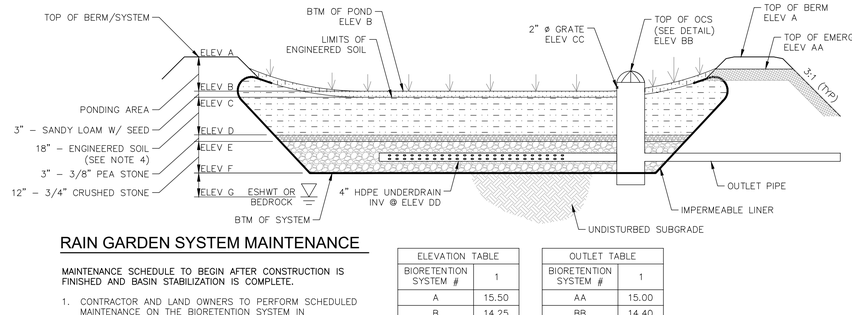
EVERGREEN PLANTING

NOT TO SCALE



DECIDUOUS TREE PLANTING

NOT TO SCALE



RAIN GARDEN SYSTEM MAINTENANCE

MAINTENANCE SCHEDULE TO BEGIN AFTER CONSTRUCTION IS FINISHED AND BASIN STABILIZATION IS COMPLETE.

1. CONTRACTOR AND LAND OWNERS TO PERFORM SCHEDULED MAINTENANCE ON THE BIORETENTION SYSTEM IN ACCORDANCE WITH THE STORMWATER OPERATION AND MAINTENANCE MANUAL.

RAIN GARDEN DETAIL

NOT TO SCALE

NOTE: SEE PLANS FOR BED, BERM AND OVERFLOW ELEVATIONS

ELEVATION TABLE	
BIORETENTION SYSTEM #	1
A	15.50
B	14.25
C	14.00
D	12.50
E	12.25
F	11.25
G	10.17

OUTLET TABLE	
BIORETENTION SYSTEM #	1
AA	15.00
BB	14.40
CC	14.20
DD	11.50

RAIN GARDEN SYSTEM CONSTRUCTION

1. CLEAR AND GRUB THE AREA WHERE THE RAIN GARDEN SYSTEMS ARE TO BE LOCATED. STOCKPILE LOAM FOR REUSE ON SLOPES.
2. GRADE RAIN GARDEN SYSTEM ACCORDING TO PLAN AND DETAILS. SIDE SLOPES SHALL HAVE 6" LOAM AND SEED AND A SLOPE NOT TO EXCEED 3:1. BOTTOM OF BIORETENTION SYSTEM AREAS TO BE CONSTRUCTED WITH MANUFACTURED SOIL (SEE RAIN GARDEN SYSTEM CONSTRUCTION DETAIL).
3. BOTTOM OF THE RAIN GARDEN SYSTEM TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX THAT MEETS NH STATE STANDARDS.
4. THE ENGINEERED SOIL – SEE ENGINEERED SOIL MIX NOTES.
   SOILS TO BE TESTED AND APPROVED BY THE ENGINEER OF RECORD. ENGINEER SHALL SUBMIT LETTER OF VERIFICATION TO THE CITY.
5. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT EQUIPMENT & VEHICLE TRAFFIC FROM DRIVING IN THE AREA OF THE PROPOSED RAIN GARDEN SYSTEM AREA DURING CONSTRUCTION.
6. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES. THE BASIN BOTTOM SHOULD BE LEVELED PRIOR TO BACKFILLING WITH CRUSHED STONE AND RAIN GARDEN SOIL MIXTURE.
7. AASHTO #57 STONE CAN BE USED IN PLACE OF ¾" CRUSHED STONE.

RAIN GARDEN

NOT TO SCALE

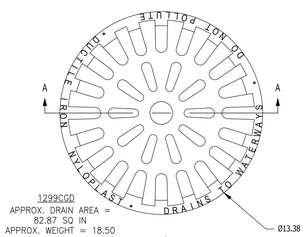
SEEDING

1. USE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR MOIST SITES BY NEW ENGLAND WETLAND PLANTS, INC. OR EQUIVALENT.
2. SEED AT A RATE OF 1LB/1250SF. APPLY TO BARE SOIL. LIGHTLY MULCH WITH CLEAN WEED FREE STRAW.

ENGINEERED SOIL MIX

1. THE ENGINEERED SOIL IS MADE OF IS 10% WOOD CHIPS, 35% LOAM, AND 55% SAND.
2. LOAM SHALL MEET THE USDA TEXTURAL CLASSIFICATION OF LOAMY FINE SAND.
3. SAND SHALL BE CONCRETE SAND MEETING ASTM C–33 SPECIFICATION.
4. WOOD CHIPS SHALL BE SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIALS
5. SOIL REACTION: PH OF 6 TO 7.
6. CEC OF TOTAL SOIL: MINIMUM 10 MEQ/100 ML AT PH OF 7.0.
7. BASIS–OF–DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS INDICATED ON DRAWINGS
8. BASIC PROPERTIES: MANUFACTURED SOIL SHALL NOT CONTAIN THE FOLLOWING:
   A. UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, AND OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANT GROWTH.
   B. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, AND POCKETS OF COARSE SAND THAT EXCEED A COMBINED MAXIMUM OF 5 PERCENT BY DRY WEIGHT OF THE MANUFACTURED SOIL.
   C. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS, AND POCKETS OF COARSE SAND EXCEEDING 0.187 INCHES (4.76 MM) IN ANY DIMENSION.

ENGINEERED SOIL MIX PARTICLE SIZE DISTRIBUTION (PSD)			
PSD UPPER LIMIT		PSD LOWER LIMIT	
SIEVE #	% Passing	SIEVE #	% PASSING
4	100	4	100
10	95	10	95
40	40	40	15
200	20	200	15
<200	5	<200	5



SECTION A–A

DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70–50–05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT LOCKING DEVICE AVAILABLE UPON REQUEST

ADS 24" DOME GRATE

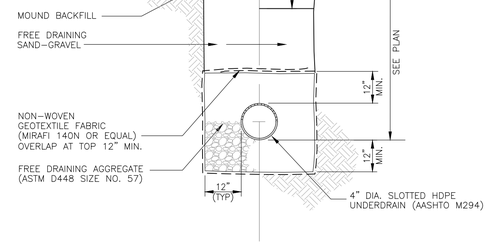
(WITH WEIR)

NOT TO SCALE

6" LOAM (ITEM 641)
SEED (ITEM 644) LIMESTONE (ITEM 642) FERTILIZER (ITEM 643.11)
APPLY RATIOS OF LIMESTONE AND FERTILIZER PER MANUFACTURERS SPECIFICATION BASED ON SOIL TEST RESULTS.
STRAW MULCH SHALL BE UTILIZED FOR EROSION CONTROL AT A RATE OF 3 TONS PER ACRE. HYDROSEEDING MAYBE UTILIZED AS AN ALTERNATE METHOD. (SEE HYDROSEEDING NOTES)

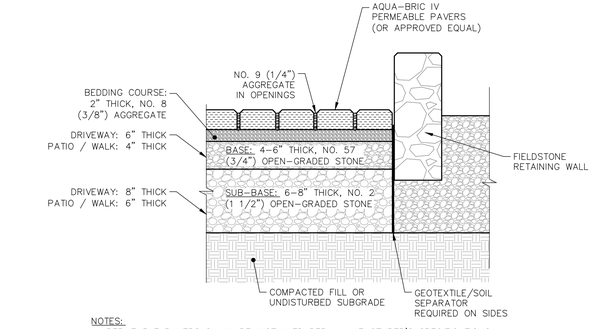
LOAM & SEED

NOT TO SCALE



UNDERDRAIN TRENCH

NOT TO SCALE

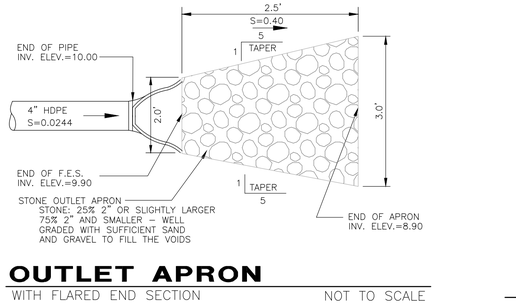


NOTES:
1. PERMEABLE PAVERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALLATION OF PERMEABLE PAVER SECTION SHALL BEGIN AT LOWEST GRADE AND END AT HIGHEST GRADE.

PROFILE VIEW

PERMEABLE PAVER

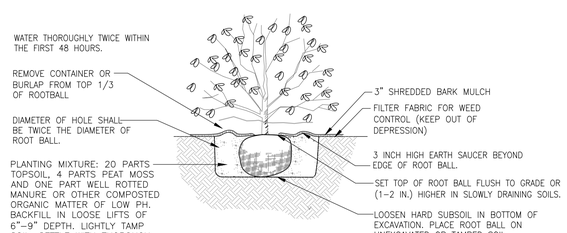
NOT TO SCALE



OUTLET APRON

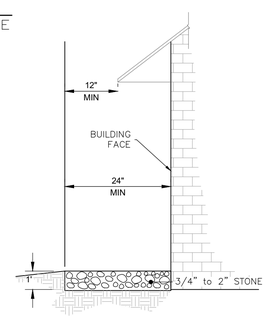
WITH FLARED END SECTION

NOT TO SCALE



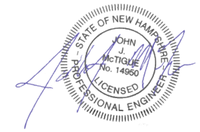
SHRUB PLANTING

NOT TO SCALE



DRIP EDGE TRENCH

NOT TO SCALE



SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

DETAILS

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

SCALE: NTS **MAY 25, 2022**

REV	DATE	DESCRIPTION	DR	CK
1	6/27/22	NO REVISIONS TO THIS PLAN		

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307–01_DETAILS	C–05

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48 Constitution Drive, Bedford, N.H. 03110

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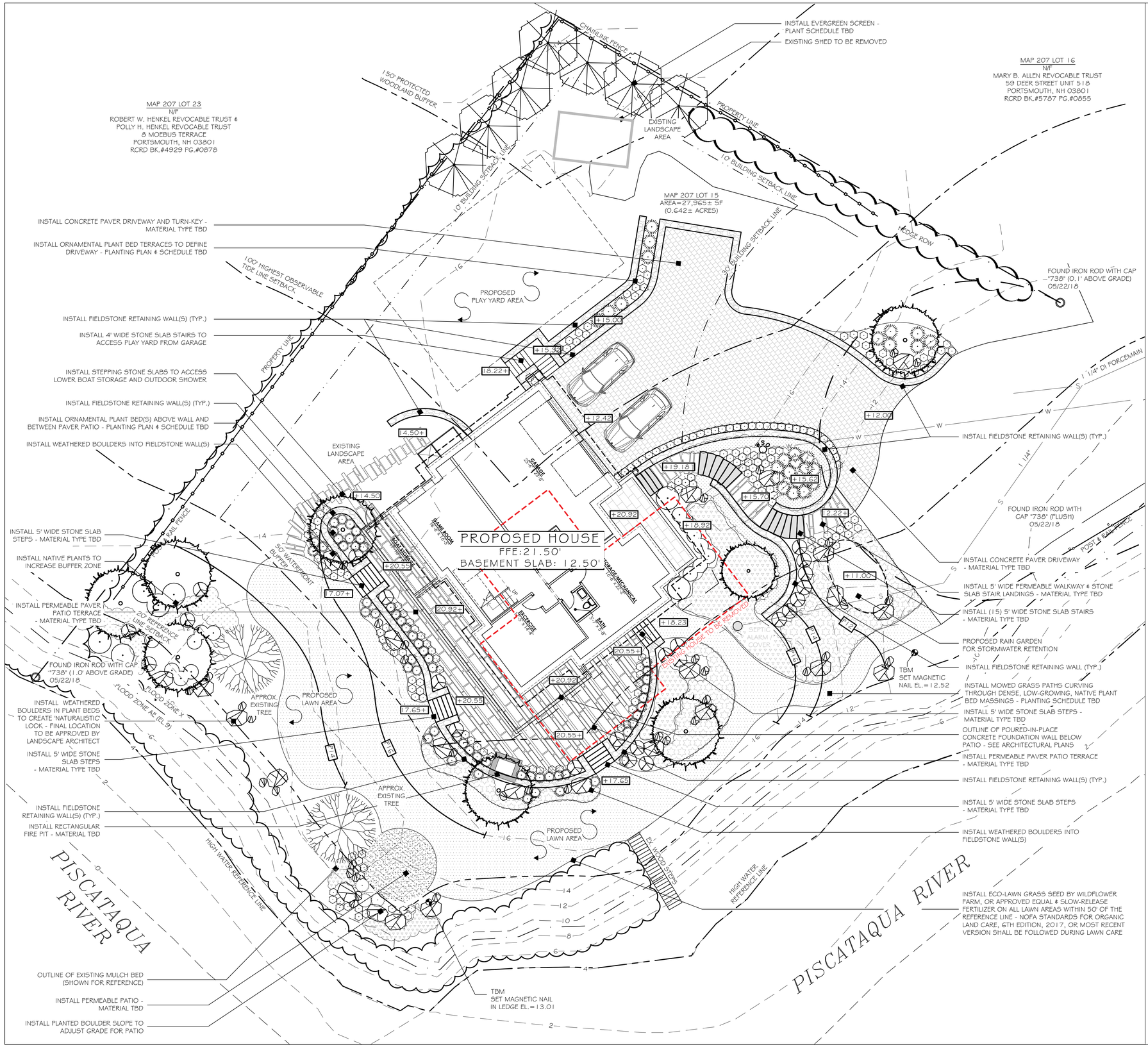
DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 28, 2022 - 3:33pm
P:\MSC Projects\47307 - Pleasant Point Dr - Portsmouth\47307-01 - Katara - 70 Pleasant Point Drive\Design\PRODUCTION DRAWINGS\47307-01_Details.dwg



EROSION CONTROL NOTES

1. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. LIMIT OF WORK IS NOTED ON THIS SHEET. CONTRACTOR TO WORK WITHIN THESE LIMITS AS SHOWN. NO AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING FIVE CALENDAR DAYS.

2. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PANS. IN ADDITION SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.5" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.

3. ALL DISTURBED AREAS DESIGNATED TO BE TURF SHALL RECEIVE A MINIMUM OF 4" LOAM (COMPACTED THICKNESS), PRIOR TO SEEDING AND MULCHING.

4. ALL SWALES AND DITCH LINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AND EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCH LINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.

5. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.

6. AN AREA SHALL BE CONSIDERED STABILIZE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A. BASE COURSE OF GRADES ARE INSTALLED IN AREAS TO BE PAVED;
   - B. A MINIMUM OF 85% VEGETATIVE GROWTH HAS BEEN ESTABLISHED;
   - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIALS, SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; AND/OR
   - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

7. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.

8. IN NO WAY ARE THE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.

9. ALL EROSION CONTROL METHODS TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS AS WELL AS INDICATED IN THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION."

10. ALL ROADS, PATHS, DRIVEWAYS, PATIOS AND POOL DECKS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

11. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF ACHIEVING FINISH GRADE.

DIG SAFE
811 OR NH RSA 374:48
CALL BEFORE YOU DIG
1-888-DIG-SAFE
CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

PROPOSED IMPERVIOUS CALCULATIONS		
HOUSE	:	2,948 SF
DRIVEWAY	:	1,754 SF
DECK	:	0 SF
SHED	:	0 SF
WALKWAY / PAVER	:	0 SF
STAIRS	:	205 SF
PATIO	:	0 SF
RETAINING WALL	:	683 SF
TOTAL IMPERVIOUS	:	5,590 SF
TOTAL LOT WITHIN 250'	:	27,965 SF
19.99% IMPERVIOUS		

LINETYPE LEGEND

- EROSION CONTROL
- PROPERTY LINE
- PROPERTY SETBACKS
- REFERENCE LINE
- REFERENCE LINE SETBACKS
- TOPOGRAPHY MIN
- TOPOGRAPHY MAJ
- VEGETATION QUAD
- MESH FENCING / PARAMETERS OF WORK
- UNALTERED AREA
- TEMPORARY IMPACT AREA
- ECO-LAWN GRASS SEED & SLOW RELEASE FERTILIZER

0 5' 10' 20' 30' 50'

terrain
planning & design llc
311 kast hill road
hopkinton nh 03229
603. 746. 3512
terrainplanning.com

ROWE - SMALL RESIDENCE

Site Location:
70 Pleasant Point Drive
Portsmouth, NH 03801
Tax Map: 207
Lot #: 15

Prepared For:
KATARA LLC
Rebecca Rowe & Marc Small
274 Miller Avenue
Portsmouth, NH 03801

LANDSCAPING PLAN

DATE: 01 - 04 - 2022

SCALE: 1" = 10'

PROJECT #: 2186

Drawn By: CGB

Checked By: ERB

REVISIONS: DATE:
Revised per client comments 01-31-22
Revised per client comments 02-17-22
Revised footprint 05-24-22
Revised per Con Com comments 06-23-22
Revised per Con Com comments 07-08-22

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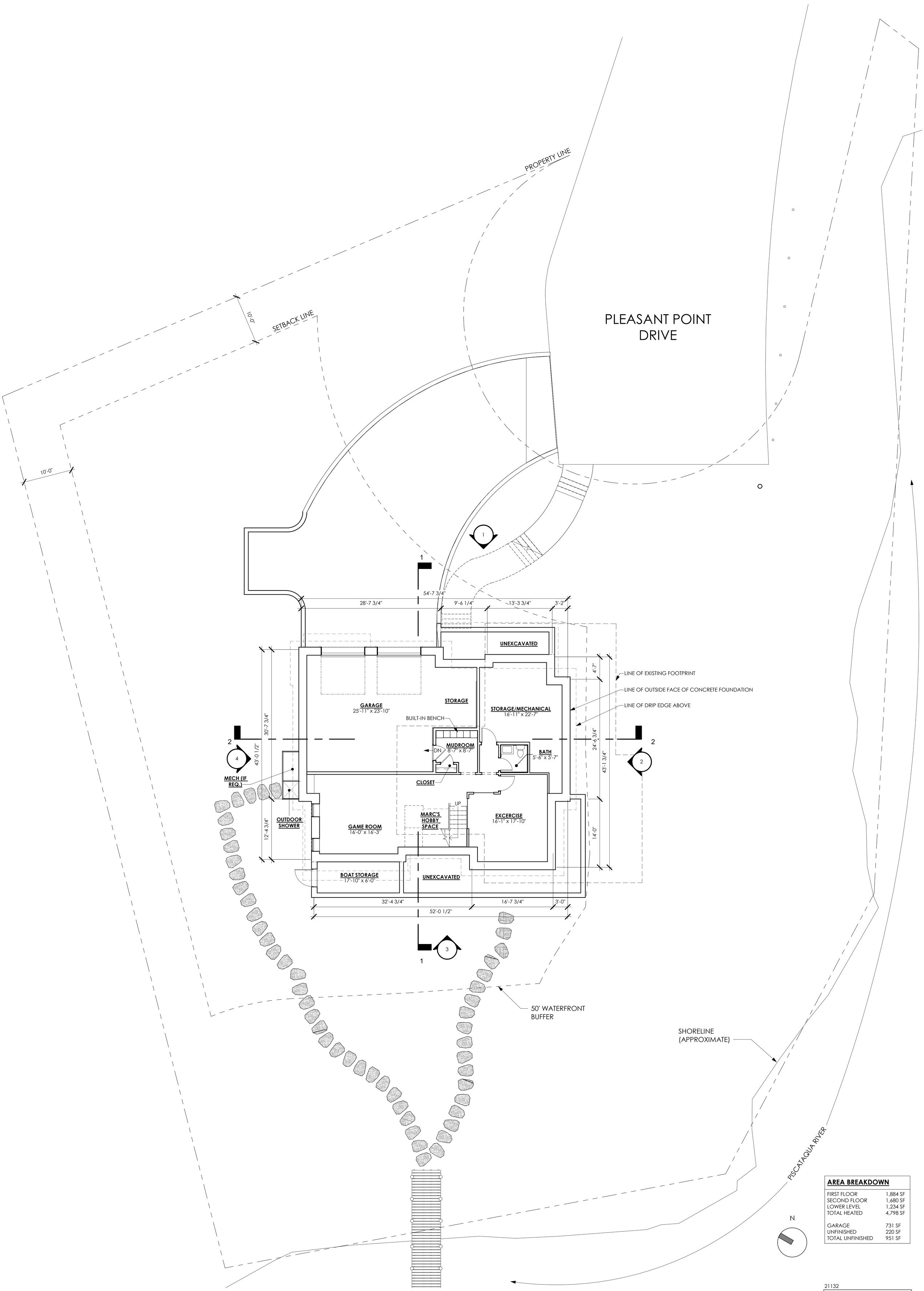

AREA BREAKDOWN	
FIRST FLOOR	1,884 SF
SECOND FLOOR	1,680 SF
LOWER LEVEL	1,234 SF
TOTAL HEATED	4,798 SF
GARAGE	731 SF
UNFINISHED	220 SF
TOTAL UNFINISHED	951 SF

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

LOWER LEVEL FLOOR PLAN

1/8" = 1'-0"

07/20/22

21132

D|M|A
DESTEFANO
MAUGEL
ARCHITECTS

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PROPERTY LINE

SETBACK LINE

10'-0"

10'-0"

PLEASANT POINT
DRIVE

UP

1

1

55'-1"

1'-8" | 11'-9" | 15'-8" | 9'-1" | 13'-9" | 3'-2"

SEATING BENCH

2'-0"

DN

COVERED ENTRY

BUILT-IN BREAKFAST NOOK

LINE OF ROOF ABOVE

LINE OF CEILING DETAIL ABOVE

4'-7"

LINE OF EXISTING FOOTPRINT

INTERIOR WINDOW WELL

GUEST BEDROOM
13'-7" x 15'-2"

DINING ROOM
13'-1" x 16'-7"

KITCHEN
14'-0" x 12'-6"

31'-1"

BATH
7'-1" x 13'-5"

CLOSET

2

4

47'-5 3/4"

D
W

CLOSET

BUTLER PANTRY
7'-10" x 7'-1"

OFFICE
6'-0" x 7'-1"

25'-1 1/8"

43'-7"

2

MECH (IF REQ.)

CLOSET

LAUNDRY
6'-5" x 8'-4"

POWDER ROOM
6'-1" x 4'-5"

DN

UP

3'-1 1/2"

LIVING ROOM
15'-0" x 14'-9"

INTERIOR WINDOW WELL

OUTDOOR SHOWER

OPEN TO BELOW

3'-0"

2'-6"

SCREENED PORCH
17'-5" x 12'-9"

DN

13'-10 7/8"

14'-4 3/4"

2'-6"

BUILT-IN BOOK CASE

PATIO

LINE OF ROOF ABOVE

2'-6" | 17'-11 1/8" | 14'-6 7/8" | 17'-1" | 3'-0"

55'-1"

3

1

50' WATERFRONT BUFFER

SHORELINE
(APPROXIMATE)

PISCATAQUA RIVER

N

AREA BREAKDOWN

FIRST FLOOR	1,884 SF
SECOND FLOOR	1,680 SF
LOWER LEVEL	1,234 SF
TOTAL HEATED	4,798 SF
GARAGE	731 SF
UNFINISHED	220 SF
TOTAL UNFINISHED	951 SF

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

FIRST FLOOR PLAN

1/8" = 1'-0"

07/20/22

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PROPERTY LINE

SETBACK LINE

10'-0"

10'-0"

PLEASANT POINT
DRIVE

1

1

55'-1"

28'-10 3/8"

26'-2 5/8"

CLOSET

PRIMARY
CLOSET 1
11'-2" x 5'-9"

PRIMARY
CLOSET 2
11'-2" x 5'-9"

6'-1"

6'-1"

BUILT-IN
DRESSER

BEDROOM 1
13'-4" x 17'-10"

BEDROOM 2
13'-9" x 17'-10"

UNFINISHED

LINE OF ROOF ABOVE

CLOSET

PRIMARY
BATHROOM
12'-11" x 12'-0"

2

4

2

25'-0"

25'-0"

44'-1"

45'-1"

BATH
9'-1" x 8'-6"

LINEN
CLOSET

W/D

LAUNDRY
CLOSET

BUILT-IN

BUILT-IN
BOOK CASE

BUILT-IN
OVER BED

DN

OPEN TO
BELOW

FAMILY ROOM
16'-11" x 14'-8"

PRIMARY
BEDROOM
16'-3" x 17'-1"

13'-0"

14'-0"

BUILT-IN
BOOK CASE

PERGOLA

3'-0"

17'-1"

14'-11"

17'-1"

3'-0"

55'-1"

3

1

PISCATAQUA RIVER

N

AREA BREAKDOWN

FIRST FLOOR	1,884 SF
SECOND FLOOR	1,680 SF
LOWER LEVEL	1,234 SF
TOTAL HEATED	4,798 SF
GARAGE	731 SF
UNFINISHED	220 SF
TOTAL UNFINISHED	951 SF

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

SECOND FLOOR PLAN

1/8" = 1'-0"

07/20/22

21132

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MAUGEL
ARCHITECTS

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WINDOW SCHEDULE							
KEY	Count	TYPE	ROUGH WIDTH	ROUGH HEIGHT	Solar Heat Gain Coefficient	Heat Transfer Coefficient (U)	COMMENTS
A	36	AWNING	2'-9"	1'-11 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
B	8	CASEMENT	2'-9"	3'-7 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
B2	4	CASEMENT	2'-9"	3'-7 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
C	18	CASEMENT	2'-9"	5'-3 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
C2	3	CASEMENT	2'-9"	5'-3 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
D	6	CASEMENT	2'-9"	5'-11 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
E	3	CASEMENT	2'-9"	6'-11 5/8"	0.41	0.2563 BTU/(h·ft²·°F)	
F2	6	CASEMENT	2'-9"	7'-2 1/2"	0.41	0.2563 BTU/(h·ft²·°F)	
G	5	FIXED	2'-9"	9'-2 1/4"	0.41	0.2563 BTU/(h·ft²·°F)	
GRAND TOTAL:	89						

DD DOOR SCHEDULE			
NUMBER	Function	SIZE	
		WIDTH	HEIGHT
Exterior			
001A	Exterior	9'-0"	8'-0"
001B	Exterior	9'-0"	8'-0"
002A	Exterior	3'-0"	6'-8"
101A	Exterior	5'-4"	7'-0"
110A	Exterior	5'-9 1/8"	7'-2"
111A	Exterior	8'-2 3/4"	7'-2"
Interior			
002B	Interior	2'-6"	6'-8"
005A	Interior	3'-0"	6'-8"
006A	Interior	2'-6"	6'-8"
007A	Interior	3'-0"	6'-8"
008A	Interior	3'-6"	5'-6"
101C	Interior	2'-0"	7'-0"
101D	Interior	1'-3"	7'-0"
103A	Interior	2'-8"	7'-0"
103B	Interior	2'-8"	7'-0"
107A	Interior	2'-6"	7'-0"
108A	Interior	3'-2"	7'-0"
109A	Interior	2'-8"	7'-0"
110A	Interior	2'-8"	7'-0"
110B	Interior	5'-0"	7'-0"
203A	Interior	2'-6"	7'-0"
203B	Interior	2'-6"	7'-0"
203D	Interior	0"	0"
203H	Interior	4'-0"	7'-0"
203I	Interior	0"	0"
203J	Interior	0"	0"
203K	Interior	0"	0"
203L	Interior	4'-0"	7'-0"
203M	Interior	2'-6"	7'-0"
206A	Interior	7'-0"	7'-0"
207A	Interior	2'-8"	7'-0"
208A	Interior	2'-8"	7'-0"
208B	Interior	4'-0"	7'-0"
209A	Interior	2'-8"	7'-0"
210A	Interior	4'-0"	7'-0"

PROPOSED WEST ELEVATION 4
1/8" = 1'-0"

PROPOSED SOUTH ELEVATION 3
1/8" = 1'-0"

PROPOSED EAST ELEVATION 2
1/8" = 1'-0"

PROPOSED NORTH ELEVATION 1
1/8" = 1'-0"

21132

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

PROPOSED ELEVATIONS

1/8" = 1'-0"

07/20/22

D|M|A
DESTEFANO MAUGEL
ARCHITECTS

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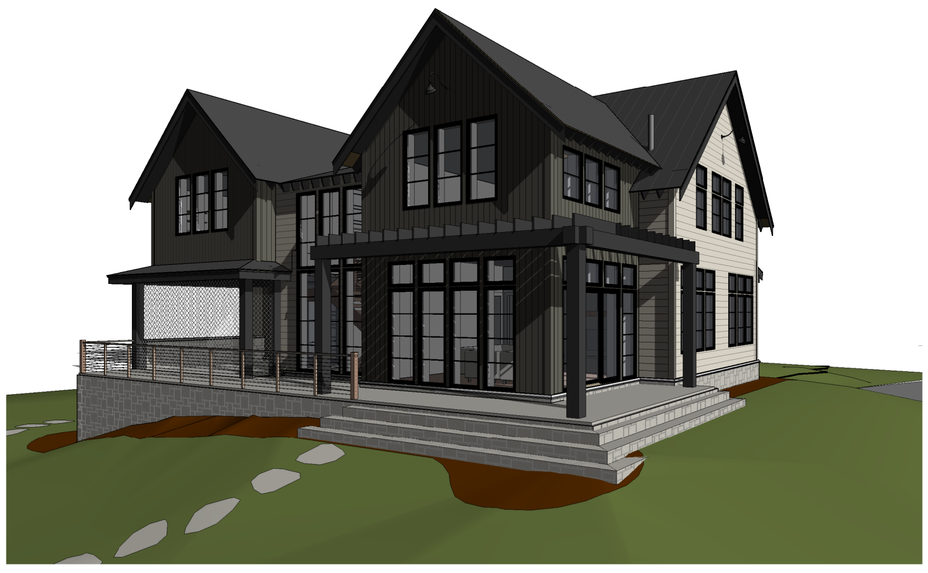
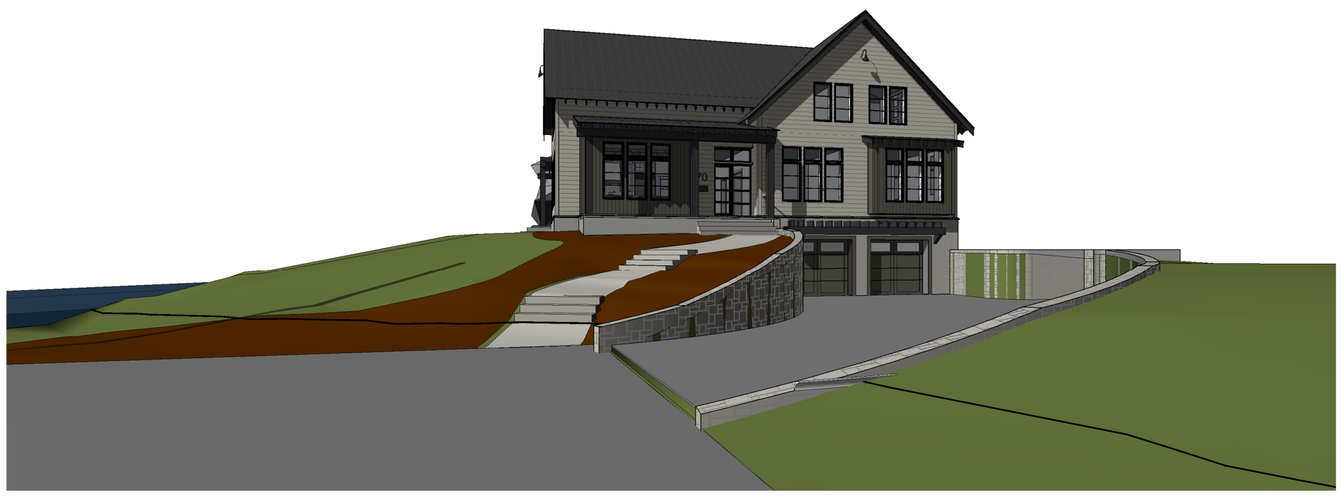
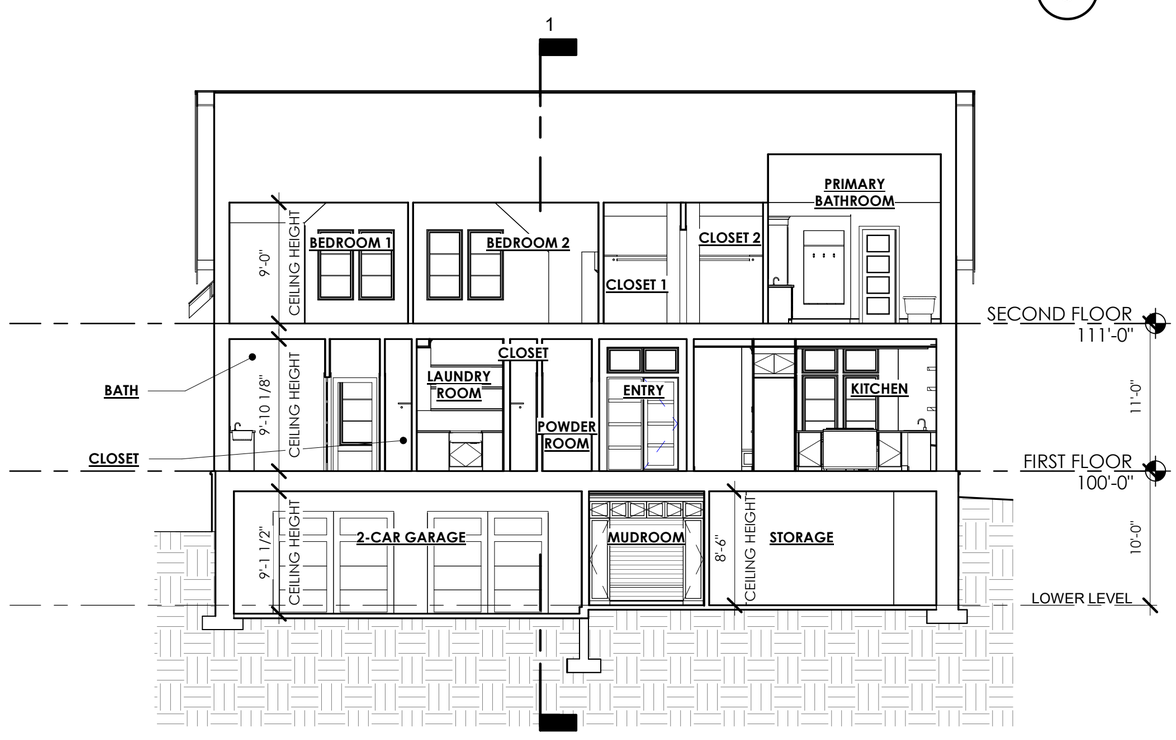


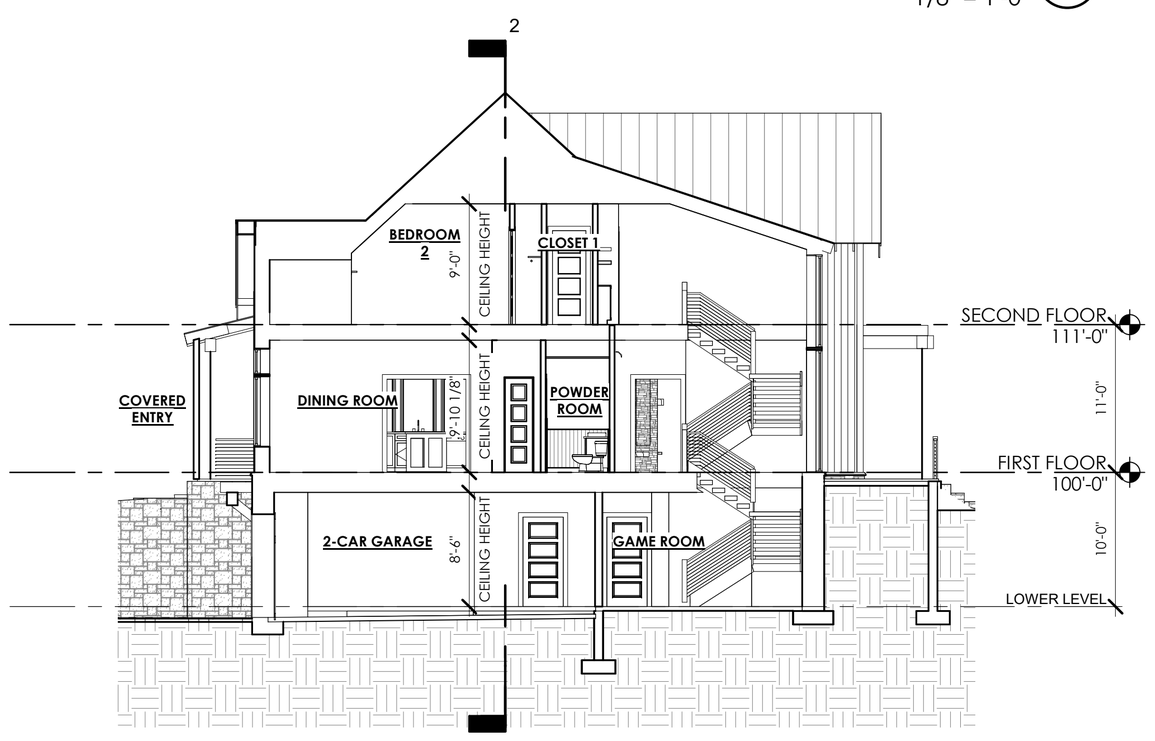
PERSPECTIVE AT REAR 4



PERSPECTIVE AT FRONT 3



BUILDING SECTION 2 2
1/8" = 1'-0"



BUILDING SECTION 1 1
1/8" = 1'-0"

21132

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

SECTIONS AND PERSPECTIVES

1/8" = 1'-0"

07/20/22

DESTEFANO MAUGEL ARCHITECTS

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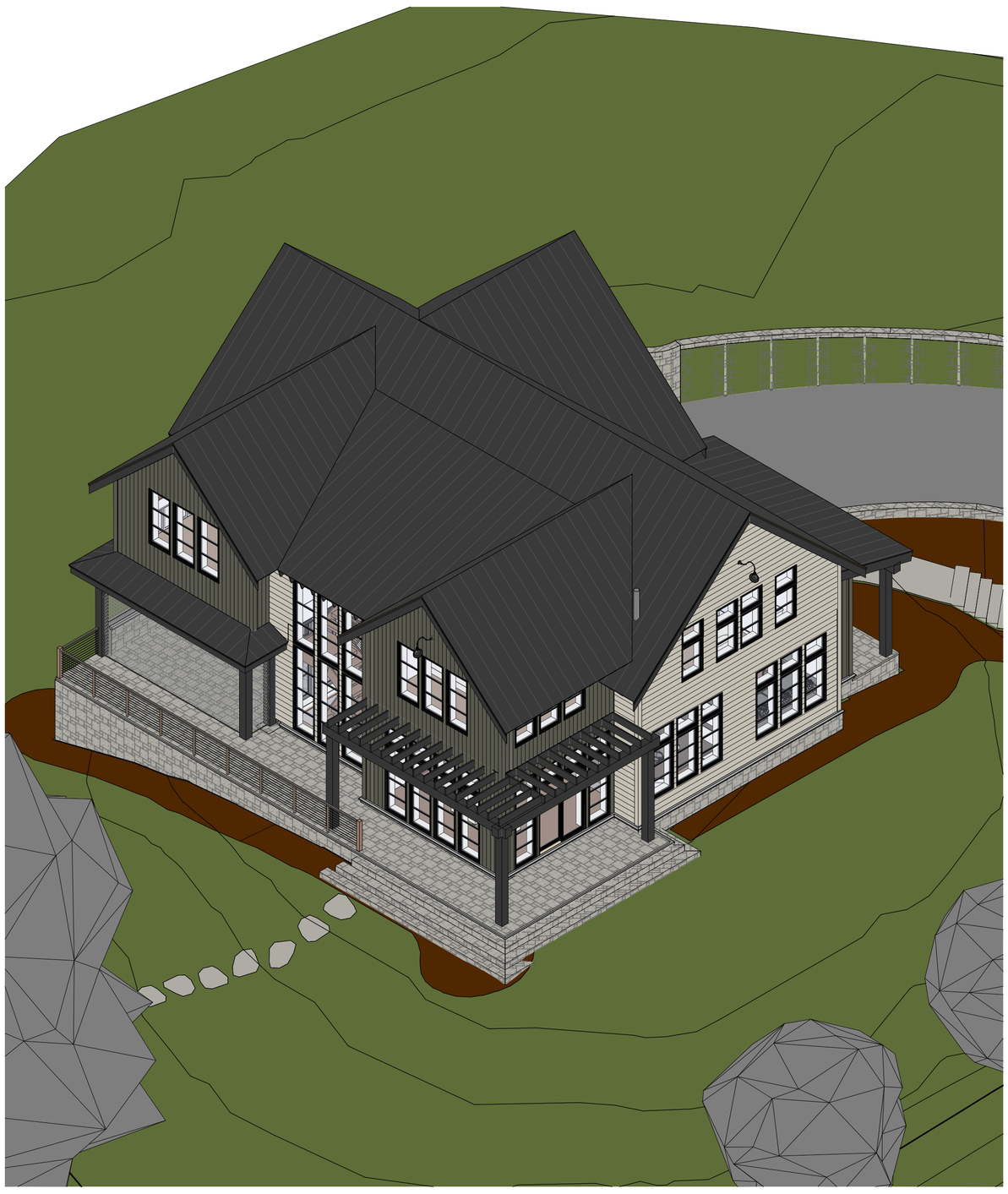
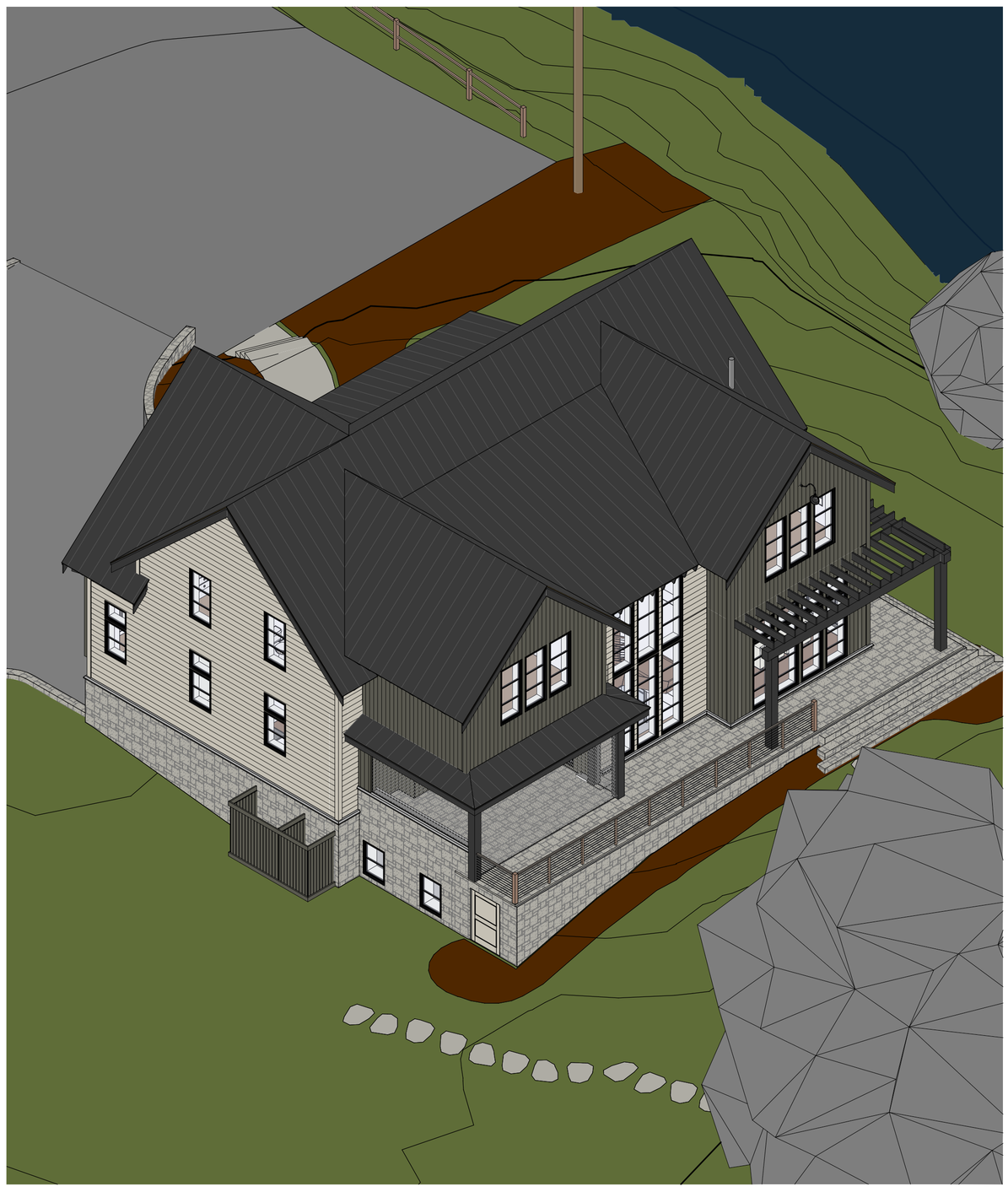
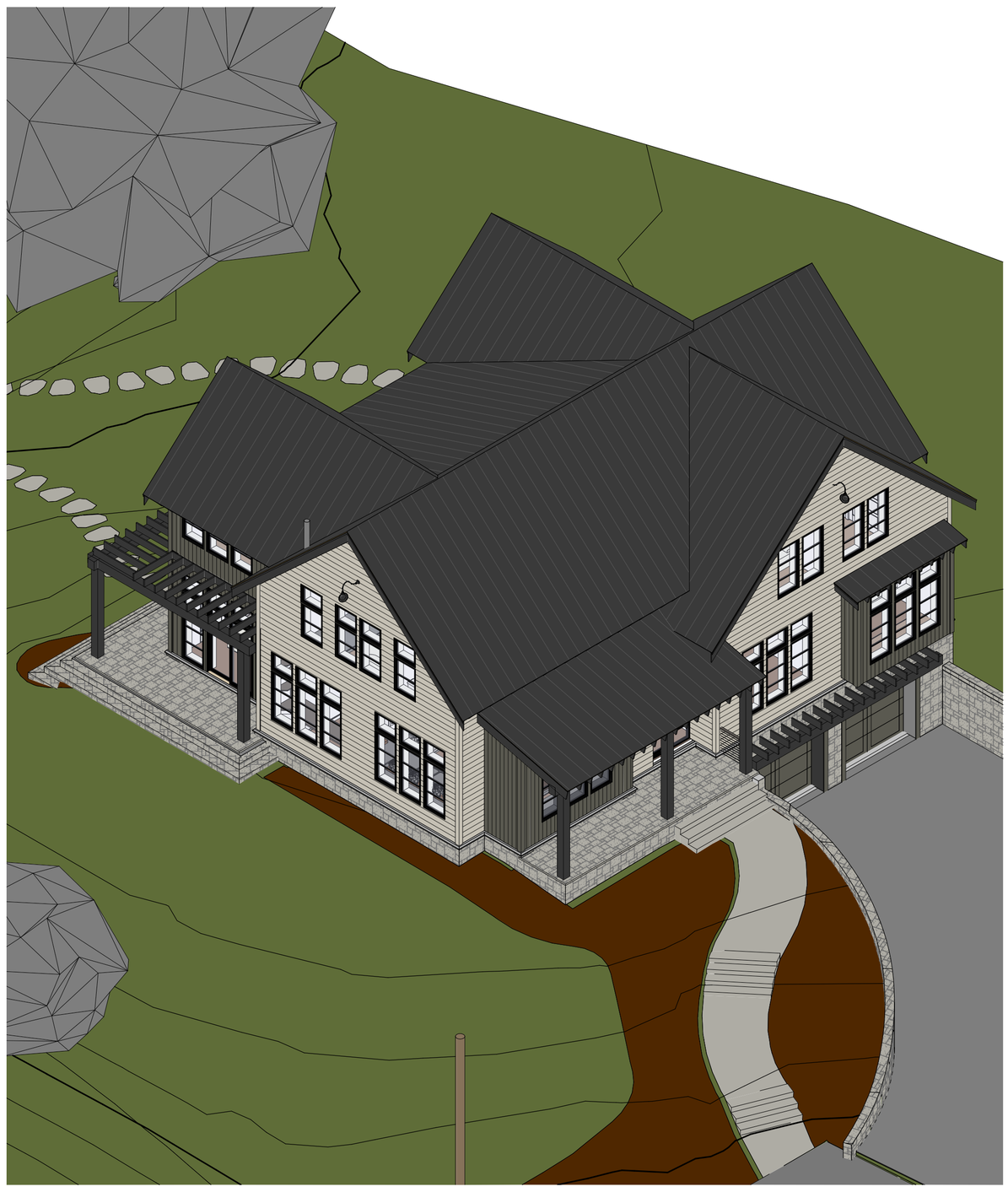


SOUTH AXONOMETRIC VIEW 1



WEST AXONOMETRIC VIEW 2

NORTH AXONOMETRIC VIEW 3



EAST AXONOMETRIC VIEW 4

PROPOSED DESIGN DEVELOPMENT FOR

KATARA

70 PLEASANT POINT DR.
PORTSMOUTH, NH

EXTERIOR AXONOMETRIC VIEWS

07/20/22

21132

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L-0700-023
July 21, 2022

Mr. Rick Chellman, Chairman
City of Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit Application**
Lonza Biologics – Proposed Café Expansion

Dear Chairman Chellman:

On behalf of Lonza Biologics, we are pleased to submit via the City of Portsmouth online permitting system the following information to support a request to the Planning Board for a recommendation for approval to the Pease Development Authority (PDA) for Site Plan Review for the above referenced project:

- One (1) copy of the PDA Application for Site Review, dated June 21, 2021;
- One (1) full-size & one (1) half-size copy of the Site Plan Set, last revised July 21, 2022;
- One (1) copy of the TAC Stipulation Response Report, dated July 21, 2022;
- One (1) copy of the Drainage Memo, last revised July 21, 2022;
- One (1) copy of the Operations and Maintenance Plan, dated June 21, 2022;
- One (1) copy of the Exterior Rendering, dated May 19, 2022;

The proposed project is located at 101 International Drive which is identified as Map 305 Lot 6 on the City of Portsmouth Tax Maps. The proposed project is to expand Lonza Biologics café to support its existing workforce in the pharmaceutical and biologic industries.

The proposed project includes the construction of an approximately 4,200 SF expansion to Lonza's existing café. This café expansion is necessary to support Lonza's existing workforce. The proposed expansion is directly adjacent to the existing café internal to the main building. The project will consist of associated site improvements such as landscaping, retaining wall, relocation of the existing grease trap, and stormwater management that will include stormwater treatment via a proprietary filtration unit. The proposed project is providing stormwater treatment for all the proposed new impervious surfaces plus an equivalent area of existing impervious surfaces as required by the PDA. The relocated existing grease trap will discharge to the existing 8" clay gravity-fed sewer line that runs parallel to International Drive in the grassed portion of the right of way on the development lot side of the street.

On May 17, 2022, the PDA Board granted conceptual approval for these improvements. The project also received a recommendation for approval from the Technical Advisory Committee (TAC) at their July 5, 2022, meeting. We respectfully request to be placed on the Planning Board (PB) meeting agenda for August 18, 2022. If you have any questions or need any additional information, please contact Neil Hansen by phone at (603) 294-9213 or by email at nahansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Neil A. Hansen, PE
Project Manager

Patrick M. Crimmins, PE
Vice President

Copy: Lonza Biologics (via email)
Fulcrum Associates (via email)
Pease Development Authority

J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Report_Evaluation\Applications\City of Portsmouth\20220721 PB Submission\L-0700-023 PB Cover Letter.docx

Pease Development Authority
55 International Drive, Portsmouth, NH 03801, (603) 433-6088

Application for Site Review

For PDA Use Only			
Date Submitted:_____	Municipal Review:_____	Fee:_____	
Application Complete:_____	Date Forwarded:_____	Paid:_____	Check #:_____

Applicant Information

Applicant: Lonza Biologics, Inc.	Agent: Tighe & Bond, Inc.
Address: 101 International Drive Portsmouth, NH 03801	Address: 177 Corporate Drive Portsmouth, NH 03801
Business Phone: 603-610-5129	Business Phone: 603-433-8818
Mobile Phone:	Mobile Phone:
Fax:	Fax:

Site Information

Portsmouth Tax Map: 305	Lot #: 006	Zone: Airport, Business, Commercial
Site Address / Location : 101 International Drive, Portsmouth, NH 03801		
Site Address / Location :		Area of On-site Wetlands: 0 SF

Activity Information

Change of Use: Yes [ ] No [X]

Existing Use: Office/Research/Manufacturing

Proposed Use: Office/Research/Manufacturing

Description of Project:

The proposed project consists of the construction an approximate 4,200 SF footprint expansion to Lonza's existing cafe to support it's growing workforce. The expansion is directly adjacent to the existing cafe internal to the main building. There will also be associated site improvements to support the proposed project including stormwater treatment, relocation of the existing grease trap and landscaping.

All above information shall be shown on a site plan submitted with this application. Provide 3 full size hard copies and one PDF copy of all application materials as well as one half-size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 400 of PDA land Use Controls for additional information.

Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Site Review and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and PDA Board in the development and construction of this project.

Neil Hansen — Signature of Applicant

6/21/22 — Date

Neil Hansen — Printed Name

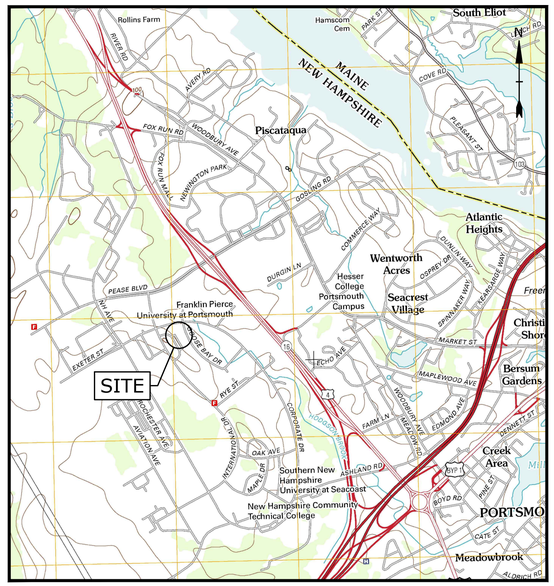
N:\Engineer\ ApplicationforSiteReview.xlsx

CAFE EXPANSION

LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE
JUNE 27, 2022
LAST REVISED JULY 21, 2022

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	7/21/2022
1 of 1	EXISTING DOUCET PLAN	5/26/2022
C-101	OVERALL EXISTING CONDITIONS PLAN	7/21/2022
C-101.1	DEMOLITION PLAN	7/21/2022
C-102	OVERALL SITE PLAN	7/21/2022
C-102.1	SITE PLAN	7/21/2022
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	7/21/2022
C-104	UTILITIES PLAN	7/21/2022
C-105	LANDSCAPE PLAN	7/21/2022
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	7/21/2022
C-502	DETAILS SHEET	7/21/2022
C-503	DETAILS SHEET	7/21/2022
C-504	DETAILS SHEET	7/21/2022
AP-101	FIRST FLOOR AREA PLAN	6/7/2022
AP-102	SECOND FLOOR AREA PLAN	6/7/2022
	PROPOSED EXTERIOR ELEVATIONS	5/19/2022

LIST OF PERMITS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT	PENDING	



LOCATION MAP
SCALE: 1" = 2,000'

LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801

APPLICANT: LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801

CIVIL ENGINEER: Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801

SURVEYOR: DOUCET SURVEY, INC.
102 KENT PLACE
NEWMARKET, NEW HAMPSHIRE 03857

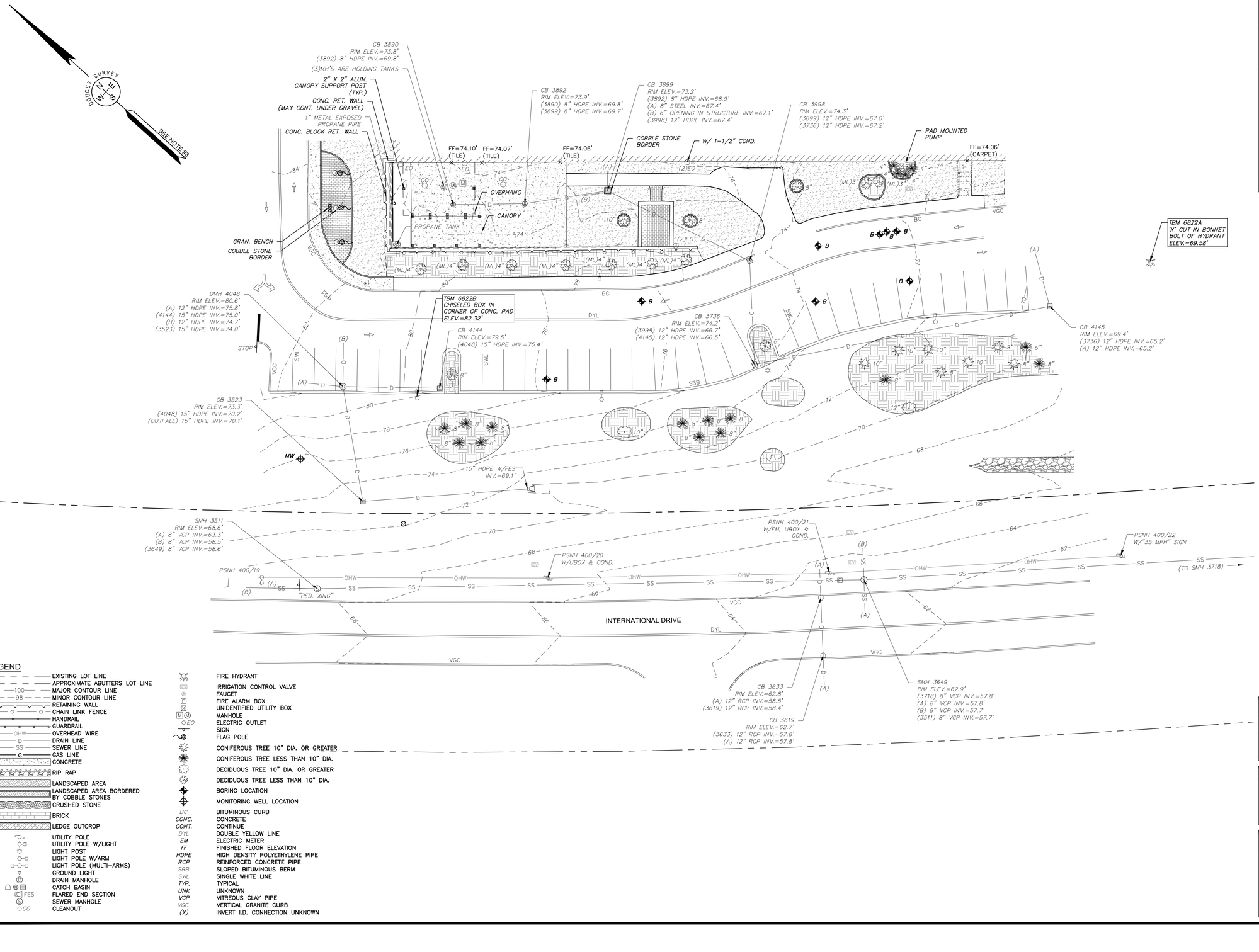
STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
7/21/22

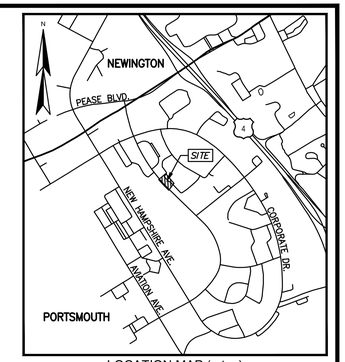
STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
7/21/22

T&B PROJECT NO: L-0700-023

PLANNING BOARD SUBMISSION PLAN SET
COMPLETE SET 16 SHEETS

Last Save Date: July 20, 2022 4:43 PM By: NWILCOX
Plot Date: Thursday, July 21, 2022 Plotted By: Caleb Kerzcuik
T&B File Location: J:\L\0700 Lonza Biologics Expansion was 1576FV023 Cafe Expansion\Drawings, Figures\AutoCAD\L-0700-023-C-COVR.dwg Layout Tab: DSGN-CS





LOCATION MAP (n.t.s.)

NOTES:

1. REFERENCE: LONZA BIOLOGICS
   101 INTERNATIONAL DRIVE
   PORTSMOUTH, NEW HAMPSHIRE
2. FIELD SURVEY PERFORMED BY S.N.F. & J.P.E. (DOUCET SURVEY) DURING MAY 2022 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
3. HORIZONTAL AND VERTICAL DATUM BASED ON PLAN TITLED "EXISTING CONDITIONS PLAN, FOR TIGHE & BOND AND LONZA, LAND OF PEASE DEVELOPMENT AUTHORITY, (TAX MAP 305, LOTS 1 & 2), GOOSE BAY DRIVE & CORPORATE DRIVE, PORTSMOUTH, NEW HAMPSHIRE" DATED DECEMBER 23, 2015 AND REVISED THRU 8/16/18 BY DOUCET SURVEY, LLC AND PREVIOUSLY PROVIDED TO TIGHE & BOND IN DIGITAL FORMAT.
4. PROPER FIELD PROCEDURES WERE FOLLOWED IN ORDER TO GENERATE CONTOURS AT 2' INTERVALS. ANY MODIFICATION OF THIS INTERVAL WILL DIMINISH THE INTEGRITY OF THE DATA, AND DOUCET SURVEY. WILL NOT BE RESPONSIBLE FOR ANY SUCH ALTERATION PERFORMED BY THE USER.
5. UNDERGROUND UTILITIES SHOWN HEREON ARE BASED ON OBSERVED PHYSICAL EVIDENCE AND PAINT MARKS FOUND ON-SITE.
6. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES/TYPES IS SUBJECT TO NUMEROUS FIELD CONDITIONS, INCLUDING; THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS, MANHOLE CONFIGURATION, ETC.
7. ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION, THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.

20 0 20 40
SCALE: 1 INCH = 20 FT.

TOPOGRAPHIC PLAN

FOR

TIGHE & BOND

OF A PORTION OF

LONZA BIOLOGICS

101 INTERNATIONAL DRIVE

PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	W.D.C.	DATE:	MAY 26, 2022
CHECKED BY:	J.A.G.	DRAWING NO.	6822C
JOB NO.	6822	SHEET	1 OF 1

DOUCET SURVEY LLC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857 (603) 659-6560
Offices in Bedford & Keene, NH and Kennebunk, ME
http://www.doucetsurvey.com

LEGEND

- EXISTING LOT LINE
- APPROXIMATE ABUTTERS LOT LINE
- 100 MAJOR CONTOUR LINE
- 98 MINOR CONTOUR LINE
- RETAINING WALL
- CHAIN LINK FENCE
- HANDRAIL
- GUARDRAIL
- OHW OVERHEAD WIRE
- D DRAIN LINE
- SS SEWER LINE
- G GAS LINE
- CONCRETE
- RIP RAP
- LANDSCAPED AREA
- LANDSCAPED AREA BORDERED BY COBBLE STONES
- CRUSHED STONE
- BRICK
- LEDGE OUTCROP
- UTILITY POLE
- UTILITY POLE W/LIGHT
- LIGHT POST
- LIGHT POLE W/ARM
- LIGHT POLE (MULTI-ARMS)
- GROUND LIGHT
- DRAIN MANHOLE
- CATCH BASIN
- FES FLARED END SECTION
- SEWER MANHOLE
- CO CLEANOUT
- FIRE HYDRANT
- IRCV IRRIGATION CONTROL VALVE
- FAUCET
- F FIRE ALARM BOX
- UNIDENTIFIED UTILITY BOX
- M MANHOLE
- E ELECTRIC OUTLET
- SIGN
- FLAG POLE
- CONIFEROUS TREE 10" DIA. OR GREATER
- CONIFEROUS TREE LESS THAN 10" DIA.
- DECIDUOUS TREE 10" DIA. OR GREATER
- DECIDUOUS TREE LESS THAN 10" DIA.
- BORING LOCATION
- MONITORING WELL LOCATION
- BC BITUMINOUS CURB
- CONC. CONCRETE
- CONT. CONTINUE
- DYL DOUBLE YELLOW LINE
- EM ELECTRIC METER
- FF FINISHED FLOOR ELEVATION
- HDPE HIGH DENSITY POLYETHYLENE PIPE
- RCP REINFORCED CONCRETE PIPE
- SBB SLOPED BITUMINOUS BERM
- SWL SINGLE WHITE LINE
- TYP. TYPICAL
- UNK. UNKNOWN
- VCP VITREOUS CLAY PIPE
- VGC VERTICAL GRANITE CURB
- (X) INVERT I.D. CONNECTION UNKNOWN

FILE NAME: Y:\PROJECTS\6822 CDS\LANDLD DATA\SURVEY\2022-05-26\6822C 2022-05-26.dwg LAYOUT NAME: 22X34 TOPO PLAN (1) PLOTTED: Thursday, May 26, 2022 - 8:29pm

LONZA BIOLOGICS

CAFE EXPANSION
LIMIT OF WORK

PROPOSED MATERIAL
STAGING AREA (TYP)

Tighe&Bond

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER
PATRICK CRIMMINS
No. 12378
LICENSED
7/21/22

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER
NEIL A. HANSEN
No. 15227
LICENSED
7/21/22

0 40' 80'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

OVERALL EXISTING CONDITIONS

SCALE: AS SHOWN

C-101

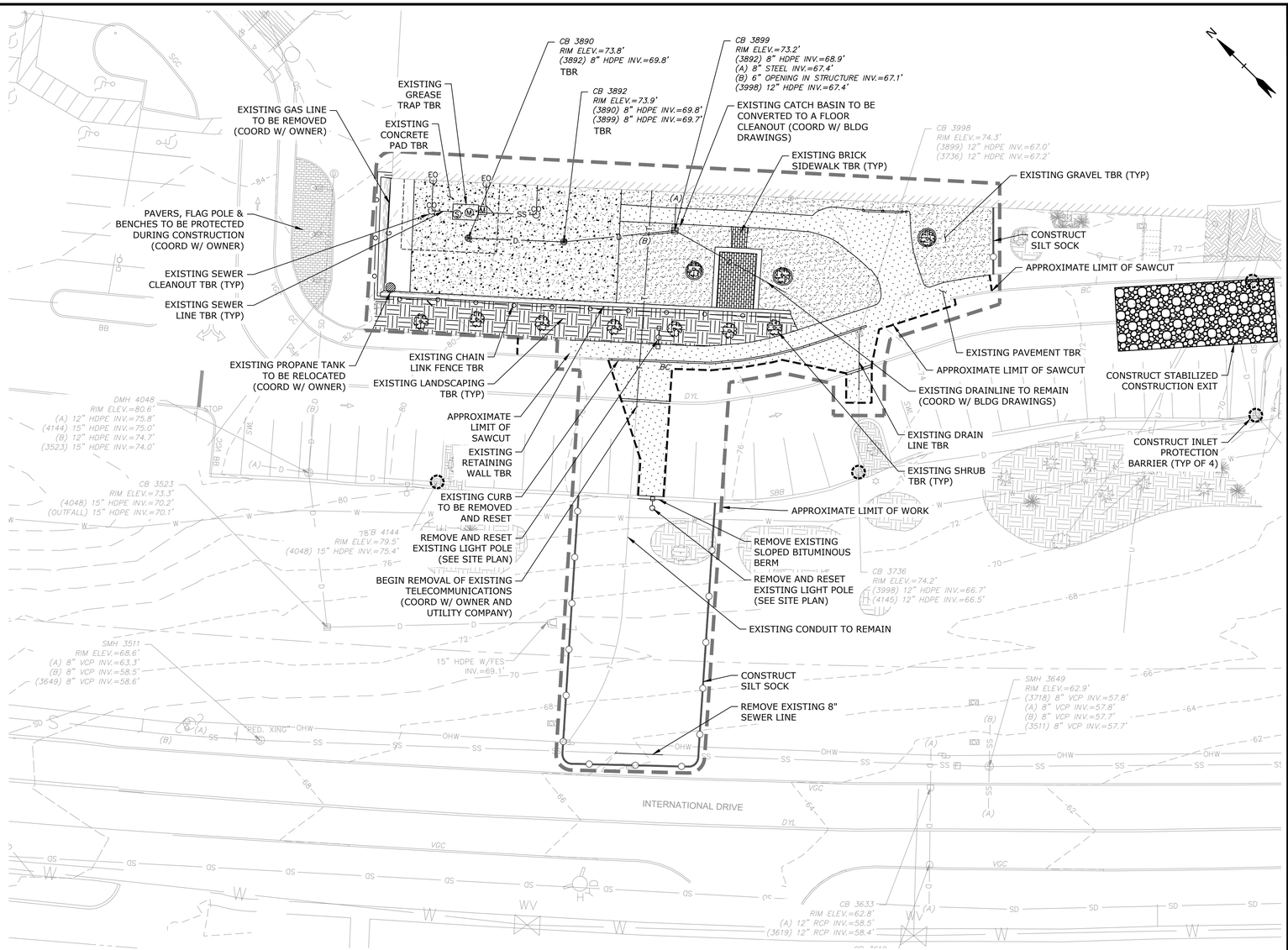
Last Saved: 7/21/2022
Plotted On: Jul 21, 2022 - 10:23am By: CKrzculk
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

DEMOLITION NOTES:

1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
3. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES EXCEPT AS SPECIFIED IN NOTE #22.
4. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
5. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
8. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS AND AS SPECIFIED IN NOTE #22.
10. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK.
11. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
12. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
13. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, UNDER GROUND PIPING, SEWER GREASE TRAP, AND SEWER LINES.
14. COORDINATE ALL WORK WITHIN THE PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
15. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
16. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
17. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
18. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
19. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
20. THE CONTRACTOR SHALL ACQUIRE A PDA DIG PERMIT BEFORE ANY DISTURBANCE CAN TAKE PLACE. ALLOW 7 CALENDAR DAYS FOR PROCESSING.
21. BEFORE ANY DEWATERING IS PERFORMED, COORDINATION BETWEEN THE APPLICANT, PDA, NHDES AND THE AIR FORCE IS REQUIRED TO DETERMINE PROPER PROCEDURES AND PERMITTING REQUIRED. AT A MINIMUM A NHDES TEMPORARY DISCHARGE PERMIT IS REQUIRED.
22. ALL EXCESS SOIL RESULTING FROM THE CONSTRUCTION SHALL REMAIN ON SITE. COORDINATE WITH OWNER AND PEASE DEVELOPMENT AUTHORITY ON FINAL LOCATION OF EXCESS MATERIALS. A SOIL MANAGEMENT PLAN SHALL BE PREPARED FOR THE RELOCATION OF ANY CONTAMINATED MATERIALS TO BE RELOCATED DURING CONSTRUCTION.
23. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
24. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE EXISTING BUSINESS THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED. ABUTTER.

EXISTING CONDITIONS NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN IS BASED ON SURVEY DRAWINGS PROVIDED BY DOUCET SURVEY TITLED "FOR TIGHE & BOND", DATED MAY 26, 2022.
2. THE DRAWINGS ARE BASED ON THE FOLLOWING DATUMS: HORIZONTAL NAD83; VERTICAL NAVD88.
3. CONTOUR LINES INDICATE ELEVATION CHANGE IN TWO FOOT INTERVALS.



LEGEND

	APPROXIMATE LIMIT OF PROPOSED SAW CUT
	LIMIT OF WORK
	PROPOSED SILT SOCK
	APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
	INLET PROTECTION SILT SACK
TBR	TO BE REMOVED
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
DMH	DRAIN MANHOLE
CB	CATCH BASIN
	EXISTING TREES/SHRUBS
	EXISTING SHRUBS TBR

Tighe&Bond

STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 7/21/22

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 7/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE: AS SHOWN

C-101.1

Last Saved: 7/21/2022
Plotted On: Jul 21, 2022 - 10:24am By: CKrzcuik
Tighe & Bond: J:\L\0700 Lonza Biologics Expansion was 1576\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

SITE DATA BLOCK

LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH NH, 03801

APPLICANT: LONZA BIOLOGICS, INC.
101 INTERNATIONAL DRIVE
PORTSMOUTH NH, 03801

LOCATION: 101 INTERNATIONAL DRIVE
PORTSMOUTH NH, 03801
MAP 305 LOT 6

ZONING DISTRICT: AIRPORT BUSINESS AND COMMERCIAL ZONE (ABC)

PROPOSED USES: OFFICE/MANUFACTURING/RESEARCH AND DEVELOPMENT

DEVELOPMENT STANDARDS

AREA, YARD, AND HEIGHT REQUIREMENTS

	REQUIRED/ALLOWED	PROPOSED/PROVIDED
MINIMUM LOT AREA	5 ACRES	46.02 ACRES
MINIMUM LOT FRONTAGE	200 FEET	1038 FEET
MINIMUM FRONT YARD	70 FEET	112± FEET
MINIMUM SIDE YARD	30 FEET	30± FEET (EXISTING)
MINIMUM REAR YARD	50 FEET	50± FEET (EXISTING)
MAXIMUM BUILDING HEIGHT	FAA CRITERIA	86 FEET
MINIMUM OPEN SPACE	25% OF LOT AREA	38.1%

OFF-STREET PARKING REQUIREMENTS:

PARKING SPACES REQUIRED:

INDUSTRIAL:		
2 SPACES PER 3 EMPLOYEES	LARGEST SHIFT:	
ON LARGEST SHIFT	740 EMPLOYEES	494 SPACES
FUTURE EMPLOYEES	1250 EMPLOYEES	834 SPACES
COMPANY VEHICLES:		
1 SPACE PER VEHICLE	1 VEHICLE	1 SPACE
TOTAL MINIMUM PARKING SPACES REQUIRED =		1,329 SPACES

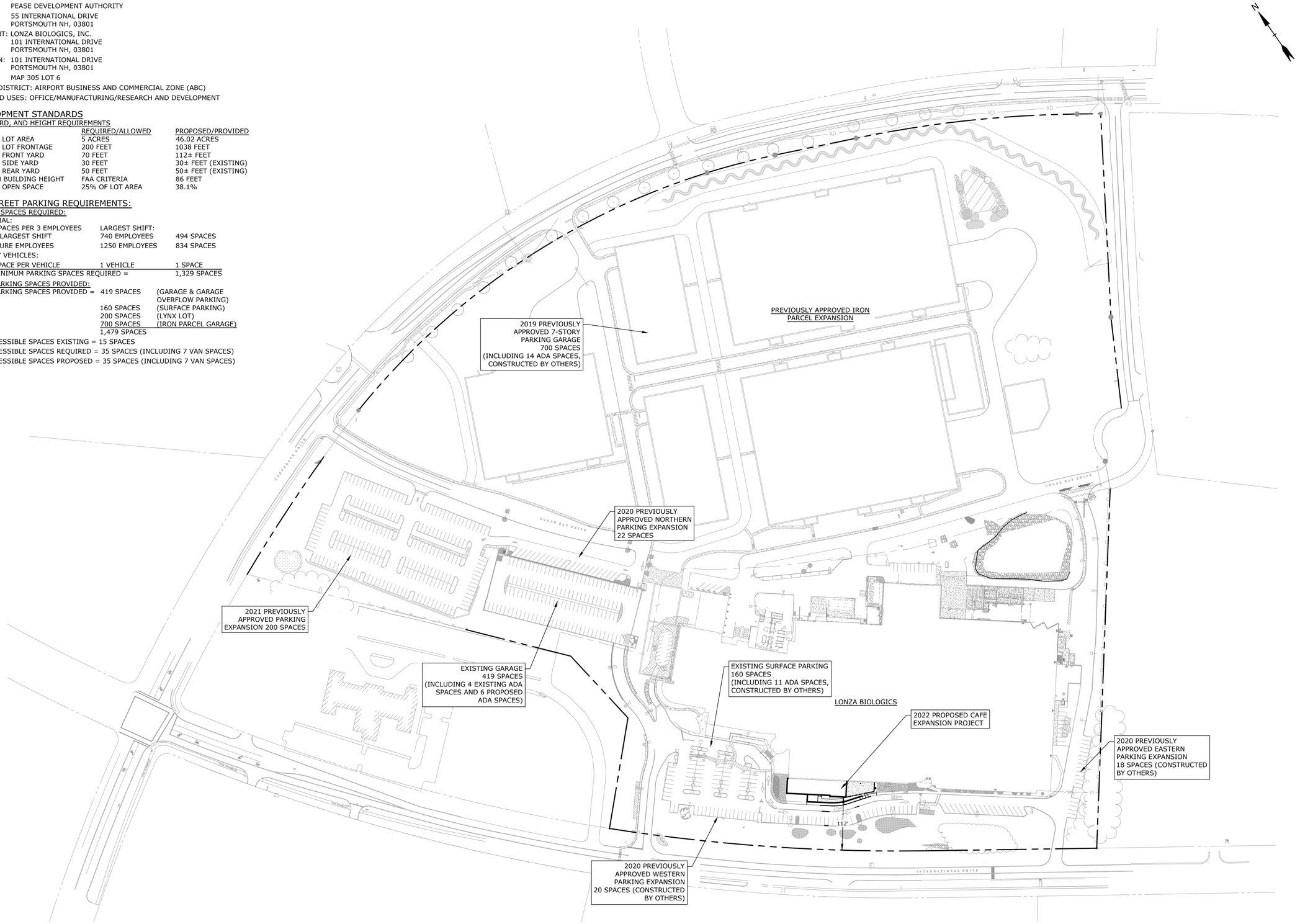
TOTAL PARKING SPACES PROVIDED:

TOTAL PARKING SPACES PROVIDED =	419 SPACES	(GARAGE & GARAGE OVERFLOW PARKING)
	160 SPACES	(SURFACE PARKING)
	200 SPACES	(LYNX LOT)
	700 SPACES	(IRON PARCEL GARAGE)
	1,479 SPACES	

ADA ACCESSIBLE SPACES EXISTING = 15 SPACES

ADA ACCESSIBLE SPACES REQUIRED = 35 SPACES (INCLUDING 7 VAN SPACES)

ADA ACCESSIBLE SPACES PROPOSED = 35 SPACES (INCLUDING 7 VAN SPACES)



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STATE OF NEW HAMPSHIRE – PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER – 7/21/22

STATE OF NEW HAMPSHIRE – NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER – 7/21/22

0 100' 200'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

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APPROVED BY:	PMC

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Last Saved: 7/21/2022
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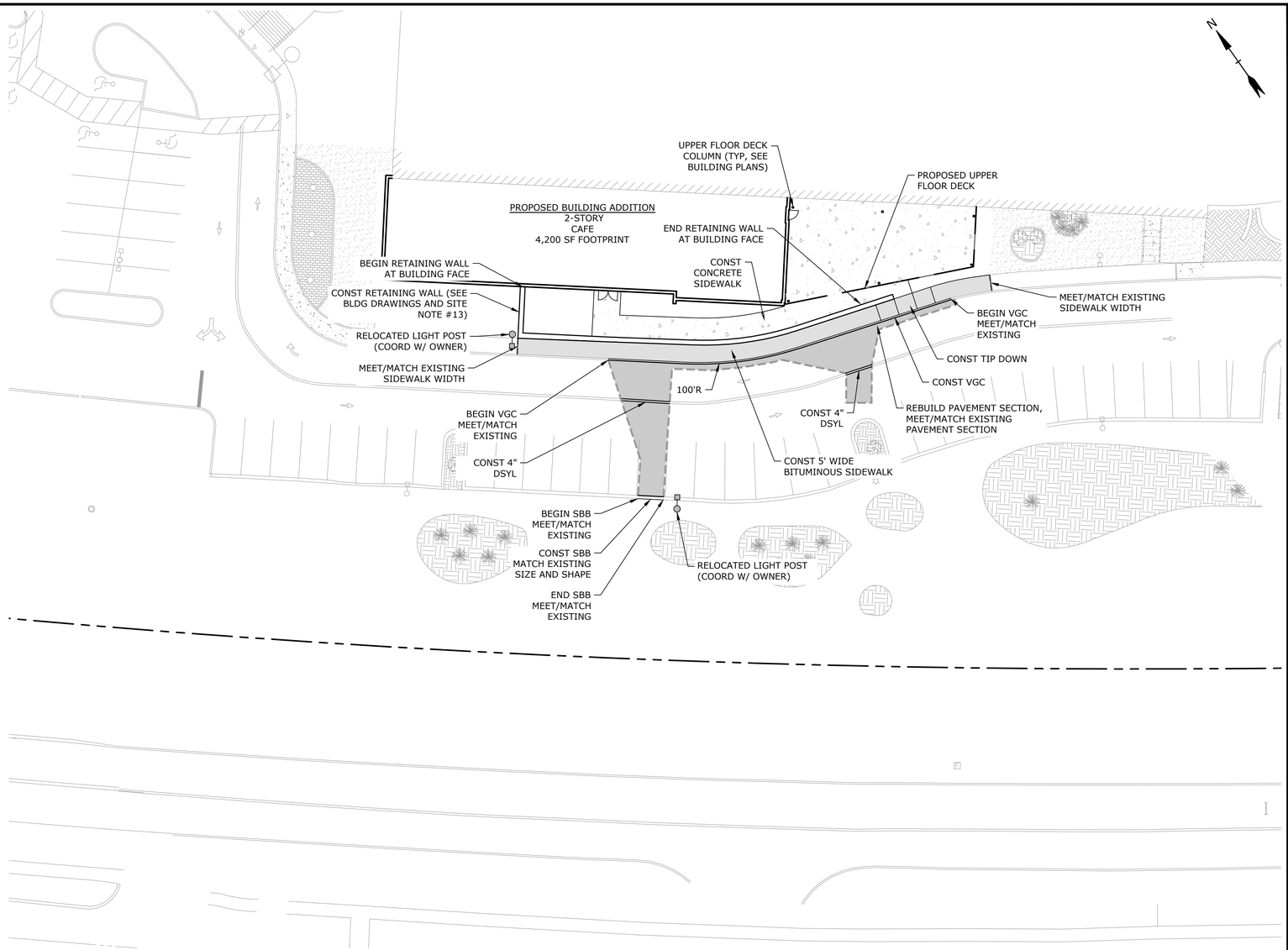
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576R\023_Cafe Expansion\Drawings, Figures\AutoCAD\L-0700-023-C-DSGN.dwg

SITE NOTES:

1. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
2. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
4. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH.
5. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
6. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
7. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED.
8. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
9. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
10. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO RELEASE OF BOND, THE APPLICANT SHALL SUBMIT A LETTER TO THE PEASE DEVELOPMENT AUTHORITY, SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER, STATING CONSTRUCTION HAS BEEN COMPLETED IN CONFORMANCE WITH THE APPROVED PLANS.
11. STRIPE PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES AND ARROWS SHALL BE CONSTRUCTED USING WHITE TRAFFIC PAINT. STOP BARS SHALL BE THERMOPLASTIC MATERIAL. THERMOPLASTIC MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO AASHTO M249. (ALL MARKINGS EXCEPT STOP BARS TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT. ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F").
12. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
13. RETAINING WALL SHALL BE DESIGNED AND STAMPED BY A NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER AND SHALL BE SUBMITTED TO PEASE DEVELOPMENT AUTHORITY FOR REVIEW.
14. IF A CRANE IS TO BE UTILIZED FOR CONSTRUCTION, CONTRACTOR SHALL SUBMIT FAA FORM 7460-1.



LEGEND

	PROPERTY LINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED BITUMINOUS SIDEWALK
	PROPOSED PAVEMENT SECTION
	PROPOSED CONCRETE PAD
	RETAINING WALL
	PROPOSED BUILDING
	PROPOSED UPPER FLOOR AREA
	PROPOSED SAWCUT LINE
	RELOCATED LIGHT POLE
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
VGC	VERTICAL GRANITE CURB
SF	SQUARE FOOT
W/	WITH
SBB	SLOPED BITUMINOUS BERM

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS - No. 12378 - LICENSED PROFESSIONAL ENGINEER
7/21/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN - No. 15227 - LICENSED PROFESSIONAL ENGINEER
7/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

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CHECKED BY:	NAH
APPROVED BY:	PMC

SITE PLAN

SCALE: AS SHOWN

C-102.1

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EROSION CONTROL NOTES:

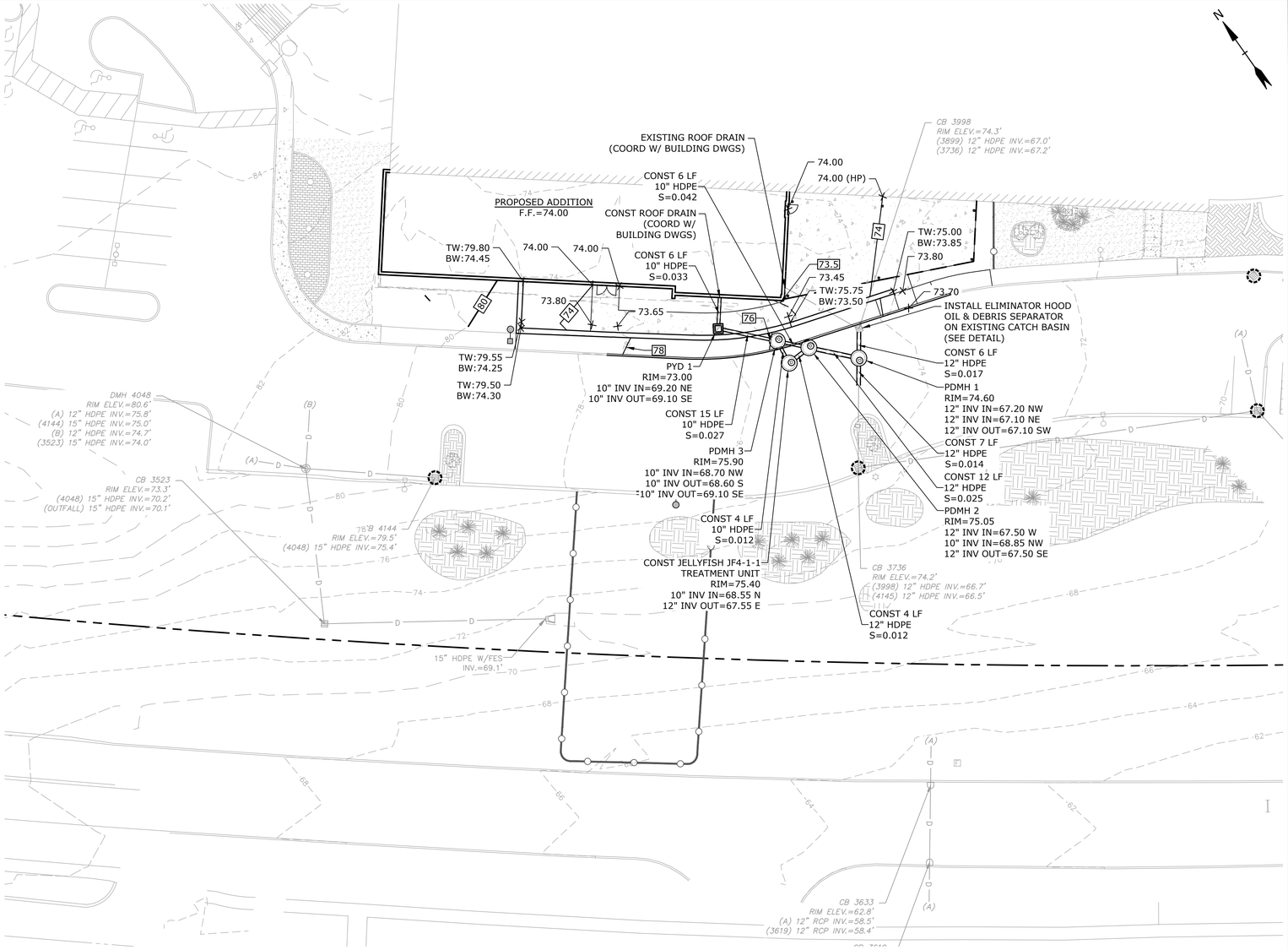
1. INSTALL EROSION CONTROL BARRIERS AS SHOWN AS FIRST ORDER OF WORK.
2. SEE GENERAL EROSION CONTROL NOTES ON "EROSION CONTROL NOTES & DETAILS SHEET".
3. PROVIDE INLET PROTECTION AROUND ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. MAINTAIN FOR THE DURATION OF THE PROJECT.
4. INSTALL STABILIZED CONSTRUCTION EXIT(S).
5. INSPECT INLET PROTECTION AND PERIMETER EROSION CONTROL MEASURES DAILY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
6. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER AND MULCH.
7. CONSTRUCT EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1.
8. PRIOR TO ANY WORK OR SOIL DISTURBANCE COMMENCING ON THE SUBJECT PROPERTY, INCLUDING MOVING OF EARTH, THE APPLICANT SHALL INSTALL ALL EROSION AND SILTATION MITIGATION AND CONTROL MEASURES AS REQUIRED BY STATE AND LOCAL PERMITS AND APPROVALS.
9. CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, SPRINKLING WATER ON UNSTABLE SOILS SUBJECT TO ARID CONDITIONS.
10. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
11. ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN FULLY PAVED. PROVIDE COPIES OF REPORT TO PEASE DEVELOPMENT AUTHORITY.
12. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED WITH PERIMETER CONTROLS AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS.
13. SAFETY FENCING SHALL BE PROVIDED AROUND STOCKPILES OVER 10 FT.
14. CONCRETE TRUCKS WILL BE REQUIRED TO WASH OUT (IF NECESSARY) SHOOTS ONLY WITHIN AREAS WHERE CONCRETE HAS BEEN PLACED. NO OTHER WASH OUT WILL BE ALLOWED.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

   * ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
2. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. CONTRACTOR TO VERIFY BENCHMARK LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
3. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL).
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
5. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS.
6. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION. PROVIDE COPIES OF REPORT TO PEASE DEVELOPMENT AUTHORITY.
7. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
9. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
10. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
11. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.
12. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
13. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.



LEGEND

80	PROPOSED MAJOR CONTOUR LINE
78	PROPOSED MINOR CONTOUR LINE
	PROPOSED DRAIN LINE (TYP)
	PROPOSED SILT SOCK
	INLET PROTECTION SILT SACK
	PROPOSED DRAIN MANHOLE
	PROPOSED YARD DRAIN
D	EXISTING DRAIN MANHOLE
	EXISTING CATCH BASIN
TYP	TYPICAL
PYD	PROPOSED YARD DRAIN
INV	INVERT
PDMH	PROPOSED DRAIN MANHOLE
CONST	CONSTRUCT
TW	TOP OF WALL
BW	BOTTOM OF WALL
COORD	COORDINATE
W/	WITH
LF	LINEAR FEET
HDPE	HIGH DENSITY POLYETHYLENE
F.F.	FINISH FLOOR

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 7/21/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 7/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

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CHECKED BY:	NAH
APPROVED BY:	PMC

GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

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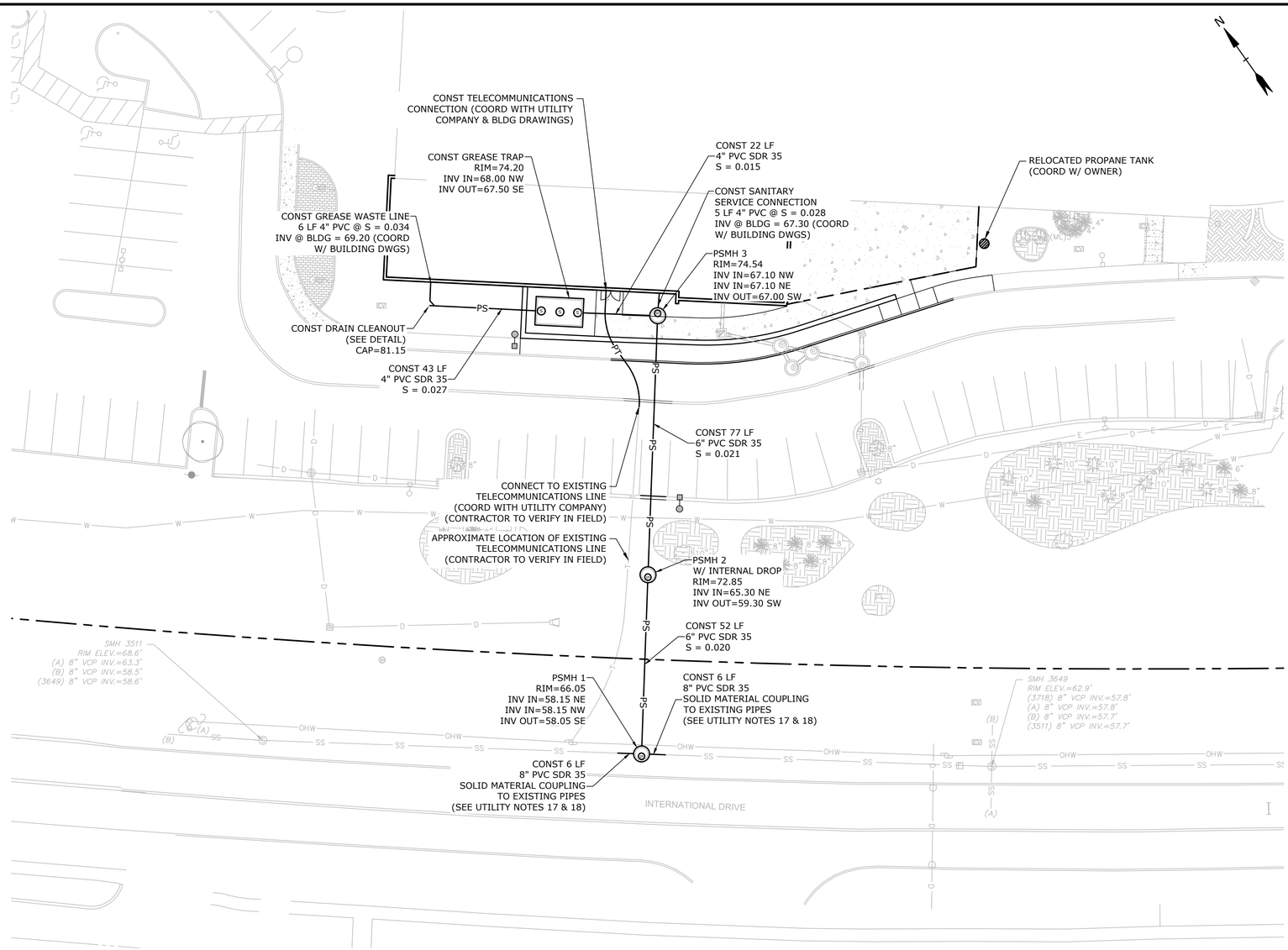
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

UTILITY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - COMMUNICATIONS - CONSOLIDATED COMMUNICATIONS
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
5. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
6. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
7. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
8. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
9. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
10. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCHES FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
11. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF PEASE DEVELOPMENT AUTHORITY AND THE CITY OF PORTSMOUTH.
12. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
13. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
14. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
15. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
16. CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLARS AND IN DIGITAL FORMAT (.DWG FILES) TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER.
17. SOLID MATERIAL COUPLINGS SHALL BE USED FOR CONNECTIONS TO THE EXISTING SEWER. COUPLINGS SHALL BE APPROVED BY THE CITY OF PORTSMOUTH SEWER DEPARTMENT PRIOR TO INSTALLATION.
18. CONTRACTOR SHALL APPROPRIATELY DISPOSE OF ASBESTOS CEMENT PIPES SHOULD ANY BE FOUND DURING CONSTRUCTION.



LEGEND

W	EXISTING WATER
D	EXISTING STORM DRAIN
G	EXISTING GAS
OHW	EXISTING OVERHEAD WIRE
SS	EXISTING SEWER
PT	PROPOSED TELECOMMUNICATIONS LINE
PS	PROPOSED SEWER LINE
	PROPOSED SEWER MANHOLE
	PROPOSED GREASE TRAP
	RELOCATED PROPANE TANK
	RELOCATED LIGHT POLE BASE AND FIXTURES
	EXISTING CATCH BASIN
S	EXISTING SEWER MANHOLE
E	EXISTING ELECTRIC MANHOLE
	EXISTING HYDRANT
TYP	TYPICAL
INV	INVERT
PSMH	PROPOSED SEWER MANHOLE
CONST	CONSTRUCT
LF	LINEAR FEET
COORD	COORDINATE
BLDG	BUILDING
W/	WITH

Tighe&Bond

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GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

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APPROVED BY:	PMC

UTILITY PLAN

SCALE: AS SHOWN

C-104

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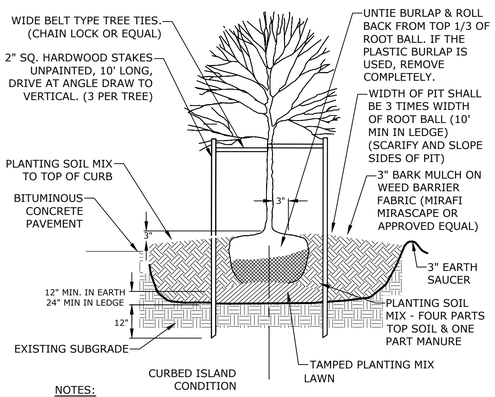
Tighe & Bond: J:\L\0700 Lonza Biologics Expansion was 15726\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
2. ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
3. PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
4. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
5. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
6. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
9. THREE INCHES (3") OF BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS TO BE USED IN A CURBED ISLAND THE BARK MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
10. SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
11. TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR.
12. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
13. PARKING AREA PLANTED ISLANDS TO HAVE MINIMUM OF 1'-0" TOPSOIL PLACED TO WITHIN 3 INCHES OF THE TOP OF CURB ELEVATION. REMOVE ALL CONSTRUCTION DEBRIS BEFORE PLACING TOPSOIL.
14. TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 'TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES.
15. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
16. EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
17. THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
18. UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
20. PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

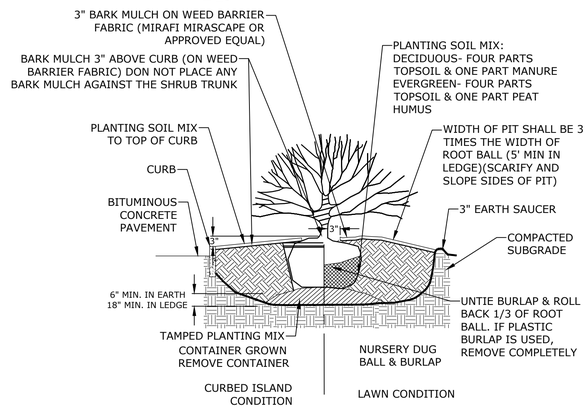
PLANT SCHEDULE				
CODE		COMMON NAME	SIZE	REMARKS
TREES				
PC	PRUNUS CERASIFERA "THUNDERCLOUD"	THUNDERCLOUD PLUMB	2-2 ½" CALIPER	B & B
SHRUBS				
JC	JUNIPERUS COMMUNIS 'BLUEBERRY DELIGHT'	BLUEBERRY DELIGHT JUNIPER	3 GALLON	CONTAINER
RP	RHODODENDRON 'PJM PINK DELIGHT'	RHODODENDRON	5 GALLON	CONTAINER
VT	VIBURNUM TRILOBUM 'COMPACTA'	COMPACT AMERICAN CRANBERRY	5 GALLON	CONTAINER



NOTES:
1. PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED OR WITHIN 2" ABOVE.
2. NEW TREE ROOT FLARES SHALL BE PLANTED AT FINISH GRADE.

DECIDUOUS TREE PLANTING

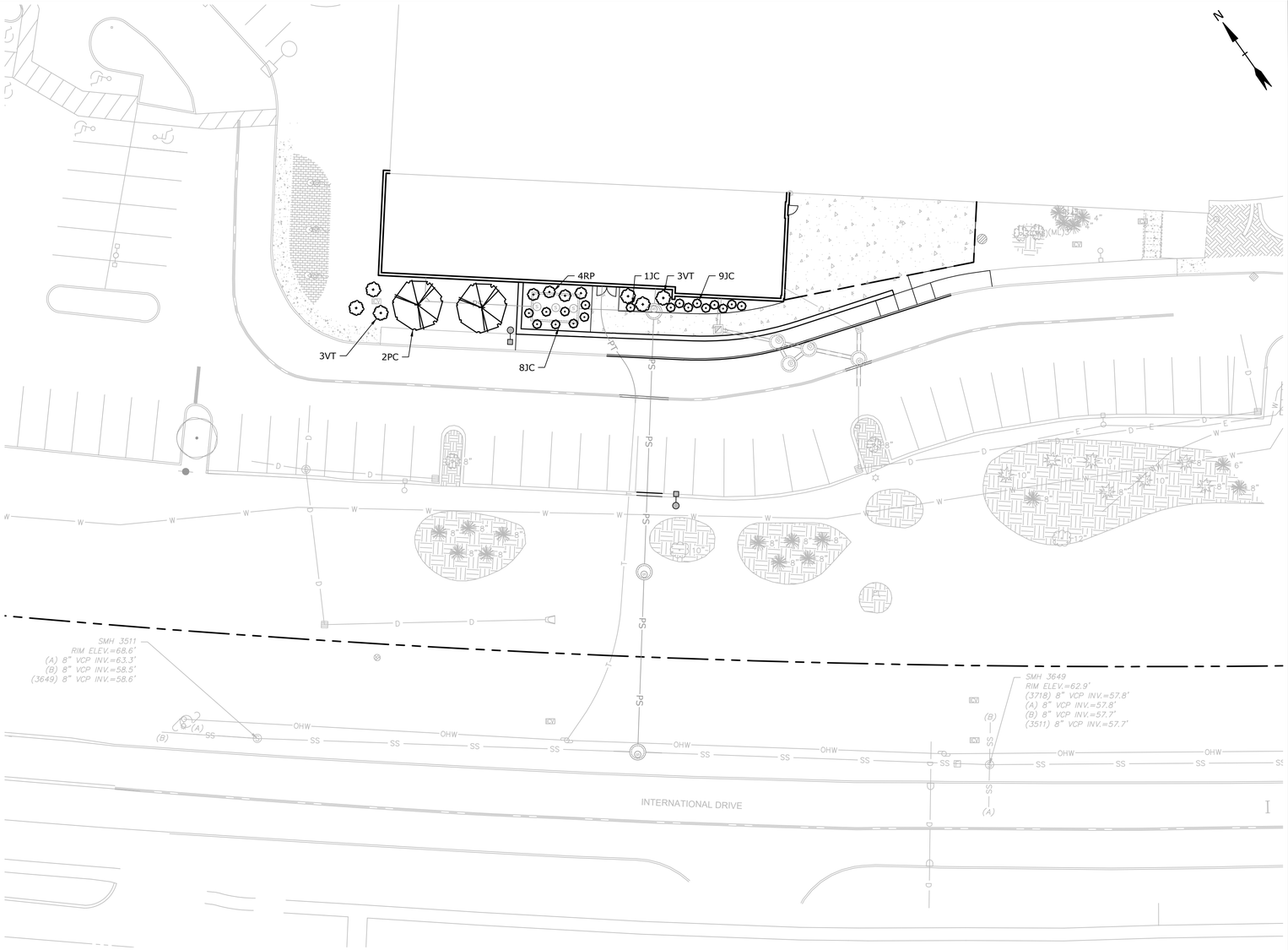
NO SCALE



NOTE:
1. PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING

NO SCALE



LEGEND

PROPOSED DECIDUOUS TREE

PROPOSED SHRUB

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS - No. 12378 - LICENSED PROFESSIONAL ENGINEER
7/21/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN - No. 15227 - LICENSED PROFESSIONAL ENGINEER
7/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

LANDSCAPE PLAN

SCALE: AS SHOWN

C-105

Last Saved: 7/21/2022
Plotted On: Jul 21, 2022 10:27am By: CKrzculk
Tighe & Bond: J:\L\0700 Lonza Biologics Expansion was 1576\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

GENERAL PROJECT INFORMATION

PROJECT LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
PROJECT APPLICANT: LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
PROJECT ADDRESS: 101 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 43°-04'-57"N
PROJECT LONGITUDE: 70°-48'-16"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE EXPANSION OF LONZA BIOLOGICS CAFE FACILITIES, WHICH INCLUDES THE CONSTRUCTION OF A 4,200 SF, 2-STORY ADDITION AND ASSOCIATED SITE IMPROVEMENTS.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.40 ACRES.

SOIL CHARACTERISTICS

BASED ON THE WEB SOIL SURVEY REPORT GENERATED ON MAY 10TH 2022, THE SITE SOILS CONSIST OF URBAN LAND AND THEREFORE DO NOT HAVE AN ASSOCIATED DRAINAGE CLASS.

NAME OF RECEIVING WATERS

THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO HODGSON BROOK

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - CONTROL OF DUST
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 7.6;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.

3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

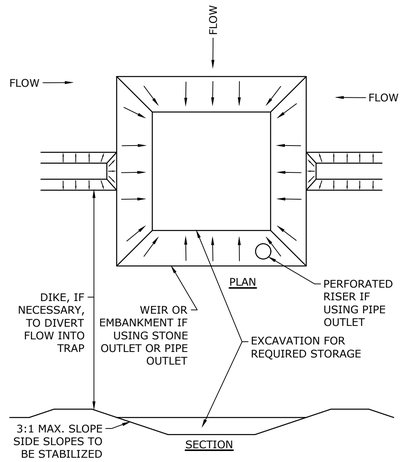
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      i. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO PEASE DEVELOPMENT AUTHORITY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

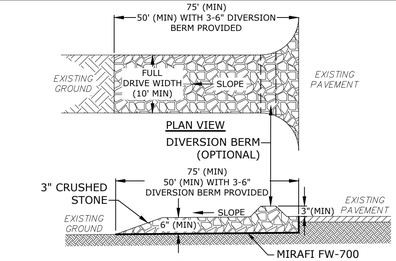
EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

THIS PROJECT DOES NOT EXCEED ONE (1) ACRE OF DISTURBANCE AND THUS DOES NOT REQUIRES A SWPPP.



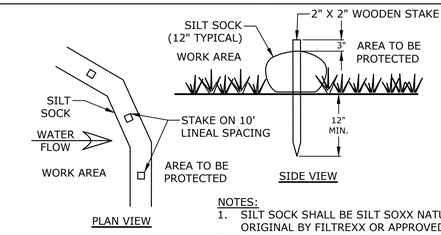
NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

SEDIMENT TRAP
NO SCALE



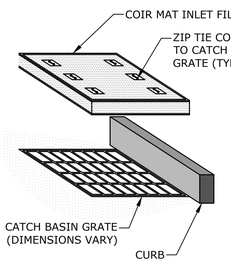
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING O SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABALIZED CONSTRUCTION EXIT
NO SCALE



NOTES:
1. SILT SOCK SHALL BE SILT SOXX NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK
NO SCALE



NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
7/21/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
7/21/22

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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DATE:	June 27, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

EROSION CONTROL NOTES & DETAILS

SCALE: AS SHOWN

C-501

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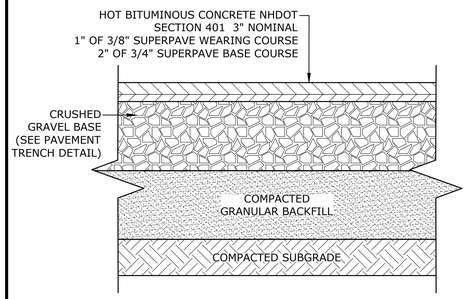
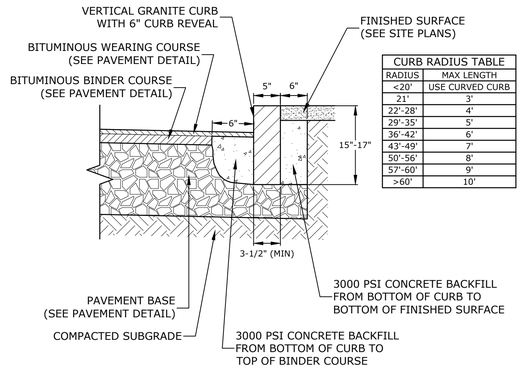


NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

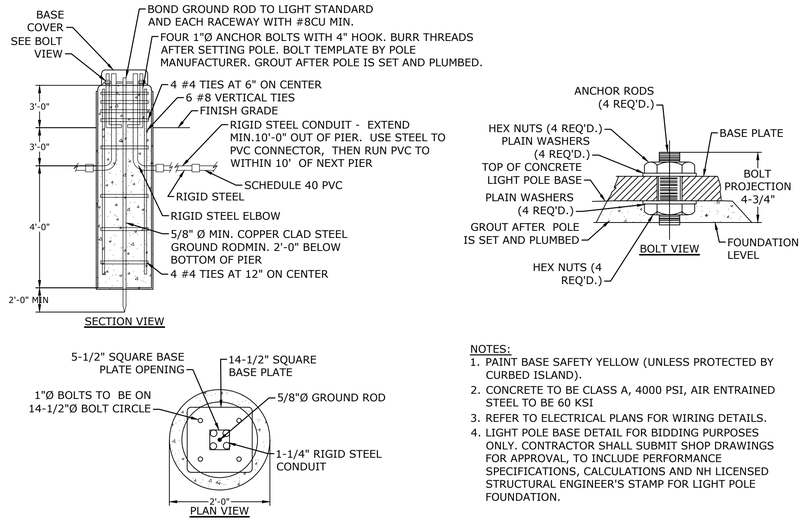
TYPICAL PAVEMENT SECTION
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE



NOTES:
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
4. LIGHT POLE BASE DETAIL FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.

TYPICAL LIGHT POLE BASE
NO SCALE

NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS
2. PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

SIDEWALK TIP-DOWN RAMP
NO SCALE

NOTE:
1. COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE

NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA
NO SCALE

NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH, LOCATIONS AND CURB TYPE.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDESLOPE GRADES.

BITUMINOUS CONCRETE SIDEWALK
NO SCALE

CONCRETE SIDEWALK
NO SCALE

NOTE:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE

Tighe&Bond

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Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

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APPROVED BY:	PMC

DETAILS

SCALE: AS SHOWN

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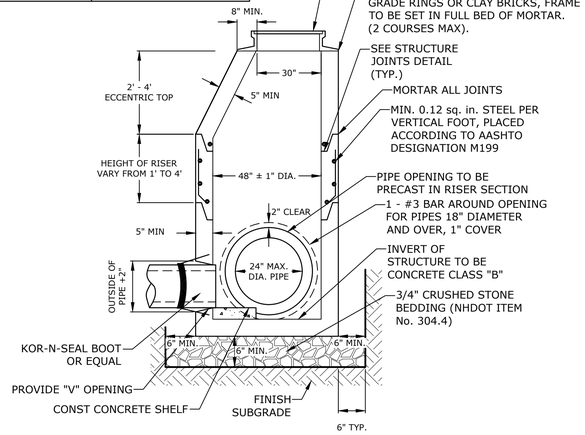
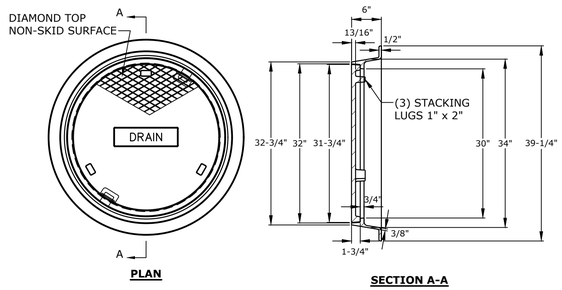
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\023. Cafe Expansion\Drawings. Figures\AutoCAD\L-0700-023-C-DTLS.dwg

NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



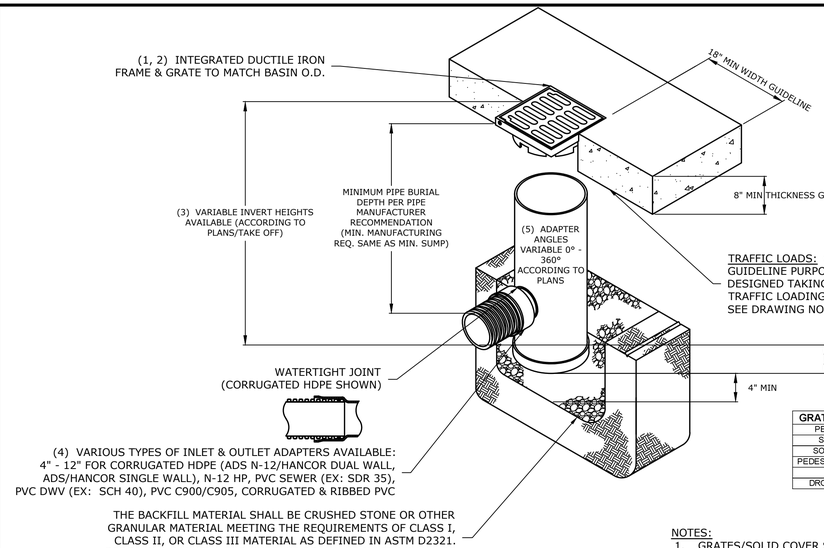
NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

4' DIAMETER DRAIN MANHOLE
NO SCALE



NOTES:
1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

DRAIN MANHOLE FRAME & COVER
NO SCALE

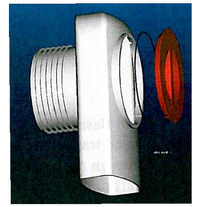


GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1299CGP	7001-110-202
STANDARD	MEETS H-20	1299CGS	7001-110-203
SOLID COVER	MEETS H-20	1299CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1299CGPB	7001-110-205
DOME	N/A	1299CGD	7001-110-206
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-021

TYPICAL SECTION

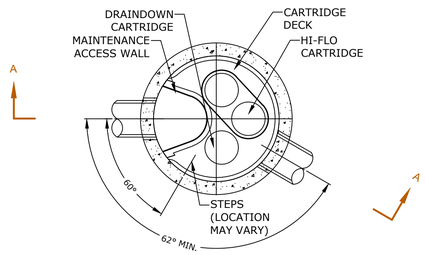
YARD DRAIN
NO SCALE

NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
5. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.



NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL "FLOATING DEBRIS TRAP
NO SCALE



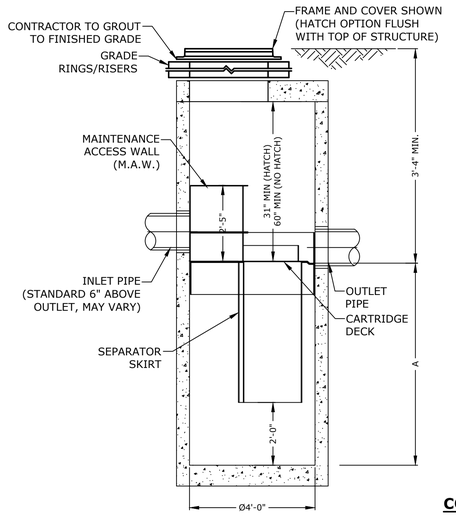
PLAN VIEW

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN. Ø48" MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 0.45 CFS. IF THE SITE CONDITIONS EXCEED 0.45 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE DEPTH	54"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-5"
FLOW RATE HIGH-FLO / DRAINDOWN (cfs) (per cart)	0.18 / 0.09
MAX. CARTS HIGH-FLO / DRAINDOWN	2 / 1

SITE SPECIFIC DATA REQUIREMENTS	
STRUCTURE ID	4'
WATER QUALITY FLOW RATE (cfs)	0.15
# OF CARTRIDGES REQUIRED (HF / DD)	(1/1)
CARTRIDGE SIZE	54"



SECTION A-A

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

CONTECH JELLYFISH JF4-1-1
NO SCALE

Tighe&Bond

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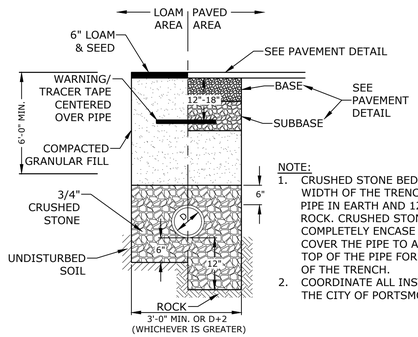
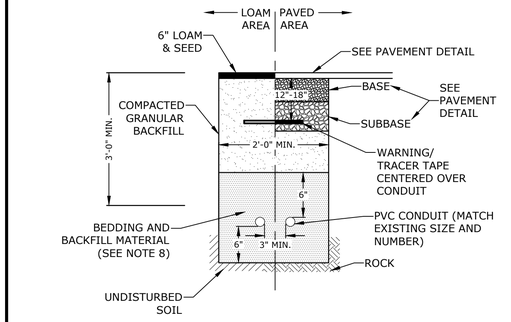


NOTE:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

SEWER SERVICE TRENCH
NO SCALE

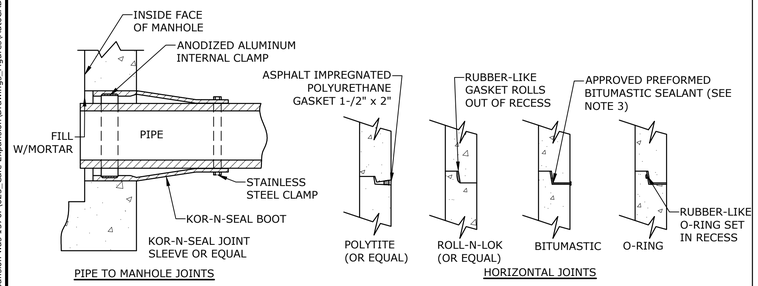


GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BEDDING	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX

NOTES:
1. DIMENSIONS SHOWN REPRESENT MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
2. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
3. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
4. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
5. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
6. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
7. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.
8. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW CONDUIT UP TO 6" ABOVE TOP OF CONDUIT.

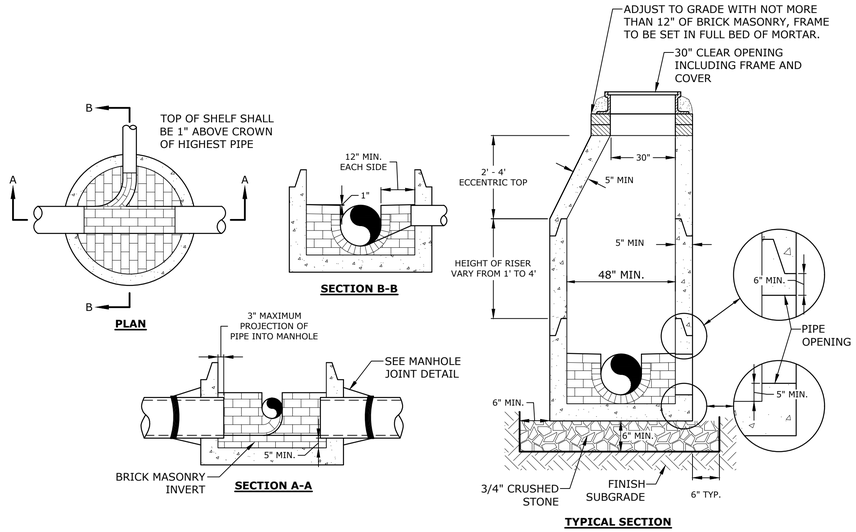
COMMUNICATION CONDUIT TRENCH
NO SCALE



PIPE TO MANHOLE JOINTS — HORIZONTAL JOINTS

NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

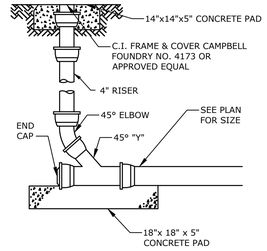
MANHOLE JOINTS
NO SCALE



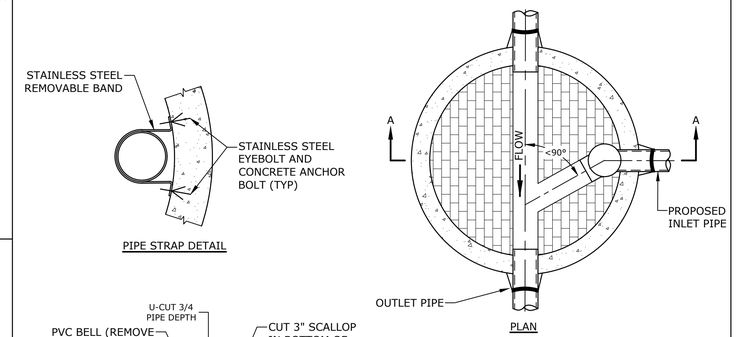
TYPICAL SECTION

NOTES:
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
3. INVERT BRICKS SHALL BE LAID ON EDGE.
4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

SEWER MANHOLE
NO SCALE

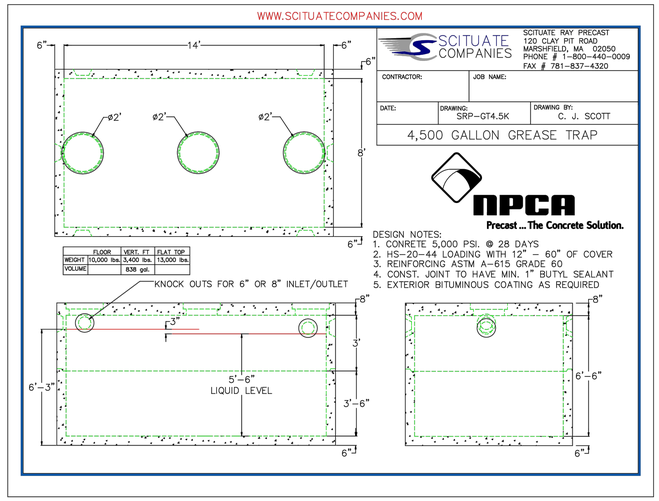


CLEAN-OUT
NO SCALE



NOTES:
1. RISER PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF SDR35 PVC PIPE.
2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS.
3. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

INSIDE DROP MANHOLE
NO SCALE



4,500 GALLON GREASE TRAP
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE - PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 7/21/22

STATE OF NEW HAMPSHIRE - NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 7/21/22

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

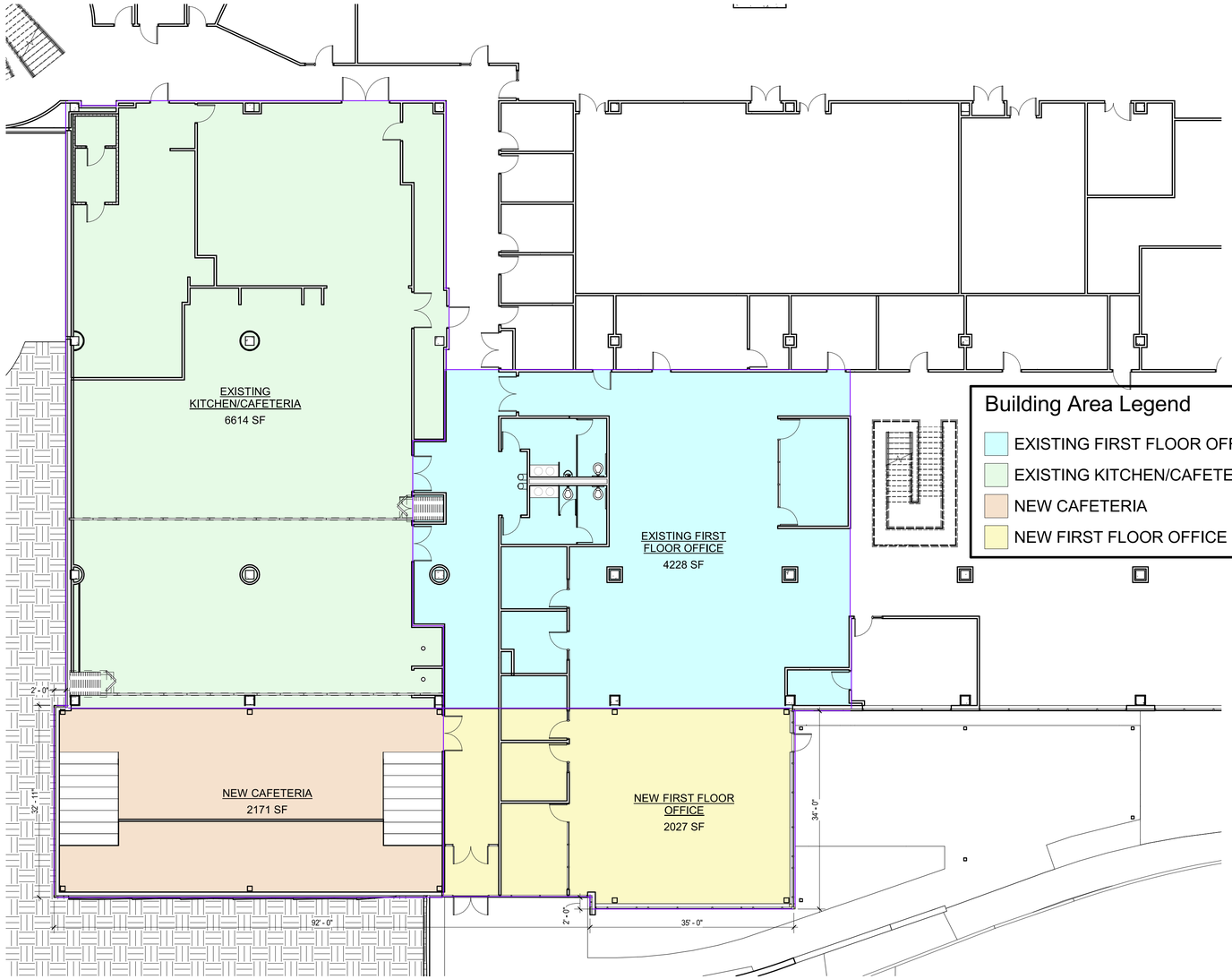
PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS

SCALE: AS SHOWN

C-504

Last Saved: 7/19/2022
Plotted On: Jul 21, 2022-11:28am By: CKrzcuik
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 15756\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DTLS.dwg



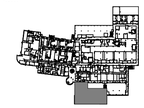
Building Area Legend

EXISTING FIRST FLOOR OFFICE	4228 SF	TOTAL EXISTING 10,842 SF
EXISTING KITCHEN/CAFETERIA	6614 SF	
NEW CAFETERIA	2171 SF	TOTAL PROPOSED 4197 SF
NEW FIRST FLOOR OFFICE	2026 SF	

1 PROPOSED FIRST FLOOR - AREA PLAN
SCALE: 3/32" = 1'-0"

Notes:

Key Plan:



Architect's Stamp:

Project:
Lonza Addition

Street Address
City, ST 00000

Client:
Lonza

Street, City

Project #: 22xxx
Scale: 3/32" = 1'-0"

Issue:	Date:
Schematic Design	06/07/2022

Revisions:	Date:

Drawing Title:
FIRST FLOOR AREA PLAN

Sheet Number:
AP-101

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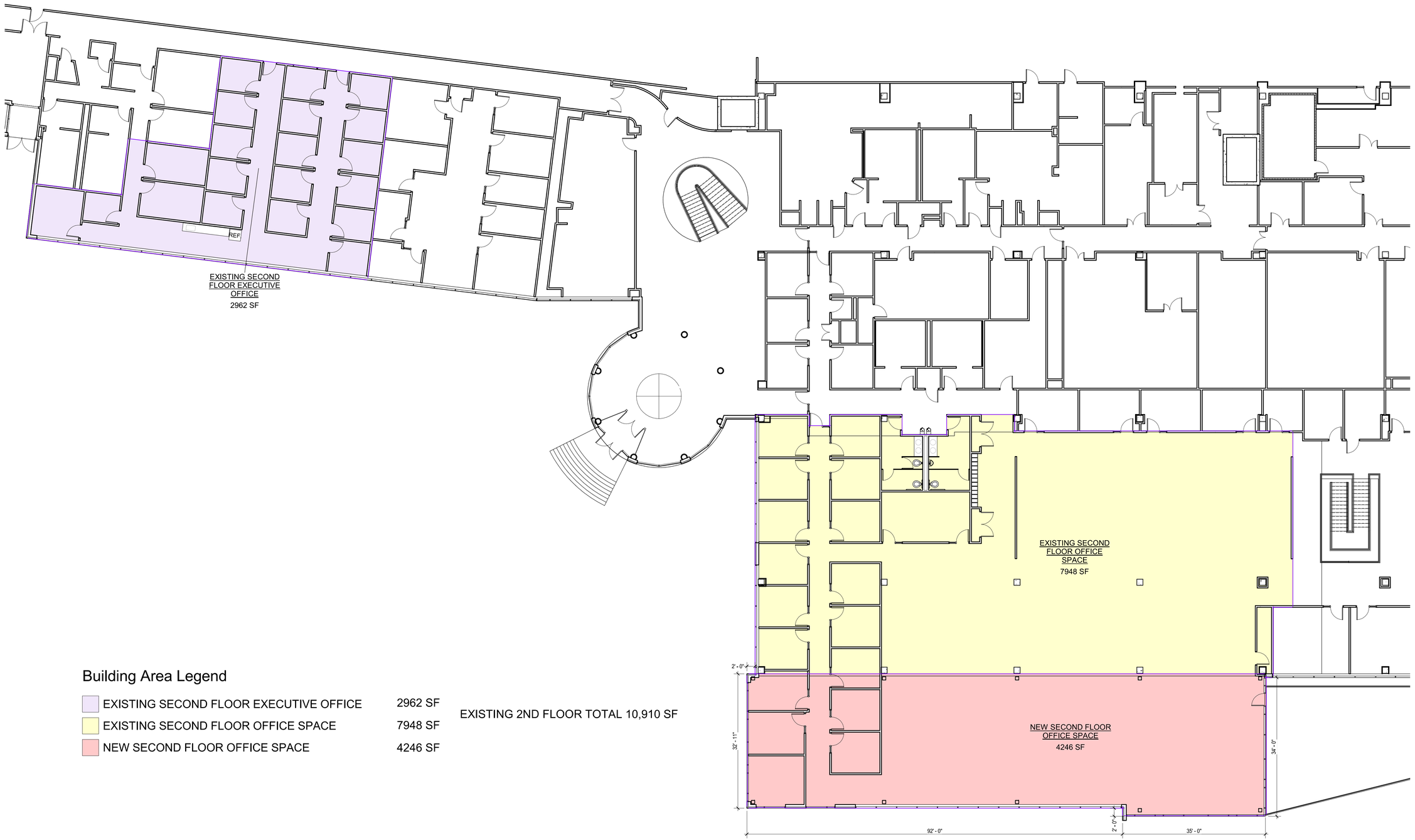


Building Area Legend

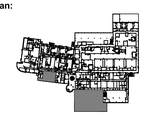
EXISTING SECOND FLOOR EXECUTIVE OFFICE	2962 SF
EXISTING SECOND FLOOR OFFICE SPACE	7948 SF
NEW SECOND FLOOR OFFICE SPACE	4246 SF

EXISTING 2ND FLOOR TOTAL 10,910 SF

1 PROPOSED SECOND FLOOR - AREA PLAN
SCALE: 3/32" = 1'-0"

Notes:

Key Plan:



Architect's Stamp:

Project:
Lonza Addition

Street Address
City, ST 00000

Client:
Lonza

Street, City

Project #: 22xxx
Scale: 3/32" = 1'-0"

Issue:	Date:
Schematic Design	06/07/2022

Revisions:	Date:

Drawing Title:
SECOND FLOOR AREA PLAN

Sheet Number:
AP-102

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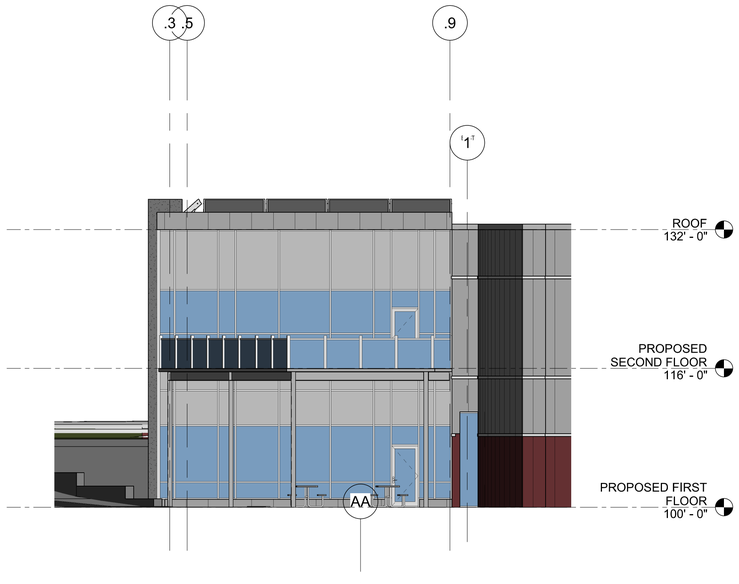
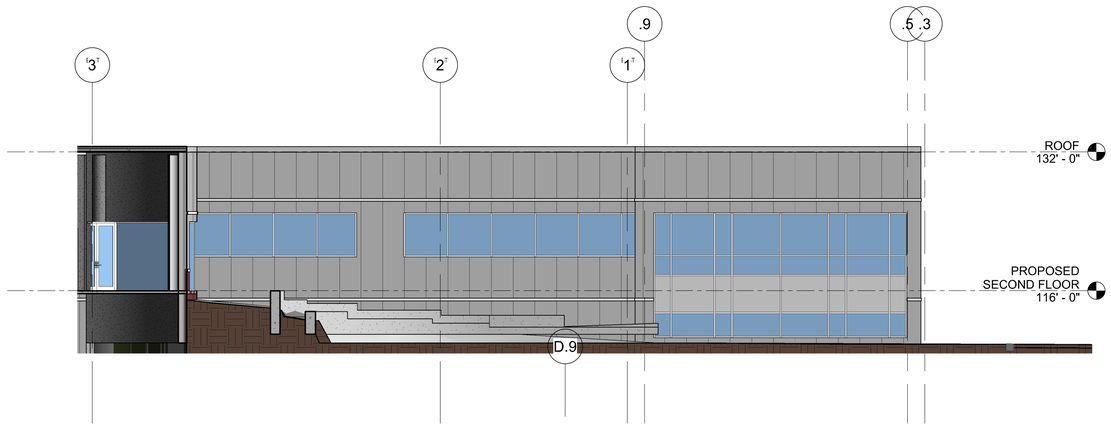
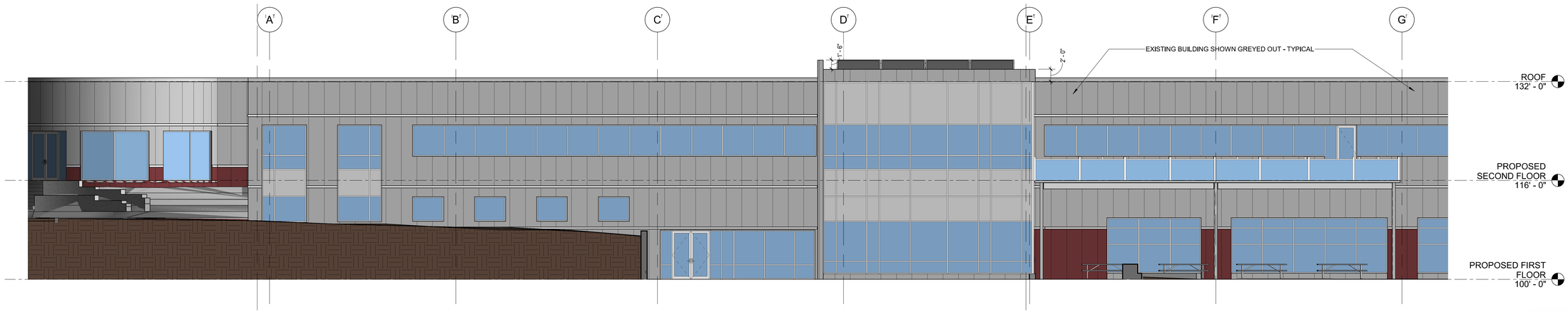


2 EAST ELEVATION
SCALE: 1/8" = 1'-0"



3 WEST ELEVATION
SCALE: 1/8" = 1'-0"



1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

Lonza, Café Expansion - City of Portsmouth TAC STIPULATION RESPONSE Date: July 21, 2022

City of Portsmouth TAC, July 5, 2022:			
	TAC Stipulation	**Applicant Response**	**Sheet**
TAC Stipulations from 7/6 Letter of Decision:			
1	Solid material couplings must be used in connection to sewer and approved by Sewer Department prior to installation.	Plan has been revised to specify solid couplings be used in connection to the existing sewer. Utility note 17 has also been added noting couplings shall be approved by the Sewer Department prior to installation.	C-104
2	A note is to be added to plan instructing the contractor to appropriately dispose of asbestos cement pipes should any be found during construction.	Utilty note 18 has been added stating that the contractor shall appropriately dispose of asbestos cement pipes should any be found during construction.	C-104

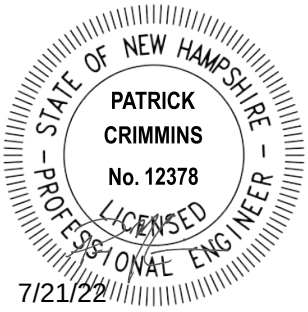
Drainage Analysis

TO: City of Portsmouth Planning Board (PB)

FROM: Neil A. Hansen, PE
Patrick M. Crimmins, PE

COPY: Lonza Biologics

DATE: July 21, 2022



1.0 Project Description

The proposed project is located at 101 International Drive which is identified as Map 305 Lot 6 on the City of Portsmouth Tax Maps. The proposed project includes a 4,200 SF expansion to the existing Lonza café. The proposed work includes drainage improvements, relocation of the existing grease trap, landscaping improvements and miscellaneous sidewalks and concrete pads.

Runoff from the proposed surfaces will be directed to a stormwater treatment system prior to entering the existing on-site drainage system. Runoff from the proposed expansion and associated sidewalks is proposed to be treated by a Contech Jellyfish Filter filtration system.

2.0 Drainage Analysis

The stormwater management system for the proposed expansion has been designed to provide stormwater treatment for the additional impervious area, as well as an equivalent amount of existing untreated impervious area as required by the Pease Development Authority (PDA) (Table 2.0).

Table 2.0 – Treatment Area Requirements	
Proposed Increase in Impervious Area	2,278 sf
Required Impervious Area to be Treated (2x Increase)	4,556 sf
Proposed Treated Impervious Area	6,526 sf

The watershed area that directs runoff to the proposed stormwater management system was analyzed to determine the Water Quality Volume (WQV) or Water Quality Flow (WQF) required to size the systems. The proposed limit of work was also analyzed for the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events.

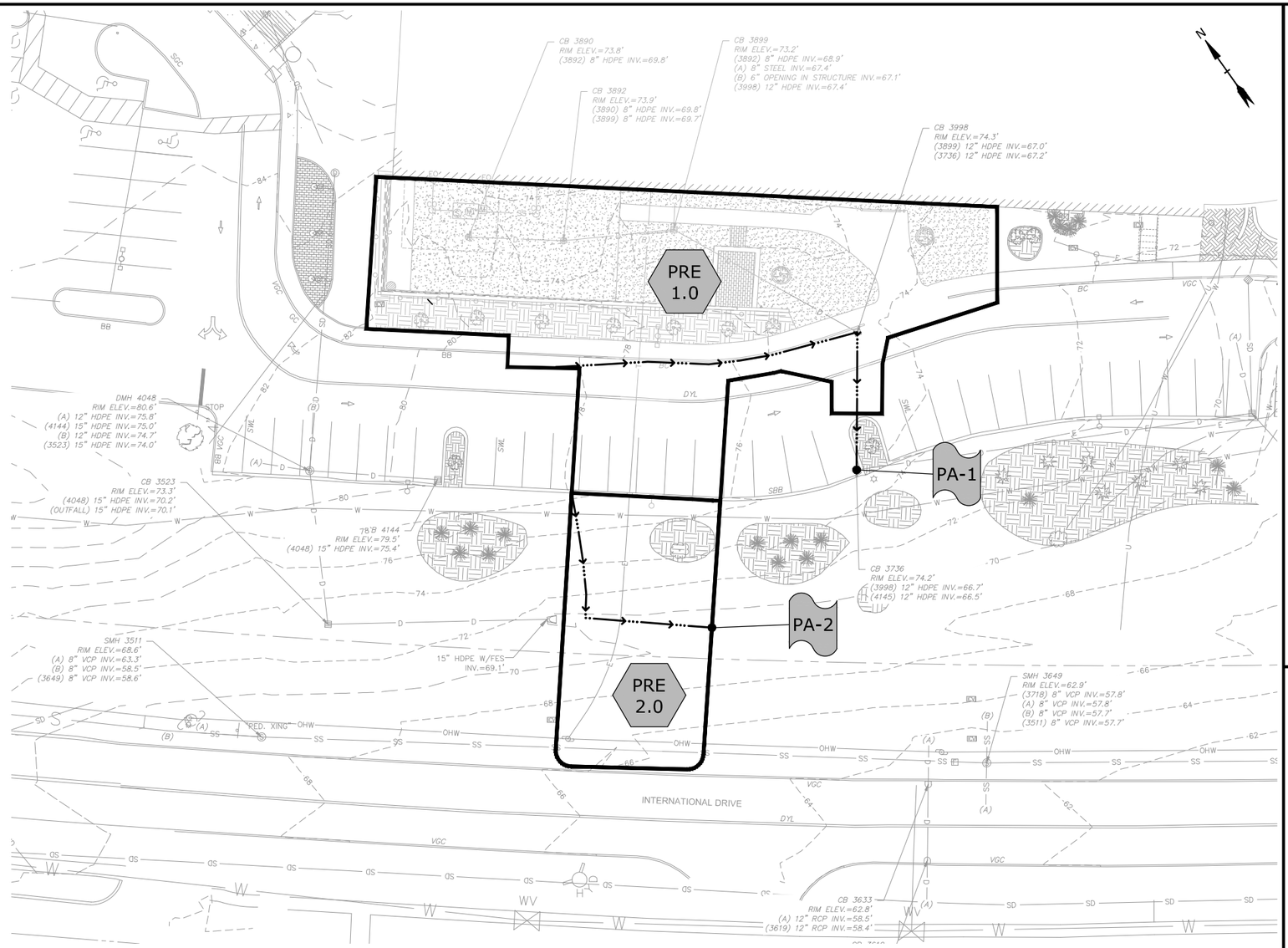
LEGEND

PRE-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

PA-1 — POINT OF ANALYSIS



0 20' 40'

GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

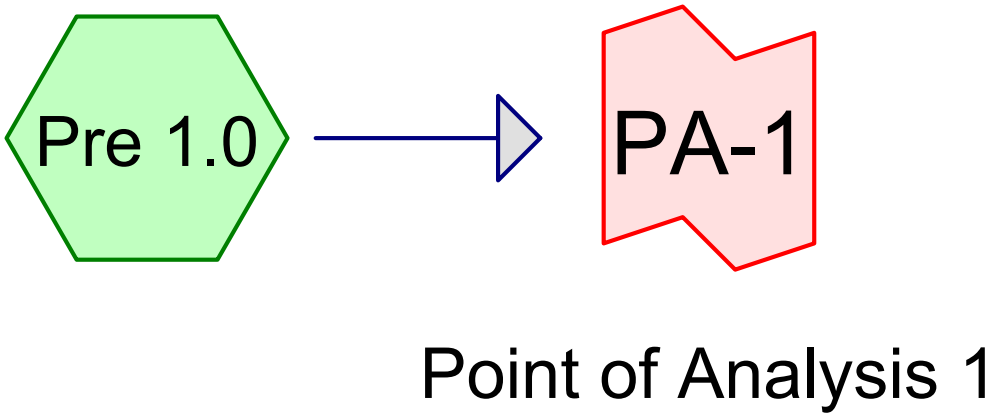
PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

PRE-DEVELOPMENT WATERSHED PLAN

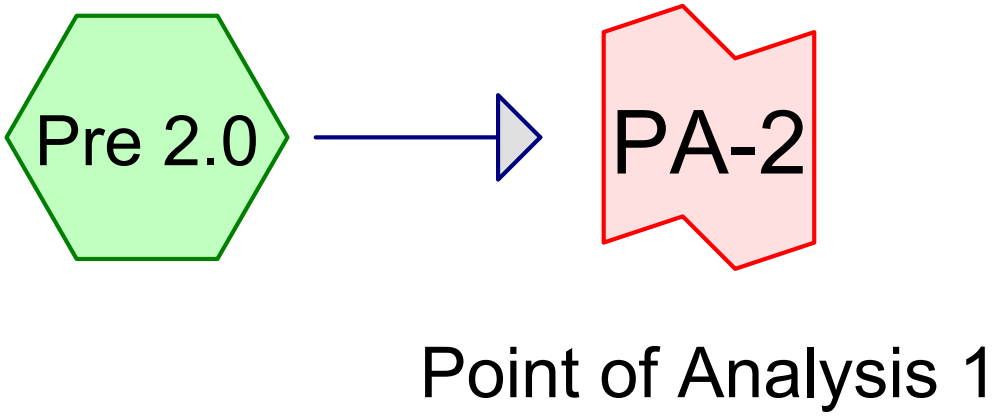
SCALE: AS SHOWN

C-801

Last Saved: 7/21/2022
Plotted on: Jul 21, 2022-10:32am By: CKrzcuik
Tighe & Bond:I:\L\0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg



Point of Analysis 1



Point of Analysis 1

Subcat Reach Pond Link

Routing Diagram for L-0700-023-PRE
Prepared by Tighe & Bond, Printed 7/21/2022
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
5,410	80	>75% Grass cover, Good, HSG D (Pre 1.0, Pre 2.0)
2,569	96	Gravel surface, HSG D (Pre 1.0)
8,240	98	Paved parking, HSG D (Pre 1.0)
16,219	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
16,219	HSG D	Pre 1.0, Pre 2.0
0	Other	
16,219		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=12,215 sf 67.46% Impervious Runoff Depth>3.22"
Flow Length=139' Tc=5.0 min CN=96 Runoff=0.98 cfs 3,279 cf

SubcatchmentPre 2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>1.78"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.19 cfs 594 cf

Link PA-1: Point of Analysis1 Inflow=0.98 cfs 3,279 cf
Primary=0.98 cfs 3,279 cf

Link PA-2: Point of Analysis1 Inflow=0.19 cfs 594 cf
Primary=0.19 cfs 594 cf

Total Runoff Area = 16,219 sf Runoff Volume = 3,873 cf Average Runoff Depth = 2.87"
49.20% Pervious = 7,979 sf 50.80% Impervious = 8,240 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=12,215 sf 67.46% Impervious Runoff Depth>5.12"
Flow Length=139' Tc=5.0 min CN=96 Runoff=1.52 cfs 5,208 cf

SubcatchmentPre 2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>3.41"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.37 cfs 1,138 cf

Link PA-1: Point of Analysis1 Inflow=1.52 cfs 5,208 cf
Primary=1.52 cfs 5,208 cf

Link PA-2: Point of Analysis1 Inflow=0.37 cfs 1,138 cf
Primary=0.37 cfs 1,138 cf

Total Runoff Area = 16,219 sf Runoff Volume = 6,347 cf Average Runoff Depth = 4.70"
49.20% Pervious = 7,979 sf 50.80% Impervious = 8,240 sf

Summary for Subcatchment Pre 1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.52 cfs @ 12.07 hrs, Volume= 5,208 cf, Depth> 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
1,406	80	>75% Grass cover, Good, HSG D
2,569	96	Gravel surface, HSG D
8,240	98	Paved parking, HSG D
12,215	96	Weighted Average
3,975		32.54% Pervious Area
8,240		67.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	96	0.0410	1.95		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.1	43	0.0116	6.35	4.99	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
0.9	139	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment Pre 2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
4,004	80	>75% Grass cover, Good, HSG D
4,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	39	0.2051	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.5	40	0.0089	1.42		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.2	79	Total, Increased to minimum Tc = 5.0 min			

Summary for Link PA-1: Point of Analysis 1

Inflow Area = 12,215 sf, 67.46% Impervious, Inflow Depth > 5.12" for 10 Year Storm event
Inflow = 1.52 cfs @ 12.07 hrs, Volume= 5,208 cf
Primary = 1.52 cfs @ 12.07 hrs, Volume= 5,208 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis 1

Inflow Area = 4,004 sf, 0.00% Impervious, Inflow Depth > 3.41" for 10 Year Storm event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf
Primary = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=12,215 sf 67.46% Impervious Runoff Depth>6.60"
Flow Length=139' Tc=5.0 min CN=96 Runoff=1.94 cfs 6,719 cf

SubcatchmentPre 2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>4.77"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.51 cfs 1,590 cf

Link PA-1: Point of Analysis1 Inflow=1.94 cfs 6,719 cf
Primary=1.94 cfs 6,719 cf

Link PA-2: Point of Analysis1 Inflow=0.51 cfs 1,590 cf
Primary=0.51 cfs 1,590 cf

Total Runoff Area = 16,219 sf Runoff Volume = 8,309 cf Average Runoff Depth = 6.15"
49.20% Pervious = 7,979 sf 50.80% Impervious = 8,240 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=12,215 sf 67.46% Impervious Runoff Depth>8.01"
Flow Length=139' Tc=5.0 min CN=96 Runoff=2.34 cfs 8,149 cf

SubcatchmentPre 2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>6.08"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.65 cfs 2,029 cf

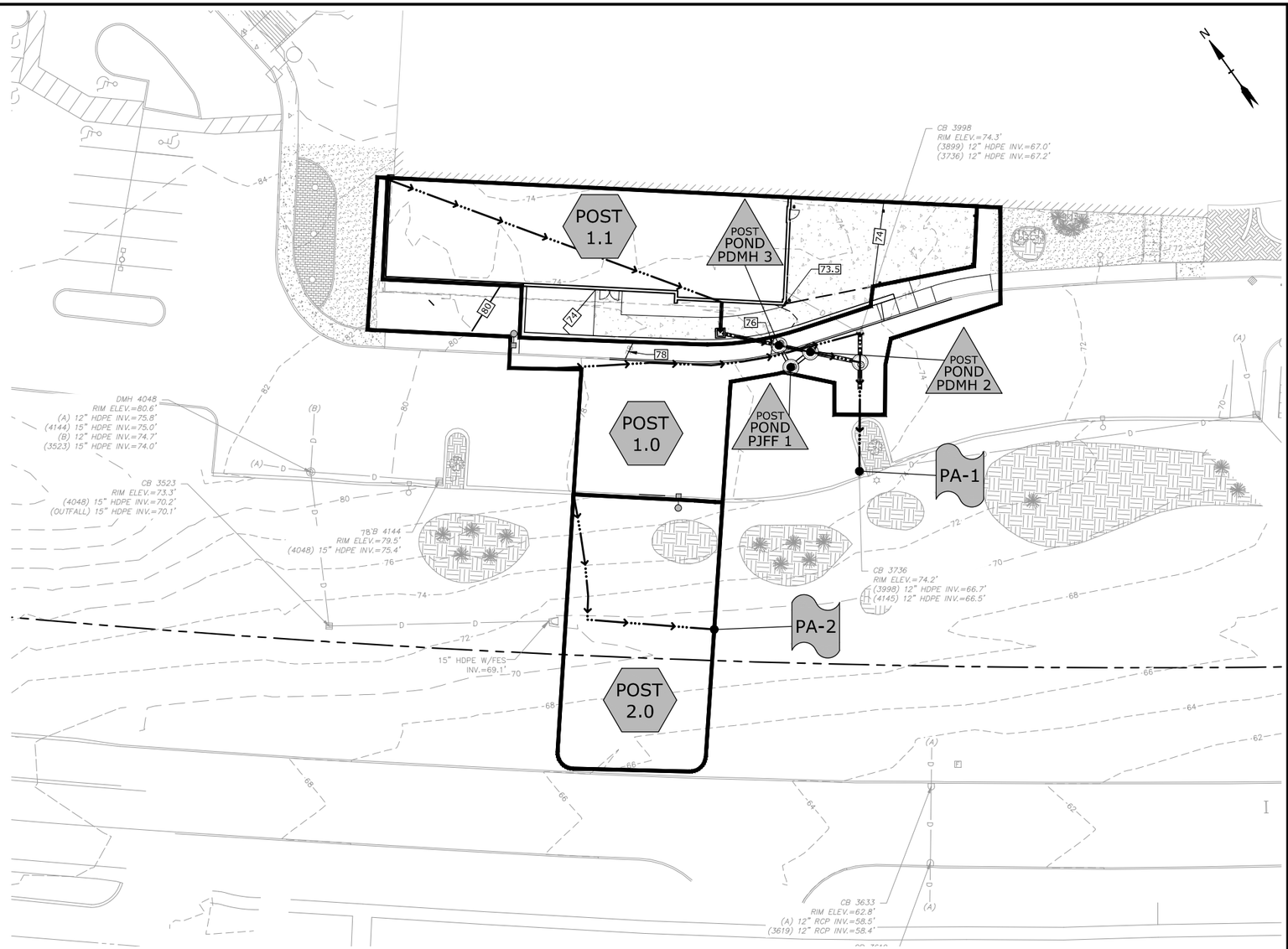
Link PA-1: Point of Analysis 1 Inflow=2.34 cfs 8,149 cf
Primary=2.34 cfs 8,149 cf

Link PA-2: Point of Analysis 1 Inflow=0.65 cfs 2,029 cf
Primary=0.65 cfs 2,029 cf

Total Runoff Area = 16,219 sf Runoff Volume = 10,179 cf Average Runoff Depth = 7.53"
49.20% Pervious = 7,979 sf 50.80% Impervious = 8,240 sf

LEGEND

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS



0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	7/21/2022	PB Submission

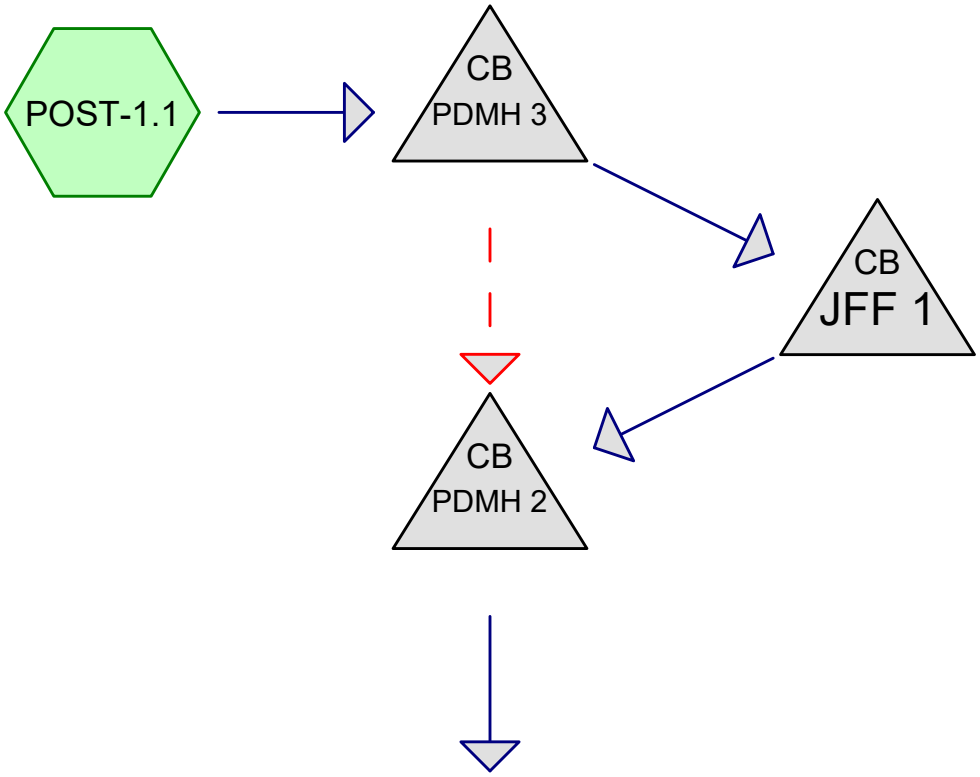
PROJECT NO:	L-0700-023
DATE:	June 27, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK/NHW
CHECKED BY:	NAH
APPROVED BY:	PMC

POST-DEVELOPMENT WATERSHED PLAN

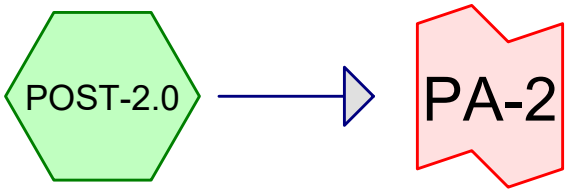
SCALE: AS SHOWN

C-802

Last Saved: 7/21/2022
Plotted On: Jul 21, 2022-10:33am By: CKrzcuik
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Café Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg



Point of Analysis 1



Point of Analysis 1

Subcat Reach Pond Link

Routing Diagram for L-0700-023-POST
Prepared by Tighe & Bond, Printed 7/21/2022
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
5,701	80	>75% Grass cover, Good, HSG D (POST-1.0, POST-1.1, POST-2.0)
5,628	98	Paved parking, HSG D (POST-1.0, POST-1.1)
4,890	98	Roofs, HSG D (POST-1.1)
16,219	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
16,219	HSG D	POST-1.0, POST-1.1, POST-2.0
0	Other	
16,219		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1.0: Runoff Area=5,120 sf 77.97% Impervious Runoff Depth>3.01"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.40 cfs 1,284 cf

Subcatchment POST-1.1: Runoff Area=7,095 sf 91.98% Impervious Runoff Depth>3.33"
Flow Length=200' Tc=5.0 min CN=97 Runoff=0.58 cfs 1,970 cf

Subcatchment POST-2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>1.78"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.19 cfs 594 cf

Pond JFF 1: Peak Elev=68.01' Inflow=0.58 cfs 1,970 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=0.58 cfs 1,970 cf

Pond PDMH 2: Peak Elev=67.88' Inflow=0.58 cfs 1,970 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=0.58 cfs 1,970 cf

Pond PDMH 3: Peak Elev=69.08' Inflow=0.58 cfs 1,970 cf
Primary=0.58 cfs 1,970 cf Secondary=0.00 cfs 0 cf Outflow=0.58 cfs 1,970 cf

Link PA-1: Point of Analysis 1 Inflow=0.98 cfs 3,254 cf
Primary=0.98 cfs 3,254 cf

Link PA-2: Point of Analysis 1 Inflow=0.19 cfs 594 cf
Primary=0.19 cfs 594 cf

Total Runoff Area = 16,219 sf Runoff Volume = 3,848 cf Average Runoff Depth = 2.85"
35.15% Pervious = 5,701 sf 64.85% Impervious = 10,518 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1.0: Runoff Area=5,120 sf 77.97% Impervious Runoff Depth>4.89"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.63 cfs 2,086 cf

Subcatchment POST-1.1: Runoff Area=7,095 sf 91.98% Impervious Runoff Depth>5.23"
Flow Length=200' Tc=5.0 min CN=97 Runoff=0.89 cfs 3,094 cf

Subcatchment POST-2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>3.41"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.37 cfs 1,138 cf

Pond JFF 1: Peak Elev=68.13' Inflow=0.85 cfs 3,081 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=0.85 cfs 3,081 cf

Pond PDMH 2: Peak Elev=67.98' Inflow=0.89 cfs 3,094 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=0.89 cfs 3,094 cf

Pond PDMH 3: Peak Elev=69.21' Inflow=0.89 cfs 3,094 cf
Primary=0.85 cfs 3,081 cf Secondary=0.04 cfs 12 cf Outflow=0.89 cfs 3,094 cf

Link PA-1: Point of Analysis 1 Inflow=1.52 cfs 5,180 cf
Primary=1.52 cfs 5,180 cf

Link PA-2: Point of Analysis 1 Inflow=0.37 cfs 1,138 cf
Primary=0.37 cfs 1,138 cf

Total Runoff Area = 16,219 sf Runoff Volume = 6,318 cf Average Runoff Depth = 4.67"
35.15% Pervious = 5,701 sf 64.85% Impervious = 10,518 sf

Summary for Subcatchment POST-1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.63 cfs @ 12.07 hrs, Volume= 2,086 cf, Depth> 4.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

	Area (sf)	CN	Description
	1,128	80	>75% Grass cover, Good, HSG D
*	0	89	Gravel roads, HSG D
	3,992	98	Paved parking, HSG D
	5,120	94	Weighted Average
	1,128		22.03% Pervious Area
	3,992		77.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	96	0.0410	1.95		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.1	43	0.0116	6.35	4.99	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010
0.9	139	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-1.1:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf, Depth> 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

	Area (sf)	CN	Description
	569	80	>75% Grass cover, Good, HSG D
*	0	89	Gravel roads, HSG D
	1,636	98	Paved parking, HSG D
	4,890	98	Roofs, HSG D
	7,095	97	Weighted Average
	569		8.02% Pervious Area
	6,526		91.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.85		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.2	12	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	38	0.0250	8.26	4.50	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.010
0.1	50	0.0170	5.91	4.65	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
2.4	200	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment POST-2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
4,004	80	>75% Grass cover, Good, HSG D
4,004		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	39	0.2051	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.68"
0.5	40	0.0089	1.42		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.2	79	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond JFF 1:

Inflow Area = 7,095 sf, 91.98% Impervious, Inflow Depth > 5.21" for 10 Year Storm event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 3,081 cf
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 3,081 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 3,081 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 68.13' @ 12.09 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.55'	**12.0" Round Culvert** L= 4.0' Ke= 0.500 Inlet / Outlet Invert= 67.55' / 67.50' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.74 cfs @ 12.07 hrs HW=68.11' TW=67.97' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.74 cfs @ 2.35 fps)

Summary for Pond PDMH 2:

Inflow Area = 7,095 sf, 91.98% Impervious, Inflow Depth > 5.23" for 10 Year Storm event
Inflow = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf
Outflow = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 67.98' @ 12.07 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	67.50'	**12.0" Round Culvert** L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 67.50' / 67.20' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.86 cfs @ 12.07 hrs HW=67.97' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.86 cfs @ 2.34 fps)

Summary for Pond PDMH 3:

Inflow Area = 7,095 sf, 91.98% Impervious, Inflow Depth > 5.23" for 10 Year Storm event
Inflow = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf
Outflow = 0.89 cfs @ 12.07 hrs, Volume= 3,094 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 3,081 cf
Secondary = 0.04 cfs @ 12.07 hrs, Volume= 12 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 69.21' @ 12.07 hrs
Flood Elev= 73.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	68.60'	**10.0" Round Culvert** L= 4.0' Ke= 0.500 Inlet / Outlet Invert= 68.60' / 68.55' S= 0.0125 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf
#2	Secondary	69.10'	**10.0" Round Culvert** L= 6.0' Ke= 0.500 Inlet / Outlet Invert= 69.10' / 68.85' S= 0.0417 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf

Primary OutFlow Max=0.82 cfs @ 12.07 hrs HW=69.19' TW=68.11' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.82 cfs @ 2.78 fps)

Secondary OutFlow Max=0.04 cfs @ 12.07 hrs HW=69.19' TW=67.97' (Dynamic Tailwater)
2=Culvert (Inlet Controls 0.04 cfs @ 1.04 fps)

Summary for Link PA-1: Point of Analysis 1

Inflow Area = 12,215 sf, 86.11% Impervious, Inflow Depth > 5.09" for 10 Year Storm event
Inflow = 1.52 cfs @ 12.07 hrs, Volume= 5,180 cf
Primary = 1.52 cfs @ 12.07 hrs, Volume= 5,180 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis 1

Inflow Area = 4,004 sf, 0.00% Impervious, Inflow Depth > 3.41" for 10 Year Storm event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf
Primary = 0.37 cfs @ 12.08 hrs, Volume= 1,138 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1.0: Runoff Area=5,120 sf 77.97% Impervious Runoff Depth>6.36"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.80 cfs 2,716 cf

Subcatchment POST-1.1: Runoff Area=7,095 sf 91.98% Impervious Runoff Depth>6.72"
Flow Length=200' Tc=5.0 min CN=97 Runoff=1.13 cfs 3,972 cf

Subcatchment POST-2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>4.77"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.51 cfs 1,590 cf

Pond JFF 1: Peak Elev=68.21' Inflow=1.02 cfs 3,929 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=1.02 cfs 3,929 cf

Pond PDMH 2: Peak Elev=68.06' Inflow=1.13 cfs 3,972 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=1.13 cfs 3,972 cf

Pond PDMH 3: Peak Elev=69.28' Inflow=1.13 cfs 3,972 cf
Primary=1.02 cfs 3,929 cf Secondary=0.12 cfs 44 cf Outflow=1.13 cfs 3,972 cf

Link PA-1: Point of Analysis 1 Inflow=1.94 cfs 6,688 cf
Primary=1.94 cfs 6,688 cf

Link PA-2: Point of Analysis 1 Inflow=0.51 cfs 1,590 cf
Primary=0.51 cfs 1,590 cf

Total Runoff Area = 16,219 sf Runoff Volume = 8,278 cf Average Runoff Depth = 6.12"
35.15% Pervious = 5,701 sf 64.85% Impervious = 10,518 sf

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1.0: Runoff Area=5,120 sf 77.97% Impervious Runoff Depth>7.77"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.97 cfs 3,313 cf

Subcatchment POST-1.1: Runoff Area=7,095 sf 91.98% Impervious Runoff Depth>8.13"
Flow Length=200' Tc=5.0 min CN=97 Runoff=1.36 cfs 4,805 cf

Subcatchment POST-2.0: Runoff Area=4,004 sf 0.00% Impervious Runoff Depth>6.08"
Flow Length=79' Tc=5.0 min CN=80 Runoff=0.65 cfs 2,029 cf

Pond JFF 1: Peak Elev=68.27' Inflow=1.16 cfs 4,717 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=1.16 cfs 4,717 cf

Pond PDMH 2: Peak Elev=68.12' Inflow=1.36 cfs 4,805 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=1.36 cfs 4,805 cf

Pond PDMH 3: Peak Elev=69.33' Inflow=1.36 cfs 4,805 cf
Primary=1.16 cfs 4,717 cf Secondary=0.20 cfs 88 cf Outflow=1.36 cfs 4,805 cf

Link PA-1: Point of Analysis 1 Inflow=2.33 cfs 8,118 cf
Primary=2.33 cfs 8,118 cf

Link PA-2: Point of Analysis 1 Inflow=0.65 cfs 2,029 cf
Primary=0.65 cfs 2,029 cf

Total Runoff Area = 16,219 sf Runoff Volume = 10,147 cf Average Runoff Depth = 7.51"
35.15% Pervious = 5,701 sf 64.85% Impervious = 10,518 sf

2.1 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis. Point of Analysis 1 (PA1) is located at the inlet of the existing closed drainage system and Point of Analysis 2 (PA2) is located along International Drive.

Table 2.1 – Comparison of Pre- and Post- Development Flows

Point of Analysis	Pre/**Post** 2-Year Storm (cfs)	Pre/**Post** 10-Year Storm (cfs)	Pre/**Post** 25-Year Storm (cfs)	Pre/**Post** 50-Year Storm (cfs)
PA1	0.98/0.98	1.52/**1.52**	1.94/**1.94**	2.34/**2.33**
PA2	0.19/**0.19**	0.37/**0.37**	0.51/**0.51**	0.65/**0.65**

2.2 Stormwater Treatment

The stormwater management system has been designed to provide stormwater treatment to meet NHDES AoT Regulations as required by the Pease Development Authority. Stormwater treatment for the development area is detailed below.

Runoff generated from the proposed impervious areas within the café expansion will be treated by a Contech Jellyfish Filter filtration system. The Jellyfish Filter was sized to treat the Water Quality Flow (WQF), as shown in Table 2.2. The Jellyfish Filter Design Summary prepared by Contech Engineered Solutions is also provided. The subcatchment area (POST-1.1) for this expansion can be referenced on the post-development watershed plan (Sheet C-802).

Table 2.2 - Treatment Area Proposed Filtration System
Water Quality Flow Calculations

VARIABLE	DESCRIPTION	VALUE
P	1 Inch of Rainfall	1 inch
A	Total Area Draining to Design Structure	0.16 AC
Ai	Impervious Area Draining to Design Structure	0.15 AC
I	% Impervious Area Draining to Design Structures	94%
Rv	Runoff Coefficient, Rv = 0.05 + (0.9*I)	0.89
WQV	**Water Quality Volume, WQV = P*A*Rv**	**519 cf**
Tc	Time of Concentration (min.)	5.0
q_u	Unit Peak Discharge (cfs/mi^2/in)	655
WQF	**Total Treatment Flow, WQF = WQV*q_u**	**0.146 cfs**

2.3 Contech Sizing Memo

CONTECH Stormwater Solutions Inc. Engineer: DRA
Date Prepared: **6/16/2022**

Site Information

Project Name	**Lonza Biologics - Café Expansion**	
Project State	**NH**	
Project City	**Portsmouth**	
Site Designation	**JF-1**	
Total Drainage Area, Ad	**0.16**	ac
Post Development Impervious Area, Ai	**0.15**	ac
Pervious Area, Ap	**0.01**	ac
% Impervious	**94%**	
Runoff Coefficient, Rc	**0.89**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**29,040**	ft^3
Event Mean Concentration of Pollutant, EMC	**75**	mg/l
Annual Mass Load, M total	**136**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing Parameters

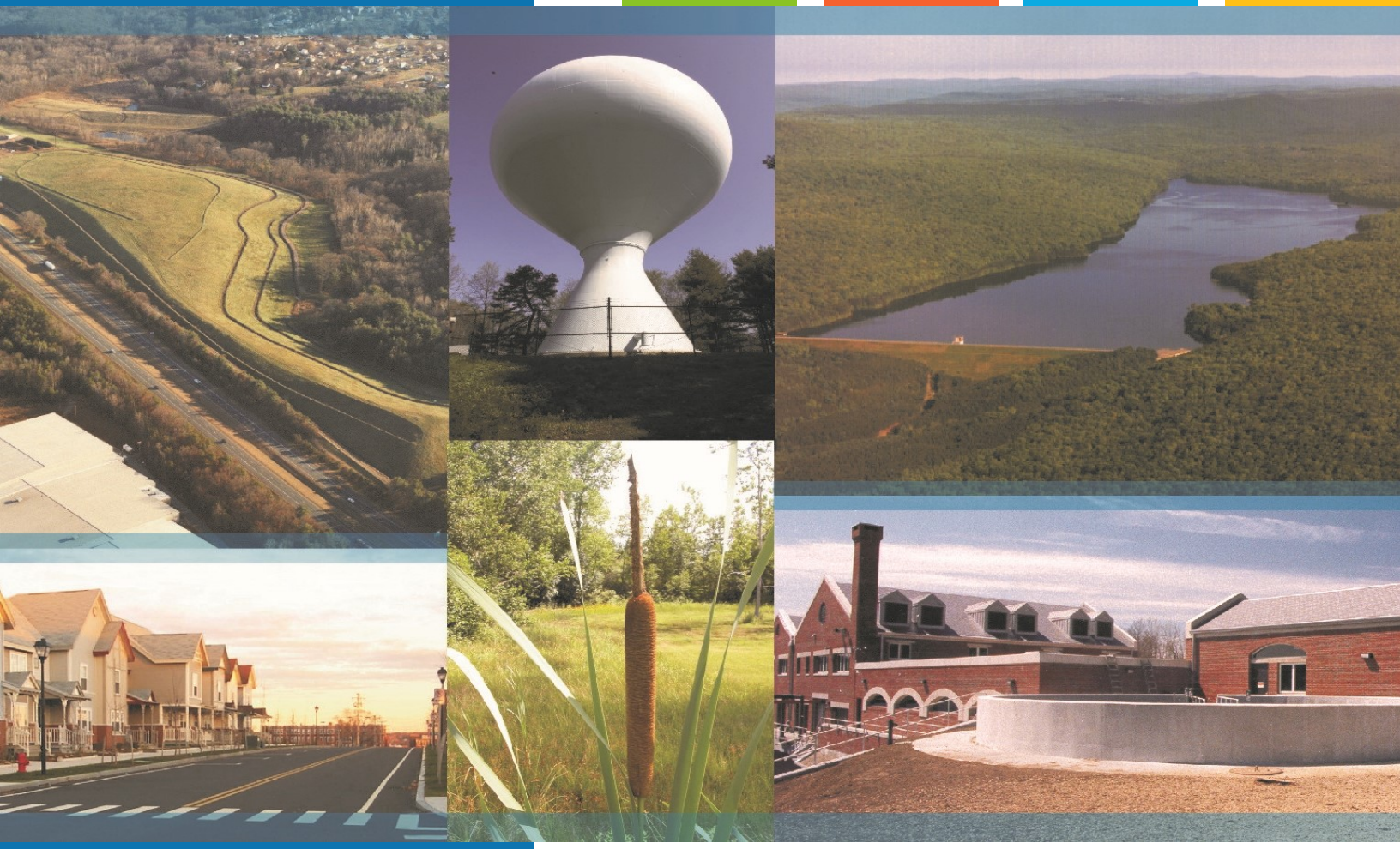
Water Quality Flow to be treated by Filter Vault	**0.15**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Required Size	**JF4-1-1**	
	Treatment Flow Rate provided:	0.27	cfs

3.0 Conclusion

The proposed project will result in no change to the post-development peak runoff rates from the pre-development condition. The net increase in impervious areas resulting from the proposed project and an equivalent amount of existing impervious area will be treated as required by the Pease Development Authority. The proposed stormwater filtration system will treat the surface runoff from the expansion area prior to discharging to the existing on-site stormwater system.



Café Expansion Project
101 International Drive
Portsmouth, NH

Long-Term Operation & Maintenance Plan

Lonza Biologics

June 21, 2022

Tighe&Bond

100% Recyclable

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Tighe&Bond

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Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

Lonza Biologics
101 International Drive
Portsmouth, NH 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Contech Jellyfish Filtration System

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

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Jellyfish Filter Inspection and Maintenance Log 12

THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

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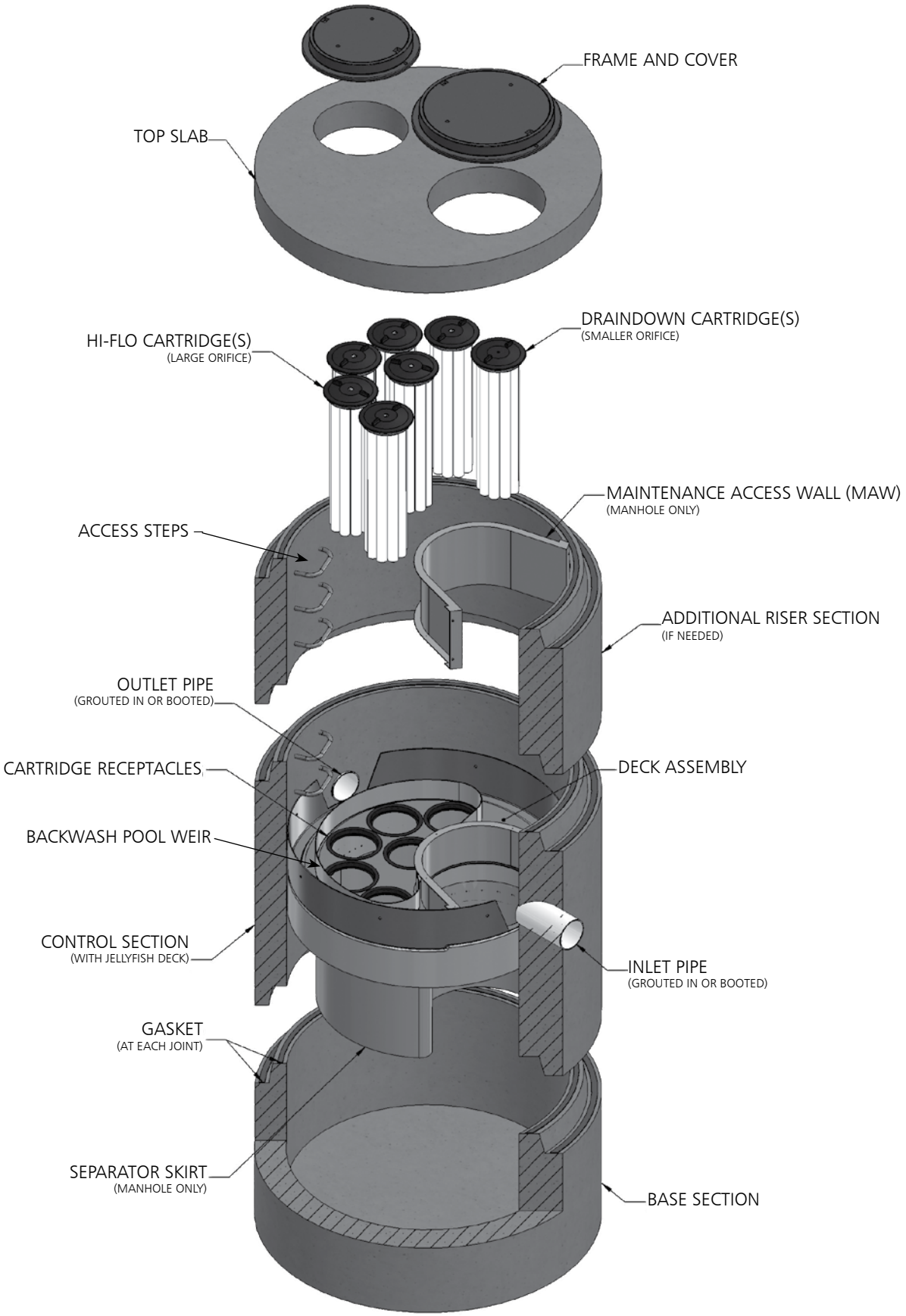

FRAME AND COVER
TOP SLAB
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

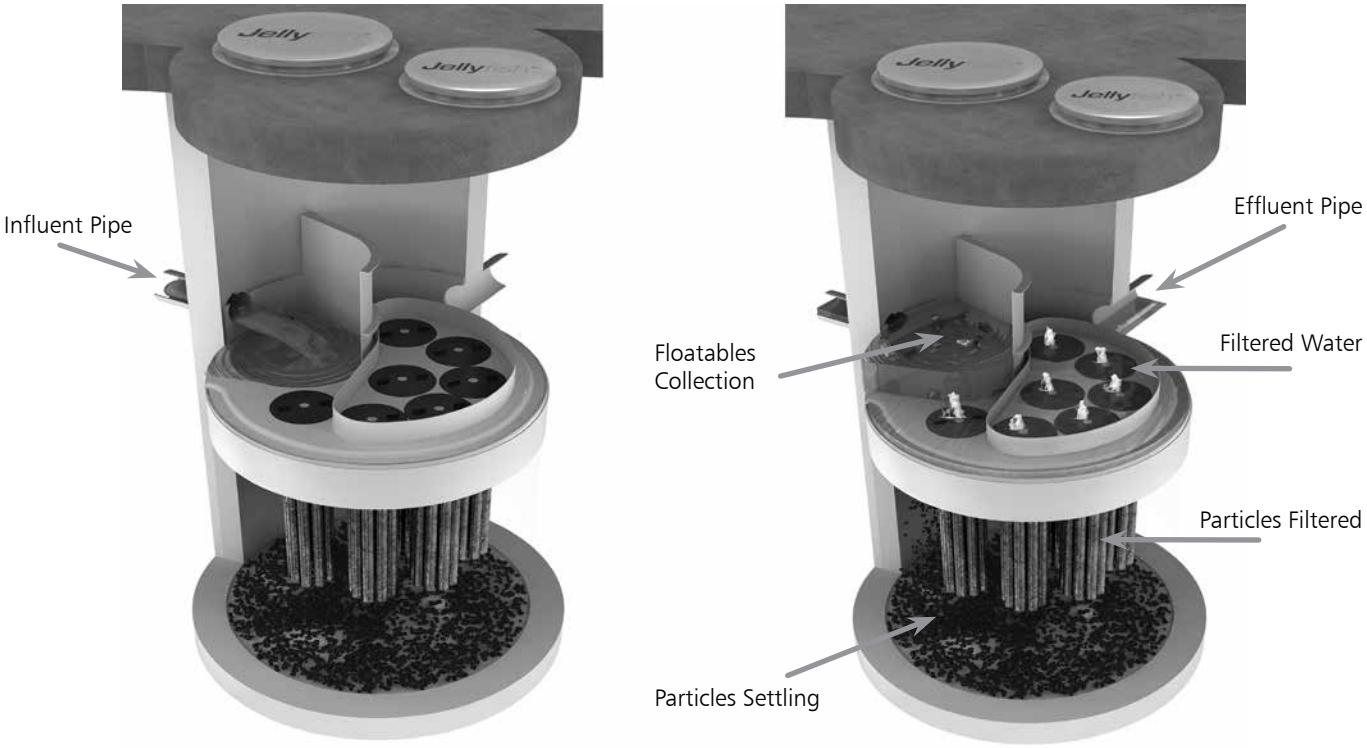
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



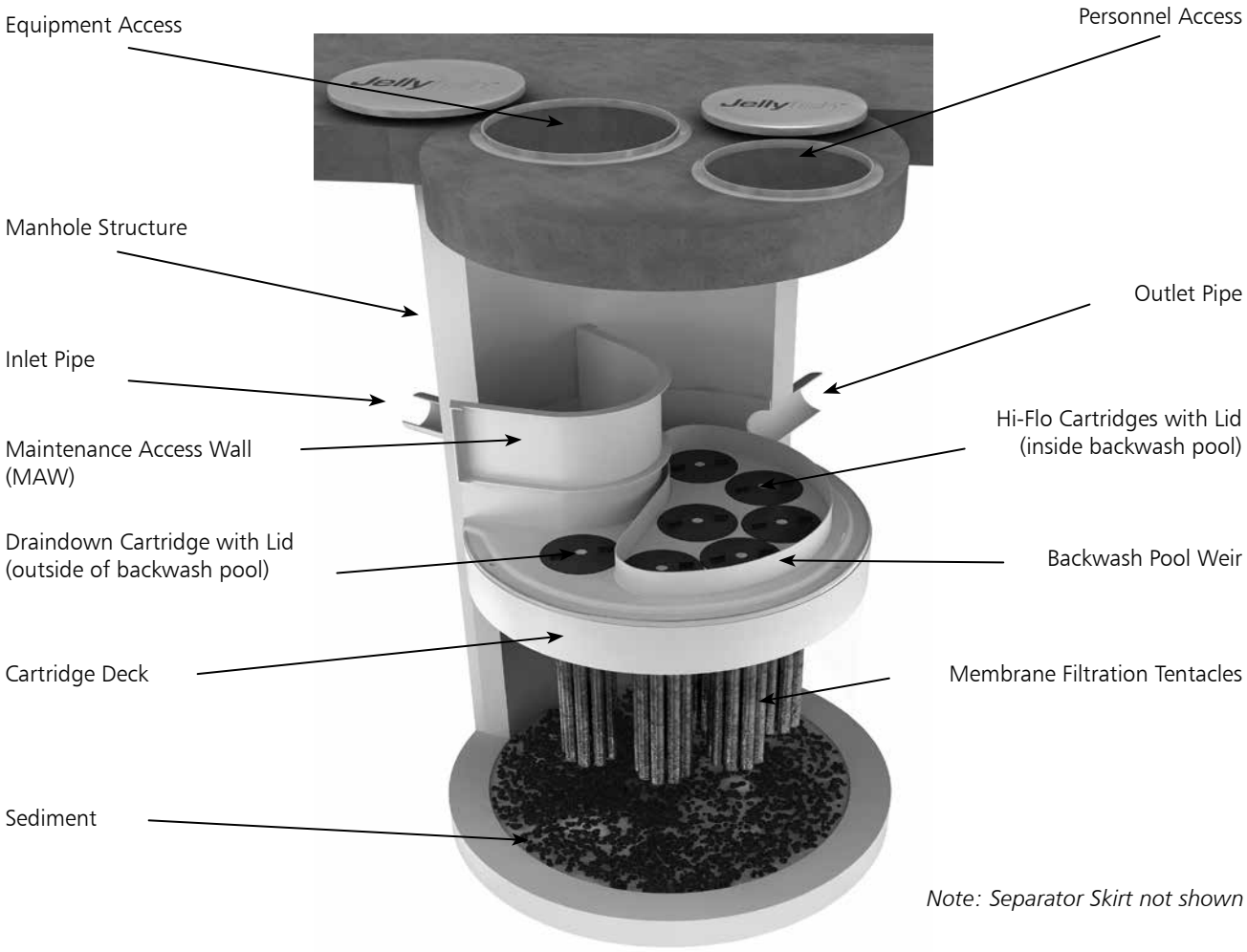
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.

Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

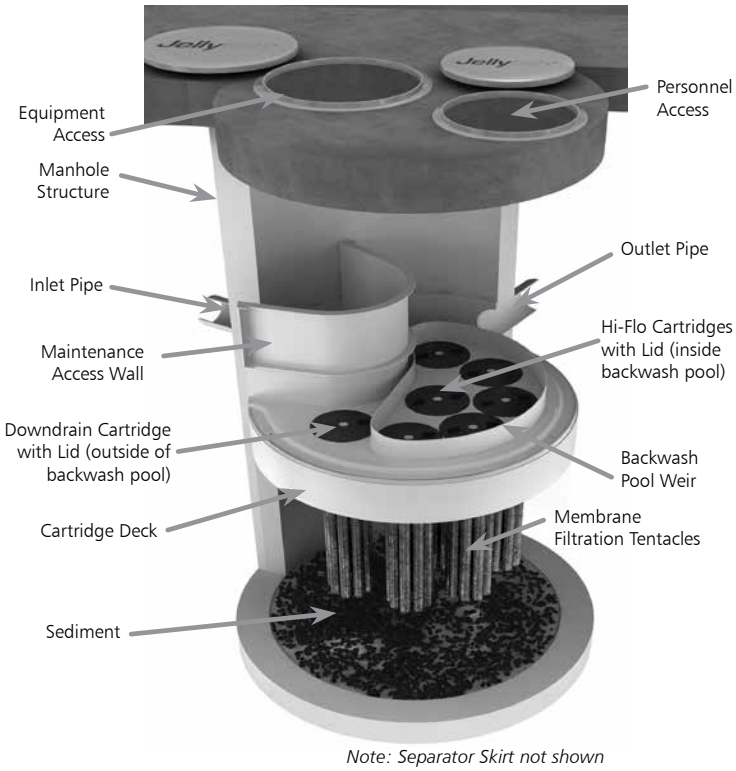
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

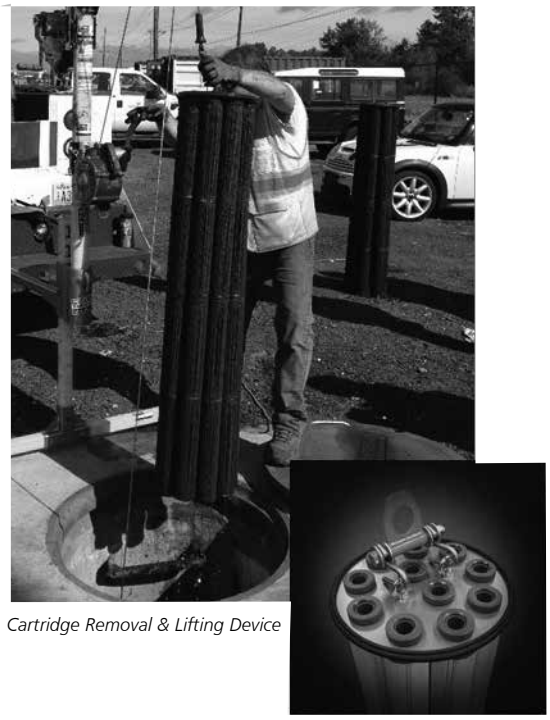
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.



Cartridge Removal & Lifting Device

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

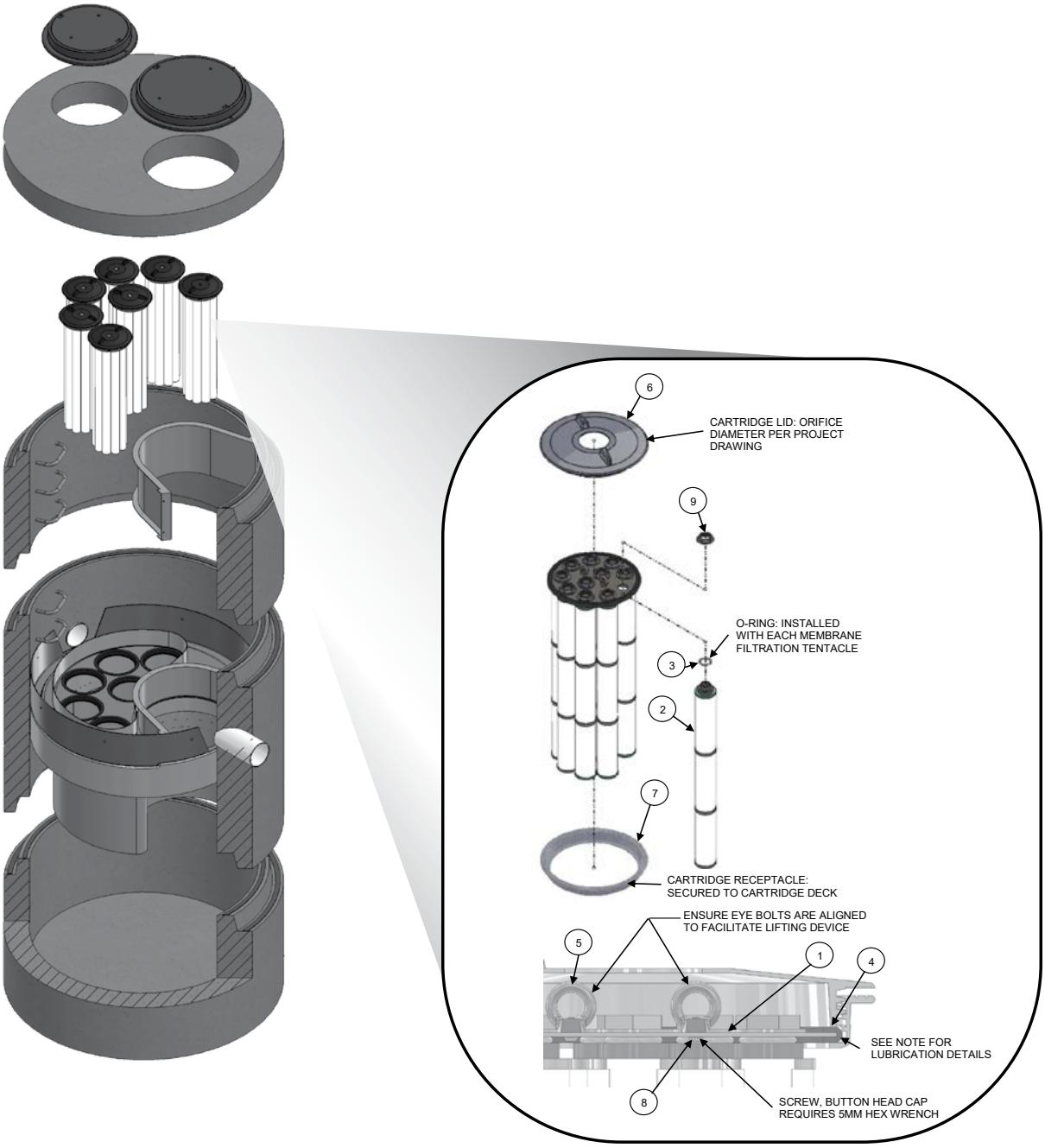


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

1.5 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the Lonza Biologics – Lynx Parking Expansion in Portsmouth, New Hampshire. The Plan includes operational guidelines including: winter operator certification requirements, weather monitoring, equipment calibration requirements, mechanical removal, and salt usage evaluation and monitoring. Due to the evolving nature of chloride management efforts, the Chlorides Management Plan will be reviewed annually, in advance of the winter season, to reflect the current management standards.

2.1 Background Information

The Lonza Biologics – Lynx Parking Expansion located within the Upper Hodgson Brook Watershed in Newington and Portsmouth, New Hampshire. The Upper Hodgson Brook is identified as a chloride-impaired waterbody.

2.2 Operational Guidelines – Chloride Management

All Lonza Biologics private contractors engaged at the Lonza Biologics premises for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. Lonza Biologics private contractors are expected to minimize the effects of the use of de-icing, anti-icing and pretreatment materials by adhering to the strict guidelines outlined below.

The Lonza Biologics winter operational de-icing, anti-icing and pretreatment materials will adhere to the following protocols:

2.2.1 Winter Operator Certification Requirements

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance must be current UNHT2 Green SnowPro Certified operators or equivalent and will use only pre-approved methods for spreading abrasives on private roadways and parking lots. All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide to Lonza Biologics management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the Lonza Biologics premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the Lonza Biologics Facilities Management office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

Lonza Biologics will coordinate weather information for use by winter maintenance contractors. This information in conjunction with site specific air/ground surface temperature monitoring will ensure that private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will make more informed decisions as to when and to what extent de-icing, anti-icing and pretreatment materials are applied to private roadways, sidewalks, and parking lots.

2.2.3 Equipment Calibration Requirements

All equipment utilized on the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will conform to the following calibration requirements.

2.2.3.1 Annual Calibration Requirements

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of the annual calibration report for each piece of equipment utilized on the Lonza Biologics premises. Each calibration report shall include the vehicle/carrier VIN number and the serial numbers for each component including, but not limited to, spreader control units, salt aggregate spreader equipment, brining/pre-wetting equipment, ground speed orientation unit, and air/ground surface temperature monitor. Annual calibration reports will be available on file in the Lonza Biologics Facilities Management office and be present in the vehicle/carrier at all times.

Prior to each use, each vehicle/carrier operator will perform a systems check to verify that unit settings remain within the guidelines established by the Lonza Biologics Management Team in order to accurately dispense material. All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Lonza Biologics Management Team to ensure that each vehicle/carrier is operating in a manner consistent with the guidelines set herein or State and Municipal regulations. All units will be recalibrated, and the updated calibration reports will be provided each time repairs or maintenance procedures affect the hydraulic system of the vehicle/carrier.

2.2.4 Increased Mechanical Removal Capabilities

All private contractors engaged at the Lonza Biologics premises will endeavor to use mechanical removal means on a more frequent basis for roadways, parking lots and sidewalks. Dedicating more manpower and equipment to increase snow removal frequencies prevents the buildup of snow and the corresponding need for de-icing, anti-icing and pretreatment materials. Shortened maintenance

routes, with shorter service intervals, will be used to stay ahead of snowfall. Minimized snow and ice packing will reduce the need for abrasives, salt aggregates, and/or brining solution to restore surfaces back to bare surface states after winter precipitation events.

After storm events the Lonza Biologics management team will be responsible for having the streets swept to recapture un-melted de-icing materials, when practical.

2.3 Salt Usage Evaluation and Monitoring

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of a storm report, which includes detailed information regarding treatment areas and the use of de-icing, anti- icing and pretreatment materials applied for the removal of snow and surface maintenance on the Lonza Biologics premises. Lonza Biologics will maintain copies of Summary Documents, including copies of the Storm Reports, operator certifications, equipment used for roadway and sidewalk winter maintenance, calibration reports and amount of de-icing materials used.

2.4 Summary

The above-described methodologies are incorporated into the Lonza Biologics Operational Manual and are to be used to qualify and retain all private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance. This section of the Manual, is intended to be an adaptive management document that is modified as required based on experience gained from past practices and technological advancements that reflect chloride BMP standards. All Lonza Biologics employees directly involved with winter operational activities are required to review this document and the current standard Best Management Practices published by the UNH Technology Transfer (T2) program annually. All Lonza Biologics employees directly involved with winter operational activities, and all private contractors engaged at the Lonza Biologics premises for the purposes of winter operational snow removal and surface maintenance, must be current UNHT2 Green SnowPro Certified operators or equivalent and undergo the necessary requirements to maintain this certification annually.

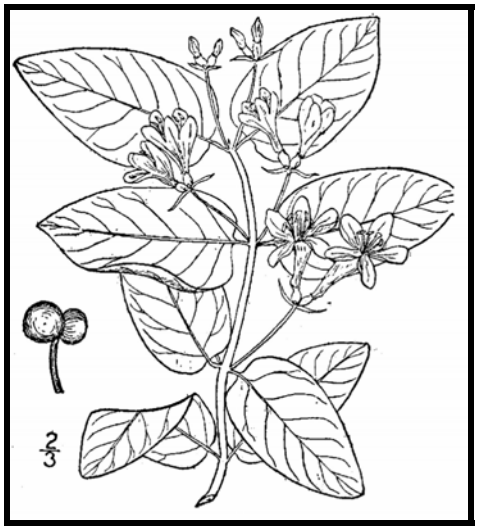
Section 3
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

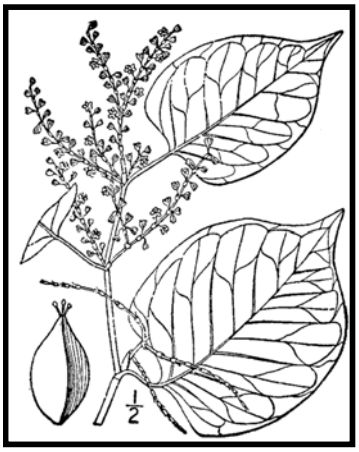
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

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Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.

Using tools to remove woody stems.

Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.

Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.

Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.

Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.

Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 4
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the Pease Development Authority on an annual basis.

Stormwater Management Report						
Lynx Parking Expansion		**101 International Drive**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Jellyfish Filter 1			❑Yes ❑No			

Fulcrum
Construction. Managed.

Lonza Addition / PROPOSED EXTERIOR RENDERING / May 19, 2022

MAUGEL
ARCHITECTS

Ross Engineering
Civil/Structural Engineering & Surveying

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

August 8, 2022

Beverly Mesa-Zendt - Planning Director
City of Portsmouth, Planning Department
1 Junkins Ave Portsmouth, NH 03801

RE: Site Plan Approval for property located at 140 West Rd, Tax Map 252, Lot 2-13 (LU-22-99)

Dear Ms. Beverly,

I am writing in response to your letter dated August 3rd, 2022. Your concerns are italicized with our comments below in bold.

1. *Plans will be updated to include treatment swale details and calculations. DPW to review and approve prior to Planning Board consideration.*
   The treatment swale has been removed. A curb inlet jellyfish filter has been designed in its place to provide treatment. This is shown on the plan view of sheet 6 "Grading & Drainage" and a detail on sheet 9 "Stormwater Management Details".

2. *Catch Basin A will be changed to a manhole.*
   Catch basin A has been changed to a drain manhole. It has been relabeled as DMH A. DMH A has been relabeled as DMH B, and DMH B has been relabeled as DMH C. This is shown on sheet 6 "Grading & Drainage".

3. *Sewer manhole detail, in accordance with State standard, will be added to the plans.*

   A sewer manhole detail has been added to sheet 11 "Details".

4. *Landscape plans will be updated to include additional plantings and loam planting beds within the three landscape islands.*

   The landscape islands have been revised to include additional plantings. This is shown on sheet 3 "Landscape Plan". The number of landscape islands has increased due to the relocation of several light poles.

5. *Cistern operation and maintenance details will be added to the plans. DPW to review and approve prior to Planning Board consideration.*

   Cistern operation and maintenance details have been added to sheet 12 "Notes". The Stormwater Management Operation & Maintenance Manual has been updated also.

6. *All State and Federal permits as required for this project will be listed on the plans.*
   A Construction General Permit is required for this project. See note 6 on sheet 2 "Site Plan".

Ross Engineering
Civil/Structural Engineering & Surveying

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7. *Plans will be updated to show granite curbing around the entire parking lot in the vicinity of Catch Basin B for drainage.*

   Granite curbing has been shown around the entire parking lot in the vicinity of the old Catch Basin B (relabeled as Catch Basin A). This is shown on sheet 2 "Site Plan".

8. *Grading Plan will be adjusted to correct reduction in grade behind building. DPW to review and approve prior to Planning Board consideration.*

   Grading has been adjusted at the rear of the building, so that proposed contour 97 more closely matches the existing contour. This is shown on sheet 6 "Grading & Drainage".

9. *Light poles will be shown on plans at least 10 feet from the overhead power lines with details that will show light temperature, cutoff shields, and mounting height. DPW to review and approve prior to Planning Board consideration.*

   Light poles along West Road have been moved into the parking lot islands to ensure a 10 foot separation from overhead power lines. Islands have been adjusted as per item 4. The light poles have a mounting height is 20 feet, and a fixture color temperature of 4000k. These are a full cutoff type and do not emit light above the horizontal plan (10.114.10). As indicated on the lighting plan, the design has minimal light reaspass (10.1141) as required by zoning with minimal light levels over the property line. Cutoff shields have not been provided as we believe the design meets the intent of the zoning and the only area no light trespass is required is within residential zones (10.1144.20).

10. *Outfall structure will be added to the plans.*

    The 12" beehive cover and 12" outlet pipe from the detention pond have been added to the plan. This is shown on sheet 6 "Grading & Drainage".

11. *Catch Basin B will be moved to the curb and a note will be added regarding jellyfish filter.*

    Catch Basin B (relabeled as Catch Basin A) has been moved to the granite curb and a note has been added on the plan noting the catch basin is a jellyfish filter. This is shown on sheet 2 "Site Plan"

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12. A letter will be provided to the Planning Department with the updated submission stating where resolved conditions can be found on within the submission and how outstanding conditions will be resolved subsequent to Planning Board approval.

This letter is provided with the updated submission stating the resolved conditions and where they can be found within the submission.

Conditions precedent to Building Permit

13. Drainage easements will be dedicated and accepted by the City.

A Drainage easement will be dedicated and accepted by the City and recorded in the Rockingham Registry of Deeds. See note 5 on drawing 2.

14. Plantings in the public Right of Way receive approval from the Trees and Greenery Committee.

Plantings in the public Right of Way must receive approval from the Trees and Greenery Committee prior to applying for a building permit. See note 7 on drawing 2.

15. A full set of documents including all plans, studies, and the aforementioned letter will be submitted for staff review and Planning Board consideration.

A full set of documents including plans, studies, and letter will be submitted as part of the updated Planning Board submission.

Sincerely,

Alex Ross, P.E.

BLACK ROCK SOCIAL CLUB

140 WEST RD

Portsmouth, NH 03801

LIST OF PROJECT PLANS AND DOCUMENTS:

CIVIL

1 - Existing Conditions
2 - Site Plan
3 - Landscape Plan
4 - Utility Plan
5 - Parking Plan
6 - Grading & Drainage
7 - Test Pit Data
8 - Stormtech Details
9 - Stormwater Management Details
10 - Stormwater Management Details
11 - Details
12 - Notes
13 - Erosion Control Plan
14 - Lighting Plan

PREPARED BY:

ROSS ENGINEERING, LLC
Civil/Structural Engineering
& Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

PREPARED FOR:
Road to the West, LLC
Alexander B. Choquette
14 Lafayette Rd. Unit 9
North Hampon, NH 03862

August 8, 2022

REFERENCE PLANS

1) "SUBDIVISION PLAN" BY KIMBALL CHASE COMPANY, INC. DATED MAY 15, 1983. RCRD D-11744.

2) "CONDOMINIUM SITE PLAN 300 WEST CONDOMINIUM FOR FREDERICK & THOMAS DAIGNEAULT" BY RICHARD P. MILLETTE AND ASSOCIATES. DATED MAY 1987. RCRD D-17576

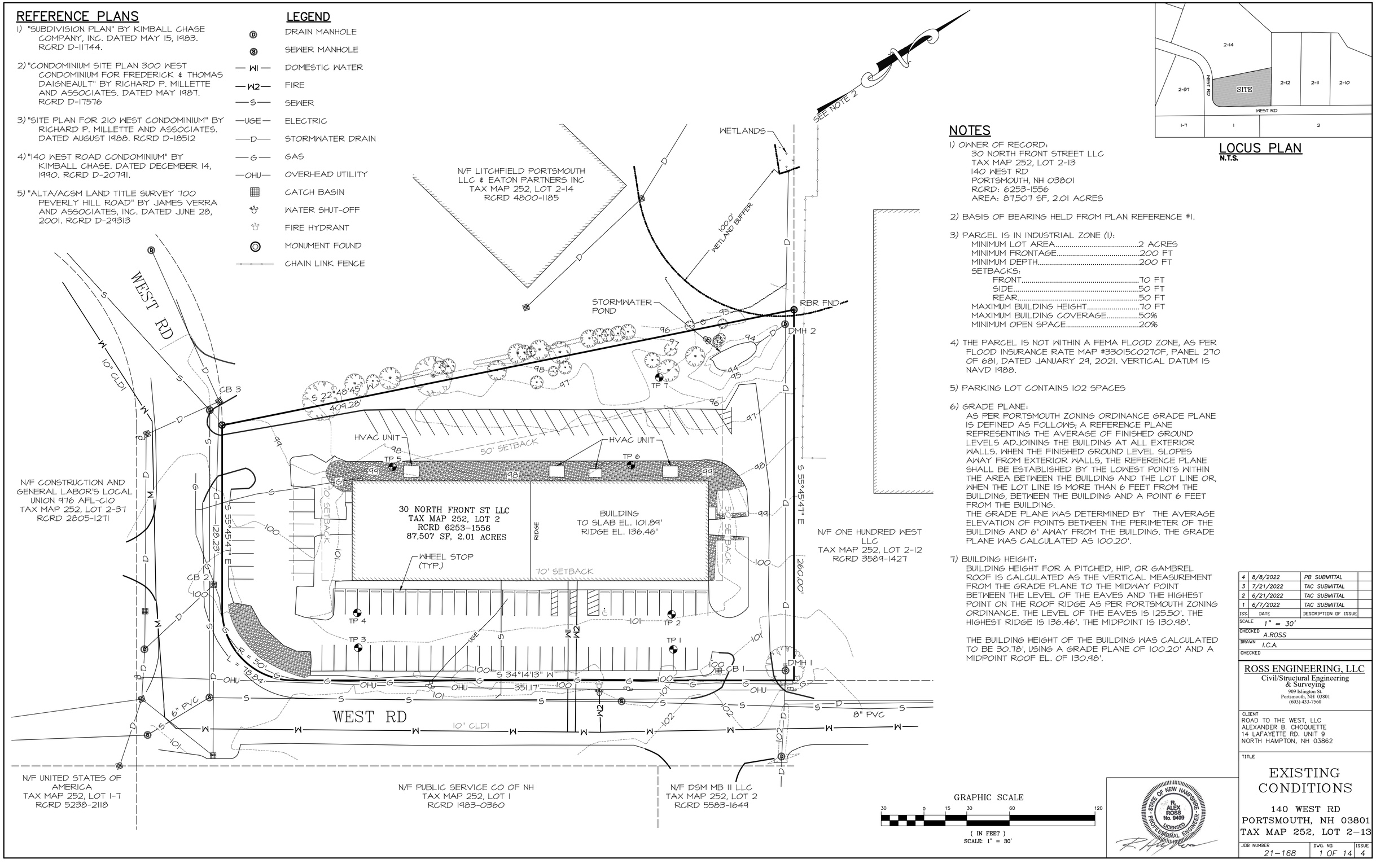
3) "SITE PLAN FOR 210 WEST CONDOMINIUM" BY RICHARD P. MILLETTE AND ASSOCIATES. DATED AUGUST 1988. RCRD D-18512

4) "140 WEST ROAD CONDOMINIUM" BY KIMBALL CHASE. DATED DECEMBER 14, 1990. RCRD D-20791.

5) "ALTA/ACSM LAND TITLE SURVEY 700 PEVERLY HILL ROAD" BY JAMES VERRA AND ASSOCIATES, INC. DATED JUNE 28, 2001. RCRD D-29313

LEGEND

- DRAIN MANHOLE
- SEWER MANHOLE
- W1 — DOMESTIC WATER
- W2 — FIRE
- S — SEWER
- UGE — ELECTRIC
- D — STORMWATER DRAIN
- G — GAS
- OHU — OVERHEAD UTILITY
- CATCH BASIN
- WATER SHUT-OFF
- FIRE HYDRANT
- MONUMENT FOUND
- CHAIN LINK FENCE



LOCUS PLAN
N.T.S.

NOTES

1) OWNER OF RECORD:
30 NORTH FRONT STREET LLC
TAX MAP 252, LOT 2-13
140 WEST RD
PORTSMOUTH, NH 03801
RCRD: 6253-1556
AREA: 87,507 SF, 2.01 ACRES

2) BASIS OF BEARING HELD FROM PLAN REFERENCE #1.

3) PARCEL IS IN INDUSTRIAL ZONE (I):

MINIMUM LOT AREA	2 ACRES
MINIMUM FRONTAGE	200 FT
MINIMUM DEPTH	200 FT
SETBACKS:	
FRONT	70 FT
SIDE	50 FT
REAR	50 FT
MAXIMUM BUILDING HEIGHT	70 FT
MAXIMUM BUILDING COVERAGE	50%
MINIMUM OPEN SPACE	20%

4) THE PARCEL IS NOT WITHIN A FEMA FLOOD ZONE, AS PER FLOOD INSURANCE RATE MAP #33015C0270F, PANEL 270 OF 681, DATED JANUARY 29, 2021. VERTICAL DATUM IS NAVD 1988.

5) PARKING LOT CONTAINS 102 SPACES

6) GRADE PLANE:
AS PER PORTSMOUTH ZONING ORDINANCE GRADE PLANE IS DEFINED AS FOLLOWS; A REFERENCE PLANE REPRESENTING THE AVERAGE OF FINISHED GROUND LEVELS ADJOINING THE BUILDING AT ALL EXTERIOR WALLS. WHEN THE FINISHED GROUND LEVEL SLOPES AWAY FROM EXTERIOR WALLS, THE REFERENCE PLANE SHALL BE ESTABLISHED BY THE LOWEST POINTS WITHIN THE AREA BETWEEN THE BUILDING AND THE LOT LINE OR, WHEN THE LOT LINE IS MORE THAN 6 FEET FROM THE BUILDING, BETWEEN THE BUILDING AND A POINT 6 FEET FROM THE BUILDING.
THE GRADE PLANE WAS DETERMINED BY THE AVERAGE ELEVATION OF POINTS BETWEEN THE PERIMETER OF THE BUILDING AND 6' AWAY FROM THE BUILDING. THE GRADE PLANE WAS CALCULATED AS 100.20'.

7) BUILDING HEIGHT:
BUILDING HEIGHT FOR A PITCHED, HIP, OR GAMBREL ROOF IS CALCULATED AS THE VERTICAL MEASUREMENT FROM THE GRADE PLANE TO THE MIDWAY POINT BETWEEN THE LEVEL OF THE EAVES AND THE HIGHEST POINT ON THE ROOF RIDGE AS PER PORTSMOUTH ZONING ORDINANCE. THE LEVEL OF THE EAVES IS 125.50'. THE HIGHEST RIDGE IS 136.46'. THE MIDPOINT IS 130.98'.

THE BUILDING HEIGHT OF THE BUILDING WAS CALCULATED TO BE 30.78', USING A GRADE PLANE OF 100.20' AND A MIDPOINT ROOF EL. OF 130.98'.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
SCALE: 1" = 30'

R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

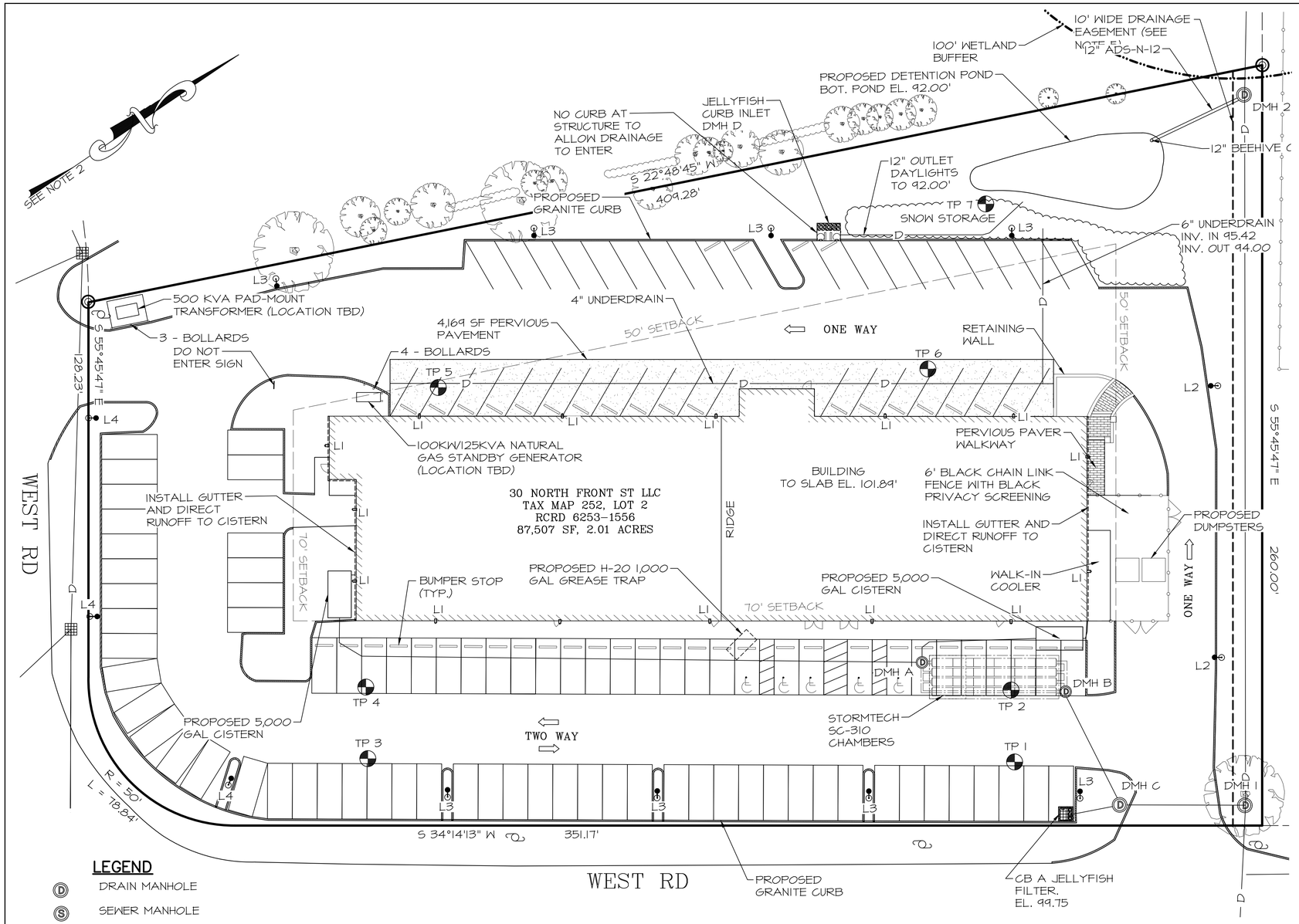
SCALE 1" = 30'
CHECKED A.ROSS
DRAWN I.C.A.
CHECKED

ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE
EXISTING CONDITIONS
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	1 OF 14	4



NOTES

1) OWNER OF RECORD:
30 NORTH FRONT STREET LLC
TAX MAP 252, LOT 2-13
140 WEST RD
PORTSMOUTH, NH 03801
RCRD: 6253-1556
AREA: 87,507 SF, 2.01 ACRES

2) COVERAGES

EXISTING BUILDING COVERAGE

BUILDING	17,500 SF
TOTAL	17,500 SF

BUILDING COVERAGE = 20.0%

PROPOSED BUILDING COVERAGE

BUILDING	17,922 SF
WALK-IN COOLER	248 SF
TOTAL	18,170 SF

BUILDING COVERAGE = 20.8% < 50%

EXISTING OPEN SPACE

BUILDING COVERAGE	17,500 SF
ASPHALT	42,529 SF
TOTAL LOT COVERAGE	60,029 SF

OPEN SPACE = 87507 - 60029 = 27478 SF
OPEN SPACE = 31.4%

PROPOSED OPEN SPACE

BUILDING COVERAGE	18,170 SF
ASPHALT	45,901 SF
CONCRETE PAD	140 SF
RETAINING WALL	76 SF
STAIRS	32 SF
TOTAL	64,319 SF

OPEN SPACE = 87507 - 64319 = 23,188 SF
OPEN SPACE = 26.5% > 20%

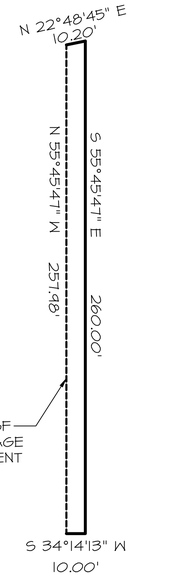
3) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

4) ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

5) A 10' WIDE DRAINAGE EASEMENT IS SHOWN TO ALLOW CONTINUED DRAINAGE USAGE AND MAINTENANCE. A DRAINAGE EASEMENT WILL BE DEDICATED AND ACCEPTED BY THE CITY AND RECORDED AT THE REGISTRY.

6) A CONSTRUCTION GENERAL PERMIT (CGP) FROM THE EPA IS REQUIRED FOR THIS PROJECT.

7) PLANTINGS IN THE PUBLIC RIGHT OF WAY MUST RECEIVE APPROVAL FROM THE TREES & GREENERY COMMITTEE PRIOR TO APPLYING FOR A BUILDING PERMIT.



EASEMENT AREA

1" = 40'

LEGEND

- DRAIN MANHOLE
- SEWER MANHOLE
- WATER
- SEWER
- STORMWATER DRAIN
- GAS
- CATCH BASIN
- WATER SHUT-OFF
- FIRE HYDRANT
- MONUMENT FOUND
- CHAIN LINK FENCE
- VERTICAL GRANITE CURB

ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

ZBA APPROVALS

1) THE PORTSMOUTH ZONING BOARD OF ADJUSTMENT GRANTED THE FOLLOWING VARIANCES ON 5-24-22.

A) SECTION 10.440 USE #4.30 TO ALLOW INDOOR RECREATION USE WHERE THE USE IS NOT PERMITTED.

B) 10.1113.41 TO ALLOW PARKING TO BE LOCATED 2 FEET FROM THE FRONT LOT LINE WHERE 50 FEET IS REQUIRED.

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14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE

SITE PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

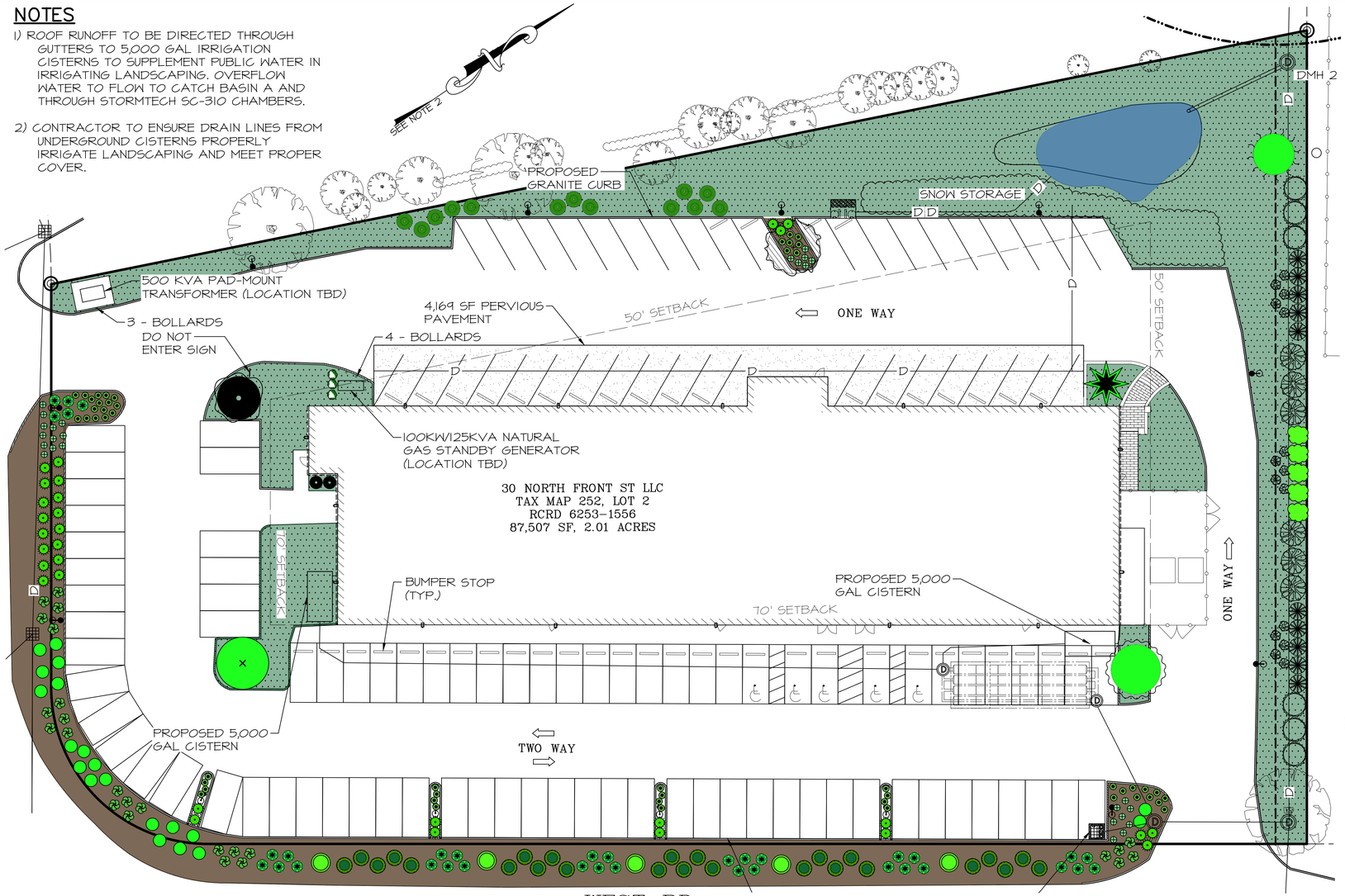
STATE OF NEW HAMPSHIRE · R. ALEX ROSS No. 9409 · LICENSED PROFESSIONAL ENGINEER

JOB NUMBER	DWG. NO.	ISSUE
21-168	2 OF 14	4

NOTES

1) ROOF RUNOFF TO BE DIRECTED THROUGH GUTTERS TO 5,000 GAL IRRIGATION CISTERNS TO SUPPLEMENT PUBLIC WATER IN IRRIGATING LANDSCAPING. OVERFLOW WATER TO FLOW TO CATCH BASIN A AND THROUGH STORMTECH SC-310 CHAMBERS.

2) CONTRACTOR TO ENSURE DRAIN LINES FROM UNDERGROUND CISTERNS PROPERLY IRRIGATE LANDSCAPING AND MEET PROPER COVER.



LEGEND

- LIGHT POST
- ROSA 'KNOCKOUT'
- THUJA OCCIDENTALIS 'HOLMSTRUP'
- SEDUM 'AUTUMN JOY'
- HEMEROCALLIS 'RUBY RETURNS'
- BUXUS 'GREEN VELVET'
- NIPPONANTHEMUM NIPPONICUM
- CALAMAGROSTIS ACUTIFLORA
- SYRINGA X 'BABY KIM'
- PINUS MUGO 'MOPS'
- VACCINIUM CORYMBOSUM
- ROSA RUGOSA
- MALUS 'ADIRONDACK'
- JUNIPERUS CHINENSIS 'MOUNTBATTEN'
- THUJA OCCIDENTALIS 'SMARAGD'
- THUJA OCCIDENTALIS 'SUNKIST'
- VIBURNUM TRILOBUM 'WENTWORTH'
- VIBURNUM PLICATUM TOMENTOSUM 'SHASTA'
- ACER GINNALA 'FLAME'
- ACER X FREEMANII 'ARMSTRONG'
- MAGNOLIA LOEBNERI 'LEONARD MESSEL'
- CORNUS KOUSA 'MILKY WAY'
- TAXUS CUSPIDATA 'CAPITATA'
- LAWN

NOTES

1) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

2) ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

INSTALLATION REQUIREMENTS

1. WHEN REPLACING EXISTING PAVED AREAS WITH AREAS OF LANDSCAPING, PAVEMENT MUST BE REMOVED ALONG WITH 18" OF SUBGRADE. APPROPRIATE LANDSCAPING LOAM MAY THEN BE ADDED WITHIN CURBING.
2. THE INSTALLATION OF A DRIP IRRIGATION SYSTEM IS STRONGLY RECOMMENDED TO ASSURE HEALTHY PLANTS LONG TERM.
3. IN CASE OF DROUGHT (DEFINED AS TWO WEEK PERIOD WITHOUT RAIN) ALL NEW PLANTS SHALL BE WATERED THROUGH NOVEMBER 30TH DURING THE FIRST SEASON IN WHICH THEY ARE INSTALLED. THEY SHALL BE WATERED ONE TIME PER DAY FOR THE FIRST WEEK AFTER INSTALLATION AND THREE TIMES PER WEEK FOR THE REMAINDER OF THE SEASON. AFTER THE FIRST SEASON WHEN THE ROOTS OF THE PLANTS ARE ESTABLISHED THEY WILL REQUIRE DEEP WATERING ONCE A WEEK.
4. SOAKER HOSES WOUND THROUGH THE BED NEAR THE BASE OF EACH PLANT ARE THE RECOMMENDED METHOD OF WATERING DURING THE FIRST SEASON. THESE CAN BE REMOVED AFTER NOVEMBER 30TH WHEN THE PLANTS ARE ESTABLISHED.
5. LAWN SEEDING INFORMATION:

LAWN SEED MIXTURE:

	LB/ACRE	LB/1000SF
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED CLOVER (ALSIKE)	20	0.45
TOTAL	48	1.35

LIME: AT 2 TONS PER ACRE OR 100 LBS PER 1,000 S.F.
FERTILIZER: 10 20 20 (NITROGEN, PHOSPHATE, POTASH AT 500# PER ACRE.
MULCH: HAY OR CLEAN STRAW; 2 TONS/ACRE OR 2 BALES/1000 S.F.

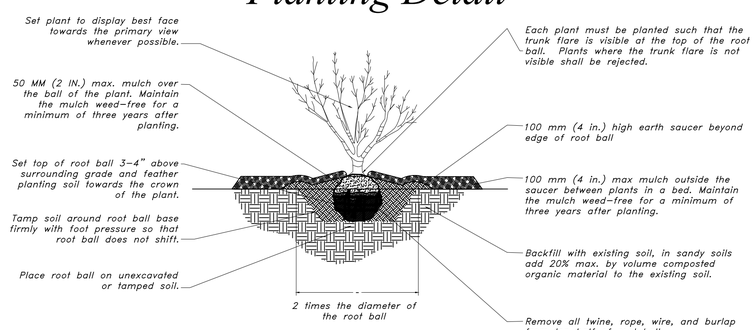
GRADING AND SHAPING:
SLOPES SHALL NOT BE STEEPER THAN 2 TO 1. 3 TO 1 OR FLATTER SLOPES ARE PREFERRED.

SEEDBED PREPARATION:
SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
STONES LARGER THAN FOUR INCHES AND TRASH SHOULD BE REMOVED.
SOD SHOULD BE TILLED TO A DEPTH OF FOUR INCHES TO PREPARE SEEDBED. FERTILIZER & LIME SHOULD BE MIXED INTO THE SOIL.
THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

6. LAWN PREPARATION AND SEEDING SHALL TAKE PLACE AFTER ALL PLANTS ARE INSTALLED.

BOTANICAL NAME	COMMON NAME	SIZE	QTY.
ACER GINNALA 'FLAME'	FLAME AMUR MAPLE	3" C	1
ACER X FREEMANII 'ARMSTRONG'	ARMSTRONG MAPLE	3-3.5" C	1
BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	#5	2
CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	1 GAL	30
CORNUS KOUSA 'MILKY WAY'	MILKY WAY KOUSA DOGWOOD	3" C	1
HEMEROCALLIS 'RUBY RETURNS'	RE-BLOOMING DAYLILY	1 QT	50
JUNIPERUS CHINENSIS 'MOUNTBATTEN'	MOUNTBATTEN JUNIPER	6-7' BB	10
MAGNOLIA LOEBNERI 'LEONARD MESSEL'	LEONARD MESSEL MAGNOLIA	3" C	1
MALUS 'ADIRONDACK'	ADIRONDACK CRABAPPLE	2.5" C	5
NIPPONANTHEMUM NIPPONICUM	MONTAUK DAISY	1 QT	20
PINUS MUGO 'MOPS'	MOPS MUGO PINE	2 GAL	35
ROSA 'KNOCKOUT'	KNOCKOUT ROSE	#10	15
ROSA RUGOSA	SALT SPRAY ROSE	2 GAL	25
SEDUM 'AUTUMN JOY'	AUTUMN JOY STONECROP	1 QT	26
SYRINGA X 'BABY KIM'	DWARF KOREAN LILAC	2 GAL	25
TAXUS CUSPIDATA 'CAPITATA'	PYRAMIDIAL JAPANESE YEW	4' BB	1
THUJA OCCIDENTALIS 'HOLMSTRUP'	HOLMSTRUP ARBORVITAE	4-5' BB	3
THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	5-6' BB	5
THUJA OCCIDENTALIS 'SUNKIST'	SUNKIST ARBORVITAE	4-5' BB	6
VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	2 GAL	13
VIBURNUM PLICATUM TOMENTOSUM 'SHASTA'	SHASTA DOUBLEFILE VIBURNUM	5-6' BB	1
VIRBURNUM TRILOBUM 'WENTWORTH'	WENTWORTH CRANBERRY VIBURNUM	3-4' BB	6

Planting Detail



PLANTING NOTES

1. ALL PLANT MATERIALS SHALL BE FIRST QUALITY NURSERY GROWN STOCK.
2. ALL PLANTS SHALL BE PLANTED IN ACCORDANCE WITH NEW HAMPSHIRE LANDSCAPE ASSOCIATION STANDARDS AND GUARANTEED FOR ONE YEAR BY THE LANDSCAPE CONTRACTOR.
3. AFTER PLANTING, ALL PLANTS SHALL BE FLOODED AT THE BASE WITH WATER FROM A SLOW-RUNNING HOSE FOR 5 MINUTES EACH.
4. ALL PLANTS SHALL BE INSTALLED BEFORE ANY GRASS IS SEEDED.
5. ALL SHRUBS AND PLANTING BEDS SHALL BE MULCHED WITH 3" OF DARK BROWN AGED BARK MULCH AS A FINAL STEP. MULCH MUST BE KEPT 2" AWAY FROM BASE OF EACH PLANT.
6. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
7. ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
8. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED, AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
9. MULCH USED WILL BE NON-COMBUSTIBLE OR APPROVED BY THE PORTSMOUTH FIRE DEPARTMENT

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DRAWN D.D.D.
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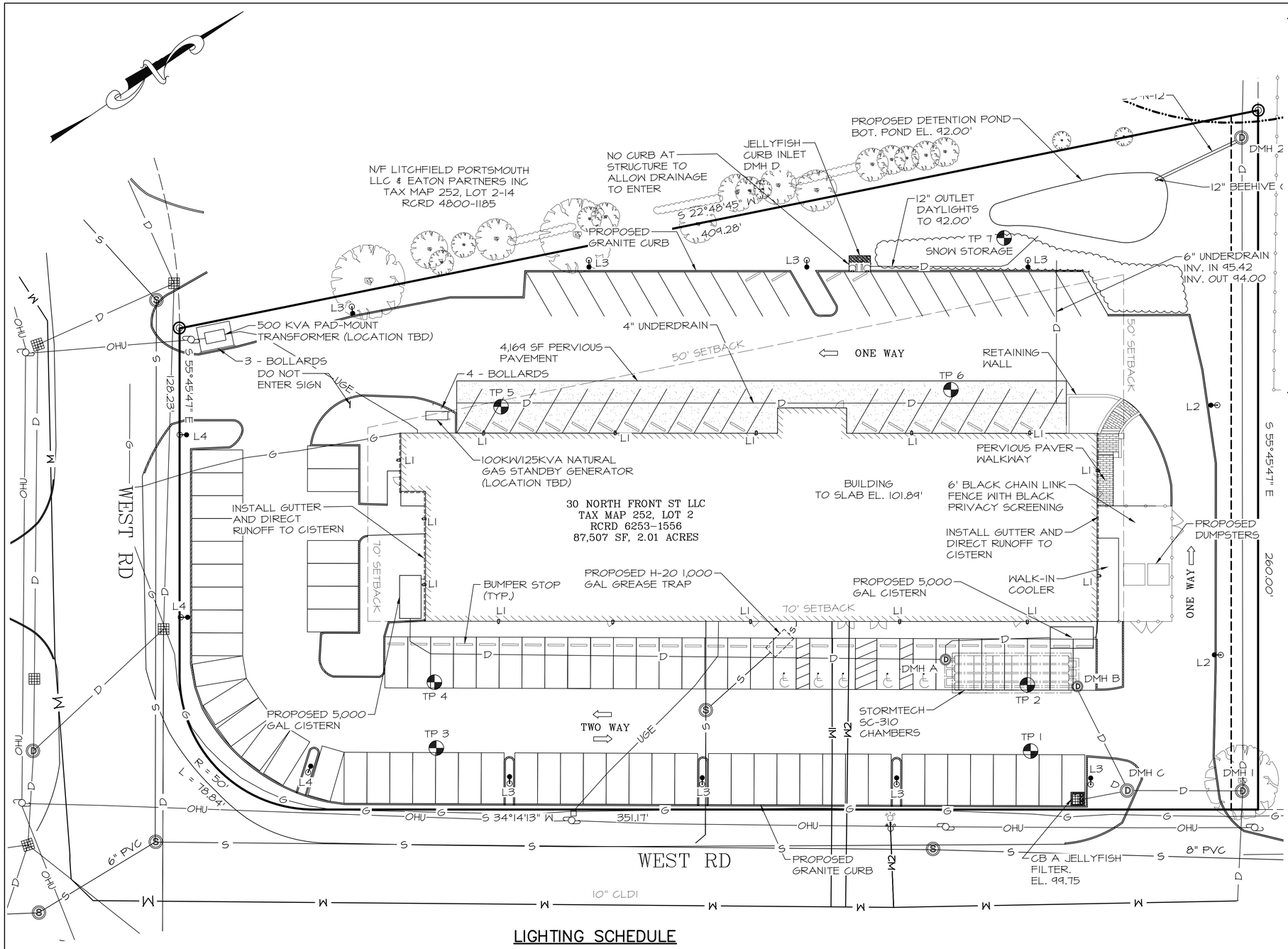
TITLE

LANDSCAPE PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

JOB NUMBER	DWG. NO.	ISSUE
21-168	3 OF 14	4



LIGHTING SCHEDULE

LABEL	SPECIFICATION
L1	WALL PACK - LUMARK XTOR CROSSTOUR MAXX LED
L2	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T2
L3	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T3
L4	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T4

UTILITIES:

CONTACT LIST:

GAS: UNITIL: SUSAN L. DUPLISEA.....603-294-5147
WATER: PORTSMOUTH DPW: 603-427-1530
SEWER: PORTSMOUTH DPW: 603-427-1530
STORMWATER: PORTSMOUTH DPW: 603-427-1530
ELECTRIC: EVERSOURCE: CASEY MCDONALD.....603-436-7708 EXT 5641

PROPOSED UTILITIES:

GAS:
EXISTING 1-¼" GAS LINE SERVES BUILDING

WATER:
EXISTING 2" DOMESTIC WATER - W1
EXISTING 6" FIRE - W2

SEWER:
EXISTING 6" SEWER SERVES BUILDING. THE LINE IS DAMAGE 33' OUT FROM THE BUILDING. DAMAGED SECTION WILL BE REPLACED.

STORMWATER:
INSTALL CB A, CB B, CB C, DMH A, DMH B
INSTALL 45 STORMTECH SC-310 CHAMBERS (ST A)
INSTALL 40 STORMTECH SC-310 CHAMBERS (ST B)
REPLACE CB 1 WITH CB D
INSTALL GUTTERS ON THE SOUTHERN ROOF TO DIRECT ROOF RUNOFF TO STORMTECH A
INSTALL GUTTERS ON THE NORTHERN ROOF TO DIRECT ROOF RUNOFF TO CATCH BASIN B

ELECTRIC:
THE EXISTING SERVICE IS 800A, 208Y/120V 3-PHASE, 4-WIRE
THE PROPOSED SERVICE IS 1600A, 208Y/120V 3-PHASE
INSTALL 500 KVA PAD-MOUNT TRANSFORMER
INSTALL A 100KW/125KVA NATURAL GAS STANDBY GENERATOR
INSTALL SOLAR PANELS ON THE EXISTING ROOF

GENERAL NOTES

1) CONTRACTOR TO REVIEW ALL SURFACING TYPES, AND MATERIAL SPECIFICATIONS WITH COMMISSIONER OF PUBLIC WORKS.
2) ALL NECESSARY NHDOT, NHDES & TOWN PERMITS MUST BE OBTAINED.
3) ALL CONSTRUCTION SHALL BE PER NH-DOT, STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION. LATEST REVISION.
4) CONTRACTOR SHALL MEET STATE AND TOWN REQUIREMENTS. TO ASSURE TYPE, SEPARATION, COVER, ETC. ALWAYS CALL DIGSAFE PRIOR TO DIGGING. UTILITIES SHOWN ARE APPROXIMATE AND MUST BE VERIFIED.

LEGEND

- DRAIN MANHOLE
- SEWER MANHOLE
- WATER
- SEWER
- STORMWATER DRAIN
- GAS
- CATCH BASIN
- WATER SHUT-OFF
- FIRE HYDRANT
- MONUMENT FOUND
- CHAIN LINK FENCE
- VERTICAL GRANITE CURB
- UTILITY POLE
- OVERHEAD UTILITY
- DRAINAGE FLOW PATH
- EXISTING CONTOUR

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
SCALE: 1" = 20'

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TITLE

UTILITY PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER 21-168 | DWG. NO. 4 OF 14 | ISSUE 4

NOTES

1) PARKING SPACES PROVIDED = 119 SPACES

N/F LITCHFIELD PORTSMOUTH LLC & EATON PARTNERS INC
TAX MAP 252, LOT 2-14
RCRD 4800-1185

PROPOSED GRANITE CURB

S 22°48'45" W
409.28'

SNOW STORAGE

19.0'

8.5'

4,169 SF PERVIOUS PAVEMENT

50' SETBACK

24.0'

ONE WAY

AASHTO WB-50 TRUCK TURNING RADIUS

50' SETBACK

S 55°45'47" E
128.23'

10.42'

DO NOT ENTER SIGN

30 NORTH FRONT ST LLC
TAX MAP 252, LOT 2
RCRD 6253-1556
87,507 SF, 2.01 ACRES

70' SETBACK

BUMPER STOP (TYP.)

PROPOSED 5,000 GAL CISTERN

70' SETBACK

24.0'

ONE WAY

S 55°45'47" E
260.00'

N/F ONE HUNDRED WEST LLC
TAX MAP 252, LOT 2-12
RCRD 3589-1427

16.0'

19.0'

25.5'

PROPOSED 5,000 GAL CISTERN

8.5'

24.0'

TWO WAY

5.0'

8.0'

R = 50.'
L = 78.84'

S 34°14'13" W
351.17'

WEST RD

PROPOSED GRANITE CURB

CB A JELLYFISH FILTER. EL. 99.75

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
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SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE

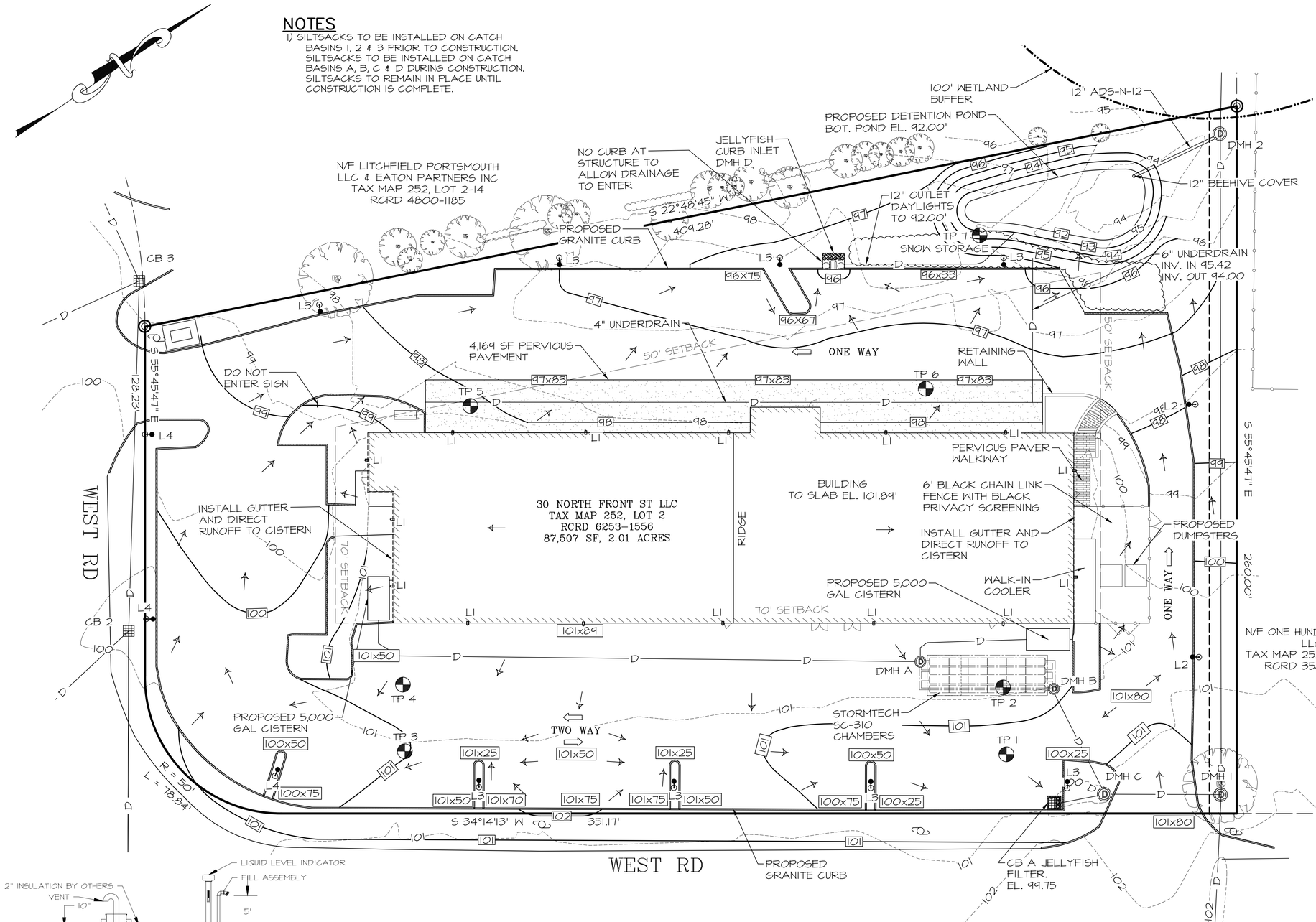
PARKING PLAN

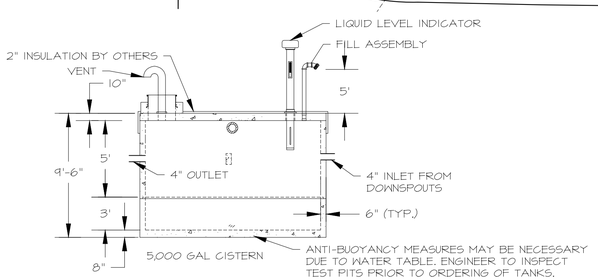
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	5 OF 14	4

NOTES

1) SILTSACKS TO BE INSTALLED ON CATCH BASINS 1, 2 & 3 PRIOR TO CONSTRUCTION. SILTSACKS TO BE INSTALLED ON CATCH BASINS A, B, C & D DURING CONSTRUCTION. SILTSACKS TO REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.





IRRIGATION CISTERN (TYP.)

NTS

EXISTING STRUCTURES

CATCH BASINS

CB #1
RIM EL. 99.28
INV. OUT 95.28 (12" RCP)

CB #2
RIM EL. 99.66
INV. OUT 95.26

CB #3
RIM EL. 98.36
INV. OUT 94.06

DRAIN MANHOLES

DMH #1
RIM EL. 101.37
INV. IN 93.37 (24" RCP) PROPOSED
INV. IN 93.12 (24" RCP)
INV. OUT 92.79 (24" RCP)

DMH #2
RIM EL. 95.64
INV. IN 92.24 (4" ADS-N-12) REMOVED
INV. IN 90.75 (12" ADS-N-12) PROPOSED
INV. IN 90.50 (24" RCP)
INV. OUT 90.47 (24" RCP)

PROPOSED STRUCTURES

CATCH BASINS

CB A
RIM EL. 99.75
INV. OUT 95.40 (12" ADS-N-12)
STRUCTURE: 4'Ø JELLYFISH FILTER

DRAIN MANHOLES

DMH A
RIM EL. 101.50
INV. IN 98.25 (4" ADS-N-12)
INV. IN 98.25 (4" ADS-N-12)
INV. OUT 98.17 (8" ADS-N-12)
INV. OUT 98.17 (12" ADS-N-12)
STRUCTURE: 4' Ø CONC. BASIN

DMH B
RIM EL. 101.00
INV. IN 98.17 (12" ADS-N-12)
INV. OUT 98.00 (12" ADS-N-12)
STRUCTURE: 4' Ø CONC. BASIN

DMH C
RIM EL. 102.25
INV. IN 95.40 (12" ADS-N-12)
INV. IN 95.35 (12" ADS-N-12)
INV. OUT 95.28 (24" ADS-N-12)
STRUCTURE: 4' Ø CONC. BASIN

DMH D
RIM EL. 96.25
CURB INLET EL. 96.00
INV. OUT 92.75 (12" ADS-N-12)
STRUCTURE: 6'x8' JELLYFISH FILTER

LEGEND

——o——o——	CHAIN LINK FENCE	(D)	DRAIN MANHOLE
———	VERTICAL GRANITE CURB	(S)	SEWER MANHOLE
~Q~	UTILITY POLE	——W——	WATER
—OHU—	OVERHEAD UTILITY	——S——	SEWER
→	DRAINAGE FLOW PATH	——D——	STORMWATER DRAIN
---97---	EXISTING CONTOUR	——G——	GAS
—97—	PROPOSED CONTOUR	▦	CATCH BASIN
101x50	EXISTING SPOT GRADE		WATER SHUT-OFF
101x50	PROPOSED SPOT GRADE		FIRE HYDRANT
	: SL630 SOLANA SERIES. MOUNTING HEIGHT: 20FT	◎	MONUMENT FOUND

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

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ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE

GRADING & DRAINAGE

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

STATE OF NEW HAMPSHIRE · R. ALEX ROSS No. 9409 · LICENSED PROFESSIONAL ENGINEER

JOB NUMBER	DWG. NO.	ISSUE
21-168	6 OF 14	4

TEST PIT 1 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT			
0	10 YR 5/3 BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
5	10 YR 5/3 BROWN	GRAVELLY SANDY LOAM (FILL)	MASSIVE	MOIST FRIABLE
36	10 YR 3/4 YELLOWISH BROWN, 10% 7.5 YR 5/8 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	GRAVELLY FINE SANDY LOAM	MASSIVE	MOIST FRIABLE

ESHWT	36 INCHES	ROOTS	NONE	RESTRICTIVE LAYERS	N/A
OBSERVED H_2O	NONE	REFUSAL (INCHES):	POSSIBLE @ 54"		
NOTES	OLD GRAVEL PIT, LONG SINCE DEVELOPED, FILL (EXCEPT FOR LAYER IMMEDIATELY BENEATH ASPHALT) MAY ALSO BE UNCONSOLIDATED SPOIL REMAINING AFTER MINING ACTIVITIES				

TEST PIT 2 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
0	10 YR 5/3 BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
14	10 YR 5/3 BROWN	GRAVELLY FINE SANDY LOAM (FILL)	MASSIVE	MOIST FRIABLE
42	10 YR 5/3 BROWN, 10% 7.5 YR 5/8 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	VERY STONY FINE SANDY LOAM (FILL/SPOIL?)	MASSIVE	MOIST FRIABLE

ESHWT	42 INCHES	ROOTS	NONE	RESTRICTIVE LAYERS	N/A
OBSERVED H_2O	NONE	REFUSAL (INCHES):	NONE TO 64"		
NOTES	FILL (EXCEPT FOR LAYER IMMEDIATELY BENEATH ASPHALT) MAY ALSO BE UNCONSOLIDATED SPOIL LEFTOVER FROM MINING ACTIVITIES				

TEST PIT 3 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT			
0	10 YR 5/3 BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
5	10 YR 5/3 BROWN	FINE SAND	MASSIVE	MOIST FRIABLE
23	10 YR 5/3 BROWN, 15% FINE 7.5 YR 5/8 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	FINE SAND, DISCONTINUOUS LENSES OF SILT LOAM FROM 18"-24" IN SOME LOCATIONS	WEAK MEDIUM PLATY	MOIST FRIABLE
35	10 YR 5/3 BROWN (NO REDOXIMORPHIC FEATURES)	VERY FINE SAND	MASSIVE	MOIST FIRM

ESHWT	23 INCHES (PERCHED)	ROOTS	NONE	RESTRICTIVE LAYERS	35"
OBSERVED H_2O	NONE	REFUSAL (INCHES):	NONE TO 66"		
NOTES					

TEST PIT 4 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT			
0	10 YR 5/3 BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
10	10 YR 4/4 DARK YELLOWISH BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
18	10 YR 4/2 DARK GRAYISH BROWN, ≤3% 10 YR 5/2 GRAYISH BROWN REDOXIMORPHIC DEPLETIONS	GRAVELLY SANDY LOAM (FILL)	WEAK FINE SUBANGULAR BLOCKY	MOIST FRIABLE
24	10 YR 5/3 BROWN, 5% FINE 10 YR 5/6 YELLOWISH BROWN REDOXIMORPHIC CONCENTRATIONS	FINE SAND, DISCONTINUOUS LENSES OF SILT LOAM FROM 18"-24" IN SOME PIT LOCATIONS	WEAK MEDIUM PLATY	MOIST FRIABLE
36	10 YR 5/3 BROWN (NO REDOXIMORPHIC FEATURES)	VERY FINE SAND (W/ DISCONTINUOUS LENSES OF SILT LOAM)	MASSIVE (WEAK FINE PLATY)	MOIST FIRM

ESHWT	23 INCHES (PERCHED-SHORT TERM)	ROOTS	NONE	RESTRICTIVE LAYERS	36"
OBSERVED H_2O	NONE	REFUSAL (INCHES):	NONE TO 66"		
NOTES	LOW CONFIDENCE LEVEL IN REDOXIMORPHIC FEATURES AT 24" - MORPHOLOGY POSSIBLY INFLUENCED BY ROOF RUNOFF, CONVERSELYM OTHER FEATURES RELICT - POSSIBLY REFLECTIVE OF FORMER CONDITIONS				

TEST PIT 5 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	CRUSHED STONE (1.5")			
0	10 YR 6/3 PALE BROWN	SAND (FILL)	SINGLE GRAIN	MOIST FRIABLE
8	10 YR 5/4 BROWN	FINE SAND (POSSIBLE FILL)	MASSIVE	MOIST FRIABLE
26	10 YR 5/3 BROWN, 10% 7.5 YR 5/8 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS AND 10% 10 YR 6/2 LIGHT BROWNISH GRAY REDOXIMORPHIC DEPLETIONS	VERY FINE SAND WITH DISCONTINUOUS LENSES OF SILT	MASSIVE	MOIST FRIABLE
35	10 YR 5/3 BROWN (NO REDOXIMORPHIC FEAUTRES)	VERY FINE SAND	MASSIVE	MOIST FIRM

ESHWT	26 INCHES	ROOTS	NONE	RESTRICTIVE LAYERS	N/A
OBSERVED H_2O	NONE	REFUSAL (INCHES):	POSSIBLE @ 60"		
NOTES	OLD GRAVEL PIT, LONG SINCE DEVELOPED, POSSIBLE PARALITHIC BEDROCK CONTACT, PITS LOCATED BEHIND STRUCTURE.				

TEST PIT 6 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	CRUSHED STONE (1.5")			
0	10 YR 6/3 PALE BROWN	SAND (FILL)	SINGLE GRAIN	MOIST FRIABLE
5	10 YR 4/3 BROWN	FINE SANDY LOAM (FILL)	MASSIVE	MOIST FRIABLE
10	2.5Y 5/4 OLIVE BROWN	FINE SAND	MASSIVE	MOIST FRIABLE
26	2.5 YR 4/2 DARK GRAYISH BROWN, 5% 2.5Y 5/6 LIGHT OLIVE BROWN AND 5% 2.5Y 6/2 LIGHT BROWNISH GRAY REDOXIMORPHIC DEPLETIONS	FINE SANDY LOAM	MASSIVE	MOIST FIRM
36	2.5Y 5/3 OLIVE BROWN	FINE SANDY LOAM	MASSIVE	MOIST FRIABLE

ESHWT	26 INCHES (PERCHED)	ROOTS	NONE	MINERAL RESTRICTIVE LAYER	26"
OBSERVED H_2O	NONE	REFUSAL (INCHES):	NONE TO 78"		

TEST PIT 7 (of 7)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
0	10 YR 3/3 DARK BROWN	FINE SANDY LOAM (FILL)	WEAK FINE GRANULAR	MOIST FRIABLE
12	2.5 YR 4/3 OLIVE BROWN	STONY SANDY LOAM (FILL)	MASSIVE	MOIST FRIABLE
21	2.5 Y 5/3 LIGHT OLIVE BROWN, 15% 7.5 YR 5/6 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS AND 15% 2.5 Y 6/2 LIGHT BROWNISH GRAY REDOXIMORPHIC DEPLETIONS	FINE SANDY LOAM (FILL)	MASSIVE	MOIST TO WET FRIABLE
36	2.5 Y 4/2 DARK GRAYISH BROWN (NO REDOXIMORPHIC FEATURES)	FINE SANDY LOAM (FILL)	MASSIVE	MOIST FIRM
54	2.5 Y 4/1 DARK GRAY	FINE SANDY LOAM (FILL)	MASSIVE	MOIST TO WET FRIABLE

ESHWT	21 INCHES (PERCHED)	ROOTS	NONE	MINERAL RESTRICTIVE LAYERS	36 INCHES
OBSERVED H_2O	SLOW SEEP AT 21"	REFUSAL (INCHES):	NONE TO 84"		
NOTES	RAIN OCCURRED NIGHT BEFORE				

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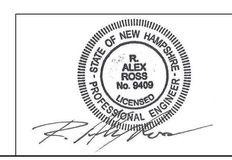
TITLE
TEST PIT DATA

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER 21-168 | DWG. NO. 7 OF 14 | ISSUE 4



STORMTECH GENERAL NOTES

1. STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.

2. OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL **1-888-892-2694** TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT **WWW. STORMTECH.COM** TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.

3. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.):MINIMUM COVER IS 18" (457 mm) NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" (2438 mm) INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" (610 mm), MAXIMUM COVER IS 96" (2438 mm).

4. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.

5. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.

6. STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.

7. BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.

8. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: **WWW.STORMTECH.COM**. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.

9. THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.

10. STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM**

SC-310 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-310.

2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE OR POLYETHYLENE COPOLYMERS.

3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".

4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.

5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.

6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.

7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2922 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.

9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM

1. STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.

2. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".

3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.

4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.

5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.

6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.

7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).

8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.

9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

1. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".

2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".

3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".

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   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE"
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".

3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B.
- C. ALL ISOLATOR ROWS
  - C.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - C.2. USING A FLASH LIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE. MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY. FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - C.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

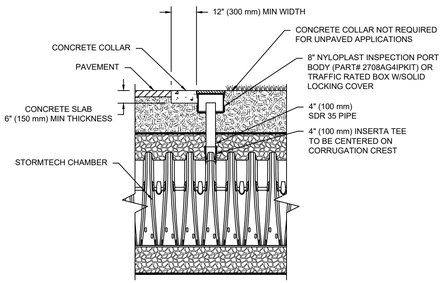
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

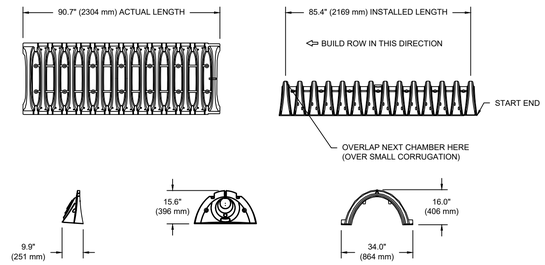
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS. ADJUSTMENT TO THE INSPECTION INTERVAL TIMEFRAME SHALL NOT BE GREATER THAN 12 MONTHS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" INSPECTION PORT DETAIL

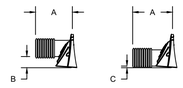
N.T.S.



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 16.0" X 85.4"	(864 mm X 406 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	(0.88 m³)
WEIGHT	35.0 lbs.	(16.8 kg)

*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC			---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC			---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC			---	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)
SC310EPE12BR	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

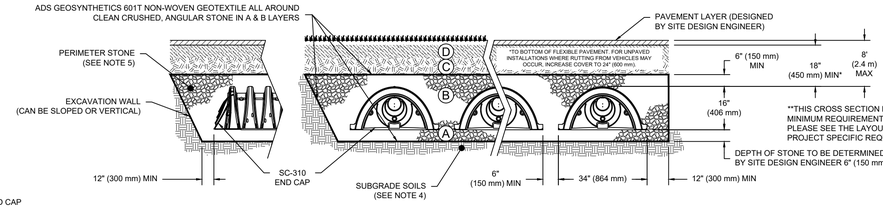
NOTE: ALL DIMENSIONS ARE NOMINAL

SC-310 TECHNICAL SPECIFICATIONS

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

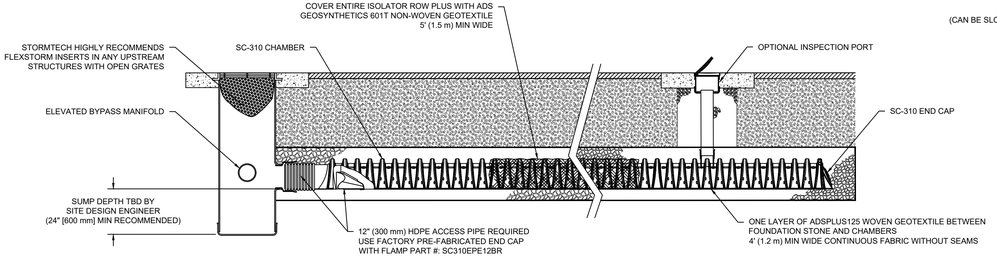
	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE; "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.



ISOLATOR ROW PROFILE

N.T.S.

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St
Portsmouth, NH 03801
(603) 433-7560

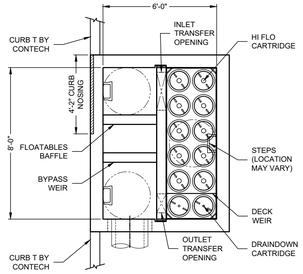
CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE

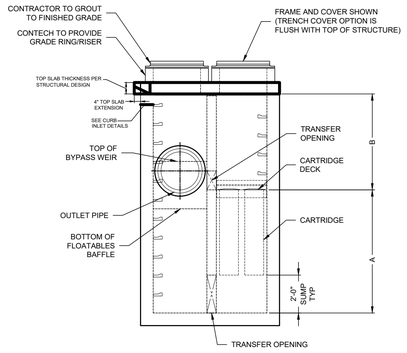
STORMTECH DETAILS

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	8 OF 14	4



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

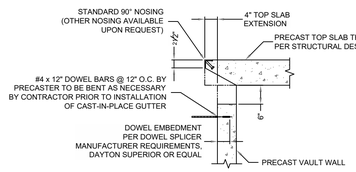


ELEVATION VIEW

JELLYFISH FILTER JFPD0806-3-1 (DMH D) DETAIL

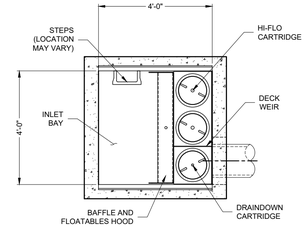
N.T.S.

JELLYFISH (JFPD0806-3-1) DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

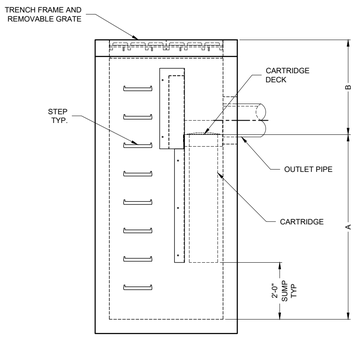


SECTION VIEW

EXTENDED TOP SLAB CURB INLET DETAIL
(VAULT IS SET BEHIND CURB)
NOT TO SCALE



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH FILTER JFSI0404 (CBA) DETAIL

N.T.S.

JELLYFISH (JFSI0404) DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD SURFACE INLET STYLE WITH TRENCH GRATE AND COVER IS SHOWN. ALTERNATE CURB INLET OR PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.45	0.33	0.22	0.12
OUTLET INVERT TO RIM (MIN) (B)	3'-4"	3'-4"	3'-4"	3'-4"

GENERAL NOTES:

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE (WHERE APPLICABLE) AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

TECHO-BLOC & PERVIOUS PAVER INSTALLATION GENERAL NOTES

DATA COLLECTION

1. DETERMINE THE SIZE, SHAPE AND INTENDED USE OF FINISHED AREAS.
2. CLASSIFY SUB-GRADE SOILS.
3. DOCUMENT ALL EXISTING CONDITIONS. (FIXED POINTS, EXISTING GRADES, SITE CONTOURS, ETC)
4. DOCUMENT SOIL TYPE, LOCATION, AND ELEVATION OF BELOW GRADE AND OVERHEAD UTILITIES BOTH PUBLIC AND PRIVATE.
5. ENSURE PUBLIC UTILITIES ARE MARKED THROUGH THE USE OF LOCATING SERVICE.
6. DETERMINE THE CROSS SECTION DESIGN OF THE SYSTEM BASED ON SOIL TYPE AND APPLICATION, SHOWING PROPOSED SUB-GRADE AND FINISHED GRADE ELEVATIONS AND ALL GEOTEXTILES AND DRAINAGE DRAINAGE PIPES NEEDED FOR CONSTRUCTION.
7. ESTABLISH THE TYPE, LOCATION, AND ELEVATION OF RELIEF STRUCTURES IF REQUIRED (OVERFLOW PIPE DISCHARGING TO RAIN GARDEN, ETC).
8. DETERMINE CURB OR EDGE RESTRAINT TYPE, ELEVATION, AND LOCATION.
9. CHOOSE PATTERN APPROPRIATE TO THE APPLICATION (TRAFFIC TYPE AND LOAD).

EXCAVATION

1. BEFORE EXCAVATING, CALL ALL LOCAL UTILITY COMPANIES (E.G., PHONE, GAS, ELECTRICAL) TO ENSURE THAT THE AREA IN WHICH YOU PLAN TO DIG IS CLEAR OF UNDERGROUND CABLES OR WIRES. IF ANY ARE FOUND, PLEASE NOTIFY THE APPROPRIATE COMPANIES BEFORE YOU BEGIN.
2. EXCAVATION DEPTH IS DETERMINE FROM THE FOUNDATION THICKNESS ACCORDING TO THE PROJECT SPECIFICATIONS (FOUNDATION THICKNESS IS DETERMINED BY QUALIFIED ENGINEER BASED ON STRUCTURAL AND HYDROLOGIC ANALYSIS)
3. THE SLOPE OF THE SUB-GRADE WILL DEPEND ON DRAINAGE DESIGN AND INFILTRATION TYPE, A MINIMUM SLOPE OF 5% (⅛" PER FOOT) IS REQUIRED.
4. THE DISTANCE THAT THE EXCAVATED AREA SHOULD EXTEND BEYOND THE AREA TO BE PAVED SHALL BE ONE TO 1.5 TIMES THE THICKNESS OF THE FOUNDATION. EXTRA SPACE ENSURE STABILITY OF PAVERS NEAR EDGE AND EDGE RESTRAINTS.
5. LEVEL THE BOTTOM OF THE EXCAVATED AREA WITH A RAKE.
6. COMPACTION WILL REDUCE THE PERMEABILITY OF THE SUB-GRADE. CARE SHOULD BE TAKEN TO MAINTAIN UNDISTURBED SOIL INFILTRATION DURING EXCAVATION AND CONSTRUCTION. STABILIZATION OF SUB-GRADE MAY BE REQUIRED WITH WEAK, OR CONTINUOUSLY SATURATED SOILS. REDUCED INFILTRATION MAY REQUIRE DRAINAGE PIPES WITHIN THE SUB-BASE TO CONFORM TO STORMWATER DRAINAGE REQUIREMENTS.

GEOTEXTILES, IMPERMEABLE LINERS, AND DRAIN PIPES.

1. USE A WOVEN GEOTEXTILE WITH HIGH BI-AXEL STRENGTH.
2. PLACE THE GEOTEXTILE ON THE BOTTOM AND SIDES OF THE SOIL SUB-GRADE. ELIMINATE WRINKLES IN THE GEOTEXTILE AND ENSURE IT IS NOT DAMAGED DURING CONSTRUCTION.
3. OVERLAP OF GEOTEXTILE SHALL BE A MINIMUM 2'-0" IN THE DIRECTION OF DRAINAGE. OVERLAPPING SHOULD BE "SHINGLE" STYLE WITH RESPECT TO ANY SLOPE DIRECTION AND BASE STONE DISTRIBUTION DIRECTION. KEEP PROPERLY TENSIONED, ELIMINATE WRINKLES, AND AVOID DAMAGING FABRIC (NO SPIKES).

SUB-BASE

1. USE SUB-BASE ASTM NO. 2 OR NO. 3 MEETING THE FOLLOWING REQUIREMENTS:
   A. 90% FRACTURED SYMMETRICAL PARTICALS
   B. LESS THAN 5% PASSING 200 SIEVE
   C. INDUSTRY HARDNESS TESTED
2. MOISTEN SPREAD AND COMPACT ASTM NO. 2 AGGREGATE SUB-BASE IN MINIMUM 6" LIFTS (WITHOUT DAMAGING OR DISTORTING THE GEOTEXTILE).
3. MAKE AT LEAST TWO PASSES IN VIBRATORY MODE FOLLOWED BY AT LEAST TWO PASSES IN STATIC MODE WITH A MINIMUM 10 TON VIBRATORY ROLLER, UNTIL THERE IS NOT VISIBLE MOVEMENT OF THE AGGREGATE.
4. DO NOT ALLOW COMPACTOR TO CRUSH AGGREGATE.
5. SURFACE TOLERANCE OF THE ASTM NO. 2 SUB-BASE SHOULD BE ±2½" OVER 10'.

EDGE RESTRAINT

1. INSTALL AVIGNON, BELGIK, PIETRA, TUNDRA, OR UNIVERSAL EDGE CUT UNITS. CAST-IN-PLACE CONCRETE OR PRECAST CONCRETE CURBS SHALL BE UTILIZED IN VEHICULAR APPLICATIONS.
2. EDGE RESTRAINT MAY REST ON AN OPEN-GRADED OR DENSE-GRADED AGGREGATE BASE.

BASE

1. MOISTEN, SPREAD AND COMPACT THE ASTM NO. 57 AGGREGATE BASE LAYER IN ONE 4" THICK LIFT.
2. MAKE A MINIMUM OF TWO PASSES IN VIBRATORY MODE FOLLOWED BY AT LEAST TWO STATIC MODE WITH A MINIMUM 10 TON ROLLER, UNTIL NO VISIBLE MOVEMENT OF THE AGGREGATE. ALTERNATIVELY, A 13,500 LB PLATE COMPACTOR CAN BE USED TO COMPACTER ASTM NO. 57 AGGREGATE BASE.
3. DO NOT ALLOW COMPACTOR TO CRUSH AGGREGATE.
4. SURFACE TOLERANCE OF THE ASTM NO. 57 BASE SHOULD BE ±1" OVER 10'.

BEDDING COURSE

1. MOISTEN, SPREAD AND SCREED ASTM NO 8. AGGREGATE BEDDING LAYER IN ONE 2" THICK LIFT
2. SURFACE TOLERANCE OF THE ASTM NO 8. BEDDING COURSE ±⅜" OVER 10'
3. CONSTRUCTION EQUIPMENT AND PEDESTRIAN TRAVEL ON SCREEDED BEDDING COARSE IS PROHIBITED.

PAVER

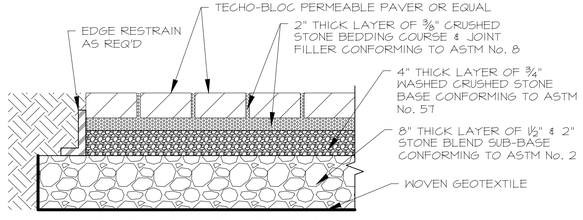
1. PAVERS SHOULD BE PLACED IN PATTERN SHOWN ON DRAWINGS. LAY UNITS TIGHT TO DESIGNATED LAYING PATTERNS. UNITS HAVE LUGS TO MAINTAIN CONSISTENT JOINT WIDTH.
2. IN SLOPED CONDITIONS START LAYING FROM THE BOTTOM IN AN UPHILL DIRECTION.
3. THE MINIMUM SLOPE FOR PERMEABLE PAVEMENT SURFACE IS 1%.
4. INFLO PAVERS CAN BE INSTALLED WITH TBI0051 (TECHO-BLOC MECHANICAL TOOL) TO EXPEDITE INSTALLATION.
5. WHEN SUBJECT IT VEHICULAR TRAFFIC, CUT UNITS SHOULD NOT BE SMALLER THEN ⅓ THE WHOLE PAVER. WHEN USING CUT PAVERS MAINTAIN JOINT.
6. IN VEHICULAR APPLICATION LAY PATTERN PERPENDICULAR TO TRAFFIC FLOW.

JOINT FILL

1. FILL PAVER JOINT OPENINGS WITH ASTM NO. 8 AGGREGATE. SWEEP STONE TO FILL JOINTS. SURFACE MUST BE SWEPT CLEAN PRIOR TO COMPACTION
2. COMPACT WITH 5,000 LB PLATE COMPACTOR (TWO PASSES MINIMUM). INSTALL OF NEOPRENE PAD TO PROTECT THE TEXTURE OF THE PAVING UNITS.
3. DO NOT COMPACT WITHIN 6' OF UNRESTRAINED EDGES OF PAVERS.
4. APPLY ADDITIONAL AGGREGATE TO FILL THE JOINT OPENINGS IF NEEDED AND COMPACT.
5. SURFACE TOLERANCE OF COMPACTED PAVERS SHOULD BE ±⅜" OVER 10'.

POST INSTALLATION PROTECTION

1. MAINTAIN EROSION AND SEDIMENT MEASURES AT PERIMETER TO PREVENT CONTAMINATION OF POROUS PAVEMENT SYSTEM.



PERVIOUS PAVERS DETAIL

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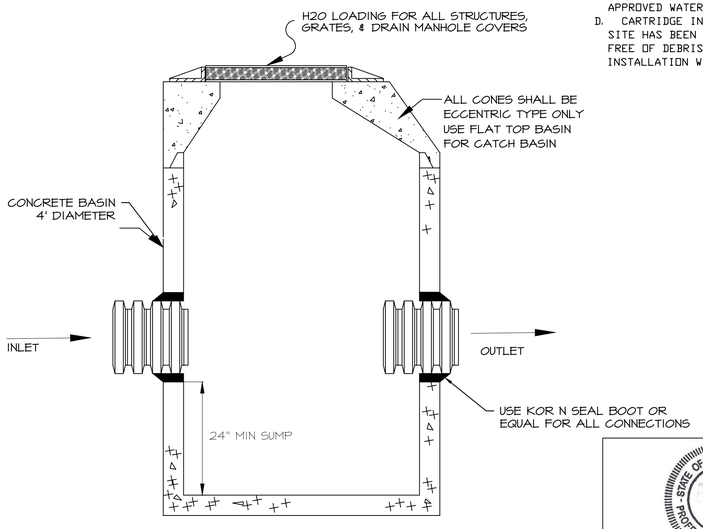

PROPOSED DRAIN MANHOLE (TYP.)

N.T.S.

4	8/8/2022	PB SUBMITTAL	
3	7/21/2022	TAC SUBMITTAL	
2	6/21/2022	TAC SUBMITTAL	
1	6/7/2022	TAC SUBMITTAL	
ISS.	DATE	DESCRIPTION OF ISSUE	

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

ROSS ENGINEERING, LLC
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TITLE
STORMWATER MANAGEMENT DETAILS
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	9 OF 14	4

STATE OF NEW HAMPSHIRE - R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

CONSTRUCTION SPECIFICATIONS FOR POROUS ASPHALT

REFERENCE DOCUMENT: UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, UNH STORMWATER CENTER, FEBRUARY, 2014.

INSTALLATION RECOMMENDATIONS

THE FOLLOWING RECOMMENDATIONS WILL HELP ASSURE THAT THE POROUS ASPHALT PAVEMENT IS PROPERLY INSTALLED.

1. THE FULL PAVEMENT SPECIFICATION MUST BE FOLLOWED CONSCIENTIOUSLY DURING CONSTRUCTION. IT IS BASED ON UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS. THE UNH SPECIFICATION INCLUDE NUMEROUS VITAL PROVISIONS FOR AGGREGATE AND BITUMINOUS MATERIALS, THEIR PLACEMENT, AND QUALITY CONTROL, AMONG ITS NOTABLE PROVISIONS ARE THE FOLLOWING EXAMPLES:
   - OPEN-GRADED AGGREGATE TO MAKE ALL PAVEMENT LAYERS POROUS AND PERMEABLE.
   - STIFF ASPHALT BINDER TO ADHERE TO THE AGGREGATE PARTICLES AND RESIST "DRAINDOWN" THROUGH THE PAVEMENT'S PORES, ENHANCING THE MATERIAL'S PERFORMANCE AND DURABILITY;
   - A SPECIFIC LIMIT ON ALLOWABLE DRAINDOWN, AND ADDITION OF A STYRENE-BUTADIENE-STYRENE (SBS) POLYMER ADDITIVE TO HELP MEET THAT REQUIREMENT;
   - THE POROUS PAVEMENT IS TO BE INSTALLED ONLY AFTER MAJOR CONSTRUCTION IS COMPLETED, SO THAT CONSTRUCTION TRAFFIC WILL NOT TRACK POTENTIALLY CLOGGING SEDIMENT ONTO THE PAVEMENT SURFACE. FOR CONSTRUCTION ACCESS, A TEMPORARY SURFACE WILL BE INSTALLED, SIMILAR IN CONSTRUCTION TO A STANDARD STABILIZED CONSTRUCTION ENTRANCE. THIS TYPE OF SURFACE CAN BEAR CONSTRUCTION TRAFFIC WITHOUT ERODING.
   - PROMINENT AND REPEATED STATEMENTS OF THE SPECIAL NATURE AND PURPOSE OF POROUS PAVEMENT, AND THE NECESSITY OF COMPLYING STRICTLY WITH THESE DISTINCTIVE SPECIFICATIONS.
   - PROTECTION OF THE FINISHED POROUS ASPHALT SURFACE FROM TRACKING OF CONSTRUCTION SEDIMENT.

2. THOROUGH COMMUNICATION WITH THE POROUS ASPHALT SUPPLIER AND PAVEMENT INSTALLER IS ESSENTIAL. THEY MUST UNDERSTAND THE POROUS PAVEMENT'S SPECIAL OBJECTIVES, THE SPECIAL MATERIALS AND PROCEDURES NECESSARY TO MAKE IT EFFECTIVE, AND ANY COMPLIANCE WITH SPECIFICATIONS IS ESSENTIAL. TO THIS END, THE SPECIFICATIONS STATE PROMINENTLY AND REPEATEDLY THE SPECIAL NATURE AND PURPOSE OF THE POROUS MATERIALS. IN ADDITION, THE PROJECT ENGINEER SHOULD MEET WITH THE CONTRACTORS IN PERSON TO REVIEW THE SPECIFICATIONS AND MAKE SURE THE CONTRACTORS UNDERSTAND THE OBJECTIVES. HE SHOULD OBSERVE THE CONTRACTORS ON-SITE FREQUENTLY, TO MAKE SURE THE OBJECTIVES ARE CARRIED OUT. HE SHOULD MAINTAIN A WRITTEN RECORD DOCUMENTING REVIEW AND APPROVAL AT CRITICAL PROJECT STAGES SUCH AS EXCAVATION OF THE SUB GRADE AND QUALITY CHECKS OF BASE AND SURFACE MATERIALS. HE SHOULD INSPECT THE SITE TO MAKE SURE CONSTRUCTION VEHICLES ARE NOT ALLOWED TO TRAVERSE EXCAVATED SUB GRADE OR THE PAVEMENT STRUCTURE AT ANY INAPPROPRIATE STAGE. HE SHOULD FORBID CONSTRUCTION TRAFFIC FROM TRACKING SOIL ONTO THE FINISHED PAVEMENT SURFACE.

INSTALLATION

A. PERCOLATION BEDS
   1. OWNER SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO ALL PERCOLATION BED AND POROUS PAVING WORK.
   2. SUB GRADE PREPARATION
      a. EXISTING SUB GRADE UNDER BED AREAS SHALL NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO STONE BED PLACEMENT.
      b. WHERE EROSION OF SUB GRADE HAS CAUSED ACCUMULATION OF FINE MATERIALS AND/OR SURFACE PONDING, THIS MATERIAL SHALL BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES WITH A YORK RAKE OR EQUIVALENT AND LIGHT TRACTOR.
      c. BRING SUB GRADE OF STONE PERCOLATION BED TO LINE, GRADE, AND ELEVATIONS INDICATED. FILL AND LIGHTLY REGRADE ANY AREAS DAMAGED BY EROSIONS, PONDING, OR TRAFFIC COMPACTION BEFORE THE PLACING OF STONE. ALL BED BOTTOMS ARE LEVEL GRADE.
   3. RECHARGE BED INSTALLATION
      a. UPON COMPLETION OF SUB GRADE WORK, THE ENGINEER SHALL BE NOTIFIED AND SHALL INSPECT AT HIS DISCRETION BEFORE PROCEEDING WITH PERCOLATION BED INSTALLATION.
      b. PERCOLATION BED AGGREGATE SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUB GRADE PREPARATION. ANY ACCUMULATION OF DEBRIS OR SEDIMENT WHICH HAS TAKEN PLACE AFTER APPROVAL OF SUB GRADE SHALL BE REMOVED PRIOR TO INSTALLATION OF AGGREGATE AT NO EXTRA COST TO THE OWNER.
      c. INSTALL COARSE AGGREGATE (CRUSHED STONE) IN 8-INCH MAXIMUM LIFTS, TO A MAXIMUM OF 95% STANDARD PROCTOR COMPACTION, KEEPING EQUIPMENT MOVEMENT OVER STORAGE BED SUBGRADES TO A MINIMUM. INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
      d. INSTALL FILTER COARSE (BANK RUN GRAVEL) IN 8-INCH MAXIMUM LIFTS, TO A MAXIMUM OF 95% STANDARD PROCTOR COMPACTION, KEEPING EQUIPMENT MOVEMENT OVER STORAGE BED SUBGRADES TO A MINIMUM. INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
      e. INSTALL CHOKER BASE COURSE (SEE MATERIALS SECTION) AGGREGATE EVENLY OVER SURFACE OF STONE BED, SUFFICIENT TO ALLOW PLACEMENT OF PAVEMENT, AND NOTIFY ENGINEER FOR APPROVAL. CHOKER BASE COURSE SHALL BE SUFFICIENT TO ALLOW FOR EVEN PLACEMENT OF ASPHALT BUT NO LESS THAN 4-INCH IN DEPTH.
   4. SURROUNDING AREAS
      a. BEFORE THE POROUS PAVEMENT IS INSTALLED, ADJACENT SOIL AREAS SHOULD BE SLOPED AWAY FROM ALL PAVEMENT EDGES, TO PREVENT POTENTIAL SEDIMENT FROM WASHING ON THE PAVEMENT SURFACE.
      b. TO ACCOMPLISH THIS, A SEQUENCE OF TEMPORARY SWALES SHOULD BE EXCAVATED INTO ALL EARTHEN (UNPAVED) AREAS AT LEAST ON THE UPHILL SIDES OF THE PAVEMENT, AND WHERE NECESSARY, TO BELOW THE CURB OR PAVEMENT ELEVATION. ITS SHAPE AND PLANTINGS CAN BE INTEGRATED WITH THE PROJECT'S ARCHITECTURE AND LANDSCAPE, AND DESIGNED TO MAXIMIZE INFILTRATION. SWALE OVERFLOW, WHEN IT OCCURS, CAN BE DISCHARGED FROM ONE SWALE TO ANOTHER BY CONNECTING PIPES UNDER DRIVEWAYS.
      c. BUILDING BASEMENTS AND FOUNDATIONS SHOULD BE WATERPROOFED AS NECESSARY, WHERE THE POROUS PAVEMENT ABUTS BUILDINGS.

INSTALLATION (CONT...)

B. POROUS ASPHALT
   1. TRANSPORTING MATERIAL
      a. TRANSPORTING OF MIX TO THE SITE SHALL BE IN VEHICLES WITH SMOOTH, CLEAN DUMP BEDS THAT HAVE BEEN SPRAYED WITH A NON-PETROLEUM RELEASE AGENT.
      b. THE MIX SHALL BE COVERED DURING TRANSPORT TO CONTROL COOLING.
   2. POROUS BITUMINOUS ASPHALT SHALL NOT BE STORED IN EXCESS OF 90 MINUTES BEFORE PLACEMENT.
   3. ASPHALT PLACEMENT
      a. THE POROUS BITUMINOUS SURFACE COURSE SHALL BE LAID IN ONE OR TWO LIFTS DIRECTLY OVER THE CHOKER COARSE, FILTER COARSE, AND CRUSHED STONE BASE COURSE TO DEPTH INDICATED. IF LAID IN TWO LIFTS THE PAVEMENT SHALL BE CLEANED AND INSPECTED BY THE ENGINEER BEFORE PLACEMENT OF THE SECOND LIFT.
      b. THE LAYING TEMPERATURE OF THE BITUMINOUS MIX SHALL BE BETWEEN 275 DEGREES FAHRENHEIT AND 325 DEGREES FAHRENHEIT (BASED ON RECOMMENDATIONS OF THE ASPHALT SUPPLIER).
      c. INSTALLATION SHALL TAKE PLACE WHEN AMBIENT TEMPERATURES ARE 55 DEGREES FAHRENHEIT OR ABOVE, WHEN MEASURED IN THE SHADE AWAY FROM ARTIFICIAL HEAT:
      d. THE USE OF A REMIXING MATERIAL TRANSFER DEVICE BETWEEN THE TRUCKS AND THE PAVER IS HIGHLY RECOMMENDED TO ELIMINATE COLD LUMPS IN THE MIX.
      e. THE POLYMER-MODIFIED ASPHALT IS VERY DIFFICULT TO RAKE, A WELL-HEATED SCREED SHOULD BE USED TO MINIMIZE THE NEED FOR RAKING.
      f. COMPACTION OF THE SURFACE COURSE SHALL TAKE PLACE WHEN THE SURFACE IS COOL ENOUGH TO RESIST AN 8-12-TON ROLLER. BREAKDOWN ROLLING SHALL OCCUR WHEN THE MIX TEMPERATURE IS BETWEEN 275 DEGREES FAHRENHEIT AND 325 DEGREES FAHRENHEIT. INTERMEDIATE ROLLING SHALL OCCUR WHEN THE MIX TEMPERATURE IS BETWEEN 150 DEGREES FAHRENHEIT AND 200 DEGREES FAHRENHEIT. THE CESSATION TEMPERATURE OCCURS AT APPROXIMATELY 175 DEGREES FAHRENHEIT, AT WHICH POINT THE MIX BECOMES RESISTANT TO COMPACTION. IF COMPACTION HAS NOT BEEN DONE AT TEMPERATURE GREATER THAN THE CESSATION TEMPERATURE, THE PAVEMENT WILL NOT ACHIEVE ADEQUATE DURABILITY.
   4. IN THE EVENT CONSTRUCTION SEDIMENT IS INADVERTENTLY DEPOSITED ON THE FINISHED POROUS SURFACE, IT MUST BE IMMEDIATELY REMOVED BY VACUMING.
   5. AFTER FINAL ROLLING, NO VEHICULAR TRAFFIC OF ANY KIND SHALL BE PERMITTED ON THE SURFACE UNTIL COOLING AND HARDENING HAS TAKEN PLACE, AND IN NO CASE WITHIN THE FIRST 48 HOURS. PROVIDE BARRIERS AS NECESSARY AT NO EXTRA COST TO THE OWNER TO PREVENT VEHICULAR USE; REMOVE AT THE DISCRETION OF THE ENGINEER.
   6. STRIPING PAINT FOR TRAFFIC LANES AND PARKING BAYS SHALL BE CHLORINATED RUBBER BASE, FACTORY MIXED, NON-BLEEDING, FAST DRYING, BEST QUALITY, WHITE TRAFFIC PAINT WITH A LIFE EXPECTANCY OF TWO YEARS UNDER NORMAL TRAFFIC USE.
      a. PAVEMENT-MARKING PAINT; LATEX, WATER-BASE EMULSION, READY-MIXED, COMPLYING WITH FS TT-P-1952.
      b. SWEEP AND CLEAN SURFACE TO ELIMINATE LOOSE MATERIAL AND DUST.
      c. PAINT 4 INCH WIDE PARKING STRIPING AND TRAFFIC LANE STRIPING IN ACCORDANCE WITH LAYOUTS OF PLAN. APPLY PAINT WITH MECHANICAL EQUIPMENT TO PRODUCE UNIFORM STRAIGHT EDGES. APPLY IN TWO COATS AT MANUFACTURER'S RECOMMENDED RATES. PROVIDE CLEAR, SHARP LINES USING WHITE TRAFFIC PAINT, INSTALLED IN ACCORDANCE WITH NHDOT SPECIFICATIONS.
   7. WORK SHALL BE DONE EXPERTLY THROUGHOUT, WITHOUT STAINING OR INJURY TO OTHER WORK. TRANSITION TO ADJACENT IMPERVIOUS BITUMINOUS PAVING SHALL BE MERGED NEATLY WITH FLUSH, CLEAN LINE. FINISHED PAVING SHALL BE EVEN, WITHOUT POCKETS, AND GRADED TO ELEVATIONS SHOWN ON DRAWING.
   8. POROUS PAVEMENT BEDS SHALL NOT BE USED FOR EQUIPMENT OR MATERIALS STORAGE DURING CONSTRUCTION, AND UNDER NO CIRCUMSTANCES SHALL VEHICLES BE ALLOWED TO DEPOSIT SOIL ON PAVED POROUS SURFACES.
   9. REPAIR OF DAMAGED PAVING
      a. ANY EXISTING PAVING ON OR ADJACENT TO THE SITE THAT HAS BEEN DAMAGED AS A RESULT OF CONSTRUCTION WORK SHALL BE REPAIRED TO SATISFACTION OF THE OWNER WITHOUT ADDITIONAL COST TO THE OWNER.
   10. FULL QUALITY CONTROL
      a. THE FULL PERMEABILITY OF THE PAVEMENT SURFACE SHALL BE TESTED BY APPLICATION OF CLEAN WATER AT THE RATE OF AT LEAST 5 GPM OVER THE SURFACE, USING A HOSE OR OTHER DISTRIBUTION DEVISE, WATER USED FOR THE TEST SHALL BE CLEAN, FREE OF SUSPENDED SOLIDS AND DELETERIOUS LIQUIDS AND WILL BE PROVIDED AT NO EXTRA COST TO THE OWNER. ALL APPLIED WATER SHALL INFILTRATE DIRECTLY WITHOUT PUDDLE FORMATION OR SURFACE RUNOFF, AND SHALL BE OBSERVED BY THE ENGINEER AND OWNER.
      b. TEST IN-PLACE BASE AND SURFACE COURSE FOR COMPLIANCE WITH REQUIREMENTS FOR THICKNESS AND SURFACE SMOOTHNESS, REPAIR OR REMOVE AND REPLACE UNACCEPTABLE WORK AS DIRECTED BY THE OWNER.
      c. SURFACE SMOOTHNESS: TEST FINISHED SURFACE FOR SMOOTHNESS AND EVEN DRAINAGE, USING A TEN-FOOT TO CENTERLINE OF PAVED AREA. SURFACE WILL NOT BE ACCEPTED IF GAPS OR RIDGES EXCEED 3/16 OF AN INCH.

MAINTENANCE SPECIFICATIONS FOR POROUS ASPHALT

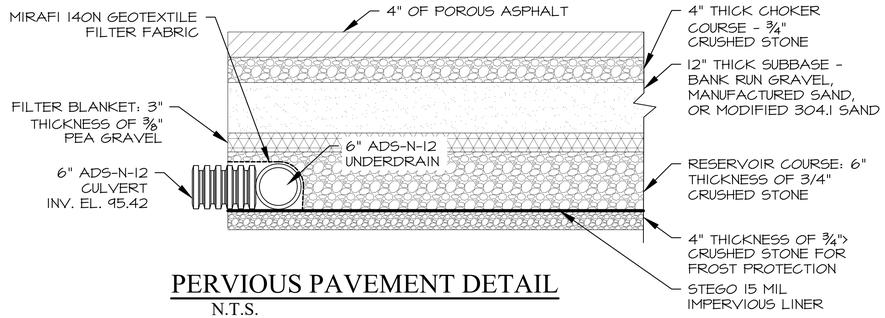
THE FOLLOWING RECOMMENDATIONS WILL HELP ASSURE THAT THE PAVEMENT IS MAINTAINED TO PRESERVE ITS HYDROLOGIC EFFECTIVENESS.

WINTER MAINTENANCE:

1. SANDING FOR WINTER TRACTION IS PROHIBITED. DEICING IS PERMITTED (NaCl, MgCl2, OR EQUIVALENT). REDUCED SALT APPLICATION OF 50% OVER TRADITIONAL PAVEMENT APPLICATION RATES, NONTOXIC, ORGANIC DEICERS, APPLIED EITHER AS BLENDED, MAGNESIUM CHLORIDE-BASED LIQUID PRODUCTS OR AS PRETREATED SALT, ARE PREFERABLE.
2. PLOWING IS ALLOWED, BLADE SHOULD BE SLIGHTLY RAISED (ALTHOUGH NOT NECESSARY, THIS WILL PREVENT PAVEMENT SCARING). ICE AND LIGHT SNOW ACCUMULATION ARE GENERALLY NOT AS PROBLEMATIC AS FOR STANDARD ASPHALT. SNOW WILL ACCUMULATE DURING HEAVIER STORMS AND SHOULD BE PLOWED AFTER 2 TO 4 INCHES OF SNOW ACCUMULATION.

ROUTINE MAINTENANCE:

1. ASPHALT SEAL COATING MUST BE ABSOLUTELY FORBIDDEN. SURFACE SEAL COATING IS NOT REVERSIBLE.
2. THE PAVEMENT SURFACE SHOULD BE VACUMED 2 TO 4 TIMES PER YEAR, ESPECIALLY AFTER WINTER AND FALL SEASONS, AND AT ANY ADDITIONAL TIMES SEDIMENT IS SPILLED, ERODED, OR TRACKED ONTO THE SURFACE.
3. PLANTED AREAS ADJACENT TO PERVIOUS PAVEMENT SHOULD BE WELL MAINTAINED TO PREVENT SOIL WASHOUT ONTO THE PAVEMENT. IF ANY BARE SPOTS OR ERODED AREAS ARE OBSERVED WITHIN THE PLANTED AREAS, THEY SHOULD BE REPLANTED AND/OR STABILIZED AT ONCE.
4. IMMEDIATELY CLEAN ANY SOIL DEPOSITED ON PAVEMENT. SUPERFICIAL DIRT DOES NOT NECESSARILY CLOG THE PAVEMENT VOIDS. HOWEVER, DIRT THAT IS GROUND IN REPEATEDLY BY TIRES CAN LEAD TO CLOGGING. THEREFORE, TRUCKS OR OTHER HEAVY VEHICLES SHOULD BE PREVENTED FROM TRACKING OR SPILLING DIRT ONTO THE PAVEMENT.
5. DO NOT ALLOW CONSTRUCTION STAGING, SOIL/MULCH STORAGE, ETC. ON UNPROTECTED PAVEMENT SURFACE.
6. REPAIRS: FOR THE POROUS ASPHALT PARKING LOT, POTHOLES OF LESS THAN 50 SQUARE FEET CAN BE PATCHED BY ANY MEANS SUITABLE WITH STANDARD PAVEMENT OR A PERVIOUS MIX IS PREFERRED. FOR AREAS GREATER THAN 50 SQ. FT. IS IN NEED OF REPAIR, APPROVAL OF PATCH TYPE SHOULD BE SOUGHT FROM A QUALIFIED ENGINEER. ANY REQUIRED REPAIR OF DRAINAGE STRUCTURES SHOULD BE DONE PROMPTLY TO ENSURE CONTINUED PROPER FUNCTIONING OF THE SYSTEM. REPAIRS TO THE POROUS ASPHALT SIDEWALK SHALL BE MADE WITH A PERVIOUS MIX.
7. WRITTEN AND VERBAL COMMUNICATION TO THE POROUS PAVEMENT'S FUTURE OWNER SHOULD MAKE CLEAR THE PAVEMENT'S SPECIAL PURPOSE AND SPECIAL MAINTENANCE REQUIREMENTS SUCH AS THOSE LISTED HERE.



PERVIOUS PAVEMENT DETAIL

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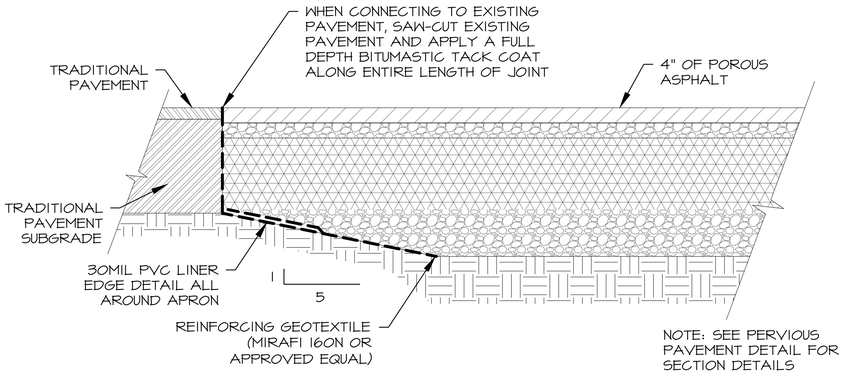

PERVIOUS PAVEMENT TRANSITION DETAIL

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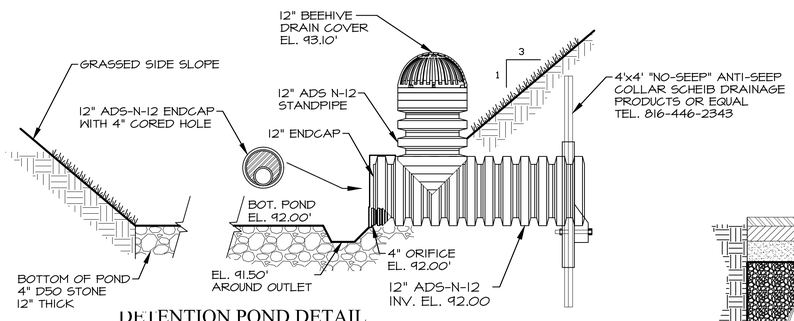
MIX SUMMARY

1. POROUS ASPHALT PAVEMENT MIX PER THE CURRENT UNH STORM WATER CENTER DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS MANUAL.

2. NO WORK SHALL BE STARTED UNTIL THE CONTRACTOR HAS SUBMITTED AND THE ENGINEER HAS APPROVED A MIX DESIGN INCLUDING THE PERCENTAGE OF EACH INGREDIENT INCLUDING BINDER, POLYMER, AND THE JOB-MIX FORMULA FROM SUCH A COMBINATION. THE JOB-MIX FORMULA SHALL ESTABLISH A SINGLE PERCENTAGE OF AGGREGATE PASSING SIEVE AND A SINGLE PERCENTAGE OF BITUMINOUS MATERIAL TO BE ADDED TO THE AGGREGATE. NO CHANGE IN THE JOB-MIX FORMULA MAY BE MADE WITHOUT WRITTEN APPROVAL OF THE ENGINEER. THE JOB-MIX FORMULA MUST FALL WITH THE MASTER RANGE SPECIFIED IN COMPOSITION OF MIXTURE TABLE.

TRANSPORTING MATERIAL: SEE CONSTRUCTION AND INSTALL SPECIFICATIONS



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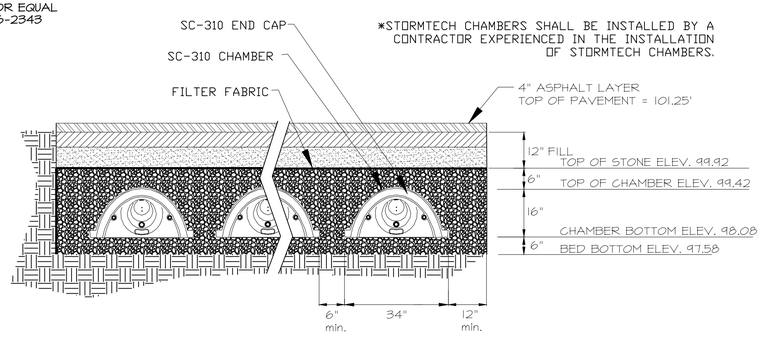

STORMTECH SC-310 CHAMBER SYSTEM CROSS SECTION

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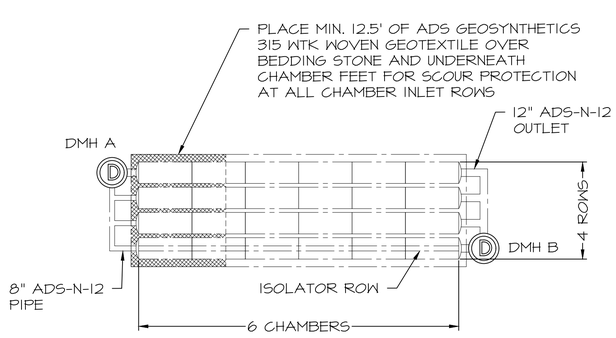

SUBSURFACE CHAMBER LAYOUT

NTS

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
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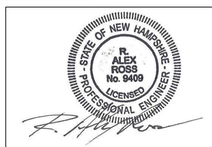

TITLE
STORMWATER MANAGEMENT DETAILS
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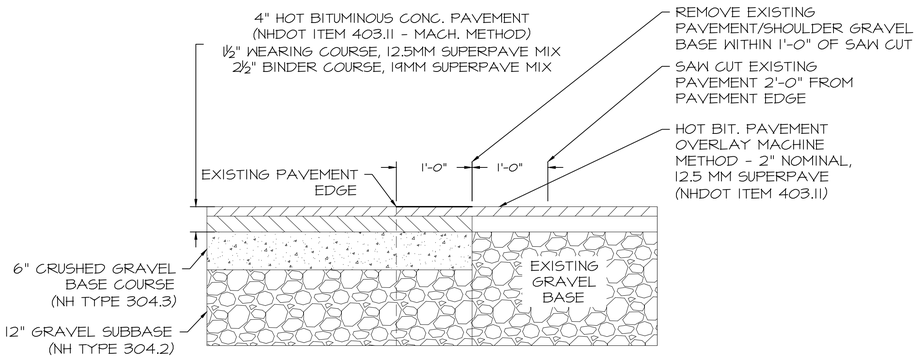
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	10 OF 14	4



PAVEMENT JOINT DETAIL
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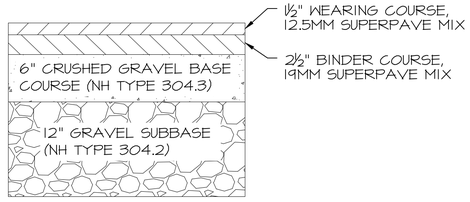

PROPOSED PAVEMENT DETAIL
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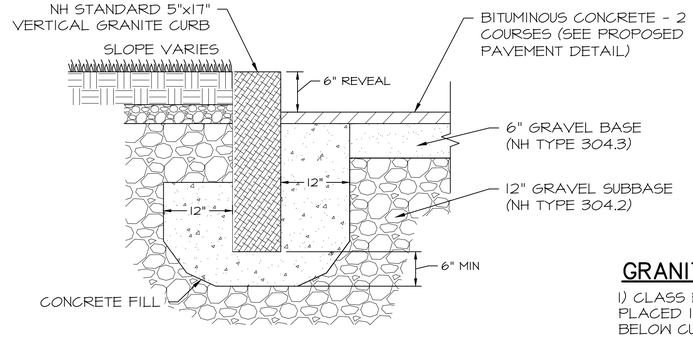


VERTICAL GRANITE CURB DETAIL
N.T.S.

GRANITE CURB NOTES:

1) CLASS B CONCRETE FILL SHALL BE PLACED IN VOIDS IN FRONT, BEHIND, AND BELOW CURBING PRIOR TO INSTALLATION OF GRAVEL BACKING AND FINISH GRADE WEARING COURSE PAVEMENT.

TRENCH NOTES - STORM DRAIN:

1) BEDDING: BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS. NORMAL PIPE BEDDING IS CRUSHED STONE TO THE HAUNCH OF THE PIPE AND SAND BEDDING 6" ABOVE THE CROWN. IF THE TOP OF THE PIPE IS LESS THAN 30" FROM FINISH GRADE, BED PIPE COMPLETELY IN STONE UP TO 6" ABOVE PIPE CROWN. UNDERDRAIN TO HAVE 4" MIN" OF STONE OVER PIPE OR AS NECESSARY TO BE IN CONTACT WITH GRAVEL LAYER OF SELECTS ABOVE. FILTER FABRIC TO BE PLACED IN BETWEEN ALL STONE BEDDING MATERIAL AND SUBSEQUENT LAYERS OF FILL MATERIAL.

2) COMPACTION: ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COZMPACTED TO NOT LESS THAN 95 PERCENT OF AASHTO T99, METHOD C.

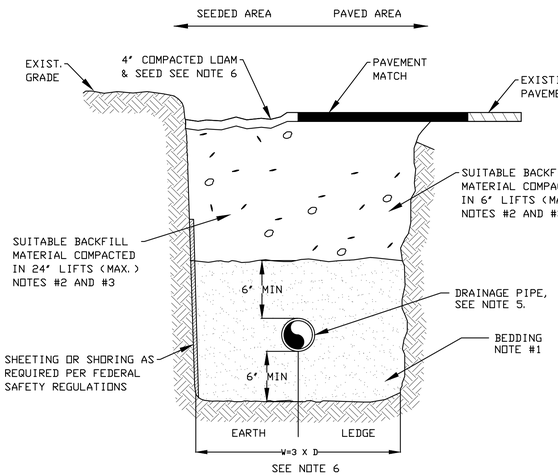
3) SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6 INCHES IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.

   IN SEEDED AREAS, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAD, ROCKS UNDER 12", FROZEN EARTH OR CLAY, IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EAST ACCESS TO THE PIPE WILL BE PRESERVED.

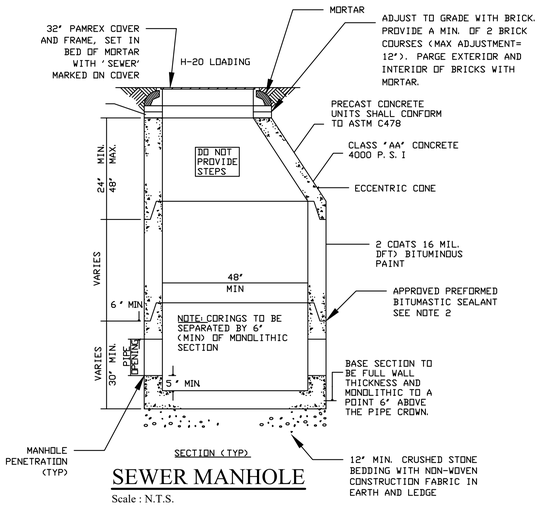
4) BASE COURSE AND PAVEMENT: SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES - DIVISIONS 300 AND 400 RESPECTIVELY.

5) DRAINAGE PIPE: PIPE MATERIALS SHALL BE POLYETHYLENE (SEE SPECIFICATIONS).

6) W=MAXIMUM ALLOWABLE TRENCH WIDTH: W SHALL BE THE MAXIMUM PAYMENT WIDTH FOR ROCK EXCAVATION (TRENCH) AND FOR ORDERED EXCAVATION BELOW GRADE.



TRENCH DETAIL - STORM DRAIN
N.T.S.



SEWER MANHOLE
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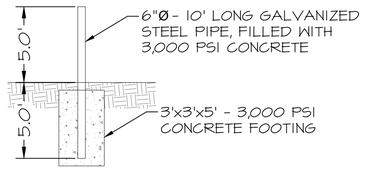
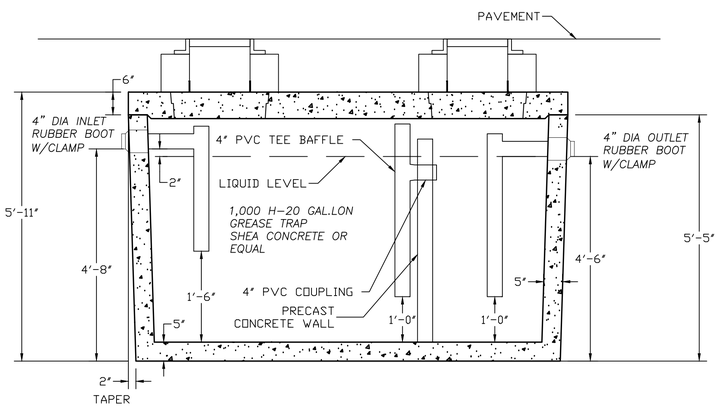


BOLLARD DETAIL
SCALE: NTS



GREASE TRAP DETAIL
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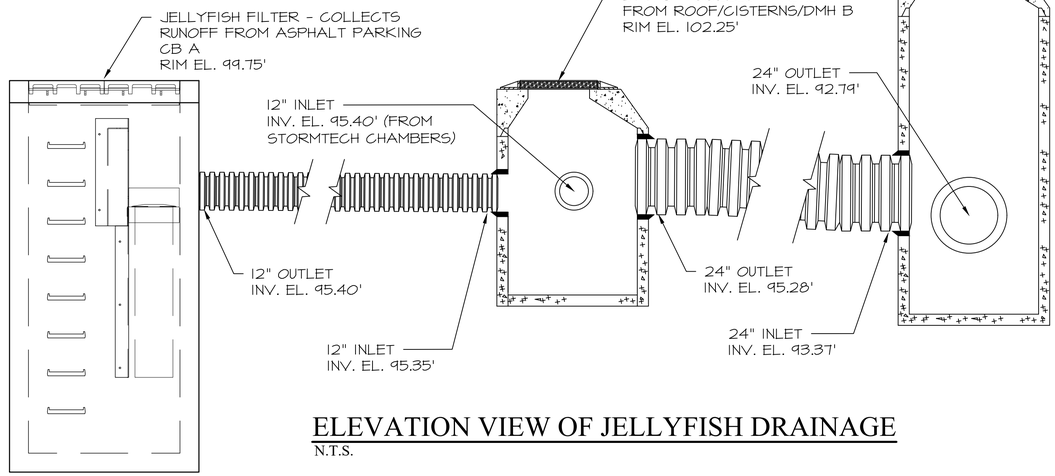

ELEVATION VIEW OF JELLYFISH DRAINAGE
N.T.S.

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
2	6/21/2022	TAC SUBMITTAL
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SCALE	1" = 20'
CHECKED	A.ROSS
DRAWN	D.D.D.
CHECKED	

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STATE OF NEW HAMPSHIRE · R. ALEX ROSS No. 9409 · LICENSED PROFESSIONAL ENGINEER

JOB NUMBER	DWG. NO.	ISSUE
21-168	11 OF 14	4

MAINTENANCE NOTES

A. MAINTENANCE OF COMMON FACILITIES OR PROPERTY

B. MAINTENANCE OF COMMON FACILITIES OR PROPERTY

1. FUTURE OWNERS OR ASSIGNS ARE RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER INFRASTRUCTURE ASSOCIATED WITH THE FACILITY AND THE PROPERTY. THIS INCLUDES THE ROOF DRAINAGE SYSTEM, CISTERN, STORMWATER POND, PERVIOUS PAVERS, STORM TECH CHAMBERS, LANDSCAPED AREAS, PERVIOUS ASPHALT AND CONTECH TREATMENT STRUCTURE.

C. GENERAL INSPECTION AND MAINTENANCE REQUIREMENTS

1. PERMANENT STORMWATER AND SEDIMENT AND EROSION CONTROL FACILITIES TO BE MAINTAINED ON THE SITE INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

   a. PARKING AREAS
   b. PERVIOUS ASPHALT
   c. DETENTION POND
   d. LANDSCAPED AREAS
   e. PERMEABLE PAVERS
   f. CULVERTS & DRAIN LINES
   g. CONTECH JELLYFISH
   h. ROOF DRAINAGE
   i. STORM TECH CHAMBERS
   j. CISTERN

2. MAINTENANCE OF PERMANENT MEASURES SHALL FOLLOW THE FOLLOWING SCHEDULE:

a. PARKING AREAS, DRIVEWAY:

INSPECTION AT THE END OF EVERY WINTER, PRIOR TO THE START OF THE SPRING RAIN SEASON. SWEEPING SHALL BE DONE ONCE IN EARLY FALL AND THEN AFTER SPRING SNOWMELT. SAND/DEBRIS THAT HAS COLLECTED OFF THE DRIVEWAY AND PARKING LOT SHOULD BE REMOVED OFF-SITE AND DISPOSED OF PROPERLY.

b. PERVIOUS ASPHALT:

VISUALLY INSPECT PAVEMENT MONTHLY TO ENSURE IT IS CLEAN OF DEBRIS, DE-WATERS BETWEEN STORMS AND IS CLEAN OF SEDIMENTS. MAINTAIN ALL ADJACENT AND UPLAND AREAS. KEEP SURFACE FREE OF SEDIMENT BY BLOWING, AND VACUUMING AT LEAST AS OFTEN AS ITEM A. ABOVE AND AS NEEDED. AVOID ANY SEALING OR REPAVING WITH IMPERVIOUS MATERIALS.

c. DETENTION POND:

INSPECT INLET AND OUTLET PIPES AND STONED BASIN ANNUALLY. INSPECT FOR ACCUMULATION OF SEDIMENT AND OF PROPER FUNCTION OF PIPES. REMOVED TRASH AND DEBRIS FROM BASIN AND ANY INLET OR OUTLET PIPE OFFSITE. GRASSED SIDE SLOPES SHALL BE MAINTAINED AND MOWED REGULARLY.

d. LANDSCAPED AREAS:

ANNUAL INSPECTION OF SITE'S VEGETATION AND LANDSCAPING. ANY AREAS THAT ARE BARE SHALL BE RESEEDED AND MULCHED WITH HAY OR, IF THE CASE IS EXTREME, LOAMED AND SEEDED OR SODDED TO ENSURE ADEQUATE VEGETATIVE COVER. LANDSCAPE SPECIMENS SHALL BE REPLACED IN-KIND, IF THEY ARE FOUND TO BE DEAD OR DYING.

e. PERMEABLE PAVERS:

REVIEW PERIODICALLY DURING STORM EVENTS FOR PROPER INFILTRATION. INSPECT ONCE PER YEAR BY RUNNING WATER OVER THE SURFACE WHILE WATCHING FOR PROPER INFILTRATION. CLEAN/REMOVE ANY SEDMENT/DEBRIS FROM THE JOINTS TO ENSURE LARGEST SURFACE AREA FOR WATER TO INFILTRATE, PERFORM LIGHT VACUUMING TWICE A YEAR.

f. CULVERTS AND DRAIN LINES:

INSPECT TWICE A YEAR, MORE OFTEN IF NEEDED. INSPECT FOR ACCUMULATION OF DEBRIS. REMOVE MATERIAL FROM INLET/OUTLET AS NECESSARY, DISPOSE OF OFFSITE.

g. CONTECH JELLYFISH TREATMENT STRUCTURE:

SEE ATTACHED JELLYFISH MAINTENANCE GUIDE.

h. **ROOF DRAINAGE:**

THE FOLLOWING RECOMMENDATIONS WILL HELP ASSURE THAT THE ROOF DRAINAGE SYSTEM IS MAINTAINED TO PRESERVE ITS EFFECTIVENESS:

1. INITIALLY, IT SHOULD BE TESTED BY INSERTING A GARDEN HOSE INTO THE INLET AND ALLOWING THE WATER TO RUN AT FULL STRENGTH FOR A MINIMUM OF ONE HOUR. THE WATER SHOULD STAY UNDERGROUND WITHIN THE GRAVEL. IF WATER COMES OUT OF THE OVERFLOW, THE SYSTEM SHOULD BE FURTHER INSPECTED AND POSSIBLY REPLACED. THIS PROCEDURE SHOULD BE PERFORMED EVERY YEAR DURING THE ANNUAL INSPECTION.

2. IN THE SPRING AND FALL, VISUALLY INSPECT THE AREA AROUND THE SYSTEM AND REPAIR ANY EROSION. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. RE-MULCH ANY VOID AREAS BY HAND AS NEEDED. ALSO, INSPECT THE ROOF COLLECTION AND PIPING AND CLEAN AND REPAIR AS NECESSARY.

3. DO NOT PLANT DEEP ROOTED TREES AND SHRUBS WITHIN 5' OF THE SYSTEM.

i. STORM TECH CHAMBERS:

THE FOLLOWING REQUIREMENTS WILL HELP ASSURE THAT THE STORM TECH CHAMBERS SYSTEM IS MAINTAINED TO PRESERVE ITS EFFECTIVENESS:

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT

A. INSPECTION PORTS (IF PRESENT)

A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN

A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED

A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG

A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)

A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

B. ALL ISOLATOR ROWS

B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW

B.2. USING A FLASH LIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE. MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY. FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE

B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80MM) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS

A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1M) OR MORE IS PREFERRED

B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN

C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORM TECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS. ADJUSTMENT TO THE INSPECTION INTERVAL TIMEFRAME SHALL NOT BE GREATER THAN 12 MONTHS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

j. INSPECTION OF SITE SHALL OCCUR MONTHLY FOR THE FIRST FEW MONTHS AFTER CONSTRUCTION. THEN INSPECTIONS CAN OCCUR ON AN ANNUAL BASIS, PREFERABLY AFTER RAIN EVENTS WHEN CLOGGING CAN OCCUR AND BE OBVIOUS. PERMEABLE PAVERS REQUIRE MINIMAL MAINTENANCE; HOWEVER MAINTENANCE IS ABSOLUTELY NECESSARY TO ENSURE A PROPER WORKING SYSTEM.

ii. ASPHALT SEAL COATING IS ABSOLUTELY FORBIDDEN. SURFACE SEAL COATING IS NOT REVERSIBLE.

iii. STREET SWEEPERS WITH VACUUMS, WATER, AND BRUSHES CAN BE USED TO RESTORE PERMEABILITY. FOLLOW SWEEPING WITH HIGH-PRESSURE HOSING OF THE SURFACE PORES. SURFACE SHOULD BE VACUUMED 4 TIMES PER YEAR, AND AT ANY ADDITIONAL TIMES SEDIMENT IS SPILLED, ERODED, OR TRACKED ONTO THE SURFACE.

iv. PLANTED AREAS ADJACENT TO PERVIOUS PAVERS SHOULD BE WELL MAINTAINED TO PREVENT SOIL WASHOUT ONTO THE PAVEMENT. IF ANY BARE SPOTS OR ERODED AREAS ARE OBSERVED WITHIN THE PLANTED AREAS, THEY SHOULD BE REPLANTED AND/OR STABILIZED AT ONCE.

v. IMMEDIATELY CLEAN ANY SOIL DEPOSITED ON PAVERS. SUPERFICIAL DIRT DOES NOT NECESSARILY CLOG THE VOIDS. HOWEVER, DIRT THAT IS GROUND IN REPEATEDLY BY TIRES CAN LEAD TO CLOGGING. THEREFORE, TRUCKS OR OTHER HEAVY VEHICLES SHOULD BE PREVENTED FROM TRACKING OR SPILLING DIRT ONTO THE PAVEMENT. REPLACE ANY DAMAGED PAVING BLOCKS.

vi. DO NOT ALLOW CONSTRUCTION STAGING, SOIL/MULCH STORAGE, ETC. ON UNPROTECTED PAVERS SURFACE.

vii. NO WINTER SANDING. MECHANICAL SNOW AND ICE REMOVAL PREFERRED.

viii. WRITTEN AND VERBAL COMMUNICATION TO THE POROUS PAVER'S FUTURE OWNER SHOULD MAKE CLEAR THE SPECIAL PURPOSE AND SPECIAL MAINTENANCE REQUIREMENTS SUCH AS THOSE LISTED HERE.

viv. OWNERS SHALL PROVIDE A REPORT ON ACTIVITIES PERFORMED THROUGHOUT THE YEAR. REPORT SHALL INCLUDE DOCUMENTATION THAT PAVEMENT CLEANING IS ACCOMPLISHED PER THIS DOCUMENT AND A CERTIFICATION THAT THE SYSTEM CONTINUES TO FUNCTION AS DESIGNED.

j. LOW IMPACT DEVELOPMENT - CISTERN

CISTERNS ARE ABOVE OR UNDERGROUND STORAGE TANKS USED TO COLLECT ROOF RUNOFF. THEY MAY INCLUDE PUMPS AND FILTRATION DEVICES TO REUSE WATER. THEY PROVIDE THE BENEFIT OF REDUCED STORMWATER RUNOFF AND CONSERVATION OF WATER SUPPLIES WHEN THE WATER IS REUSED. STORMWATER COLLECTED IN CISTERNS CAN TYPICALLY BE REUSED FOR PURPOSES OF IRRIGATION AND, WASH WATER, AND OTHER NON-POTABLE USES.

WITH AN ACTIVELY MANAGED OPERATING SYSTEM, REGULAR MAINTENANCE IS ALSO IMPORTANT TO PRESERVE THE END USE WATER QUALITY, MAINTAIN SYSTEM SAFETY AND EFFICIENCY, AND MINIMIZE COST ASSOCIATED WITH REPAIRS AND DOWNTIME.

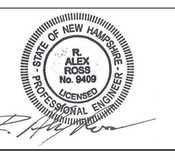
MAINTENANCE

- INSPECT OVERFLOW PIPE AND OVERFLOW AREA TO ENSURE THAT OVERFLOW IS DRAINING IN A NONEROSIVE MANNER.
- INSPECT CISTERNS AT LEAST ANNUALLY FOR ACCUMULATION OF SEDIMENT AND DEBRIS, AND CLEAN CISTERN AS WARRANTED BY INSPECTION. CISTERNS MAY REQUIRE SERVICING UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL, INCLUDING PERIODIC DISINFECTION TO CONTROL BACTERIA GROWTH, OR APPLICATION OF LARVICIDE TO CONTROL MOSQUITOES.
- VERIFY THAT THE RAINWATER HARVESTING WAS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN AND STANDARDS AND SPECIFICATIONS.
- INSPECT AND CLEAN ALL CONVEYANCE AND STORAGE ELEMENTS IMMEDIATELY PRIOR TO SYSTEM TESTING. VERIFY THAT THE DISTRIBUTION INTAKE WITHIN STORAGE DEVICE(S) IS CLEAT OF SEDIMENT AND WILL NOT ENTRAIN ANY SEDIMENT ONCE THE FLOW IS INITIATED.
- VERIFY THAT THE PRACTICE ACTUALLY CAPTURES RUNOFF. CONDUCT A FULL INUNDATION TEST TO INSPECT THE INFLOWS, PIPING, STORAGE TANK, AND OUTFLOWS.
- CONFIRM THAT THERE ARE NO LEAKAGES IN THE ROUTING TO THE STORAGE DEVICE OR OUT OF THE STORAGE DEVICE.
- USE A DETAILED INSPECTION CHECKLIST THAT INCLUDES SIGN-OFFS BY QUALIFIED INDIVIDUALS AT THE COMPLETION OF CONSTRUCTION, TO ENSURE THAT THE CONTRACTOR'S INTERPRETATION OF THE PLAN IS ACCEPTABLE TO THE PROFESSIONAL DESIGNER.

l. REVIEW AND DISCUSS ALL PART WARRANTIES.

Annual Operations and Maintenance Report

	Activity	Date of Inspection	Who Inspected	Satisfactory: Yes, No, N/A	Maintenance Needed	Implemented date of corrective action	Findings of Inspector
	Parking Areas						
	Pervious Asphalt						
	Detention Pond						
	Landscaped Areas						
	Permeable Pavers						
	Culverts & Drain lines						
	Contech Jellyfish						
	Roof Drainage						
	Storm tech Chambers						
	Cistern						



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NOTES

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TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	12 OF 14	4

EROSION AND SEDIMENTATION CONTROL CONSTRICTION PHASING AND SEQUENCING

1. SEE "EROSION AND SEDIMENTATION CONTROL GENERAL NOTES" WHICH ARE TO BE AN INTEGRAL PART OF THIS PROCESS.
2. INSTALL SILTSOXX FENCING AS PER DETAILS AND AT SEDIMENT MIGRATION.
3. CONSTRUCT TREATMENT SWALES , LEVEL SPREADERS AND DETENTION STRUCTURES AS DEPICTED ON DRAWINGS.
4. STRIP AND STOCKPILE TOPSOIL. STABILIZE PILES OF SOIL CONSTRUCTION MATERIAL & COVER WHERE PRACTICABLE.
5. MINIMIZE DUST THROUGH APPROPRIATE APPLICATION OF WATER OR OTHER DUST SUPPRESSION TECHNIQUES ON SITE.
6. ROUGH GRADE SITE. INSTALL CULVERTS AND ROAD DITCHES.
7. FINISH GRADE AND COMPACT SITE.
8. RE-SPREAD AND ADD TOPSOIL TO ALL ROADSIDE SLOPES. TOTAL TOPSOIL THICKNESS TO BE A MINIMUM OF FOUR TO SIX INCHES.
9. STABILIZE ALL AREAS OF BARE SOIL WITH MULCH AND SEEDING.
10. RE-SEED PER EROSION AND SEDIMENTATION CONTROL GENERAL NOTES.
11. SILT SOXX FENCING TO REMAIN AND BE MAINTAINED FOR TWENTY FOUR MONTHS AFTER CONSTRUCTION TO ENSURE ESTABLISHMENT OF ADEQUATE SOIL STABILIZATION AND VEGETATIVE COVER. ALL SILT SOXX FENCING ARE THEN TO BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
12. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
13. ALL TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC. MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
14. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE - BEFORE ROUGH GRADING THE SITE.
15. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM
16. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
18. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
19. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
20. LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

PLANTING NOTES:

1. ALL PLANT MATERIALS SHALL BE FIRST QUALITY NURSERY GROWN STOCK.
2. ALL PLANTS SHALL BE PLANTED IN ACCORDANCE WITH NEW HAMPSHIRE LANDSCAPE ASSOCIATION STANDARDS AND GUARANTEED FOR ONE YEAR BY THE LANDSCAPE CONTRACTOR.
3. ALL TREES AND SHRUBS SHALL HAVE WATER SAUCERS BUILT AROUND THEIR BASES AND THESE SHALL BE MULCHED WITH 4" OF DARK BROWN AGED BARK MULCH. MULCH MUST BE KEPT 2" AWAY FROM THEIR TRUNKS.
4. ALL TREES AND SHRUBS SHALL BE PLANTED AND MULCHED BEFORE LAWN IS SEEDED.

MAINTENANCE REQUIREMENTS:

1. ALL TREES, SHRUBS, AND PERENNIALS WILL NEED TO BE WATERED THROUGH THANKSGIVING DURING THE FIRST SEASON IN WHICH THEY ARE INSTALLED.
2. AN UNDERGROUND DRIP IRRIGATION SYSTEM IS RECOMMENDED. IF AN UNDERGROUND DRIP IRRIGATION SYSTEM IS NOT INSTALLED, SOAKER HOSES WOUND THROUGHOUT PLANTING BEDS ARE ACCEPTABLE. ALTHOUGH OVERHEAD SPRINKLERS ARE RECOMMENDED FOR LAWN AREAS, THEY ARE NOT ACCEPTABLE FOR IRRIGATING TREES AND SHRUBS.

SEEDING AND STABILIZATION FOR LOAMED SITE:

FOR TEMPORARY & LONG TERM SEEDINGS USE AGWAY'S SOIL CONSERVATION GRASS SEED OR EQUAL
COMPONENTS: ANNUAL RYE GRASS, PERENNIAL RYE GRASS, WHITE CLOVER, 2 FESCUES, SEED AT A RATE OF 100 POUNDS PER ACRE,
FERTILIZER & LIME:
NITROGEN (N) 50 LBS/ACRE, PHOSPHATE (P205) 100 LBS/ACRE, POTASH (K20) 100 LBS/ACRE, LIME 2000 LBS/ACRE
MULCH:
HAY OR STRAW 1.5-2 TONS/ACRE

A) GRADING AND SHAPING
1) SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED, WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

B) SEED BED PREPARATION
1) SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
2) STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

1. CONDUCT ALL CONSTRUCTION IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE PHYSICAL ENVIRONMENT, BUT IN NO CASE SHALL EXCEED 2 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
3. ALL DITCHES, SWALES AND PONDS MUST BE STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
4. ALL GROUND AREAS OPENED UP FOR CONSTRUCTION WILL BE STABILIZED WITHIN 24 HOURS OF EARTH-DISTURBING ACTIVITIES BEING CEASED, AND WILL BE FULLY STABILIZED NO LONGER THAN 14 DAYS AFTER INITIATION, (SEE NOTE 11 FOR DEFINITION OF STABLE). ALL SOILS FINISH GRADED MUST BE STABILIZED WITHIN SEVENTY TWO HOURS OF DISTURBANCE. ALL TEMPORARY OR LONG TERM SEEDING MUST BE APPLIED TO COMPLY WITH "WINTER CONSTRUCTION NOTES" (SEE WINTER CONSTRUCTION NOTES). EMPLOY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS DETAILED ON THIS PLAN AS NECESSARY UNTIL ADEQUATE STABILIZATION HAS BEEN ASSURED (SEE NOTE 11 FOR DEFINITION OF STABLE).
5. TEMPORARY & LONG TERM SEEDING: USE SEED MIXTURES, FERTILIZER, LIME AND MULCHING AS RECOMMENDED (SEE SEEDING AND STABILIZATION NOTES).
6. SILTSOXX FENCING TO BE SECURELY EMBEDDED AND STAKED AS DETAILED. WHEREVER POSSIBLE A VEGETATED STRIP OF AT LEAST TWENTY FIVE FEET IS TO BE KEPT BETWEEN SILTSOXX AND ANY EDGE OF WET AREA.
7. SEEDED AREAS WILL BE FERTILIZED AND RE-SEEDED AS NECESSARY TO ENSURE VEGETATIVE ESTABLISHMENT.
8. SEDIMENT BASIN(S), IF REQUIRED, TO BE CHECKED AFTER EACH SIGNIFICANT RAINFALL AND CLEANED AS NEEDED TO RETAIN DESIGN CAPACITY.
9. SILTSOXX FENCING WILL BE CHECKED REGULARLY AND AFTER EACH SIGNIFICANT RAINFALL. NECESSARY REPAIRS WILL BE MADE TO CORRECT UNDERMINING OR DETERIORATION OF THE BARRIER AS WELL AS CLEANING, REMOVAL AND PROPER DISPOSAL OF TRAPPED SEDIMENT.
10. TREATMENT SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATIVE COVER HAS BEEN ESTABLISHED.
11. AN AREA SHALL BE CONSIDERED FULLY STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED.
- EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

11. ALL EROSION AND SEDIMENTATION CONTROL MEASURES IN THE PLAN SHALL MEET THE DESIGN BASED ON STANDARDS AND SPECIFICATIONS SET FORTH IN THE STORM WATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE (DECEMBER 2008 OR LATEST) PREPARED BY ROCKINGHAM COUNTY CONSERVATION DISTRICT, N.H. DES AND NRCS.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPETED IN ADVANCE OF THAW OR SPRING MELT EVENT.;
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

LONG TERM SEEDING

*WELL TO MODERATELY WELL DRAINED SOILS

FOR CUT AND FILL AREA AND FOR WATERWAYS AND CHANNELS

SEEDING MIXTURE C

	lb/ACRE	lb/1000SF
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED CLOVER (ALSIKE)	20	0.45
TOTAL	48	1.35

LIME: AT 2 TONS PER ACRE OR 100 LBS PER 1,000 S.F.
FERTILIZER: 10 20 20 (NITROGEN, PHOSPHATE, POTASH AT 500# PER ACRE.
MULCH: HAY OR CLEAN STRAW; 2 TONS/ACRE OR 2 BALES/1000 S.F.

GRADING AND SHAPING:
SLOPES SHALL NOT BE STEEPER THAN 2 TO 1. 3 TO 1 OR FLATTER SLOPES ARE PREFERRED.
SEEDBED PREPARATION:
SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
STONES LARGER THAN FOUR INCHES AND TRASH SHOULD BE REMOVED.
SOD SHOULD BE TILLED TO A DEPTH OF FOUR INCHES TO PREPARE SEEDBED. FERTILIZER & LIME SHOULD BE MIXED INTO THE SOIL.
THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

* FROM: STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE, DECEMBER 2008.

SHORT TERM SEEDING

*WELL TO MODERATELY WELL DRAINED SOILS

FOR CUT AND FILL AREA AND FOR WATERWAYS AND CHANNELS

SEEDING MIXTURE C

	#/ACRE	#/1000SF
FOR APRIL 1 - AUGUST 15		
ANNUAL RYE GRASS	40	1
FOR FALL SEEDING		
WINTER RYE	112	2.5

LIME: AT 1 TON PER ACRE OR 100 LBS PER 1,000 S.F.
FERTILIZER: 10 10 10 (NITROGEN, PHOSPHATE, POTASH AT 500# PER ACRE.
MULCH: HAY OR CLEAN STRAW; 2 TONS/ACRE OR 2 BALES/1000 S.F.

GRADING AND SHAPING:
SLOPES SHALL NOT BE STEEPER THAN 2 TO 1. 3 TO 1 OR FLATTER SLOPES ARE PREFERRED.
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* FROM: STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE, DECEMBER 2008.

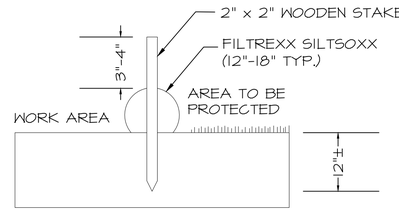
WHEN PROPOSED FOR ALTERATION DURING CONSTRUCTION AS BEING INFESTED WITH INVASIVE SPECIES SHALL BE MANAGED APPROPRIATELY USING THE DISPOSAL PRACTICES IDENTIFIED IN "NHDOT - BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS -2008" AND "METHODS FOR DISPOSING NON-NATIVE INVASIVE PLANTS - UNH COOPERATIVE EXTENSION - 2010"

SEED MIXES SHALL NOT CONTAIN ANY SPECIES IDENTIFIED BY THE NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST.

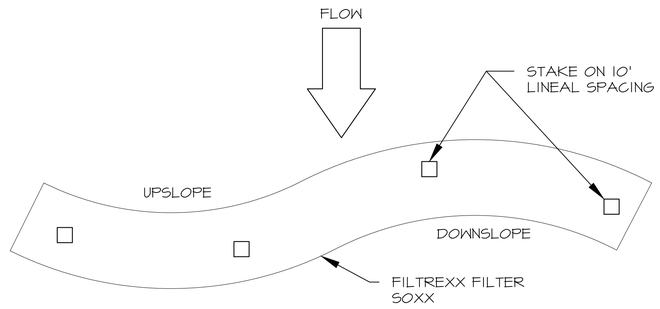
FILTREXX SILTSOXX NOTES

1) ALL MAERTIAL TO MEET FILTREXX SPECIFICATIONS

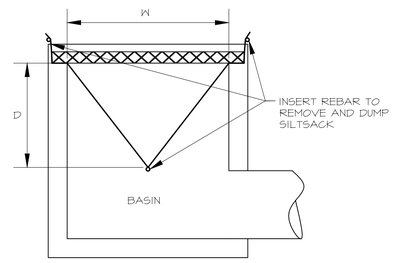
2) SILTSOXX COMPOST, SOIL, ROCK, SEED FILL TO MEET APPLICATION REQUIREMENTS



Filtrexx SiltSoxx Section
N.T.S.



Filtrexx SiltSoxx Plan View
N.T.S.



SILTSACK IS TO BE SECURED BY WEIGHT OF BASIN GRATE TO PREVENT SEDIMENT FROM ENTERING THE DRAIN LINE

INSTALL SILTSACK TO CATCH BASINS 1, 2, & 3 PRIOR TO CONSTRUCTION & TO CATCH BASINS A, B, C & D DURING CONSTRUCTION. DO NOT REMOVE SILTSACK UNTIL CONSTRUCTION IS COMPLETE.

Siltsack
N.T.S.

ISS.	DATE	DESCRIPTION OF ISSUE	
4	8/8/2022	PB SUBMITTAL	
3	7/21/2022	TAC SUBMITTAL	
2	6/21/2022	TAC SUBMITTAL	
1	6/7/2022	TAC SUBMITTAL	

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

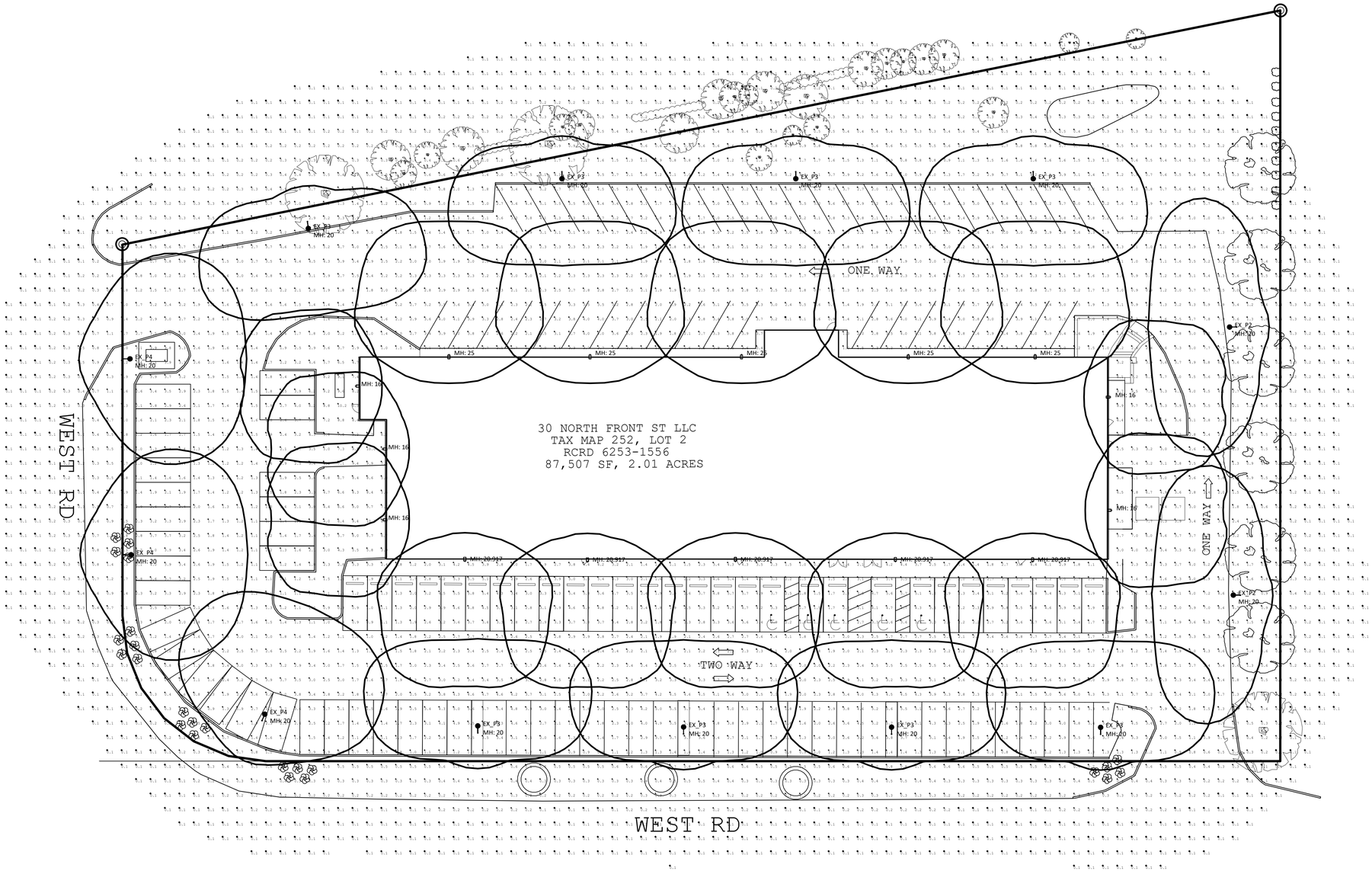
ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE
EROSION CONTROL PLAN
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	13 OF 14	4

STATE OF NEW HAMPSHIRE · R. ALEX ROSS No. 9409 LICENSED · PROFESSIONAL ENGINEER



LIGHTING SCHEDULE

LABEL	SPECIFICATION
L1	WALL PACK - LUMARK XTOR CROSSTOUR MAXX LED
L2	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T2
L3	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T3
L4	LIGHT POLE - SL630 SOLANA SERIES LED DISTRIBUTION TYPE T4

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

LIGHTING PLAN DESIGNED BY:

SEAN REESE, OMNILITE ILLUMINATE
263 WINN STREET
BURLINGTON, MA 01803
P: (978) 992-6484
E: SREESE@ILLUMINATENE.COM
ILLUMINATENE.COM

ISS.	DATE	DESCRIPTION OF ISSUE
4	8/8/2022	PB SUBMITTAL
3	7/21/2022	TAC SUBMITTAL
2	6/21/2022	TAC SUBMITTAL
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SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

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& Surveying
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Portsmouth, NH 03801
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CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

TITLE

LIGHTING PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	13 OF 14	4

GENERAL CODE COMPLIANCE REVIEW

140 WEST ROAD
PORTSMOUTH, NH 03801

PROJECT DATA:

DESCRIPTION: INTERIOR RENOVATIONS AND EXTERIOR STAIR TOWER ADDITIONS TO AN EXISTING 2B BUILDING, THE USE IS INDOOR RECREATION - ASSEMBLY AND OFFICE.

STATE BUILDING CODE:

2015 INTERNATIONAL BUILDING CODE (2015 IBC)

LIFE SAFETY CODE:

2015 NATIONAL FIRE PROTECTION AGENCY 101 (NFPA 101)

FIRE CODE:

2015 INTERNATIONAL FIRE CODE (2015 IFC)

STATE ENERGY CODE:

2015 INTERNATIONAL ENERGY CONSERVATION CODE (2015 IECC)

STATE MECHANICAL CODE:

2015 INTERNATIONAL MECHANICAL CODE (2015 IMC)

ELECTRICAL CODE:

2017 NATIONAL ELECTRICAL CODE (NFPA 70)

STATE PLUMBING CODE:

2015 INTERNATIONAL PLUMBING CODE (2015 IPC)

EXISTING BUILDING CODE:

2015 INTERNATIONAL EXISTING BUILDING CODE

STATE ACCESSIBILITY CODE:

2009 ANSI A117.1 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES

2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

CODE REVIEW

GENERAL BUILDING INFO	COMMENTS	CODE SECTION REFERENCE
OCCUPANCY USE GROUP	(A-2) ASSEMBLY, (B) BUSINESS, (S-2) STORAGE ASSEMBLY, BUSINESS, STORAGE	IBC, CH 3 NFPA101, CH 6 & CH 26
CONSTRUCTION TYPE	TYPE 2-B	IBC 602.2
FIRE SPRINKLER SYSTEM	YES	IBC 903; NFPA 101: 7.1.11
FIRE ALARM	YES	IBC 907; NFPA 101: 4.5.4
MIXED USE	NONSEPARATED OCCUPANCIES - A-2 MOST RESTRICTIVE	IBC 508.3.3; NFPA 101: 6.1.14.3
BUILDING HEIGHT	ALLOWABLE: 75'-0" ACTUAL: 38' - 0" +/-	IBC 504, TABLE 504.3
STORIES(S)	ALLOWABLE: 3 ACTUAL: 2	IBC 504, TABLE 504.4
AREA	ALLOWABLE: 28,500 SF ACTUAL: 18,111 SF	IBC 506, TABLE 506.2
AREA CALCULATIONS	N/A	IBC 506
OCCUPANT LOAD PER SUITE 100	502 (SEE LIFE SAFETY PLAN)	IBC TABLE 1004.5: NFPA 101: 7.3.1
NUMBER OF EXITS	REQUIRED: 3 ACTUAL: 5 (1ST), 3 (2ND)	IBC TABLE 1006.3.1
FIRE RATINGS	**TYPE 2B CONSTRUCTION**	**IBC TABLE 601**
EXTERIOR BEARING WALLS	0 HOUR	
INTERIOR BEARING WALLS	0 HOUR	
NON-BEARING INTERIOR WALLS	0 HOUR	
FLOOR CONSTRUCTION	0 HOUR	
ROOF CONSTRUCTION	0 HOUR	
STRUCTURAL FRAME	0 HOUR	
MEANS OF EGRESS REQUIREMENTS	--	--
MIN EGRESS WIDTH AT DOORS	REQUIRED: 32 INCHES ACTUAL: 32 INCHES	IBC 1005.3.2, IBC 1010.1.1
MIN EGRESS WIDTH AT STAIR	REQUIRED: 44 INCHES ACTUAL: 44 INCHES	IBC 1005.3.1, IBC 1011.2: NFPA101 12.2.3.8
MAXIMUM DEAD END CORRIDOR	(A-2) IBC: 20'-0" (A) NFPA: 20'-0"	IBC 1020.4: NFPA 101 TABLE A.7.6
MAXIMUM TRAVEL DISTANCE	(A-2) IBC: 250'-0" (A) NFPA: 250'-0"	IBC TABLE 1017.2: NFPA 101 TABLE A.7.6
COMMON PATH OF TRAVEL	(A-2) IBC: 75'-0" (A) NFPA: 20' - 75'(ALLOWED WITH <50PPL)	IBC TABLE 1006.2.1: NFPA 101 TABLE A.7.6
MINIMUM CORRIDOR WIDTH	REQUIRED: 44" ACTUAL: 60"	IBC 1005.3.2, IBC 1020.2
MINIMUM RAMP WIDTH	REQUIRED: 36" BETWEEN HANDRAILS ACTUAL: 56"	IBC 1005.3.2, IBC 1012.5.1
REMOTENESS	268'-3" (DIAGONAL) / 3 = 89'-5" MINIMUM EXIT SEPARATION DISTANCE	IBC 1007.1.2 NFPA101 7.5.1.3.3
ASSEMBLY EGRESS REQUIREMENTS	--	**IBC SECTION 1018, 1029**
TRAVEL DISTANCE	250' - 0" MAX.	IBC 1029.7
COMMON PATH OF TRAVEL	30' FROM ANY SEAT TO A CHOICE OF TWO PATHS TO EXITS	IBC 1029.8
AISLE WIDTH (.15" PER OCCUPANT)	MINIMUM AT LEVEL AISLE WITH SEATING ON BOTH SIDES: 42" MINIMUM AT LEVEL AISLE WITH SEATING ON ONE SIDE: 36"	IBC 1029.9.1.4: NFPA101 12.2.5.6.3(4) IBC 1029.9.1.5: NFPA101 12.2.5.6.3(2)
CONVERGING AISLES	AT CONVERGING AISLES: AISLE WIDTH SHALL NOT BE LESS THAN TOTAL REQUIRED CAPACITY OF ALL CONVERGING AISLES	IBC 1029.9.3
UNIFORM WIDTH AND CAPACITY	AISLES SHALL BE UNIFORM IN MINIMUM OR REQUIRED WIDTH	IBC 1029.9.4
DEAD END AISLES	20' - 0"	IBC 1029.9.6: NFPA101 12.2.5.6.2
AISLE MEASURMENT	CLEAR WIDTH OF AISLES SHALL BE MEASURED FROM WALLS TO EDGE OF SEATING EXCEPT FOR PERMITED PROJECTIONS 19" FROM FACE OF COUNTER/TABLE TO FACE OF COUNTER/TABLE	IBC 1029.9.6
AISLE ACCESSWAYS		IBC 1029.12.1
CAPACITY AND WIDTH	12" MIN, .15" PER PERSON ACCESSING AISLE ACCESSWAY	IBC 1029.12.1.1
AISLE ACCESSWAY LENGTH	30' - 0" MAX.	IBC 1029.12.1.2
ACCESSIBILITY REQUIREMENTS	--	--
TOE AND KNEE CLEARANCES	SEE SHEET T4	ANSI A117.1, ADA 2010 SECTION 306
REACH RANGES	SEE SHEET T4	ANSI A117.1, ADA 2010 SECTION 308
SERVICE COUNTERS	SEE SHEET T4	ANSI A117.1, ADA 2010 SECTION 904
CLEAR FLOOR SPACE	CLEAR FLOOR SPACE POSITIONED FOR FORWARD APPROACH SHALL BE PROVIDED	ANSI A117.1, ADA 2012 SECTION 902.2 (305/306)
TABLE HEIGHT	THE TOPS OF TABLES SHALL BE BETWEEN 28" MIN. AND 34" MAX. ABOVE THE FINISH FLOOR	ANSI A117.1, ADA 2012 SECTION 902.3
DINING AND DRINKING AREAS	ALL DINING AND DRINKING AREAS SHALL BE ACCESSIBE AND BE ON AN ACCESSIBLE ROUTE (SEE AISLES ABOVE)	IBC SECTION 1108.2.9
DINING SURFACES	5% OF TOTAL DINING SURFACES FOR THE SEATING AND STANDING SPACES SHALL BE ACCESSIBLE AND BE DISTRIBUTED THROUGHOUT THE FACILITY AND CONNECTED TO AN ACCESSBLE ROUTE, SEE TABLE CLEAR FLOOR SPACE BELOW (2/T2).	IBC SECTION 1108.2.9.1
PLUMBING FIXTURES	--	**A-3 - IBC TABLE 2902.1**
WATER CLOSET:		
MALE: 1 PER / 125 OC	PROVIDED: 8 PER GENDER, 2 UNISEX FAMILY	
FEMALE: 1 PER / 65 OC	REQUIRED: 3	
	REQUIRED: 3	
LAVATORY:	PROVIDED: 4 PER GENDER, 2 UNISEX FAMILY	
MALE: 1 PER / 200 OC	REQUIRED: 2	
FEMALE: 1 PER / 200 OC	REQUIRED: 2	
FAMILY/ASSISTED-USE TOILET ROOM	REQUIRED: 1 ACTUAL: 1 UNISEX FAMILY	IBC 1109.2.1
SERVICE SINK:	REQUIRED: 1 ACTUAL: 1	
DRINKING FOUNTAINS: 1 PER / 500 OC	KITCHEN WILL PROVIDE WATER IN A CONTAINER FREE OF CHARGE, 2 EXISTING DRINKING FOUNTAINS PROVIDED	IPC 410.4

INTERNATIONAL ENERGY CONSERVATION CODE

PORTSMOUTH ORDINANCE - CLIMATE ZONE 6	
ROOF: INSULATION ENTIRELY ABOVE ROOF DECK[1]	R-30 CONTINUOUS INSULATION
WALLS ABOVE GRADE: METAL FRAMED[1]	R-21
SLAB ON GRADE: UNHEATED[1]	R-10 FOR 24" BELOW
FIXED FENESTRATION[2]	U-0.36
OPERABLE FENESTRATION[2]	U-0.43
ENTRY DOORS[2]	U-0.77

1. SEE TABLE C402.1.3 IN IECC 2015
2. SEE TABLE C402.4 IN IECC 2015

FIRE SPRINKLER NOTES

1. CONTRACTOR TO DESIGN AND PROVIDE NFPA 13 COMPLIANT FIRE SPRINKLER SYSTEM. THE DESIGN SHALL INCLUDE DRAWINGS AND ENGINEERING CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN NEW HAMPSHIRE.
2. SYSTEM SHALL MEET ALL STATE AND LOCAL CODES. COORDINATE SYSTEM WITH DESIGN DOCUMENTS.

LIFE SAFETY LEGEND

- - - - - - - - : FIRE - EGRESS
- · - · - · - · : FIRE - 1Hr Sep.
: MAIN EGRESS AISLES / CORRIDORS

EGRESS DOOR TAG

EXIT DOOR 001	WIDTH	CAPACITY
DOOR	72"	360
USE		62

DOOR NUMBER
ALLOWED USE
ACTUAL USE
CLEAR WIDTH

EGRESS STAIR TAG

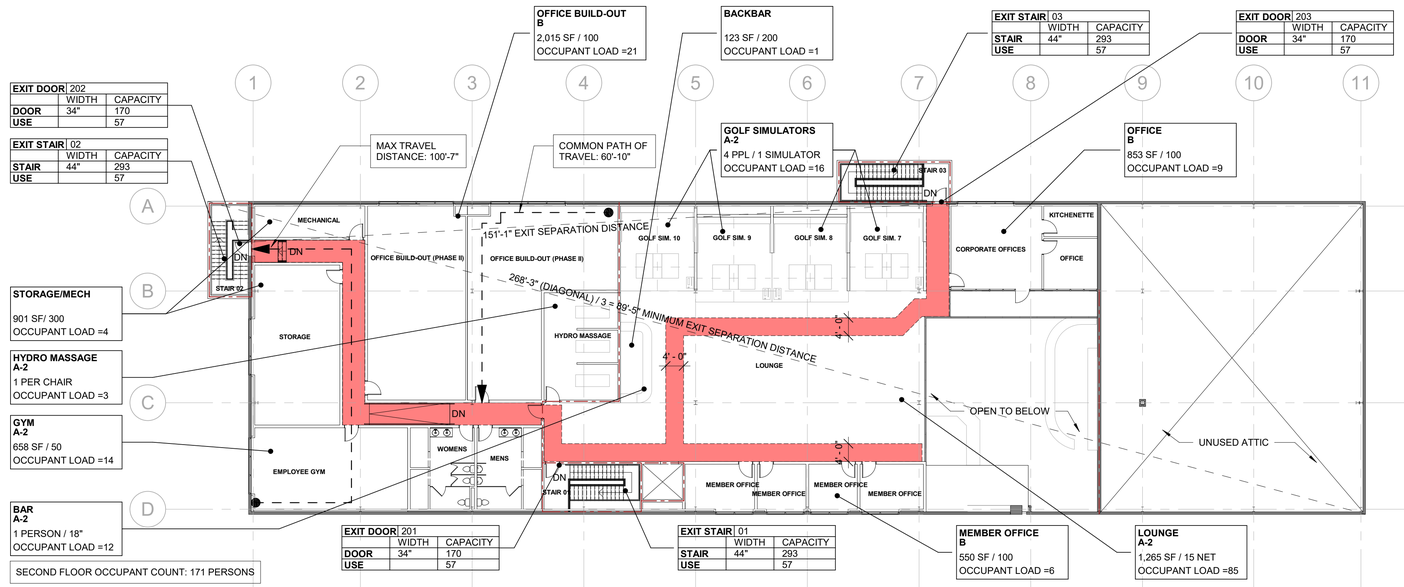
EXIT STAIR 01	WIDTH	CAPACITY
STAIR	72"	360
USE		62

ALLOWED USE
ACTUAL USE
CLEAR WIDTH

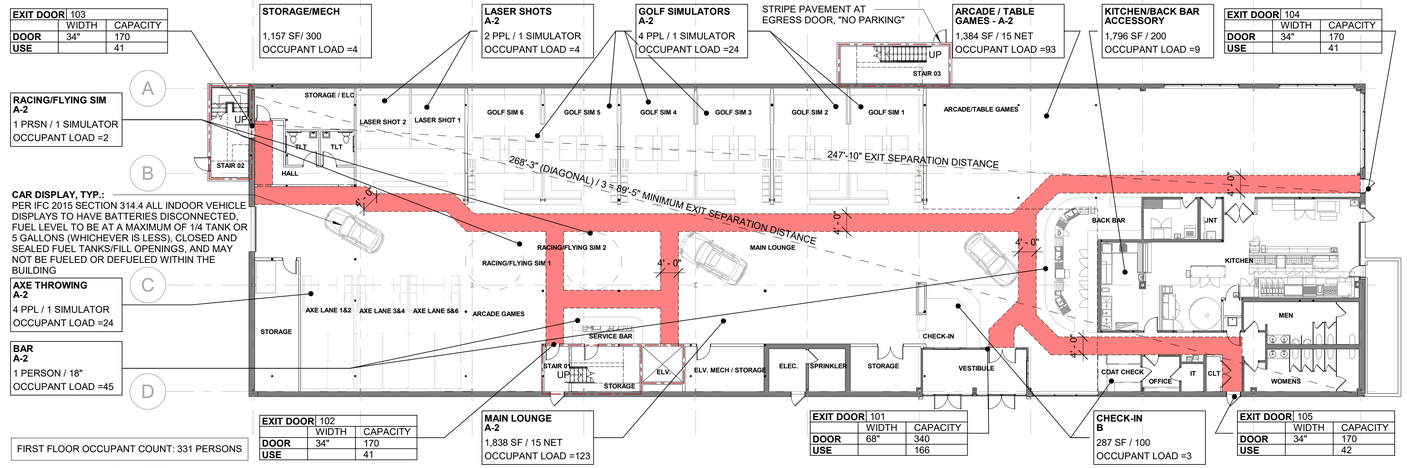
BUILDING USE TAG

ASSEMBLY
A-3
600 SF / 15
OCCUPANT LOAD =40

USE
AREA / LOAD FACTOR
OCCUPANT LOAD



2 SECOND FLOOR LIFE SAFETY PLAN
1/16" = 1'-0"



1 FIRST FLOOR LIFE SAFETY PLAN
1/16" = 1'-0"

4' 16'
0' 8' 32'
Scale: 1/16" = 1'-0"

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BLACK ROCK SOCIAL CLUB
ROAD TO THE WEST, LLC.
140 WEST ROAD
PORTSMOUTH, NH 03801

McHENRY ARCHITECTURE
4 Market Street
Portsmouth, New Hampshire
603.430.0274

NOT FOR CONSTRUCTION PERMIT SET ONLY

No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
GENERAL CODE REVIEW

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

T2

Scale: AS INDICATED

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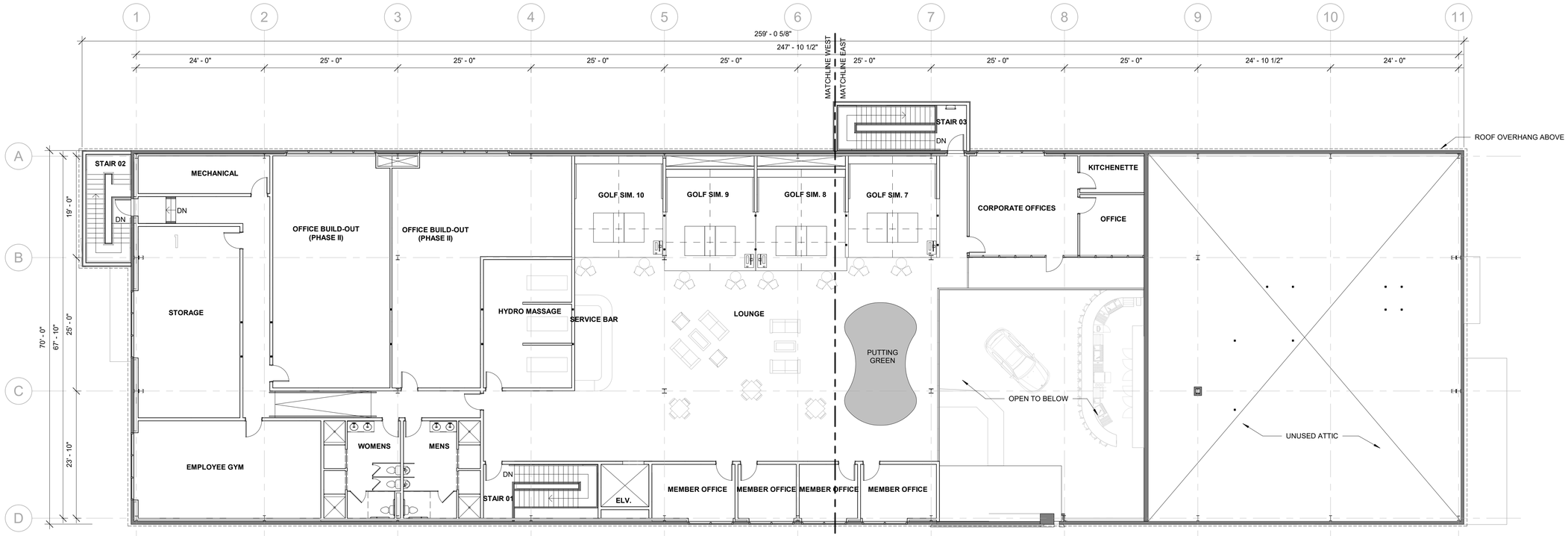
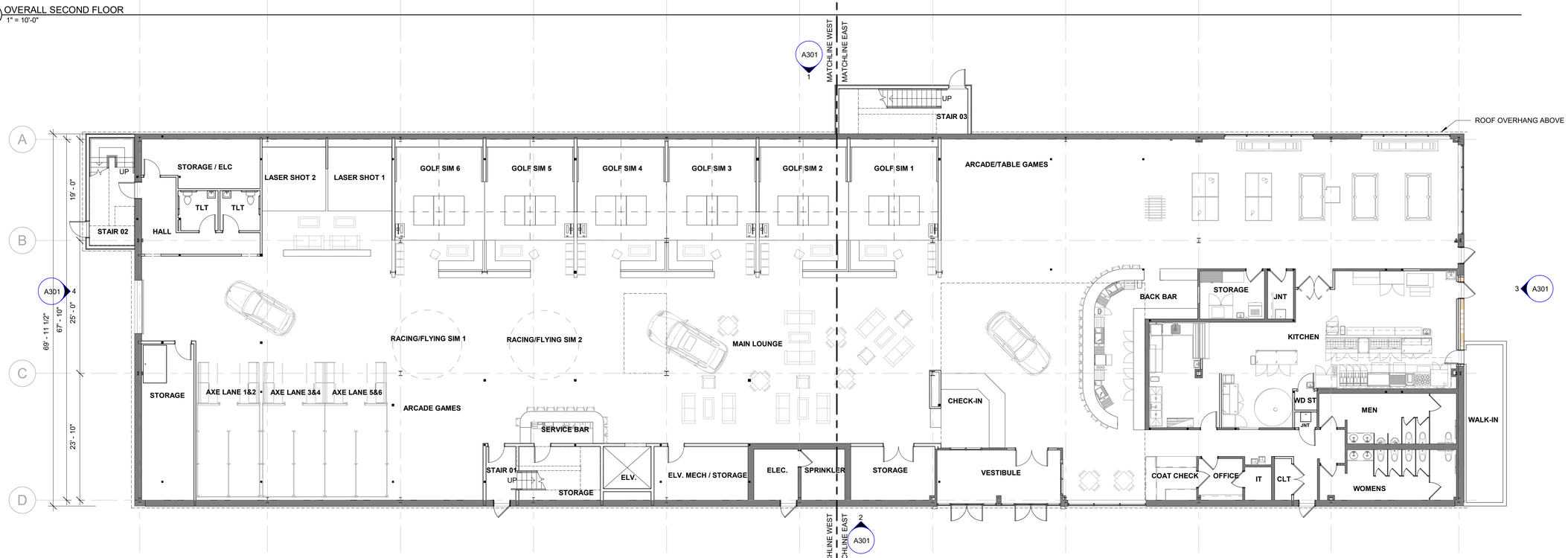


2 OVERALL SECOND FLOOR
1" = 10'-0"



1 OVERALL FIRST FLOOR
1" = 10'-0"

BUILDING FOOTPRINT:	18,111 SF
FIRST FLOOR:	18,111 SF - ASSEMBLY
SECOND FLOOR:	12,053 SF - ASSEMBLY / BUSINESS
GROSS AREA	30,164 SF

0' 10' 20' 40'
Scale: 1:10

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BLACK ROCK SOCIAL CLUB

ROAD TO THE WEST, LLC.
140 WEST ROAD
PORTSMOUTH, NH 03801

McHENRY ARCHITECTURE
4 Market Street
Portsmouth, New Hampshire
603.430.0274

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
OVERALL FLOOR PLANS

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A101

Scale: 1" = 10'-0"

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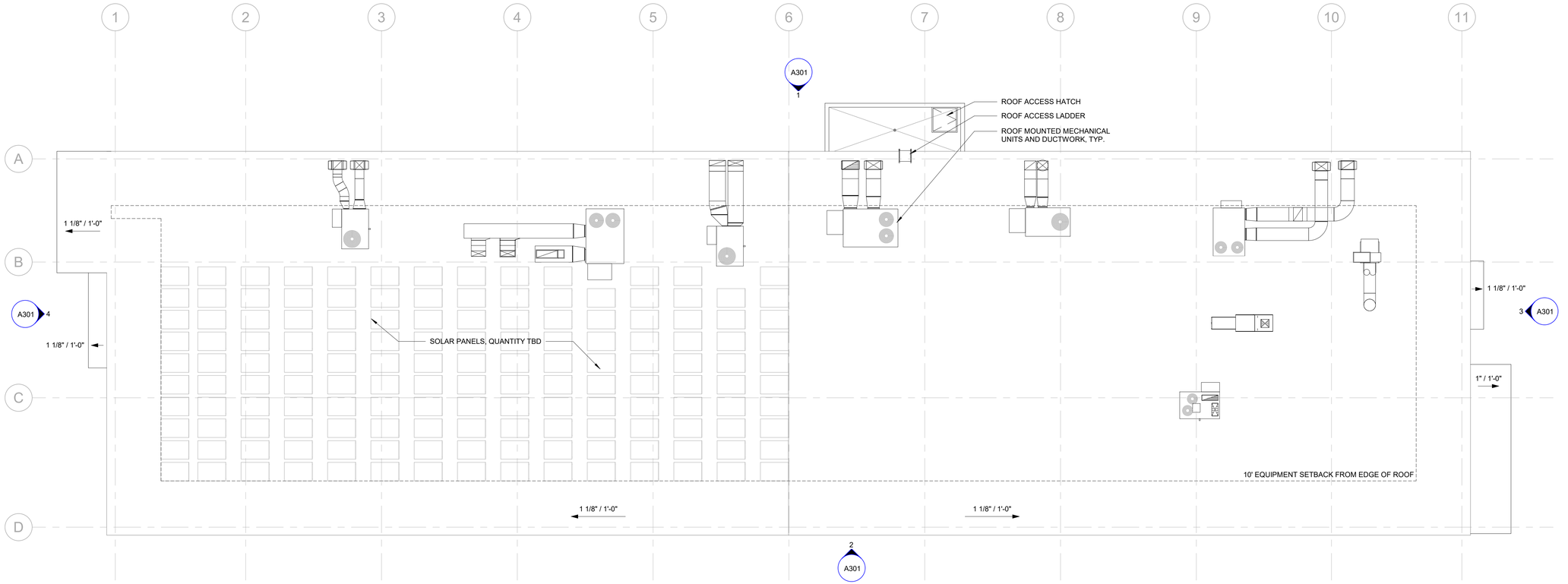

1 OVERALL ROOF PLAN
1" = 10'-0"

0' 10' 20' 40'
Scale: 1:10

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BLACK ROCK SOCIAL CLUB

ROAD TO THE WEST, LLC.
140 WEST ROAD
PORTSMOUTH, NH 03801

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4 Market Street
Portsmouth, New Hampshire
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PERMIT SET ONLY

No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
ROOF PLAN

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A102

Scale: 1" = 10'-0"

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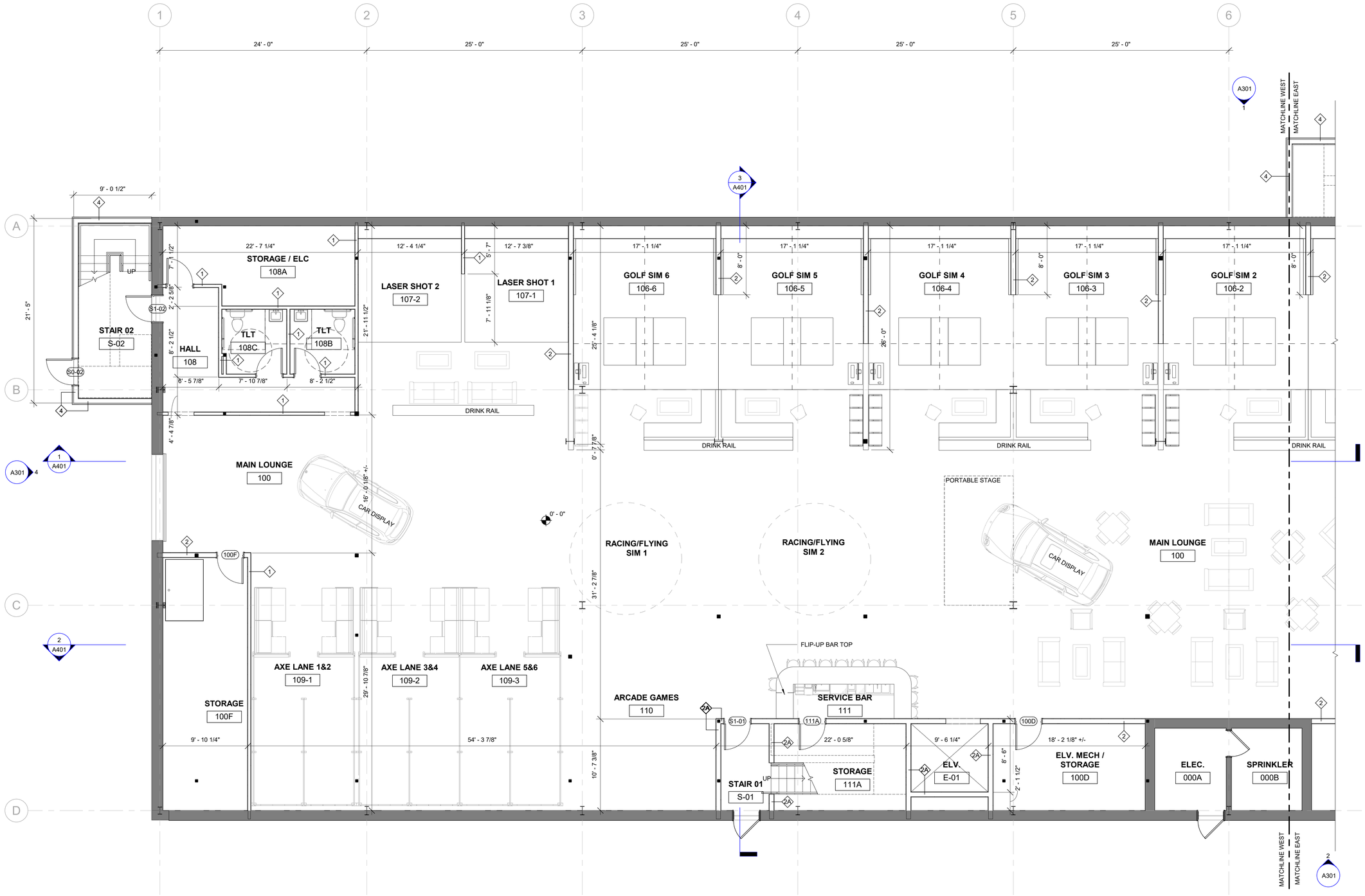

0' 4' 8' 12'
Scale: 3/16" = 1'-0"

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ROAD TO THE WEST, LLC.
140 WEST ROAD
PORTSMOUTH, NH 03801

STAIR 03

McHENRY
ARCHITECTURE
4 Market Street
Portsmouth, New Hampshire
603.430.0274

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
FIRST FLOOR PLAN - WEST

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A103

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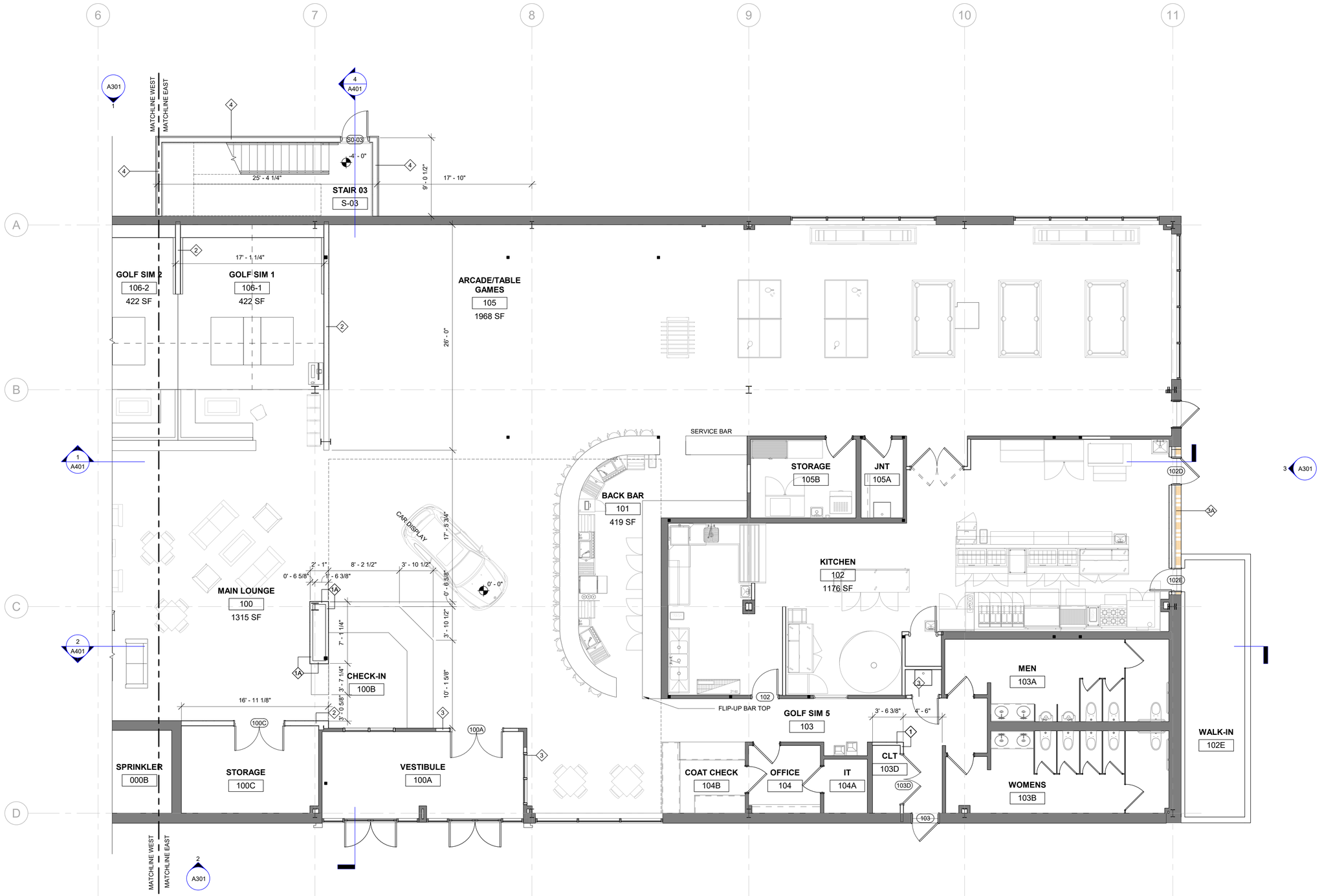

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
FIRST FLOOR PLAN - EAST

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A104

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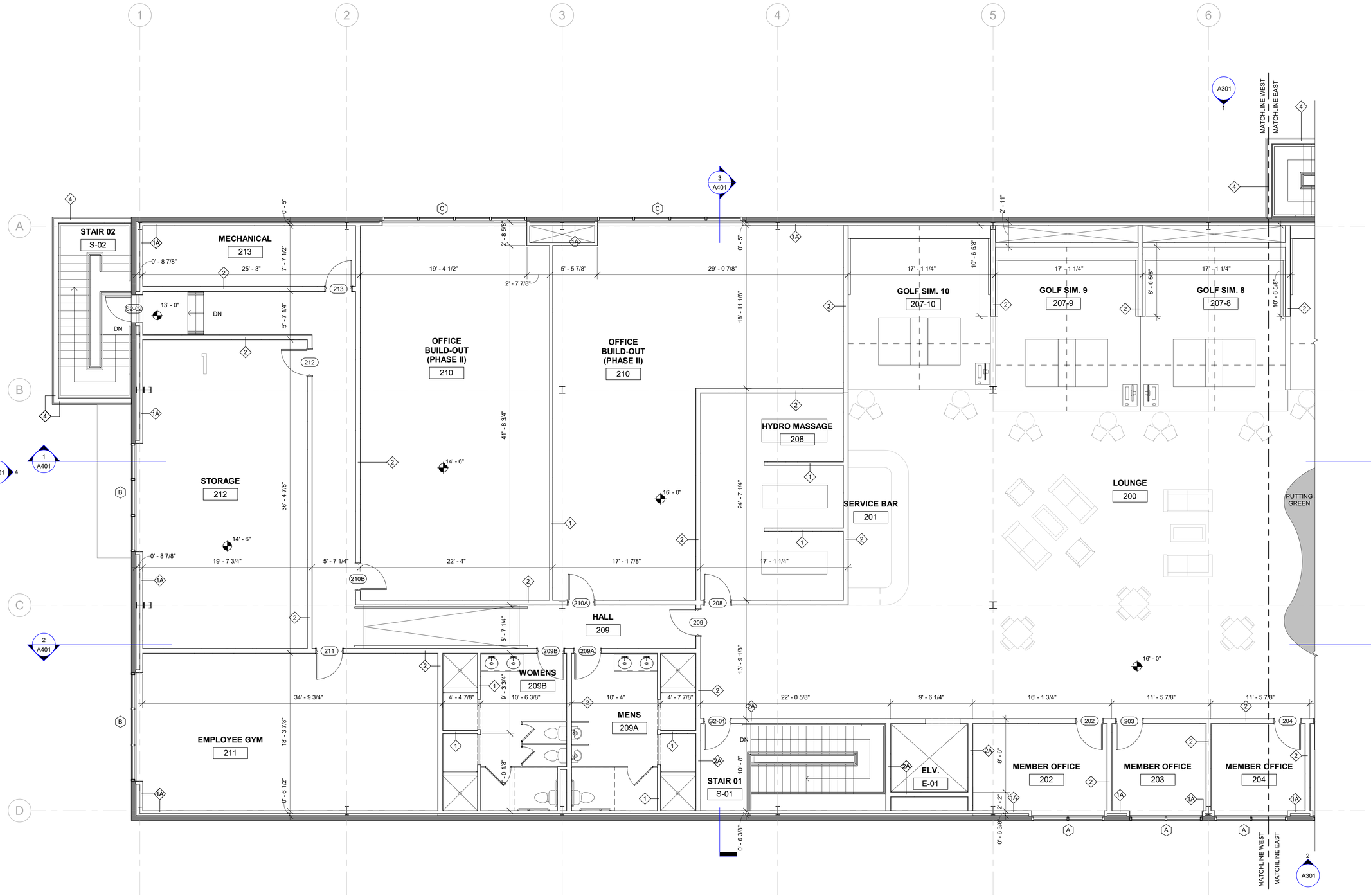

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
SECOND FLOOR PLAN - WEST

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A105

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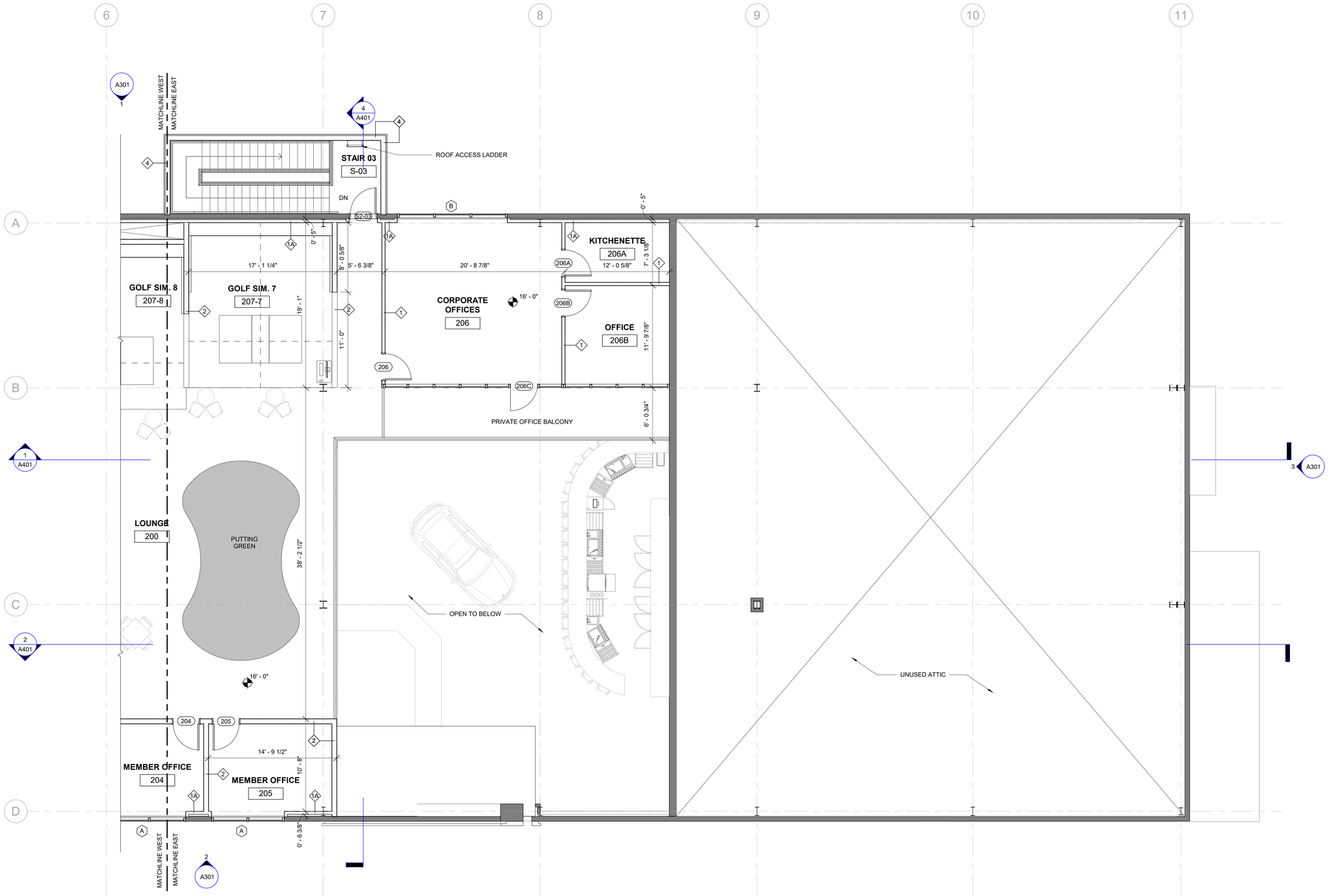

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
SECOND FLOOR PLAN - EAST

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A106

Scale: 3/16" = 1'-0"

0' 4' 8' 12'
Scale: 3/16" = 1'-0"

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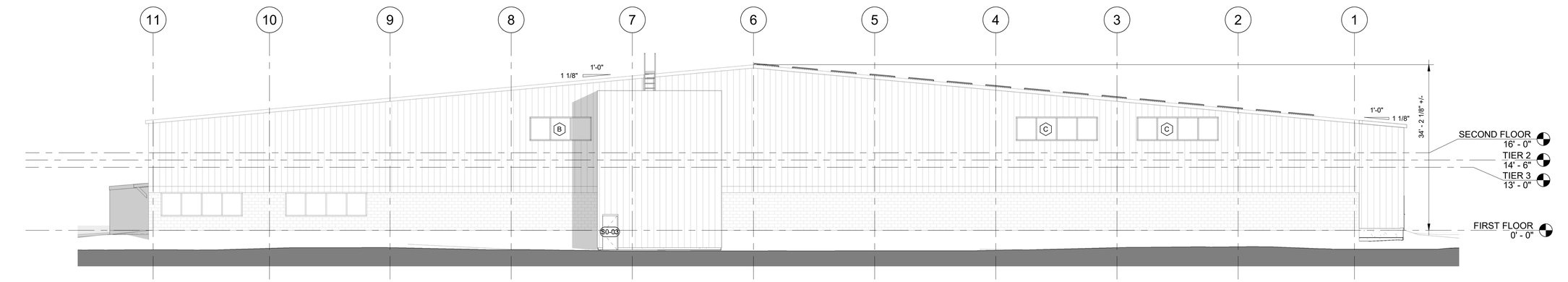

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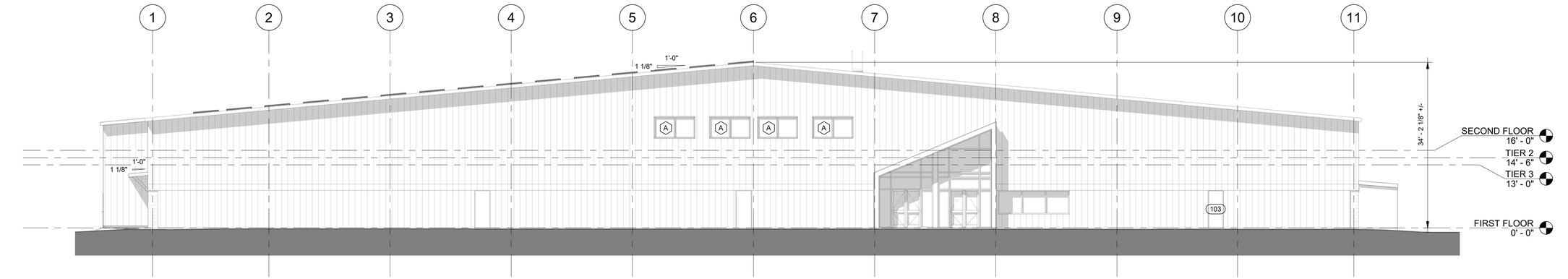

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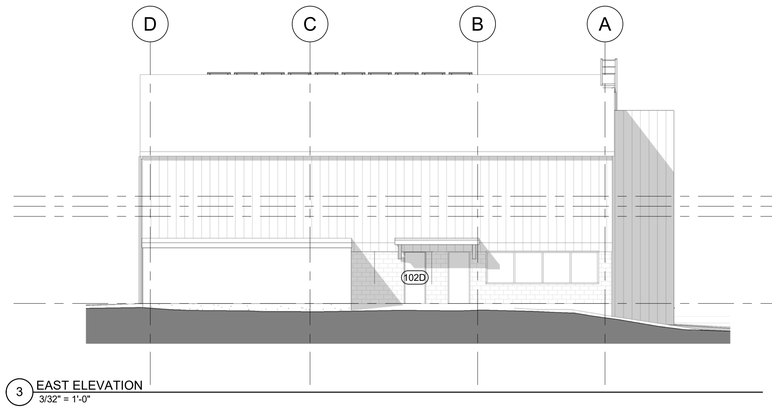

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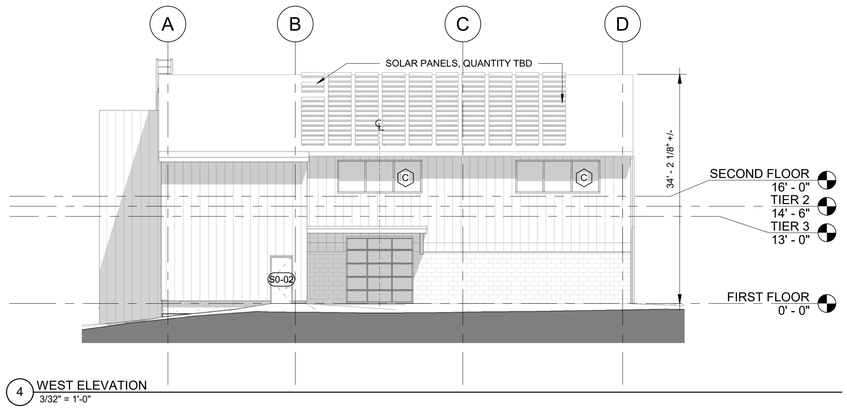

4 WEST ELEVATION
3/32" = 1'-0"

0' 8' 16' 24'
Scale: 3/32" = 1'-0"

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
OVERALL EXTERIOR ELEVATIONS

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A301

Scale: 3/32" = 1'-0"

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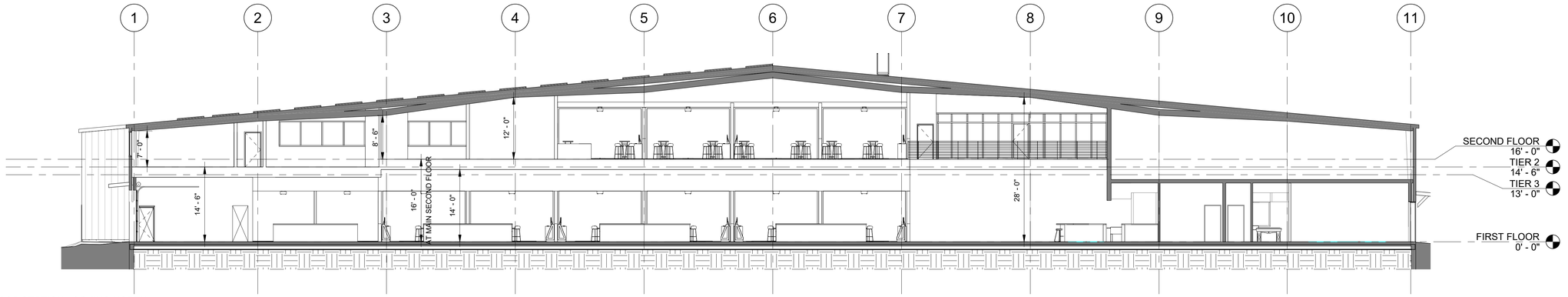

1 CROSS SECTION LOOKING NORTH
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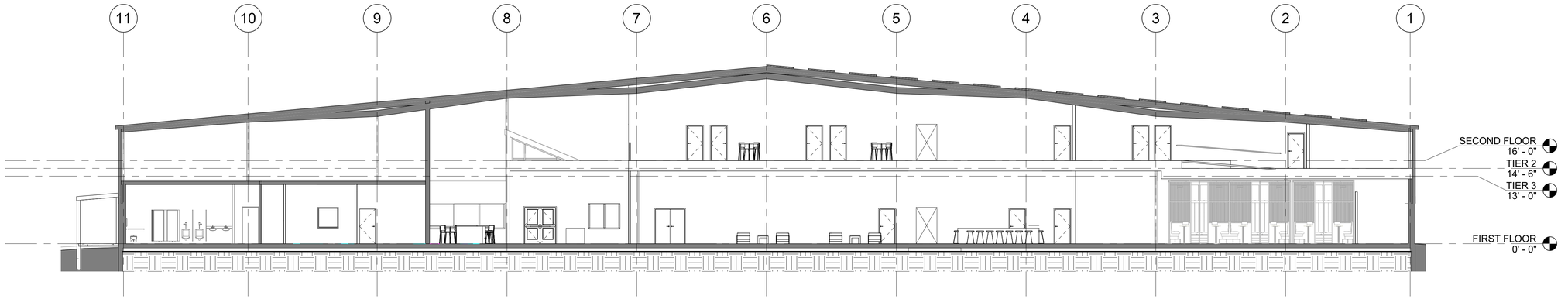

2 CROSS SECTION LOOKING SOUTH
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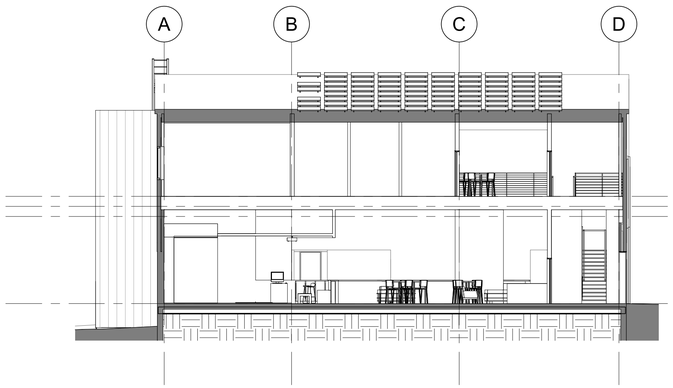

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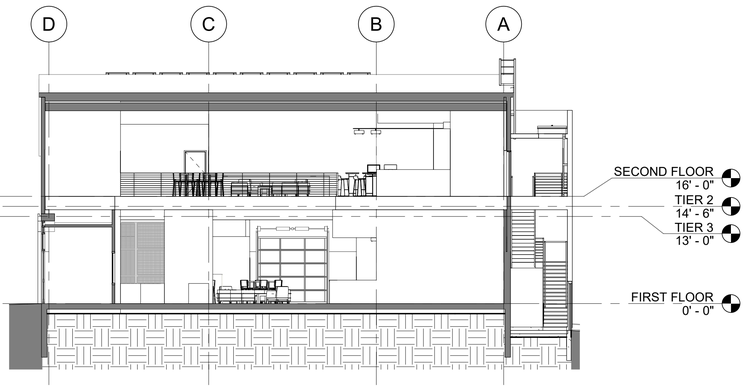

4 CROSS SECTION LOOKING WEST
3/32" = 1'-0"

0' 8' 16' 24'
Scale: 3/32" = 1'-0"

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No.	Description	Date

Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
OVERALL SECTIONS

Project Number:	21121
Date:	07/14/2022
Drawn By:	RD
Checked By:	MG

A401

Scale: 3/32" = 1'-0"

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Ross Engineering, LLC
Civil / Structural Engineering
909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

140 West Rd--Project Description

August 8th, 2022

This site review application is for renovations and site improvements to an existing fully developed site. The existing lot includes a commercial building and asphalt parking lot, with a stormwater pond in the rear. Two stairwells, adequate code conforming parking, a walk-in cooler, a pervious paver walkway, and a new screen-in dumpster area are proposed improvements to the site.

To mitigate the additional impervious coverage from the above improvements, Stormtech SC-310 chambers are proposed underneath the parking at the front of the building. Two large cisterns are proposed to collect runoff from the roof and supply water to irrigate the proposed landscaping. Overflow from these cisterns is directed into the aforementioned stormtech chambers. Pervious pavement will be installed as part of the rear parking, as well as a pervious paver walkway from the building, to mitigate stormwater runoff. The stormwater pond in the rear of the property will be expanded to handle the stormwater. A jellyfish filter by Contech will be installed to treat runoff from the east parking lot.

The plan set has been updated to include the TAC comments. Additional test pits have been dug on the rear of the property and data has been added to the plans. The grease trap has been relocated closer to the building. A traffic study has been completed and included in this submittal.

Improvements include:

- Renovations to interior of building
- Two stairwells off of the existing building
- Walk-in cooler
- Pervious paver walkway & retaining wall
- Dumpsters relocated in a privacy screened area
- Install 1,000 gallon grease interceptor
- Install Stormtech Chambers with catch basins and drain manholes
- Install 2 - cisterns
- Install gutters on the south and north roofs to direct runoff to the cisterns
- Expand rear stormwater pond
- Install jellyfish filter by Contech to treat runoff
- Install landscaping

These improvements will vastly improve the overall look of the site as well as add a significant amount of landscaping and install a stormwater system that detain, infiltrate, and treat runoff where currently that does not occur.

Sincerely,

Alex Ross, P.E.

Ross Engineering
Civil / Structural Engineering

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Portsmouth, NH 03801 **alexross@comcast.net**

Dated 6-7-2022
To: City of Portsmouth Planning Department

Applicant & Land Owner's Name:
30 North Front Street LLC
14 Lafayette Rd, Unit 9
North Hampton, NH 03862

Location of Land:
140 West Rd
Portsmouth, NH 03801
Tax Map 252, Lot 2-13

List of Abutters

United States of America
US Army Corps of Engineers
New England District
Real Est Division
696 Virginia Rd
Concord, MA 01742-2751
Tax Map 252, Lot 1-7

Public Service Company of NH
PO Box 270
Hartford, CT 06141
Tax Map 252, Lot 1

DSM MB II LLC
875 East St
Tewksbury, MA 08176
Tax Map 252, Lot 2

One Hundred West LLC
100 West Rd
Portsmouth, NH 03801
Tax Map 252, Lot 2-12

Litchfield Portsmouth LLC
& Eaton Partners Inc
175 Canal St Ste 401
Manchester, NH 03101
Tax Map 252, Lot 2-14

Construction and General Labor's Local Union
976 AFL-CIO
PO Box 4119
Portsmouth, NH 03802
Tax Map 252, Lot 2-37

List of Professionals

1. Civil Engineer & Surveyor
   Alex Ross
   Ross Engineering
   Certified Professional Engineer
   Licensed Land Surveyor
   909 Islington Street
   Portsmouth, NH 03801

2. Architect
   McHenry Architecture
   4 Market Street
   Portsmouth, NH 03801

3. MEP Engineer
   CSI Engineering
   125 Aviation Ave #4
   Portsmouth, NH 03801

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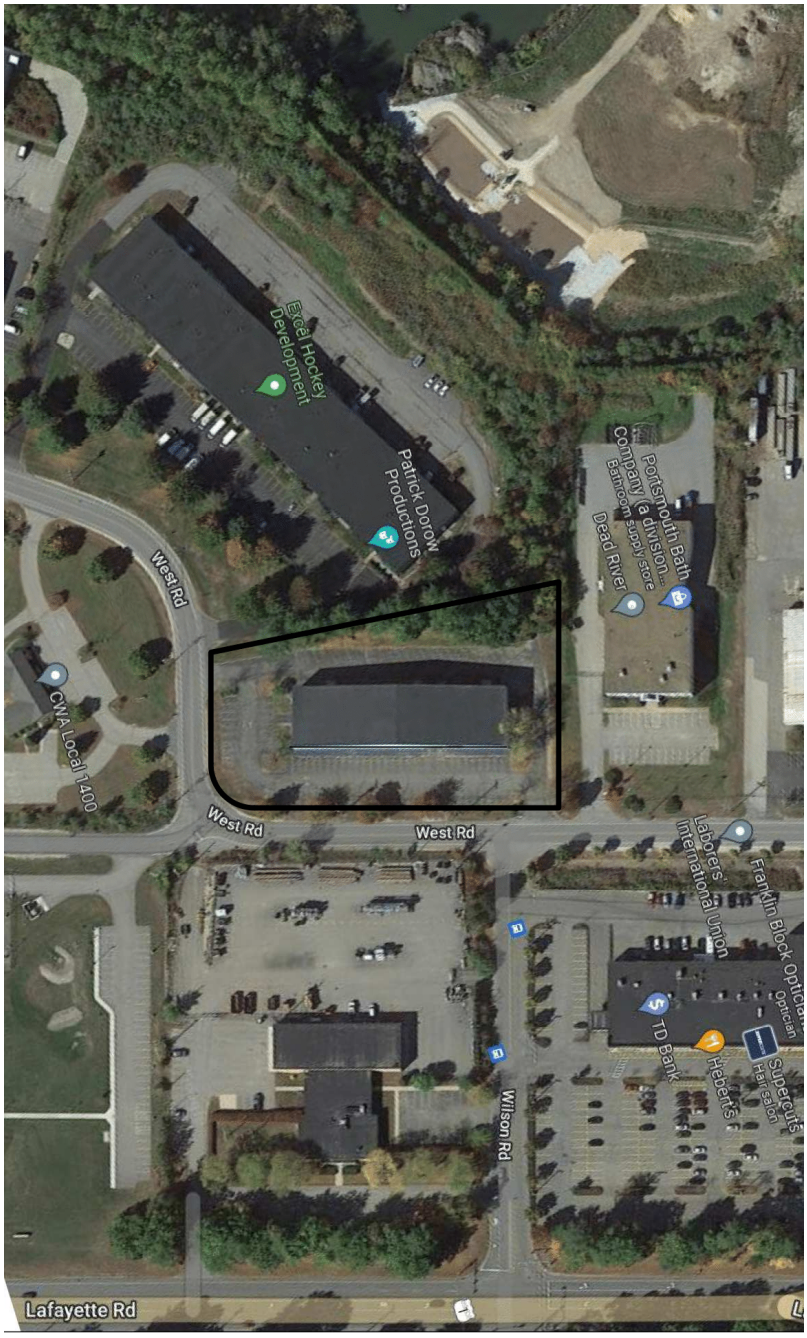

Aerial view of site

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View of building looking to the west

View of building looking to the east

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View of building & parking lot looking to the south

View of building looking to the east

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View of building looking to the south

View of dumpsters and stormwater pond looking to the west

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View of existing stormwater pond

View of front parking lot & swale looking to the south

MEMORANDUM

Date:	June 20, 2022
Project:	West Road Sport Club 140 West Rd.
Subject:	Green building components

The scope of the project uses the existing building located on the site of 140 West Road while incorporating green building materials and systems into the renovation and interior expansion. As part of the site plan review application, section 2.5.3.1b, the project has incorporated green components into the project as listed below.

- Pervious asphalt in a portion of the parking stalls.
- Reconstruction and upgrades to the site stormwater system, including a detention pond and jelly fish filtration system.
- Rainwater recovery to be used for irrigation with two 5,000-gallon cisterns located at each end of the building.
- Landscaping around the whole parcel that will include native plantings.
- LED energy efficient lighting for the site and building interior.
- Dark sky compliant site lighting.
- PV solar panel array located on the existing roof.
- Reuse of existing structure and cladding.
- Replacement and upgrade of HVAC units with energy recovery (ERV) that meet or exceed ASHRAE requirements.
- Low flow plumbing fixtures.
- Recycled content for many building components including structural steel for the 2nd floor structure and interior finishes.
- Energy efficient glazing and frames for new windows added. The additional windows also allow for natural light in occupied office space.

MEMORANDUM

Date:	June 20, 2022
Project:	West Road Sport Club 140 West Rd.
Subject:	Parking Calculations

Off street parking requirements, per the city of Portsmouth zoning section 10.1110, calculates office parking based on gross area and assembly spaces based on the calculated occupant load. The first table below outlines the maximum occupant count from Code Review sheet T2, followed by the parking tabulations.

Maximum Occupant Load Table	
Occupant Total (see sheet T2)	502
Office	36
Assembly	466

10.1112.32 Parking Requirements for Nonresidential Uses

Parking Calculations Table				
Use	Use No.	Requirement	Load	Stalls
Office	5.20	1 per 350 sf GFA	3418 sf	10
Assembly	3.10/4.60	1 per 4 persons maximum occupancy	466 persons	117
Total Parking				127

*4.60 Indoor Recreation has the same parking requirements as Assembly.

10.1112.60 Shared Parking
10.1112.61 Methodology

Developments that contain a mix of uses on the same parcel shall reduce the number of off-street parking spaces in accordance with the following methodology:

(1) Determine the minimum number of off-street parking spaces for each land use within the development in accordance with Sections 10.1112.10 through 10.1112.50.
(2) Multiply the minimum parking requirement for each land use by the corresponding parking occupancy rates for each of the five time periods set forth in Columns (B) through (F) of the Parking Occupancy Rates table below.
(3) Add the resulting shared parking requirements for each time period to determine the minimum parking requirement for that period.

The required minimum number of parking spaces for the development shall be the highest of the five time-period totals.

Shared Parking Methodology

Use	Weekday				Weekend					
	Daytime (b)		Evening (c)		Daytime(d)		Evening(e)		Nighttime(f)	
Office	100%	10	20%	2	10%	1	5%	1	5%	1
Entertainment	40%	47	100%	117	80%	94	100%	117	10%	12
Total		57		119		95		118		13

Based on the zoning requirements for off street parking and the shared parking methodology 140 West road will require 119 parking spaces.

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STORMWATER MANAGEMENT OPERATION & MAINTENANCE

140 West Road, Portsmouth, NH

The proposed stormwater structures and improvements will result in a massive upgrade for stormwater runoff control and treatment. For all of these elements to work correctly in the future it is imperative to keep up with proper operation and maintenance.

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. Future owners or assigns are responsible for maintenance of all stormwater infrastructure associated with the facility and the property. This includes the roof drainage system, cistern, stormwater pond, pervious pavers, Storm Tech Chambers, landscaped areas, pervious asphalt and Contech treatment structure.

B. General Inspection and Maintenance Requirements

1. Permanent stormwater and sediment and erosion control facilities to be maintained on the site include but are not limited to the following:

    a. Parking areas
    b. Pervious Asphalt
    c. Detention Pond
    d. Landscaped areas
    e. Permeable Pavers
    f. Culverts & Drain lines
    g. Contech jellyfish
    h. Roof drainage
    i. Storm Tech Chambers
    j. Cistern

2. Maintenance of permanent measures shall follow the following schedule:

    a. **<u>Parking areas, Driveway:</u>**
    Inspection at the end of every winter, prior to the start of the spring rain season. Sweeping shall be done once in early fall and then after spring snowmelt. Sand/debris that has collected off the driveway and parking lot should be removed off-site and disposed of properly.

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b. **Pervious Asphalt:**
Visually inspect pavement monthly to ensure it is clean of debris, de-waters between storms and is clean of sediments. Maintain all adjacent and upland areas. Keep surface free of sediment by blowing, and vacuuming at least as often as item a. above and as needed. Avoid any sealing or repaving with impervious materials.

c. **Detention Pond:**
Inspect inlet and outlet pipes and stoned basin annually. Inspect for accumulation of sediment and of proper function of pipes. Removed trash and debris from basin and any inlet or outlet pipe offsite. Grassed side slopes shall be maintained and mowed regularly.

d. **Landscaped Areas:**
Annual inspection of site's vegetation and landscaping. Any areas that are bare shall be reseeded and mulched with hay or, if the case is extreme, loamed and seeded or sodded to ensure adequate vegetative cover. Landscape specimens shall be replaced in-kind, if they are found to be dead or dying.

e. **Permeable Pavers:**
Review periodically during storm events for proper infiltration. Inspect once per year by running water over the surface while watching for proper infiltration. Clean/remove any sedment/debris from the joints to ensure largest surface area for water to infiltrate, perform light vacuuming twice a year.

f. **Culverts and drain lines:**
Inspect twice a year, more often if needed. Inspect for accumulation of debris. Remove material from inlet/outlet as necessary, dispose of offsite.

g. **Contech jellyfish treatment structure:**
See attached Jellyfish Maintenance Guide.

h. **Roof drainage:**
The following recommendations will help assure that the roof drainage system is maintained to preserve its effectiveness:

1. Initially, it should be tested by inserting a garden hose into the inlet and allowing the water to run at full strength for a minimum of one hour. The water should stay underground within the gravel. If water comes out of the overflow, the system should be further inspected and possibly replaced. This procedure should be performed every year during the annual inspection.

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2. In the spring and fall, visually inspect the area around the system and repair any erosion. Use small stones to stabilize erosion along drainage paths. Re-mulch any void areas by hand as needed. Also, inspect the roof collection and piping and clean and repair as necessary.

3. Do not plant deep rooted trees and shrubs within 5' of the system.

i. **Storm Tech Chambers:**
The following requirements will help assure that the storm tech chambers system is maintained to preserve its effectiveness:

STEP 1) inspect isolator row for sediment

A. Inspection ports (if present)
A.1. remove/open lid on nyloplast inline drain
A.2. remove and clean flexstorm filter if installed
A.3. using a flashlight and stadia rod, measure depth of sediment and record on maintenance log
A.4. lower a camera into isolator row for visual inspection of sediment levels (optional)
A.5. if sediment is at, or above, 3" (80mm) proceed to step 2. If not, proceed to step 3.

B. All isolator rows
B.1. remove cover from structure at upstream end of isolator row
B.2. using a flash light, inspect down the isolator row through outlet pipe. mirrors on poles or cameras may be used to avoid a confined space entry. follow osha regulations for confined space entry if entering manhole
B.3. if sediment is at, or above, 3" (80mm) proceed to step 2. If not, proceed to step 3.

STEP 2) Clean out isolator row using the jetvac process
A. a fixed culvert cleaning nozzle with rear facing spread of 45" (1.1m) or more is preferred
B. apply multiple passes of jetvac until backflush water is clean
C. vacuum structure sump as required

STEP 3) replace all covers, grates, filters, and lids; record observations and actions.

STEP 4) inspect and clean basins and manholes upstream of the storm tech system.

NOTES

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1. Inspect every 6 months during the first year of operation. Adjust the inspection interval based on previous observations of sediment accumulation and high water elevations. Adjustment to the inspection interval timeframe shall not be greater than 12 months.
2. Conduct jetting and vactoring annually or when inspection shows that maintenance is necessary.

i. Inspection of site shall occur monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging can occur and be obvious. Permeable pavers require minimal maintenance; however maintenance is absolutely necessary to ensure a proper working system.

ii. Asphalt seal coating is absolutely forbidden. Surface seal coating is not reversible.

iii. Street sweepers with vacuums, water, and brushes can be used to restore permeability. Follow sweeping with high-pressure hosing of the surface pores. Surface should be vacuumed 4 times per year, and at any additional times sediment is spilled, eroded, or tracked onto the surface.

iv. Planted areas adjacent to pervious pavers should be well maintained to prevent soil washout onto the pavement. If any bare spots or eroded areas are observed within the planted areas, they should be replanted and/or stabilized at once.

v. Immediately clean any soil deposited on pavers. Superficial dirt does not necessarily clog the voids. However, dirt that is ground in repeatedly by tires can lead to clogging. Therefore, trucks or other heavy vehicles should be prevented from tracking or spilling dirt onto the pavement. Replace any damaged paving blocks.

vi. Do not allow construction staging, soil/mulch storage, etc. on unprotected pavers surface.

vii. No winter sanding. Mechanical snow and ice removal preferred.

viii. Written and verbal communication to the porous paver's future owner should make clear the special purpose and special maintenance requirements such as those listed here.

viv. Owners shall provide a report on activities performed throughout the year. Report shall include documentation that pavement cleaning is accomplished per this document and a certification that the system continues to function as designed.

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j. Low Impact Development – Cistern

Cisterns are above or underground storage tanks used to collect roof runoff. They may include pumps and filtration devices to reuse water. They provide the benefit of reduced stormwater runoff and conservation of water supplies when the water is reused. Stormwater collected in cisterns can typically be reused for purposes of irrigation and, wash water, and other non-potable uses.

With an actively managed operating system, regular maintenance is also important to preserve the end use water quality, maintain system safety and efficiency, and minimize cost associated with repairs and downtime.

Maintenance

- Inspect overflow pipe and overflow area to ensure that overflow is draining in a nonerosive manner.
- Inspect cisterns at least annually for accumulation of sediment and debris, and clean cistern as warranted by inspection. Cisterns may require servicing under the supervision of a qualified professional, including periodic disinfection to control bacteria growth, or application of larvicide to control mosquitoes.
- Verify that the rainwater harvesting was built in accordance with the approved design and standards and specifications.
- Inspect and clean all conveyance and storage elements immediately prior to system testing. Verify that the distribution intake within storage device(s) is cleat of sediment and will not entrain any sediment once the flow is initiated.
- Verify that the practice actually captures runoff. Conduct a full inundation test to inspect the inflows, piping, storage tank, and outflows.
- Confirm that there are no leakages in the routing to the storage device or out of the storage device.
- Use a detailed inspection checklist that includes sign-offs by qualified individuals at the completion of construction, to ensure that the contractor’s interpretation of the plan is acceptable to the professional designer.
- Review and discuss all part warranties.

Ross Engineering

909 Islington Street
Portsmouth, NH 03801

603-433-7560
alexross@comcast.net

Annual Operations and Maintenance Report

	Activity	Date of Inspection	Who Inspected	Satisfactory: Yes, No, N/A	Maintenance Needed	Implemented date of corrective action	Findings of Inspector
	Parking Areas						
	Pervious Asphalt						
	Detention Pond						
	Landscaped Areas						
	Permeable Pavers						
	Culverts & Drain lines						
	Contech Jellyfish						
	Roof Drainage						
	Storm tech Chambers						
	Cistern						

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/Applicant: Alex Ross Date Submitted: 6/21/2022

Phone Number: 603-433-7560 E-mail: alexross@comcast.net

Site Address: 140 West Rd Map: 252 Lot: 2-13

Zoning District: Industrial Lot area: 87,507 sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Fully executed and signed Application form. **(2.5.2.3)**	Online Land Use Application	N/A
☑	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(2.5.2.8)**	See attached CD	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☑	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	See Attached Statement	☐
☑	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	Sheets A101-A105	N/A
☑	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	Sheet 1 "Existing Conditions"	N/A
☑	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	30 North Front St LLC 14 Lafayette Rd, Unit 9 North Hampton, NH 03862 alexbrian1568@gmail.com	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	See Attached Abutter's List	N/A
✓	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	See Attached Abutter's List	N/A
✓	List of reference plans. **(2.5.3.1G)**	Sheet 1 "Existing Conditions"	N/A
✓	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	Sheet 4 "Utility Plan"	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
✓	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
✓	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Required on all plan sheets Will be added	N/A
✓	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
✓	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
✓	Wetlands shall be delineated by a NH certified wetlands scientist. **(2.5.4.1E)**	No wetlands on site	N/A
✓	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Required on all plan sheets	N/A
✓	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Required on all plan sheets	N/A
✓	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Source and date of data displayed on the plan. **(2.5.4.2D)**	Required on all plan sheets	N/A
✓	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Required on all plan sheets	N/A
✓	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Sheets 2 & 3	N/A
✓	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	Sheet 3 "Landscape Plan" - Planting Notes 6-8	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)		
✓	a. Surveyed plan of site showing existing natural and built features;	Sheet 1 "Existing Conditions"	☐
✓	b. Zoning boundaries;	Sheet 1 "Existing Conditions"	☐
✓	c. Dimensional Regulations;	Sheet 1 - Note 3	☐
✓	d. Wetland delineation, wetland function and value assessment;	Sheet 1 "Existing Conditions"	☐
✓	e. SFHA, 100-year flood elevation line and BFE data.	Sheet 1 - Note 4	☐
	2. Buildings and Structures: (2.5.4.3B)		
✓	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	Sheets A101-A105	☐
✓	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	Sheet A301	☐
✓	c. Total Floor Area;	Sheet A101	☐
✓	d. Number of Usable Floors;	Sheet A101	☐
✓	e. Gross floor area by floor and use.	Sheet A101	☐
	3. Access and Circulation: (2.5.4.3C)		
✓	a. Location/width of access ways within site;	Sheet 2 "Site Plan"	☐
✓	b. Location of curbing, right of ways, edge of pavement and sidewalks;	Sheet 2 "Site Plan"	☐
✓	c. Location, type, size and design of traffic signing (pavement markings);	Sheet 2 "Site Plan"	☐
✓	d. Names/layout of existing abutting streets;	N/A	☐
✓	e. Driveway curb cuts for abutting prop. and public roads;	Sheet 1 "Existing Conditions"	☐
✓	f. If subdivision; Names of all roads, right of way lines and easements noted;	Not a Subdivision	☐
✓	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	Sheet 5 "Parking Plan"	☐
	4. Parking and Loading: (2.5.4.3D)		
✓	a. Location of off street parking/loading areas, landscaped areas/buffers;	Sheet 3 "Landscape Plan"	☐
✓	b. Parking Calculations (# required and the # provided).	Sheet 5 "Parking Plan"	☐
	5. Water Infrastructure: (2.5.4.3E)		
✓	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	Sheet 4 "Utility Plan"	☐
✓	b. Location of wells and monitoring wells (include protective radii).	N/A	☐
	6. Sewer Infrastructure: (2.5.4.3F)		
✓	a. Size, type and location of sanitary sewage facilities & Engineering data.	Sheet 4 "Utility Plan"	☐
	7. Utilities: (2.5.4.3G)		
✓	a. The size, type and location of all above & below ground utilities;	Sheet 4 "Utility Plan"	☐
✓	b. Size type and location of generator pads, transformers and other fixtures.	Sheet 4 "Utility Plan"	☐

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	**8. Solid Waste Facilities: (2.5.4.3H)**		
✓	a. The size, type and location of solid waste facilities.	Sheet 2 "Site Plan"	☐
	9. Storm water Management: (2.5.4.3I)		
✓	a. The location, elevation and layout of all storm-water drainage.	Sheet 4 "Utility Plan"	☐
	10. Outdoor Lighting: (2.5.4.3J)		
✓	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	"Lighting Plan"	☐
✓	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	"Lighting Plan"	☐
	12. Landscaping: (2.5.4.3K)		
✓	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	Sheet 3 "Landscape Plan"	☐
✓	**b.** Location of any irrigation system and water source.	N/A	☐
	13. Contours and Elevation: (2.5.4.3L)		
✓	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Sheet 4 "Grading & Drainage Plan"	☐
	14. Open Space: (2.5.4.3M)		
✓	a. Type, extent and location of all existing/proposed open space.	Sheet 2 "Site Plan"	☐
✓	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	N/A	☐
✓	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	Sheet 2 "Site Plan"	☐
✓	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	☐
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	Will Be Submitted	☐
✓	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Sheet 2 "Site Plan" Rain Garden & Stormtech SC-310 Units	☐
✓	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	Development not within wellhead protection area	☐
✓	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	Sheets 9 & 10	☐
✓	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	Sheet 2 "Site Plan"	☐
✓	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**	Sheet 10 "Erosion Control Plan"	✓

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**		☐
✓	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	See attached Drainage Study & Sheet 13 "Erosion Control Plan"	☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✓	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	Has Been Requested and will be submitted	☐
✓	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	N/A	☐

Applicant's Signature: _____ **Date:** 6/21/22

PLAN FOR
STORMWATER MANAGEMENT

For Property Located At:
140 West Rd
Tax Map 252, Lot 2-13
Portsmouth, NH 03801

Prepared by:
Alex Ross, P.E.
Ross Engineering
August 8, 2022

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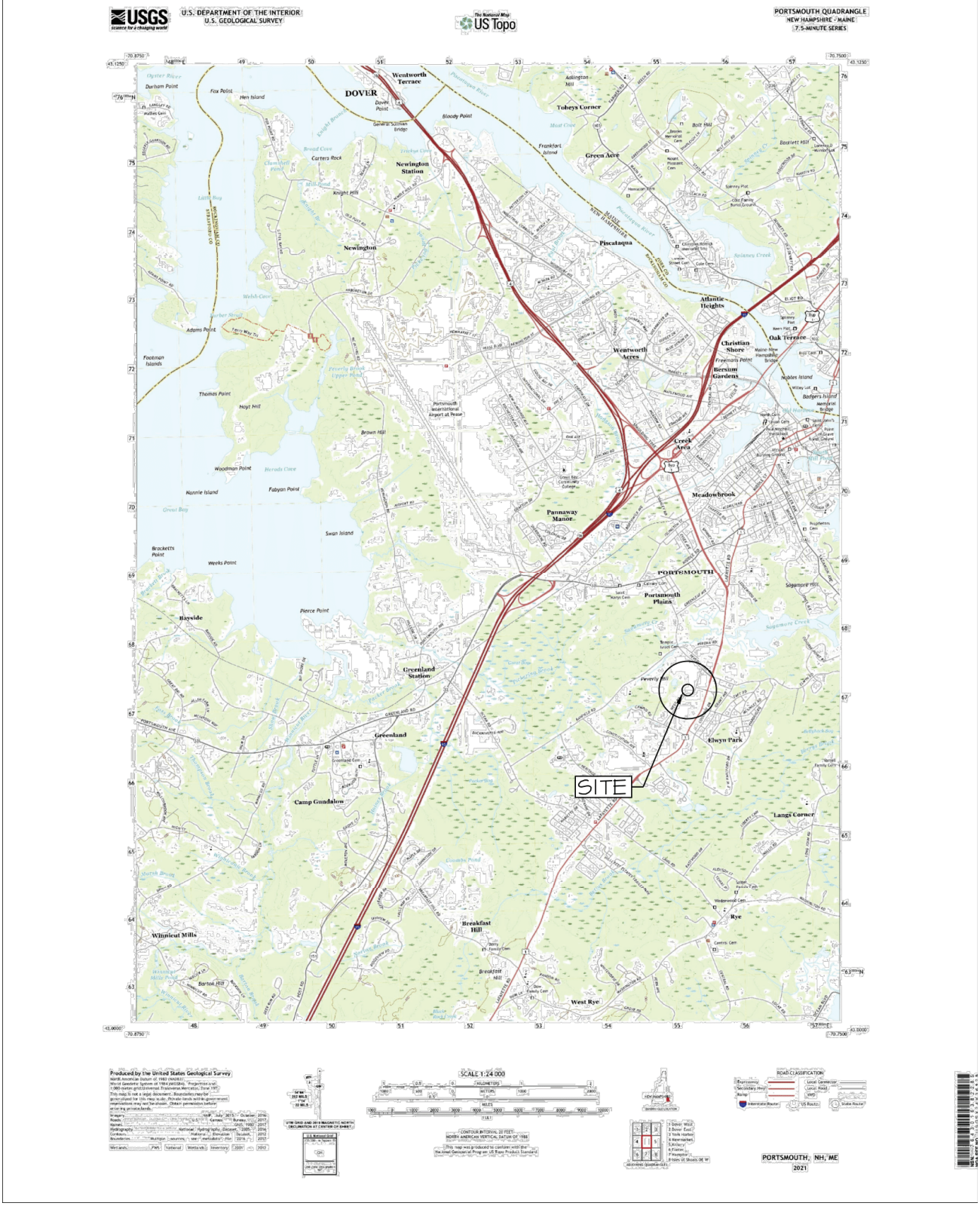
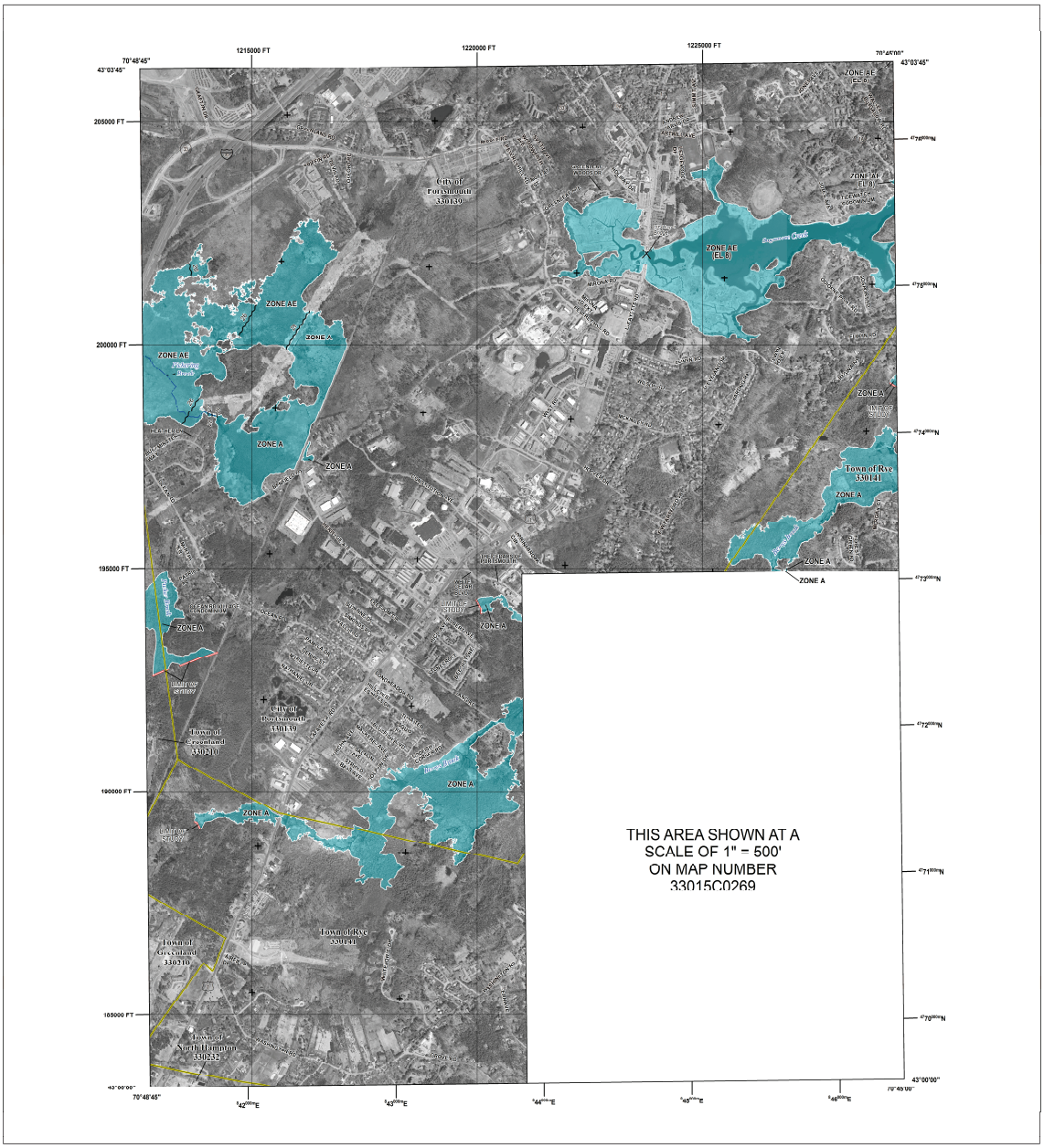
Site Description

The parcel being analyzed is located at 140 West Road in Portsmouth, NH. This is a fully developed 2.01 Acre site that was built in the late 1980's and most recently had a recreational building use. There are wetlands to the north of the site. The site lacks any effective stormwater management. The proposed improvements offer an opportunity to control stormwater and provide protection to the surrounding wetlands, while providing infiltration and aquifer recharge.

The existing building is in the center of the lot, surrounding by an asphalt parking lot. Runoff from the majority of the roof as well as northern, western and a portion of the south side of the lot flows to a stormwater pond located in the north side of the site that is improperly sized. This stormwater pond outlets to a drain manhole. Runoff from the eastern side of the lot also flows to this drain manhole through a series of drainage structures. This drain manhole outlets to the wetlands in the west. A portion of the roof and a small portion of the southern side of the lot flows to a catch basin that is part of a network of drainage structures along West Rd. This network drains to the south away from the site.

The County Soil Survey Map describes the soil in the area as 299 "Udorthents, smoothed". This soil is in the hydrologic soil group C which was used in modeling stormwater events. Seven test pits have been dug on site, and the data has been included in the site plan set.


USGS
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
The National Map
US Topo
PORTSMOUTH QUADRANGLE
NEW HAMPSHIRE - MAINE
7.5-MINUTE SERIES
DOVER
Wentworth Terrace
Newington Station
Newington
Tobeys Corner
Green Acre
Piscataqua
Atlantic Heights
Christian Shore
Oak Terrace
Wentworth Acres
Bersum Gardens
Creek Area
Meadowbrook
Pannaway Manor
PORTSMOUTH
Portsmouth Plains
Greenland Station
Greenland
Elwyn Park
SITE
Camp Gundalow
Langs Corner
Rye
Breakfast Hill
West Rye
Winnicut Mills
Bayside
Produced by the United States Geological Survey
SCALE 1:24 000
PORTSMOUTH, NH, ME
2021



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AH
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). This information was derived from digital orthophotography at a 1 foot resolution from photography dated 2010.

SCALE

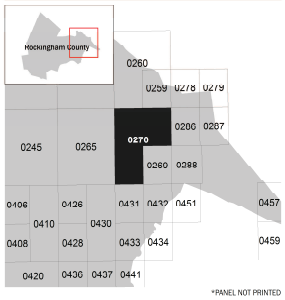
Map Projection: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Western Hemisphere Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 1,000 2,000 4,000 Feet

0 260 520 1,040 Meters

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ROCKINGHAM COUNTY, NEW HAMPSHIRE
(All Jurisdictions)

PANEL 270 OF 681

Panel Contains:

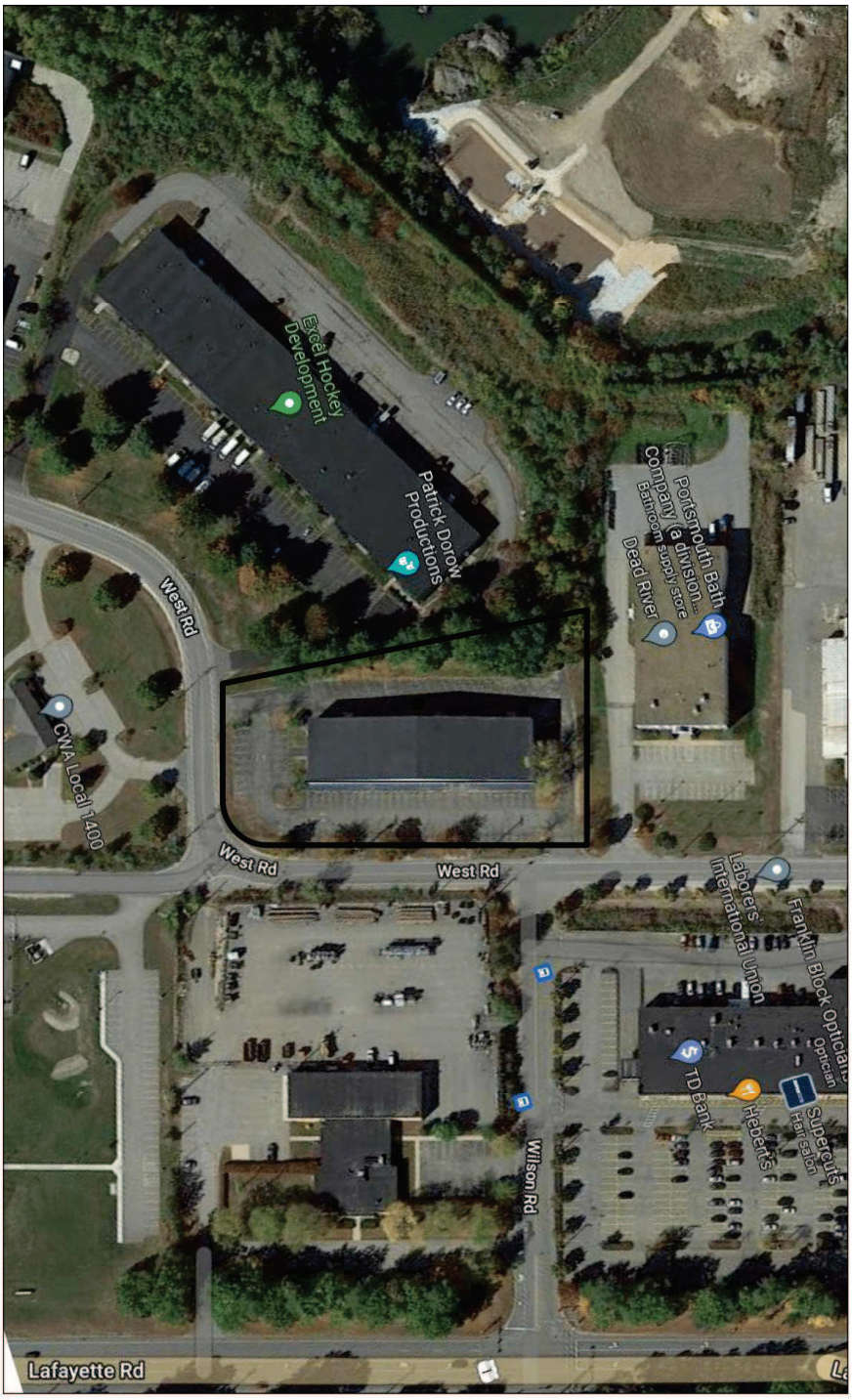
COMMUNITY	NUMBER	PANEL	SUFFIX
GREENLAND, TOWN OF	330210	0270	F
NORTH HAMPTON, TOWN OF	330232	0270	F
PORTSMOUTH, CITY OF	330139	0270	F
RYE, TOWN OF	330141	0270	F

VERSION NUMBER 2.3.2.1

MAP NUMBER 33015C0270F

MAP REVISED January 29, 2021

Aerial View


Excel Hockey Development
Patrick Dorow Productions
Portsmouth Bath Company (a division... Bathroom supply store
Dead River
West Rd
CWA Local 1400
West Rd
West Rd
Laborers' International Union
Franklin Block Opticians
Optician
TD Bank
Supercuts
Hair salon
Wilson Rd
Lafayette Rd

Drainage Design

Pre-development stormwater runoff flows must be analyzed to establish a comparable baseline for post-development flows. A stormwater management system should be installed that will adequately handle any increased post-development runoff.

The stormwater runoff analysis of the site was based on the **two, ten, twenty-five,** and **fifty** year storm event as per the City Site Plan Review Regulations, Section 7.6.1. The research method applied was the TR-55 method, which was developed from the U.S. Soil Conservation Service's TR-20 runoff procedure. The TR-55 Manual describes the method as a "...procedure to calculate storm runoff, peak rate of discharge, hydrographs, and storage volumes required for floodwater reservoirs." The model begins with a rainfall amount uniformly imposed on the watershed over a specified time distribution. Mass rainfall is converted to mass runoff by using a runoff curve number (CN). The curve number is based on soils, plant cover, amount of impervious area, interception, and surface storage to determine a coefficient representing the capability of a surface to infiltrate stormwater. Runoff is then transformed into a hydrograph by using the unit hydrograph theory and routing procedures through segments of the watershed. A hydrograph models the volume of runoff with respect to time, reflecting the unit hydrograph theory, which is that a one-day rainfall event produces a one inch depth of runoff over a given area. The routing of runoff is segmented into areas of the watershed dependent on topography and travel time. These segmented areas are known as subcatchments. Modeling calculations were performed using the HydrodCAD stormwater modeling system version 10.

Proposed Development

The existing building will be renovated, with stairwell additions on the south and west side, and a walk-in cooler expansion on the north side. Additional parking will be installed, with the new parking being partially pervious pavement and partially asphalt pavement. A patio walkway will be installed on the north exit of the building. Gutters will be added to the existing roof directing runoff into two cisterns (one on the north and one on the south side), with overflow being directed to the stormtech SC-310 units, which will connect to a drain manhole (DMH C). A jellyfish filter (CB A) that treats runoff from the eastern parking will connect to DMH C as well. DMH C will then flow to an existing drain manhole (DMH 1) on site. Pervious pavement will be located along the west side of the building. Runoff on the pervious pavement will be directed to a detention pond in the northwest of the property. Runoff from the detention pond will be slowly released to an existing drain manhole (DMH 2) on site. The runoff from DMH 1 also flows to DMH 2. The combined runoff then flows to the wetlands off site in the west. Seven test pits were dug at the site. A conservative value of 7.5 inches/hour was used for exfiltration in this analysis at the stormtech units. Exfiltration has been included in the model only for the stormtech units located at the eastern portion of the property.

Results of Drainage Analysis

Pre-Development Runoff

The existing conditions have been modeled as 3 separate subcatchments and are outlined below.

- Subcatchment area 1 will collect runoff from the north side of the building, the majority of the south side of the building, a portion of West Road, a portion of the southern parking lot, a portion of the northern parking lot, and the west side of the parking lot. Runoff will travel northwest into a stormwater pond, then through a 4" culvert into DMH 2, then through a 24" culvert to the wetlands in the northwest off site.
- Subcatchment area 2 will collect runoff from a small portion of the south side of the building, a portion of the southern parking lot, and a portion of West Road. Runoff will flow to CB 2, then to CB 3, then continue southwest into the Portsmouth drainage network.
- Subcatchment area 3 will collect runoff from the eastern parking lot, as well as a portion of West Road. Runoff will flow into CB 1 then to DMH 1, then to DMH 2, then through a 24" culvert to the wetlands in the northwest off site.

Post-Development Runoff

The proposed conditions have been modeled as 5 separate subcatchments and are outlined below.

- Subcatchment area 1 will collect runoff from the grassed area west of the parking lot and the grassed area northing of the parking lot. Runoff will flow to the northwest to a detention pond, then through a 12” culvert to DMH 2, then through a 24” culvert to the wetlands in the northwest off site.
- Subcatchment area 2 will collect runoff from the landscaped area south of the parking lot and a portion of West Road. Runoff will flow to CB 2, then to CB 3, then continue southwest into the Portsmouth drainage network.
- Subcatchment area 3 will collect runoff from the roof. Runoff will flow through gutters to two irrigation cisterns, then to DMH A, then through stormtech SC-310 chambers, then to DMH B, then to DMH C, then to DMH 1, then to DMH 2, then through a 24” culvert to the wetlands in the northwest off site.
- Subcatchment 4 will collect runoff from a portion of the eastern parking lot and a portion of West Road. Runoff will flow to a catch basin using a jellyfish filter (CB A), then to DMH C, then to DMH 1, then to DMH 2, then through a 24” culvert to the wetlands in the northwest off site.
- Subcatchment area 5 will collect runoff from a portion of the southern parking lot, a portion of the northern parking lot, the western parking lot, and a portion of West Road. Runoff will run along the vertical granite curb, flowing to curb inlet basin with a jellyfish filter (DMH D), then to a detention

pond in the northwest, then through a 12” culvert to DMH 2, then through a 24” culvert to the wetlands in the northwest off site.

- Subcatchment area 6 will collect runoff from area on the parking lot west of the existing building and a small portion of the roof. Runoff will be collected by the pervious pavement, where it will be detained and slowly released through a 6” underdrain to the detention pond in the northwest, then through a 12” culvert to DMH 2, then through a 24” culvert to the wetlands in the northwest off site.

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Drainage Summary

As required by the City of Portsmouth's Site Plan Review Regulations for Stormwater Management Best Practices (Section 7.6.1.6), the **two, ten, twenty-five,** and **fifty** year storm events were analyzed. The post-development flow meets or exceeds the requirements set forth by the city, resulting in no net increase in stormwater runoff rates. As shown on the plan, the stormwater system will adequately handle the post-development peak rate of runoff.

The proposed site improvements will have a positive drainage impact on the neighborhood and the city. Currently the flow from the majority of the site travels to either a stormwater pond that is undersized, or to the wetlands without treatment. The stormwater control measures provided by the detention pond, pervious pavement, stormtech SC-310 units, and jellyfish catch basins will both reduce the peak flow to the wetlands, and treat more stormwater than the existing site currently does.

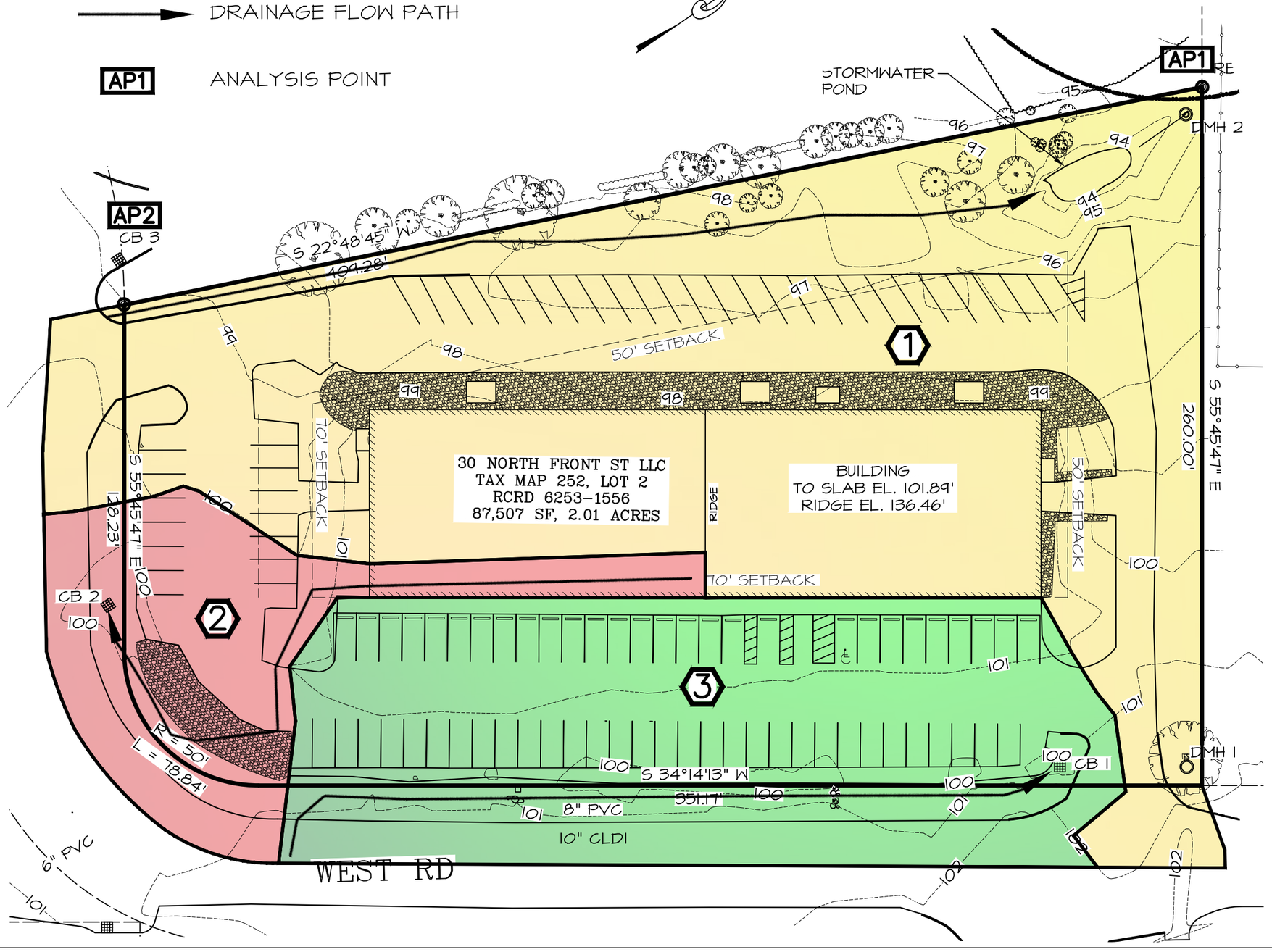
Rate of Runoff Comparison

Pre-Development (CFS)				
Analysis Points	**2yr**	**10yr**	**25yr**	**50yr**
Analysis Point 1	4.95	8.16	10.63	12.94
Analysis Point 2	2.38	3.76	4.83	5.83
Post-Development (CFS)				
Analysis Point 1	4.63	8.13	10.63	12.35
Analysis Point 2	0.37	0.64	0.85	1.04
Decrease in Flow (CFS)				
Analysis Point 1	0.32	0.03	0.00	0.59
Analysis Point 2	2.01	3.12	3.98	4.79

PRE-DEVELOPMENT CALCULATIONS

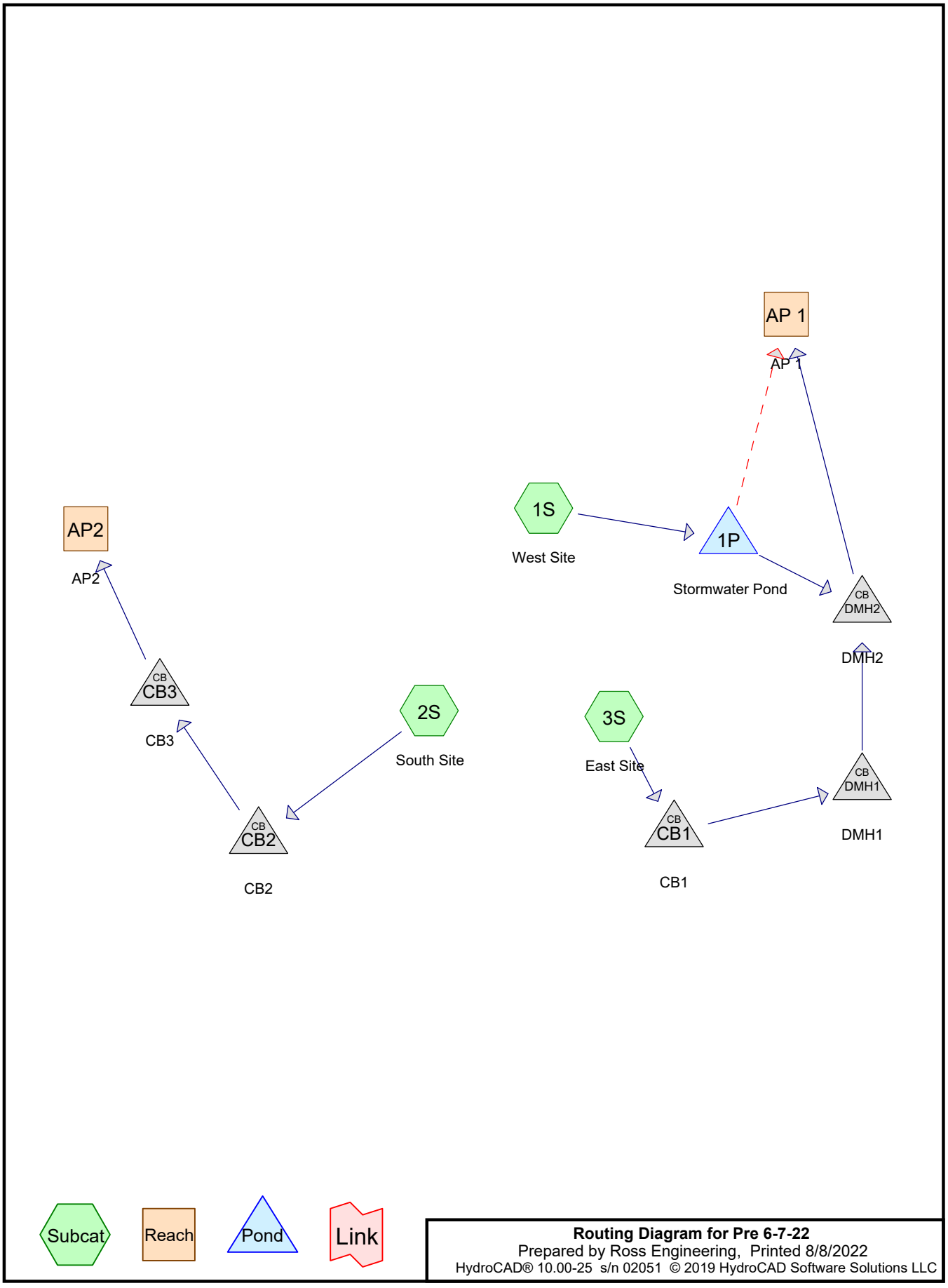
LEGEND

- (1) SUBCATCHMENT
- DRAINAGE FLOW PATH
- AP1 ANALYSIS POINT



PRE-DEVELOPMENT

SCALE: 1" = 40'



Routing Diagram for Pre 6-7-22
Prepared by Ross Engineering, Printed 8/8/2022
HydroCAD® 10.00-25 s/n 02051 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.627	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S)
0.007	98	Concrete, HSG C (1S)
0.002	98	Granite Curb, HSG C (1S)
0.124	96	Gravel surface, HSG C (1S, 2S, 3S)
1.232	98	Paved roads w/curbs & sewers, HSG C (1S, 2S, 3S)
0.402	98	Roofs, HSG C (1S, 3S)
2.395	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.395	HSG C	1S, 2S, 3S
0.000	HSG D	
0.000	Other	
2.395		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.627	0.000	0.000	0.627	>75% Grass cover, Good	1S, 2S, 3S
0.000	0.000	0.007	0.000	0.000	0.007	Concrete	1S
0.000	0.000	0.002	0.000	0.000	0.002	Granite Curb	1S
0.000	0.000	0.124	0.000	0.000	0.124	Gravel surface	1S, 2S, 3S
0.000	0.000	1.232	0.000	0.000	1.232	Paved roads w/curbs & sewers	1S, 2S, 3S
0.000	0.000	0.402	0.000	0.000	0.402	Roofs	1S, 3S
0.000	**0.000**	**2.395**	**0.000**	**0.000**	**2.395**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	93.60	92.24	21.2	0.0642	0.010	4.0	0.0	0.0
2	CB1	95.28	93.37	47.2	0.0405	0.012	12.0	0.0	0.0
3	CB2	95.26	94.06	129.0	0.0093	0.012	12.0	0.0	0.0
4	CB3	94.06	94.06	1.0	0.0000	0.012	12.0	0.0	0.0
5	DMH1	92.79	90.50	47.2	0.0485	0.012	24.0	0.0	0.0
6	DMH2	90.47	90.06	105.9	0.0039	0.012	24.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: West Site Runoff Area=62,055 sf 61.01% Impervious Runoff Depth>2.64"
Flow Length=350' Tc=7.6 min CN=90 Runoff=4.11 cfs 0.314 af

Subcatchment2S: South Site Runoff Area=29,613 sf 83.41% Impervious Runoff Depth>3.04"
Tc=5.0 min CN=94 Runoff=2.38 cfs 0.172 af

Subcatchment3S: East Site Runoff Area=12,646 sf 71.50% Impervious Runoff Depth>2.93"
Flow Length=288' Tc=8.5 min CN=93 Runoff=0.88 cfs 0.071 af

Reach AP 1: AP 1 Inflow=4.95 cfs 0.383 af
Outflow=4.95 cfs 0.383 af

Reach AP2: AP2 Inflow=2.38 cfs 0.172 af
Outflow=2.38 cfs 0.172 af

Pond 1P: Stormwater Pond Peak Elev=94.17' Storage=365 cf Inflow=4.11 cfs 0.314 af
Primary=0.27 cfs 0.148 af Secondary=3.80 cfs 0.164 af Outflow=4.07 cfs 0.312 af

Pond CB1: CB1 Peak Elev=95.76' Inflow=0.88 cfs 0.071 af
12.0" Round Culvert n=0.012 L=47.2' S=0.0405 '/' Outflow=0.88 cfs 0.071 af

Pond CB2: CB2 Peak Elev=96.21' Inflow=2.38 cfs 0.172 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=2.38 cfs 0.172 af

Pond CB3: CB3 Peak Elev=95.17' Inflow=2.38 cfs 0.172 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=2.38 cfs 0.172 af

Pond DMH1: DMH1 Peak Elev=93.17' Inflow=0.88 cfs 0.071 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=0.88 cfs 0.071 af

Pond DMH2: DMH2 Peak Elev=90.98' Inflow=1.15 cfs 0.219 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=1.15 cfs 0.219 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.557 af Average Runoff Depth = 2.79"
31.36% Pervious = 0.751 ac 68.64% Impervious = 1.644 ac

Summary for Subcatchment 1S: West Site

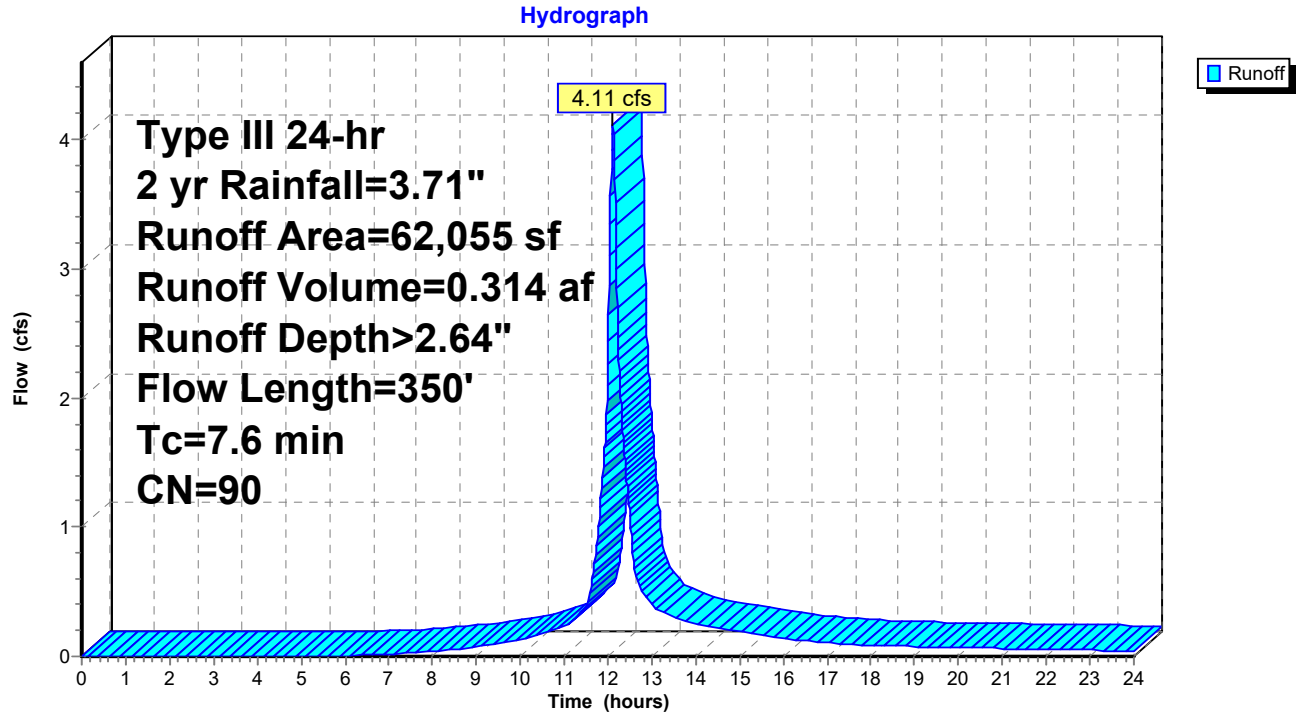
Runoff = 4.11 cfs @ 12.11 hrs, Volume= 0.314 af, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

	Area (sf)	CN	Description
	19,963	74	>75% Grass cover, Good, HSG C
	15,667	98	Roofs, HSG C
	4,231	96	Gravel surface, HSG C
	21,772	98	Paved roads w/curbs & sewers, HSG C
*	315	98	Concrete, HSG C
*	107	98	Granite Curb, HSG C
	62,055	90	Weighted Average
	24,194		38.99% Pervious Area
	37,861		61.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.7	300	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.6	350	Total			

Subcatchment 1S: West Site



Summary for Subcatchment 2S: South Site

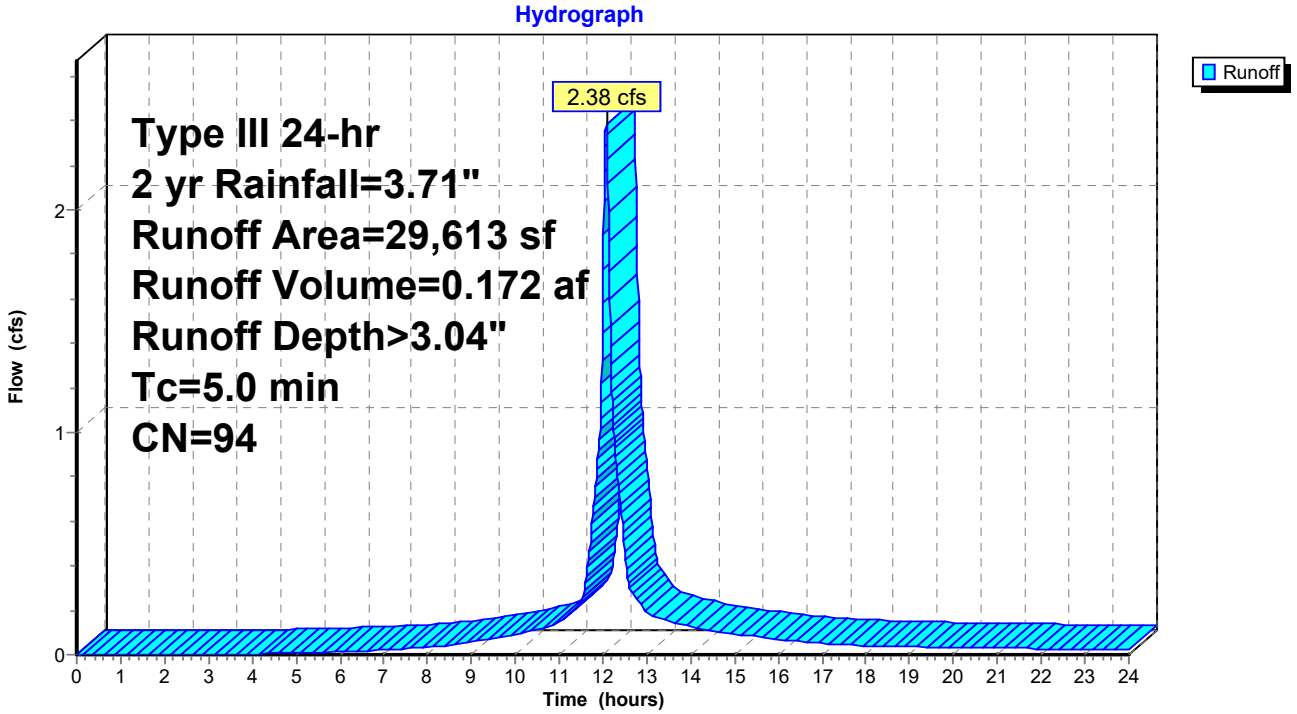
Runoff = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

Area (sf)	CN	Description
4,910	74	>75% Grass cover, Good, HSG C
3	96	Gravel surface, HSG C
24,700	98	Paved roads w/curbs & sewers, HSG C
29,613	94	Weighted Average
4,913		16.59% Pervious Area
24,700		83.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: South Site



Summary for Subcatchment 3S: East Site

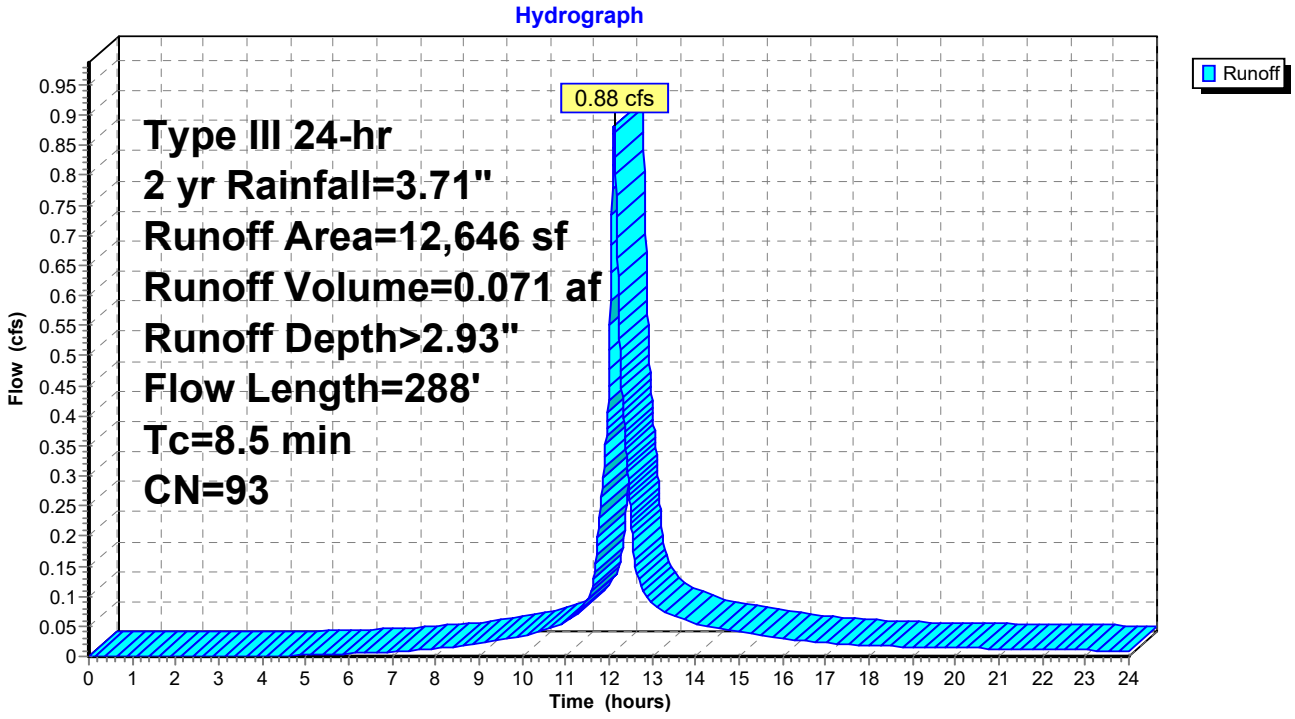
Runoff = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af, Depth> 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

Area (sf)	CN	Description
2,426	74	>75% Grass cover, Good, HSG C
1,845	98	Roofs, HSG C
1,178	96	Gravel surface, HSG C
7,197	98	Paved roads w/curbs & sewers, HSG C
12,646	93	Weighted Average
3,604		28.50% Pervious Area
9,042		71.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.7	237	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.5	288	Total			

Subcatchment 3S: East Site



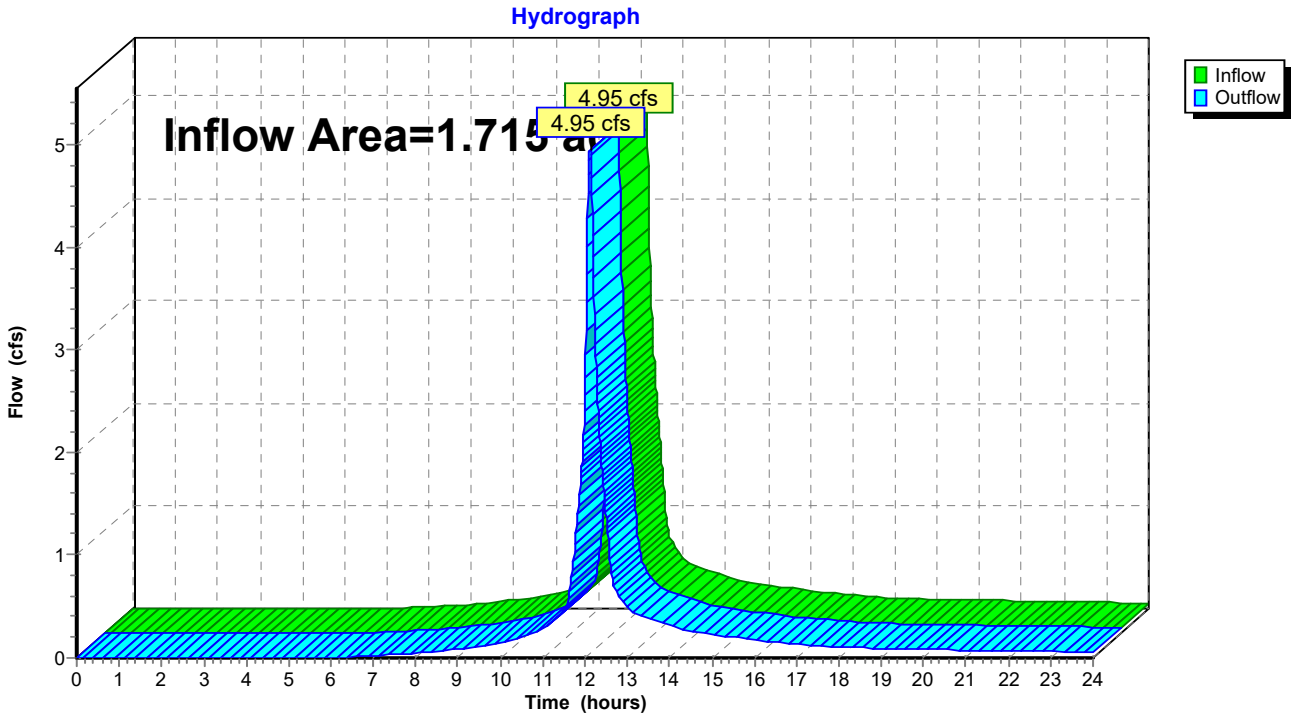
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 2.68" for 2 yr event
Inflow = 4.95 cfs @ 12.12 hrs, Volume= 0.383 af
Outflow = 4.95 cfs @ 12.12 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP 1: AP 1



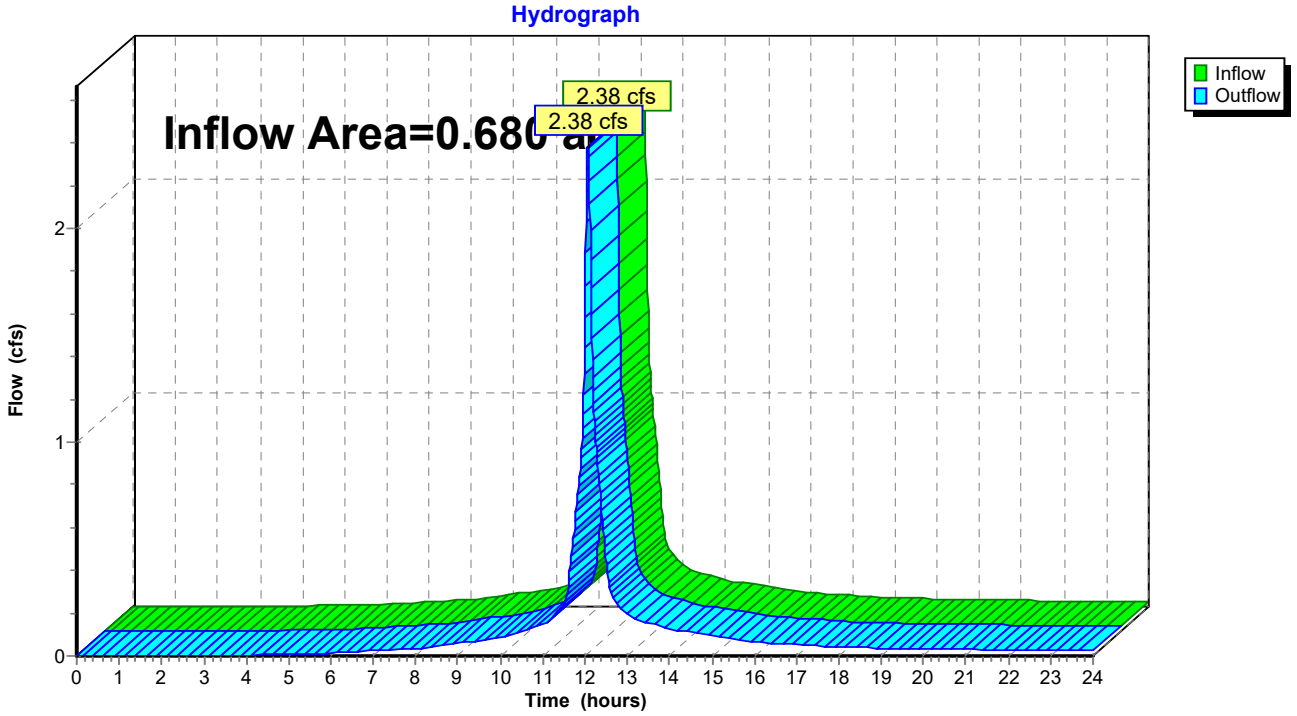
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 3.04" for 2 yr event
Inflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af
Outflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP2: AP2



Summary for Pond 1P: Stormwater Pond

Inflow Area = 1.425 ac, 61.01% Impervious, Inflow Depth > 2.64" for 2 yr event
Inflow = 4.11 cfs @ 12.11 hrs, Volume= 0.314 af
Outflow = 4.07 cfs @ 12.12 hrs, Volume= 0.312 af, Atten= 1%, Lag= 0.8 min
Primary = 0.27 cfs @ 12.12 hrs, Volume= 0.148 af
Secondary = 3.80 cfs @ 12.12 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 94.17' @ 12.12 hrs Surf.Area= 935 sf Storage= 365 cf

Plug-Flow detention time=8.7 min calculated for 0.312 af (100% of inflow)
Center-of-Mass det. time=5.9 min (807.8 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.60'	1,541 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

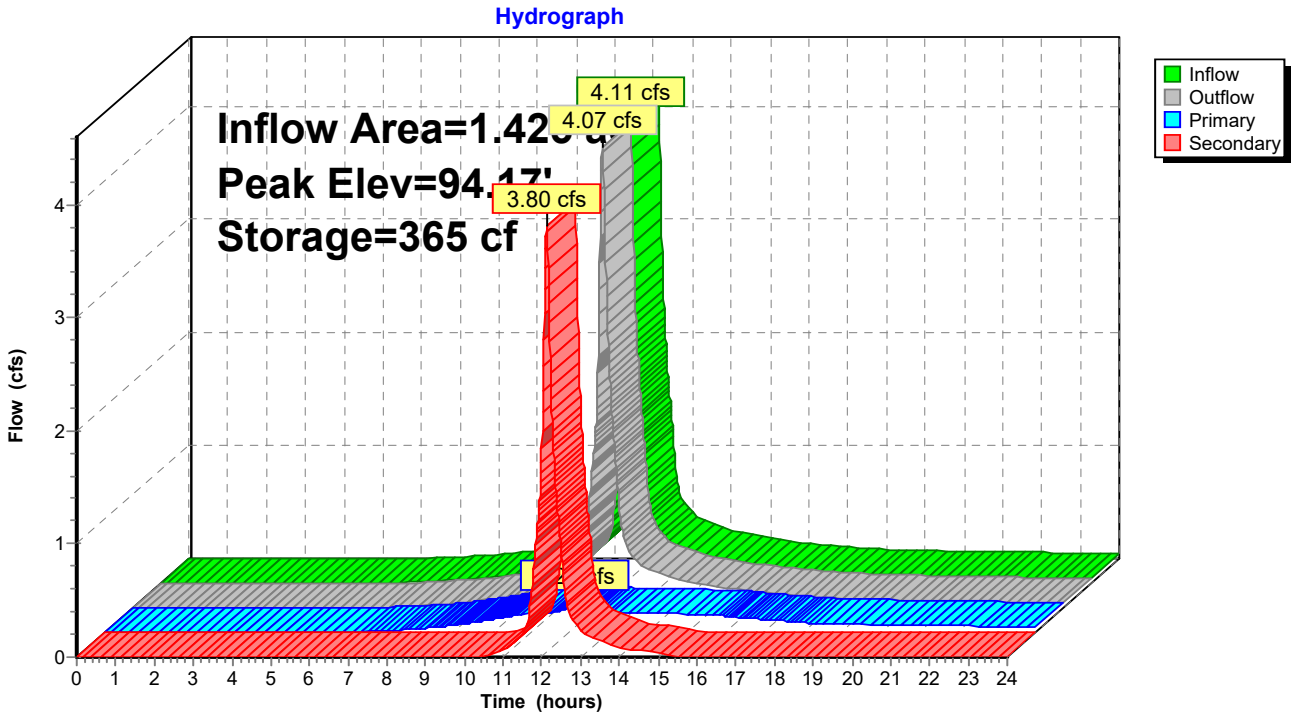
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

Device	Routing	Invert	Outlet Devices
#1	Primary	93.60'	**4.0" Round Culvert** L= 21.2' Ke= 0.500 Inlet / Outlet Invert= 93.60' / 92.24' S= 0.0642 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Secondary	93.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.27 cfs @ 12.12 hrs HW=94.17' TW=90.98' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.27 cfs @ 3.06 fps)

Secondary OutFlow Max=3.80 cfs @ 12.12 hrs HW=94.17' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 3.80 cfs @ 1.40 fps)

Pond 1P: Stormwater Pond



Summary for Pond CB1: CB1

[57] Hint: Peaked at 95.76' (Flood elevation advised)

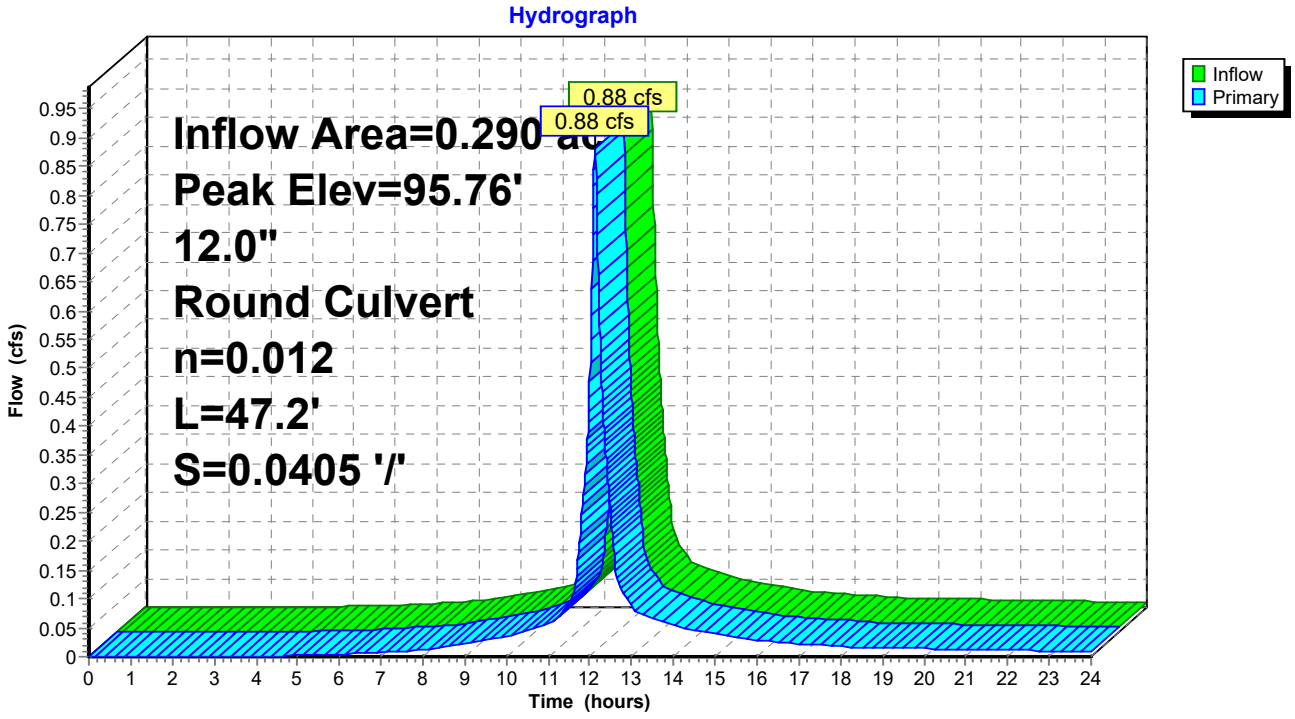
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 2.93" for 2 yr event
Inflow = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af
Outflow = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 95.76'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**12.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.88 cfs @ 12.12 hrs HW=95.76' TW=93.17' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 0.88 cfs @ 2.36 fps)

Pond CB1: CB1



Summary for Pond CB2: CB2

[57] Hint: Peaked at 96.21' (Flood elevation advised)

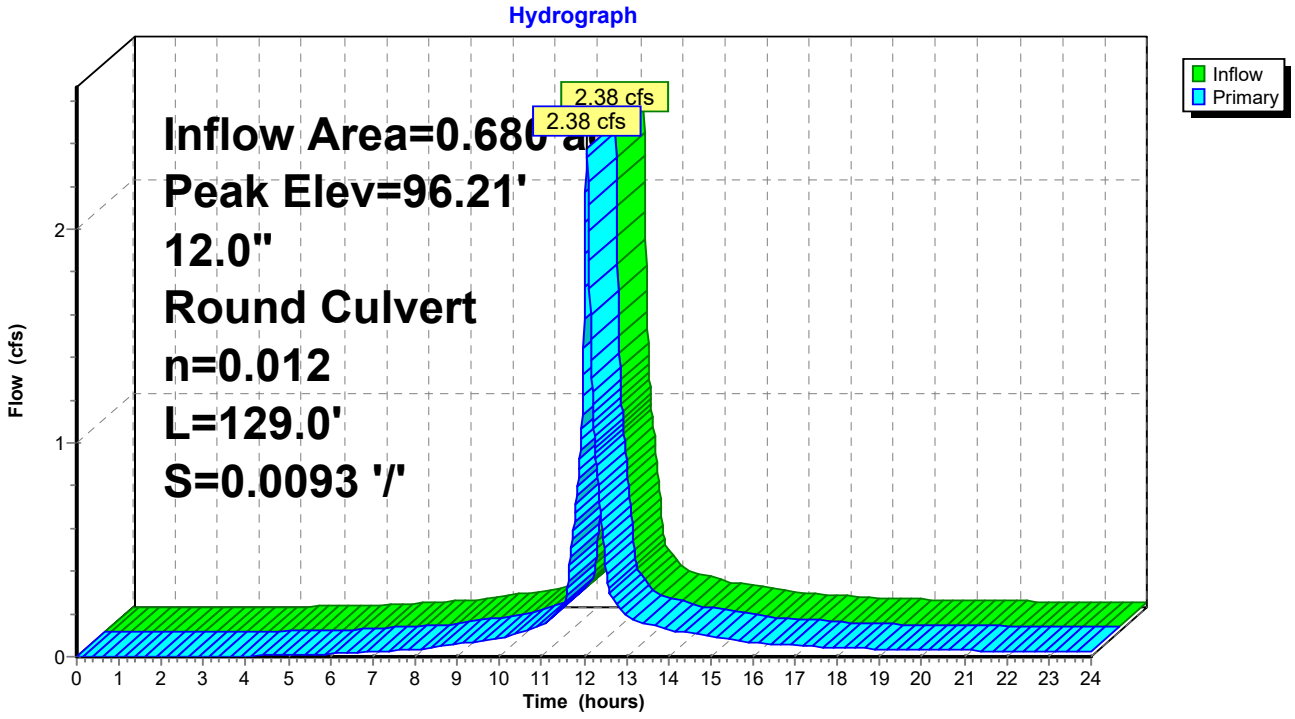
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 3.04" for 2 yr event
Inflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af
Outflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 96.21' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.38 cfs @ 12.07 hrs HW=96.21' TW=95.16' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.38 cfs @ 3.98 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 95.17' (Flood elevation advised)

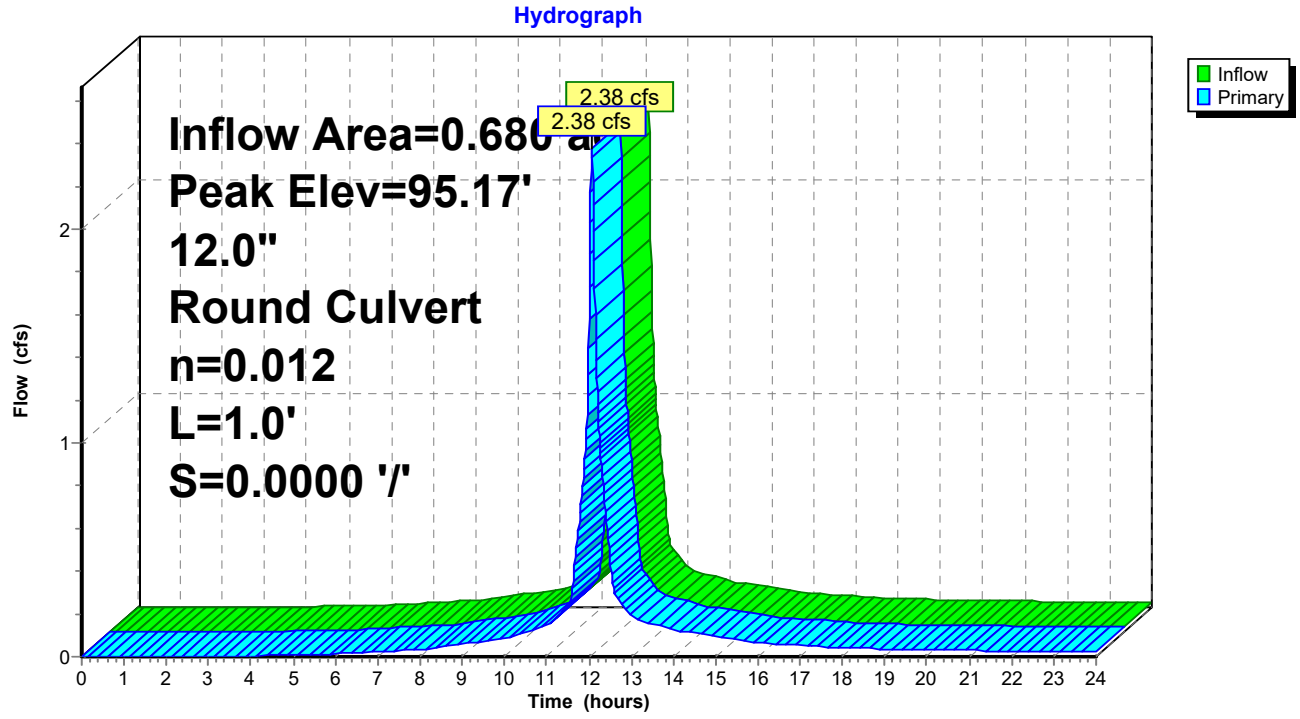
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 3.04" for 2 yr event
Inflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af
Outflow = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min
Primary = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 95.17'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.38 cfs @ 12.07 hrs HW=95.16' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.38 cfs @ 3.42 fps)

Pond CB3: CB3



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.17' (Flood elevation advised)

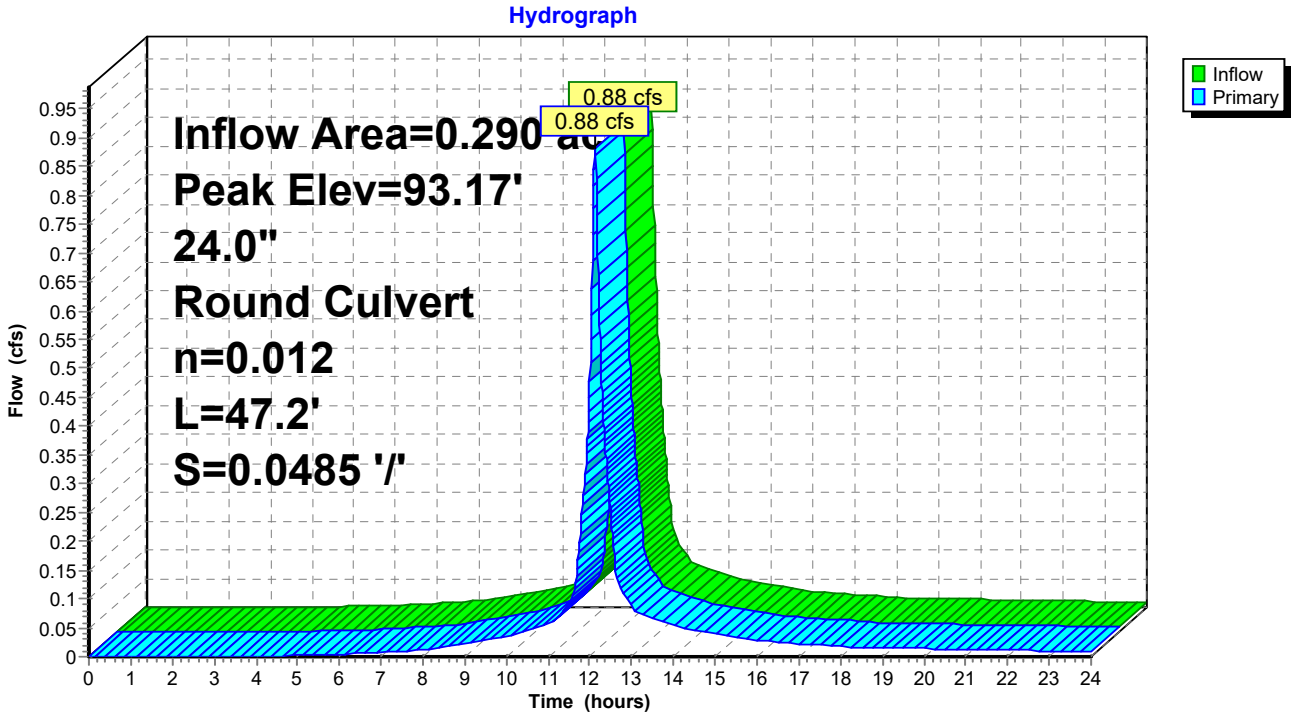
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 2.93" for 2 yr event
Inflow = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af
Outflow = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 93.17' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=0.88 cfs @ 12.12 hrs HW=93.17' TW=90.98' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 0.88 cfs @ 2.10 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 90.98' (Flood elevation advised)

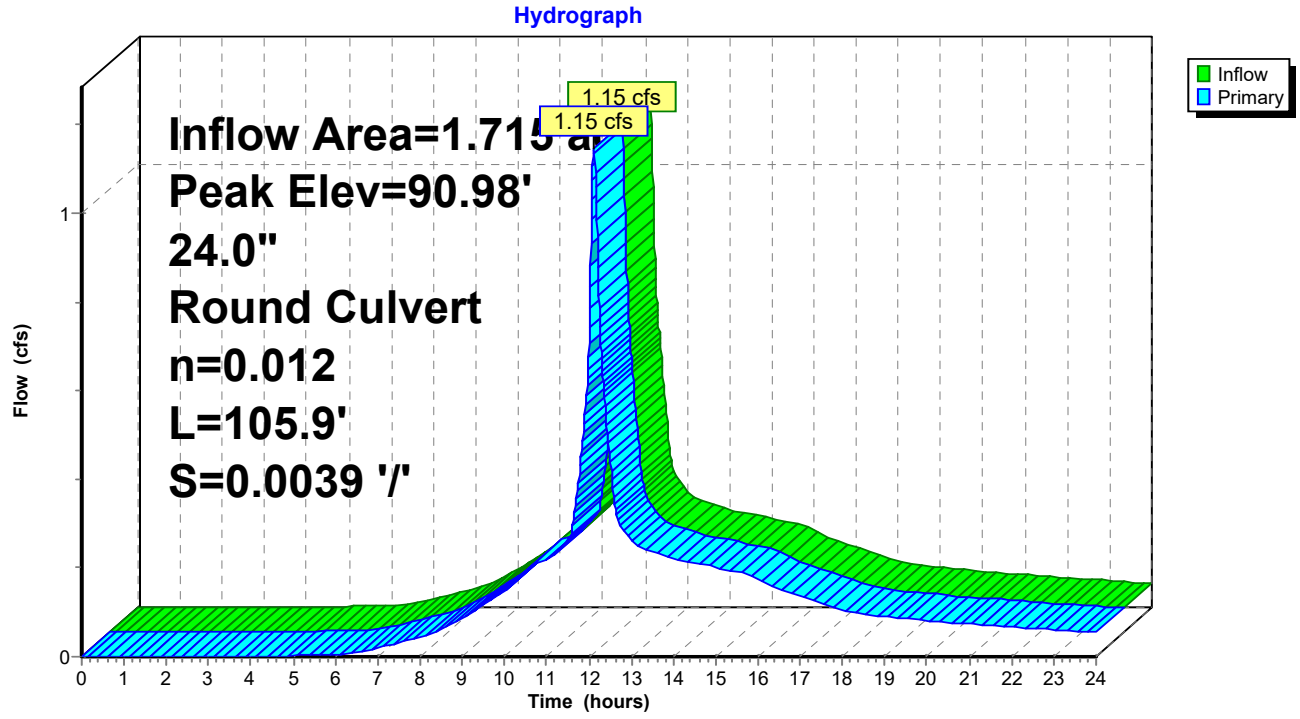
Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 1.53" for 2 yr event
Inflow = 1.15 cfs @ 12.12 hrs, Volume= 0.219 af
Outflow = 1.15 cfs @ 12.12 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.12 hrs, Volume= 0.219 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.98' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=1.15 cfs @ 12.12 hrs HW=90.98' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 1.15 cfs @ 2.73 fps)

Pond DMH2: DMH2



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: West Site Runoff Area=62,055 sf 61.01% Impervious Runoff Depth>4.49"
Flow Length=350' Tc=7.6 min CN=90 Runoff=6.81 cfs 0.533 af

Subcatchment2S: South Site Runoff Area=29,613 sf 83.41% Impervious Runoff Depth>4.94"
Tc=5.0 min CN=94 Runoff=3.76 cfs 0.280 af

Subcatchment3S: East Site Runoff Area=12,646 sf 71.50% Impervious Runoff Depth>4.82"
Flow Length=288' Tc=8.5 min CN=93 Runoff=1.41 cfs 0.117 af

Reach AP 1: AP 1 Inflow=8.16 cfs 0.648 af
Outflow=8.16 cfs 0.648 af

Reach AP2: AP2 Inflow=3.76 cfs 0.280 af
Outflow=3.76 cfs 0.280 af

Pond 1P: Stormwater Pond Peak Elev=94.28' Storage=478 cf Inflow=6.81 cfs 0.533 af
Primary=0.30 cfs 0.201 af Secondary=6.45 cfs 0.331 af Outflow=6.75 cfs 0.531 af

Pond CB1: CB1 Peak Elev=95.91' Inflow=1.41 cfs 0.117 af
12.0" Round Culvert n=0.012 L=47.2' S=0.0405 '/' Outflow=1.41 cfs 0.117 af

Pond CB2: CB2 Peak Elev=97.37' Inflow=3.76 cfs 0.280 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=3.76 cfs 0.280 af

Pond CB3: CB3 Peak Elev=95.60' Inflow=3.76 cfs 0.280 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=3.76 cfs 0.280 af

Pond DMH1: DMH1 Peak Elev=93.28' Inflow=1.41 cfs 0.117 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=1.41 cfs 0.117 af

Pond DMH2: DMH2 Peak Elev=91.10' Inflow=1.71 cfs 0.317 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=1.71 cfs 0.317 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.929 af Average Runoff Depth = 4.66"
31.36% Pervious = 0.751 ac 68.64% Impervious = 1.644 ac

Summary for Subcatchment 1S: West Site

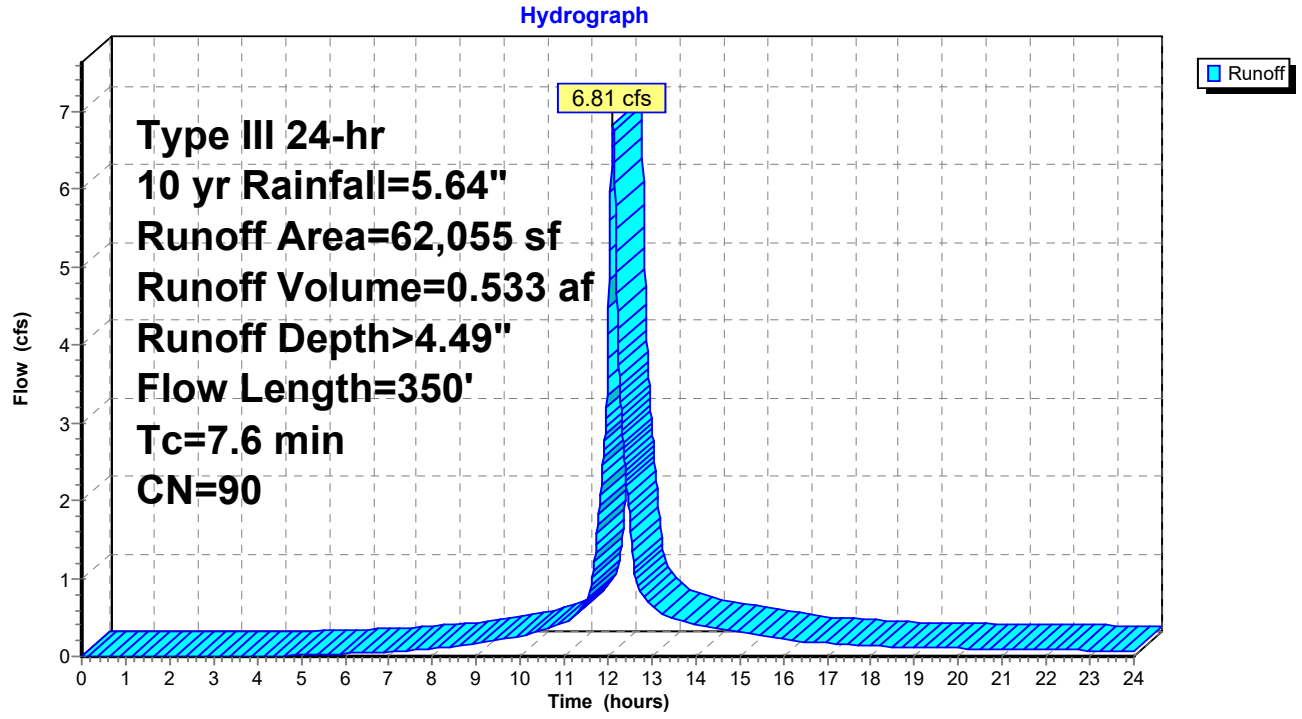
Runoff = 6.81 cfs @ 12.10 hrs, Volume= 0.533 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

	Area (sf)	CN	Description
	19,963	74	>75% Grass cover, Good, HSG C
	15,667	98	Roofs, HSG C
	4,231	96	Gravel surface, HSG C
	21,772	98	Paved roads w/curbs & sewers, HSG C
*	315	98	Concrete, HSG C
*	107	98	Granite Curb, HSG C
	62,055	90	Weighted Average
	24,194		38.99% Pervious Area
	37,861		61.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.7	300	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.6	350	Total			

Subcatchment 1S: West Site



Summary for Subcatchment 2S: South Site

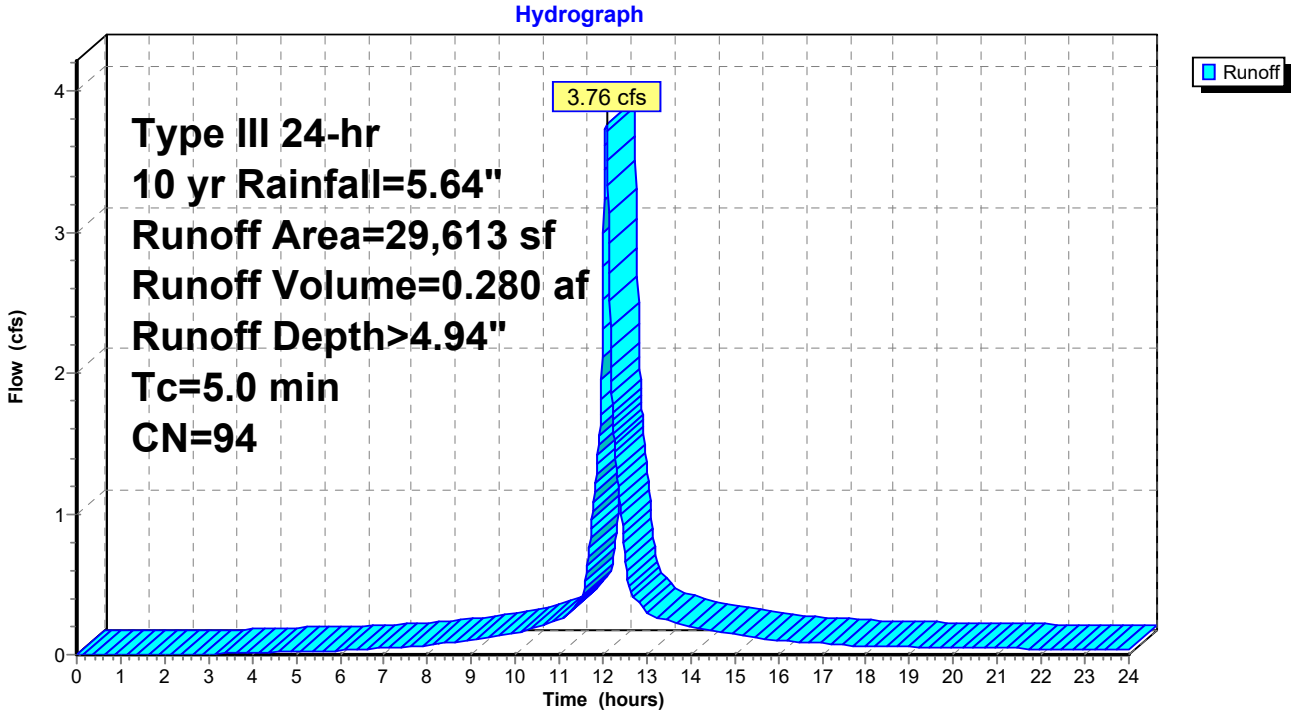
Runoff = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af, Depth> 4.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

Area (sf)	CN	Description
4,910	74	>75% Grass cover, Good, HSG C
3	96	Gravel surface, HSG C
24,700	98	Paved roads w/curbs & sewers, HSG C
29,613	94	Weighted Average
4,913		16.59% Pervious Area
24,700		83.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: South Site



Summary for Subcatchment 3S: East Site

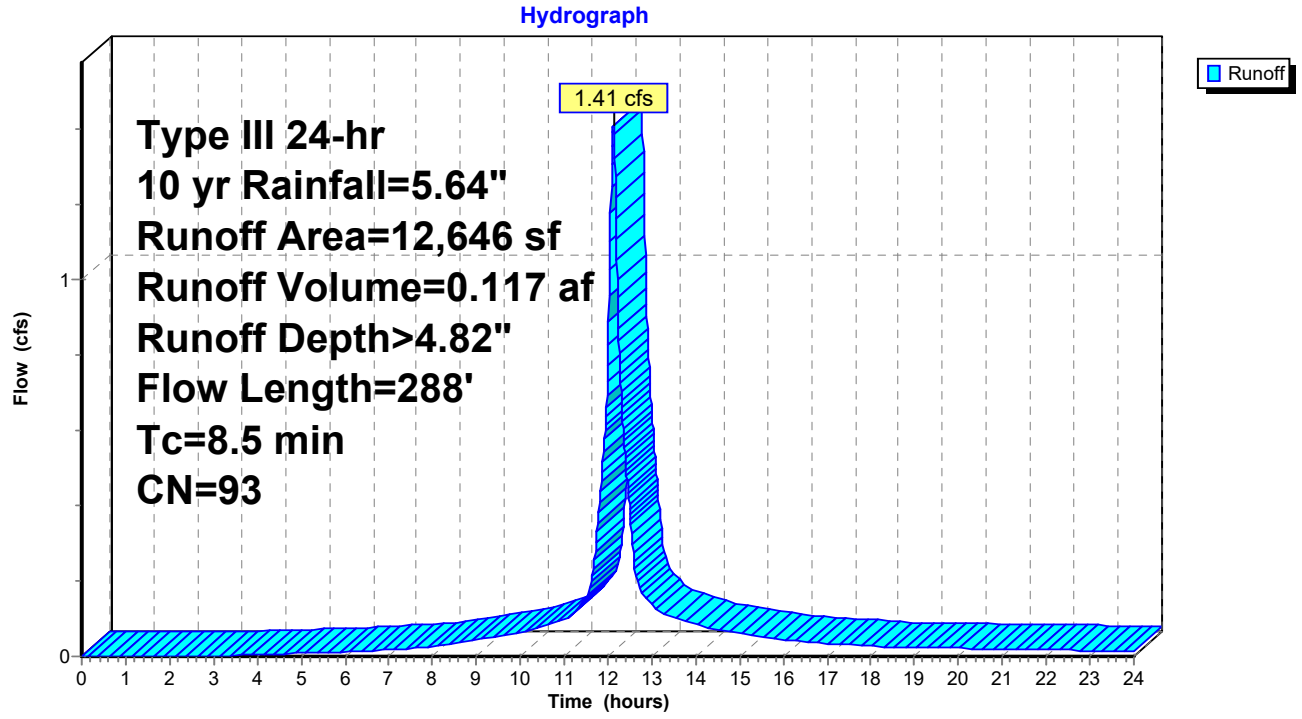
Runoff = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af, Depth> 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

Area (sf)	CN	Description
2,426	74	>75% Grass cover, Good, HSG C
1,845	98	Roofs, HSG C
1,178	96	Gravel surface, HSG C
7,197	98	Paved roads w/curbs & sewers, HSG C
12,646	93	Weighted Average
3,604		28.50% Pervious Area
9,042		71.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.7	237	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.5	288	Total			

Subcatchment 3S: East Site



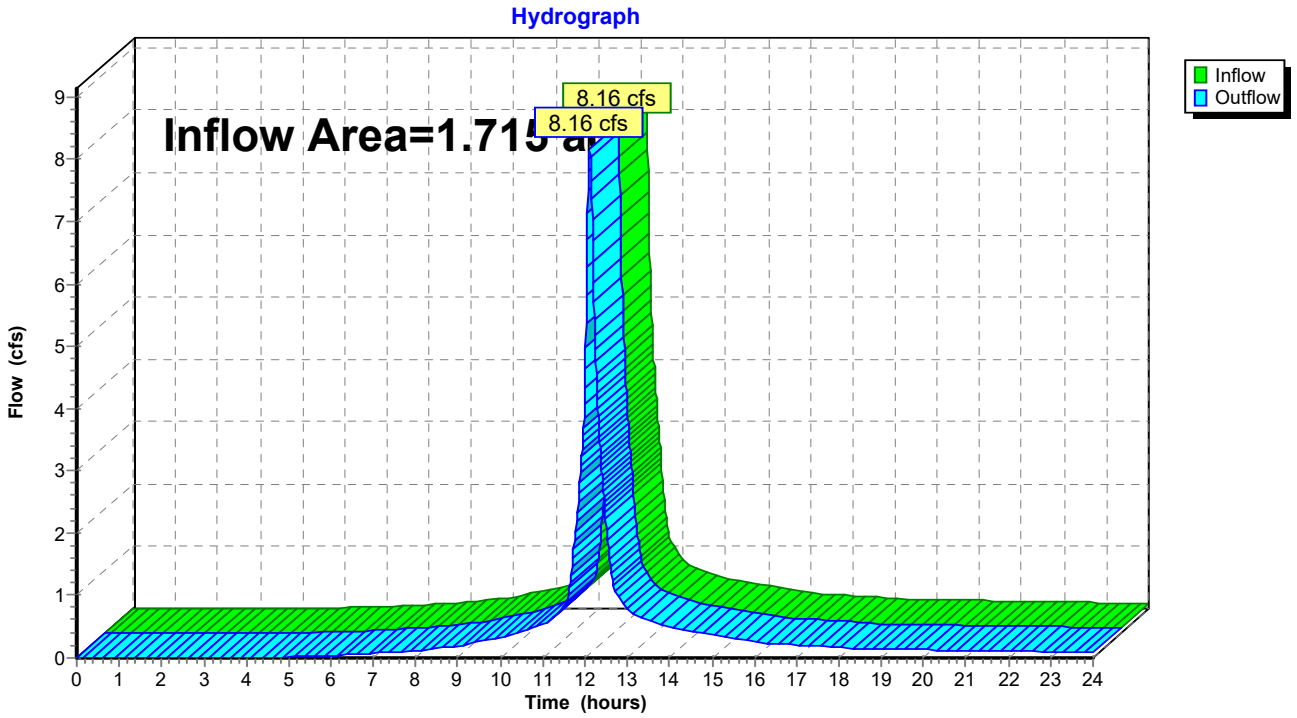
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 4.53" for 10 yr event
Inflow = 8.16 cfs @ 12.12 hrs, Volume= 0.648 af
Outflow = 8.16 cfs @ 12.12 hrs, Volume= 0.648 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP 1: AP 1



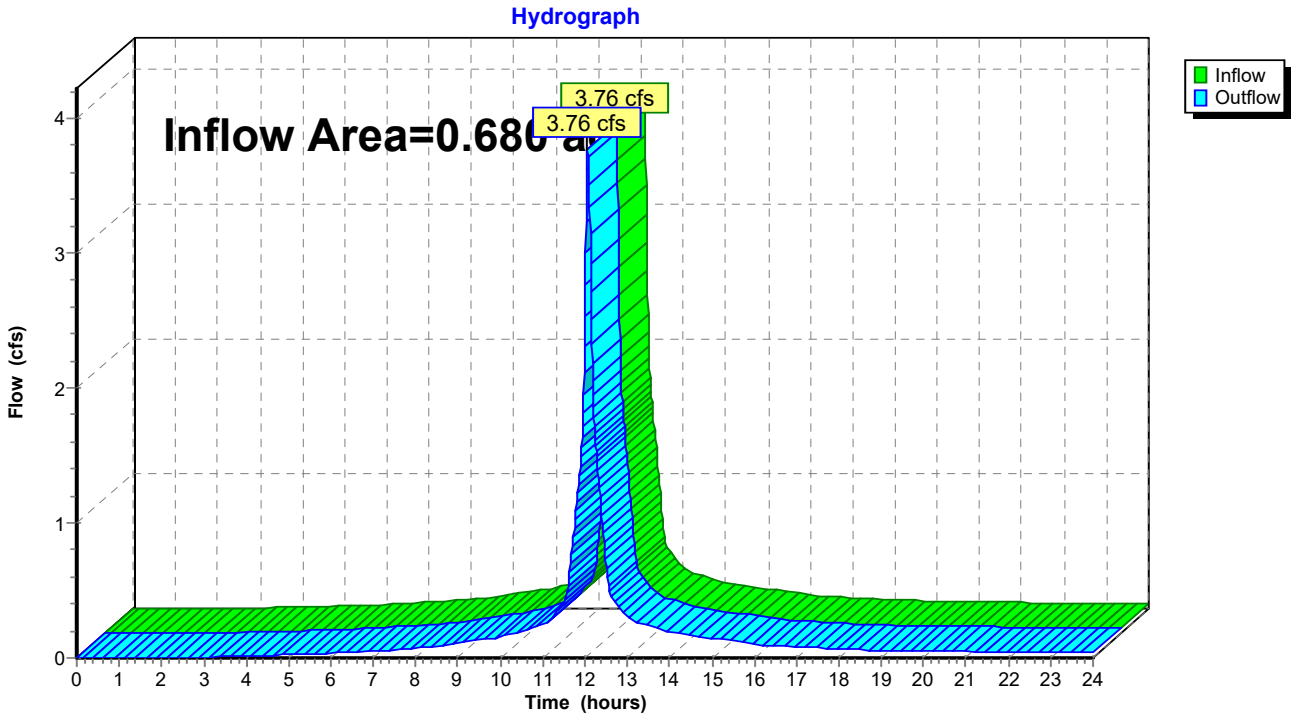
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 4.94" for 10 yr event
Inflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af
Outflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP2: AP2



Summary for Pond 1P: Stormwater Pond

Inflow Area = 1.425 ac, 61.01% Impervious, Inflow Depth > 4.49" for 10 yr event
Inflow = 6.81 cfs @ 12.10 hrs, Volume= 0.533 af
Outflow = 6.75 cfs @ 12.12 hrs, Volume= 0.531 af, Atten= 1%, Lag= 0.7 min
Primary = 0.30 cfs @ 12.12 hrs, Volume= 0.201 af
Secondary = 6.45 cfs @ 12.12 hrs, Volume= 0.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 94.28' @ 12.12 hrs Surf.Area= 1,066 sf Storage= 478 cf

Plug-Flow detention time=6.7 min calculated for 0.531 af (100% of inflow)
Center-of-Mass det. time=4.5 min (791.9 - 787.4)

Volume	Invert	Avail.Storage	Storage Description
#1	93.60'	1,541 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

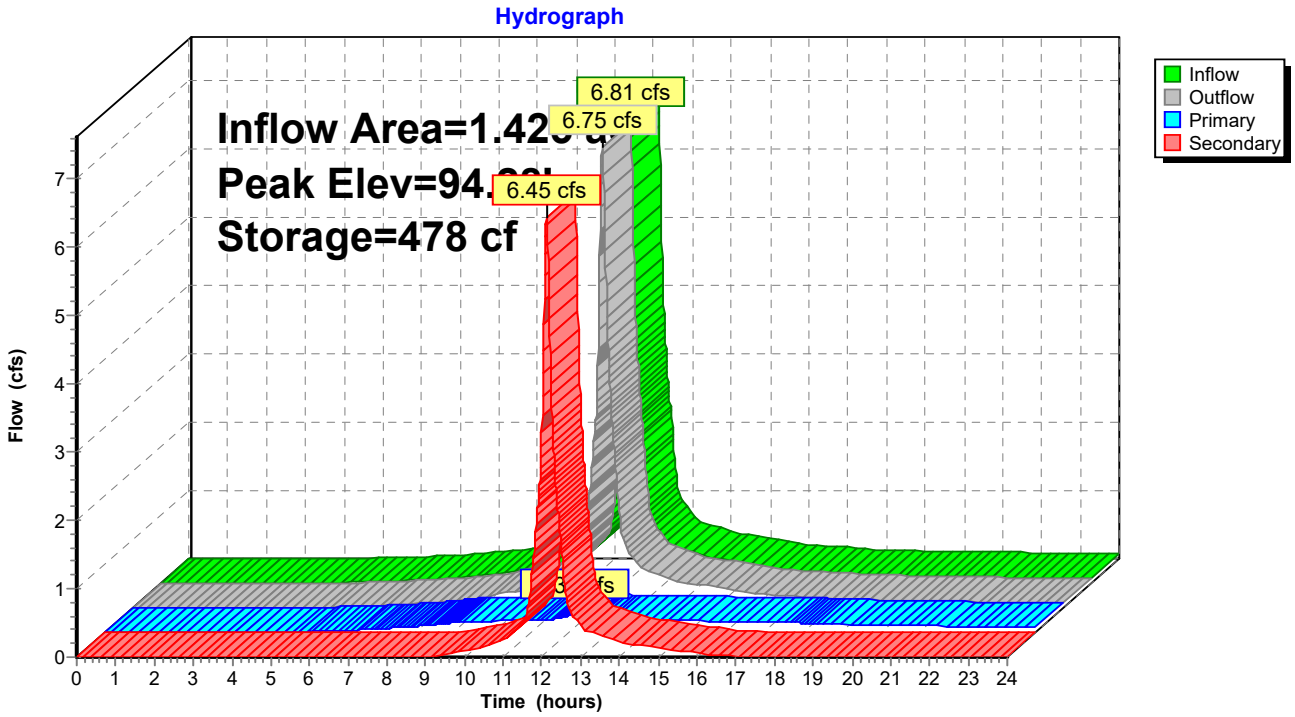
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

Device	Routing	Invert	Outlet Devices
#1	Primary	93.60'	**4.0" Round Culvert** L= 21.2' Ke= 0.500 Inlet / Outlet Invert= 93.60' / 92.24' S= 0.0642 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Secondary	93.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.30 cfs @ 12.12 hrs HW=94.28' TW=91.10' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.30 cfs @ 3.46 fps)

Secondary OutFlow Max=6.44 cfs @ 12.12 hrs HW=94.28' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 6.44 cfs @ 1.68 fps)

Pond 1P: Stormwater Pond



Summary for Pond CB1: CB1

[57] Hint: Peaked at 95.91' (Flood elevation advised)

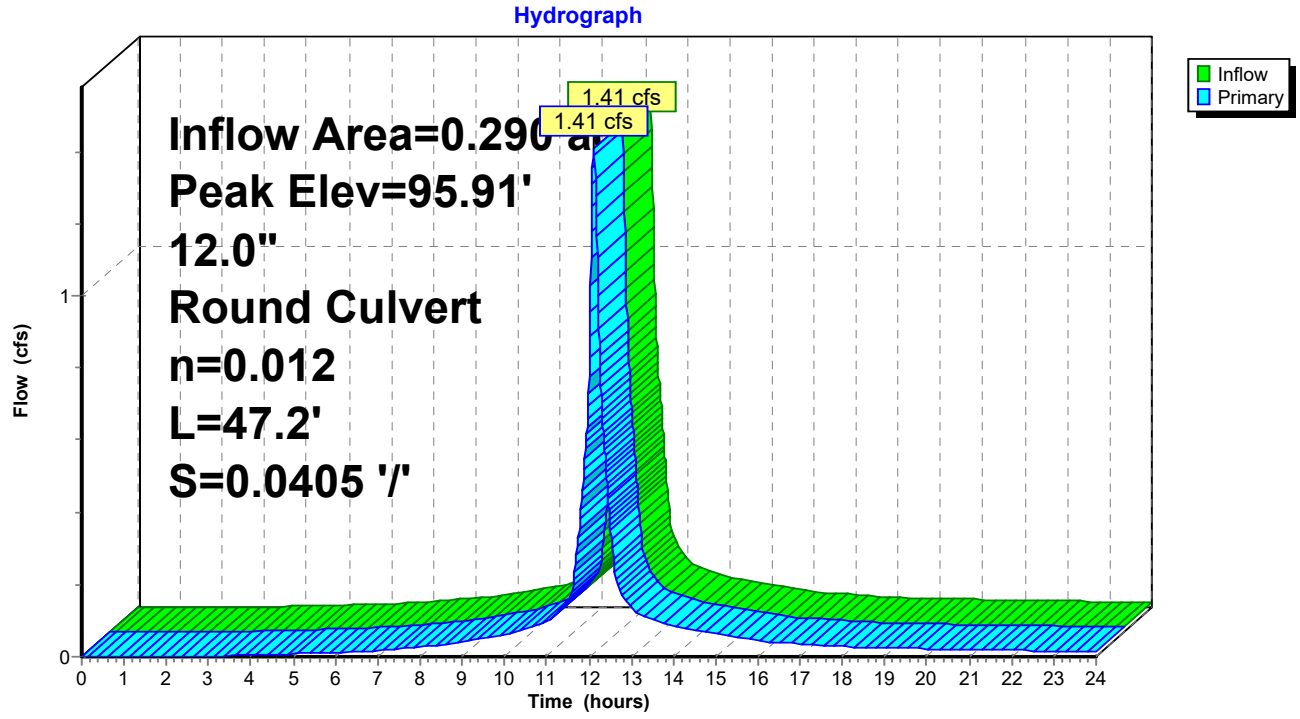
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 4.82" for 10 yr event
Inflow = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af
Outflow = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 95.91'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**12.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.41 cfs @ 12.12 hrs HW=95.91' TW=93.28' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.41 cfs @ 2.70 fps)

Pond CB1: CB1



Summary for Pond CB2: CB2

[57] Hint: Peaked at 97.37' (Flood elevation advised)

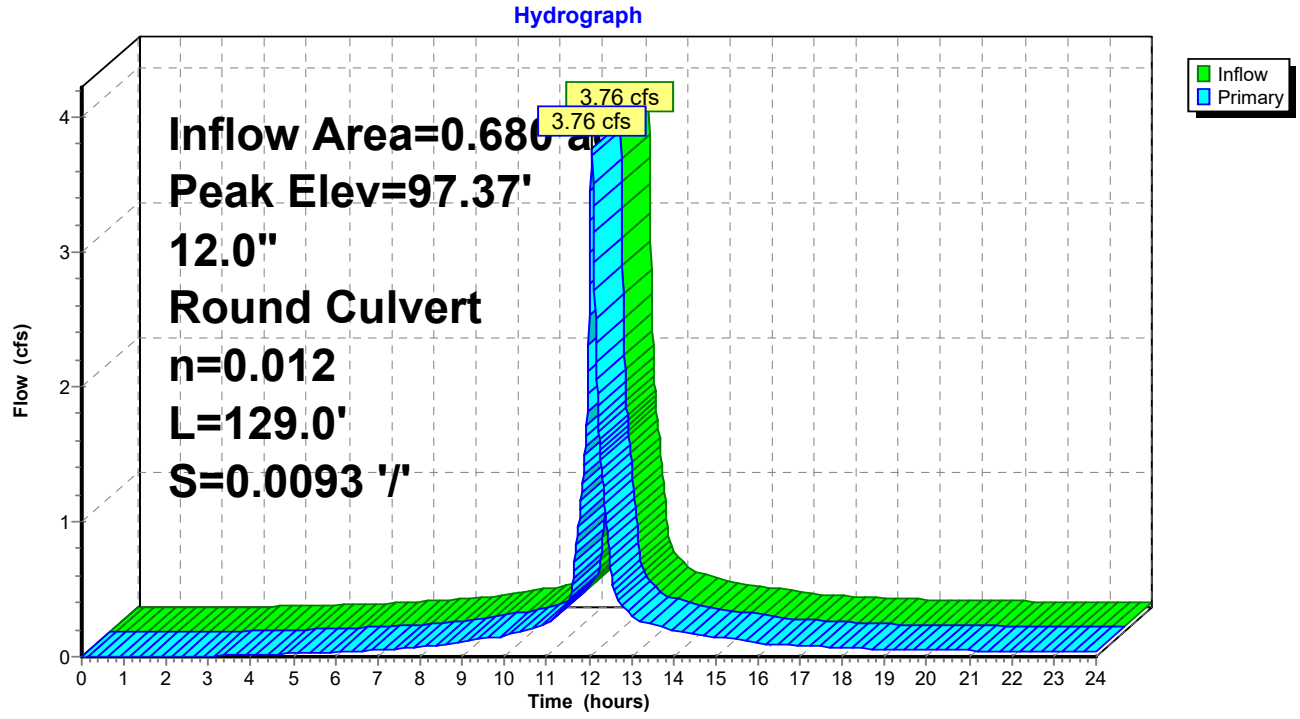
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 4.94" for 10 yr event
Inflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af
Outflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 97.37' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.76 cfs @ 12.07 hrs HW=97.37' TW=95.60' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 3.76 cfs @ 4.79 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 95.60' (Flood elevation advised)

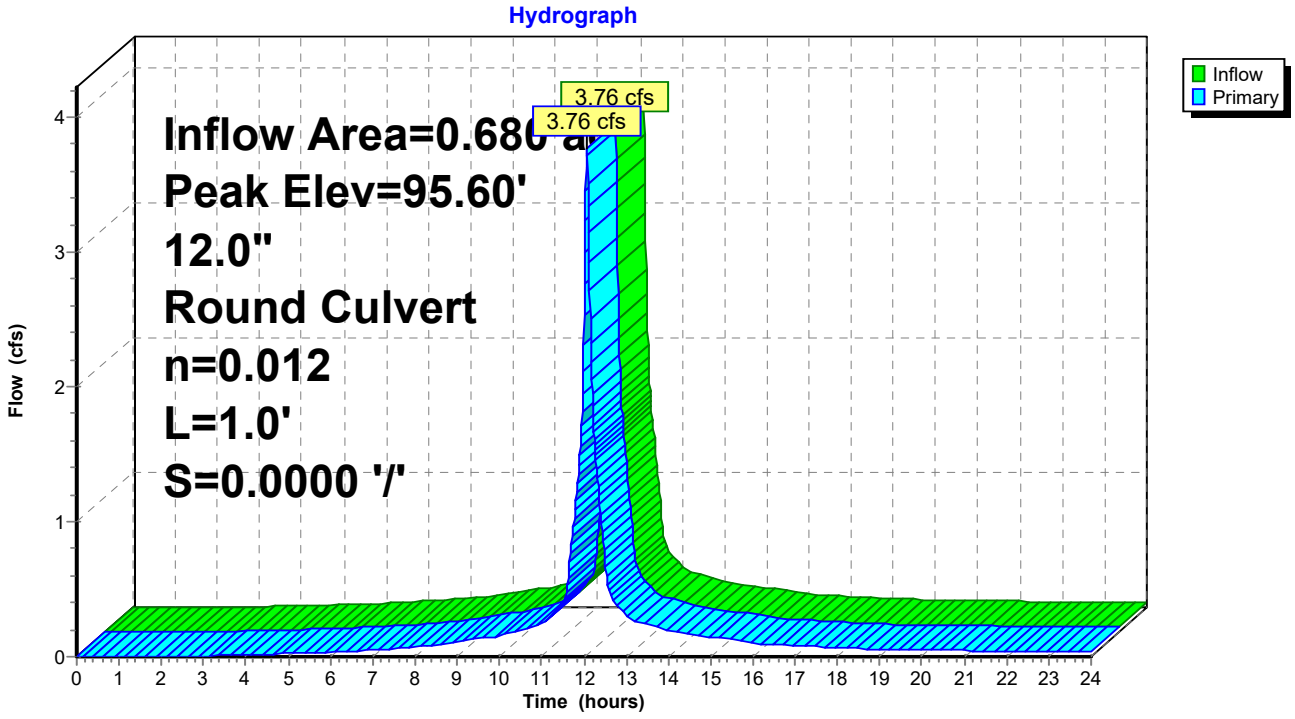
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 4.94" for 10 yr event
Inflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af
Outflow = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 95.60'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.76 cfs @ 12.07 hrs HW=95.60' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 3.76 cfs @ 4.79 fps)

Pond CB3: CB3



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.28' (Flood elevation advised)

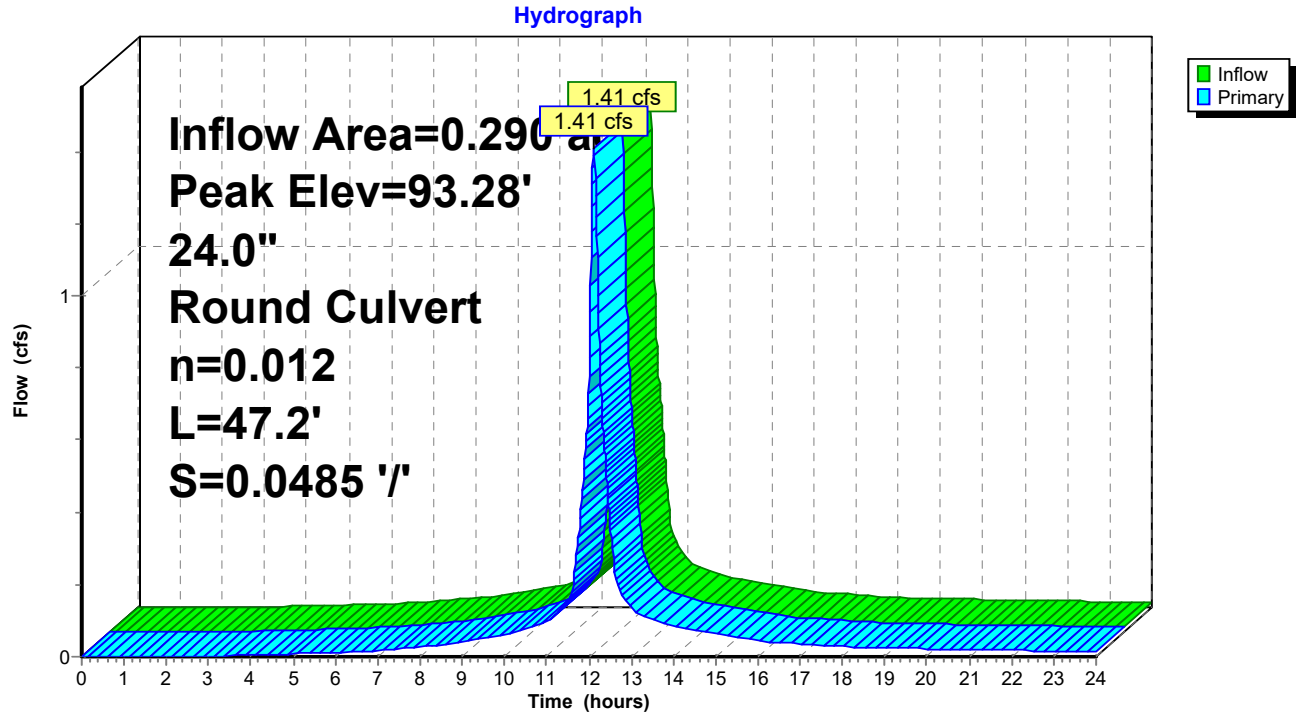
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 4.82" for 10 yr event
Inflow = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af
Outflow = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 93.28' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=1.41 cfs @ 12.12 hrs HW=93.28' TW=91.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.41 cfs @ 2.38 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.10' (Flood elevation advised)

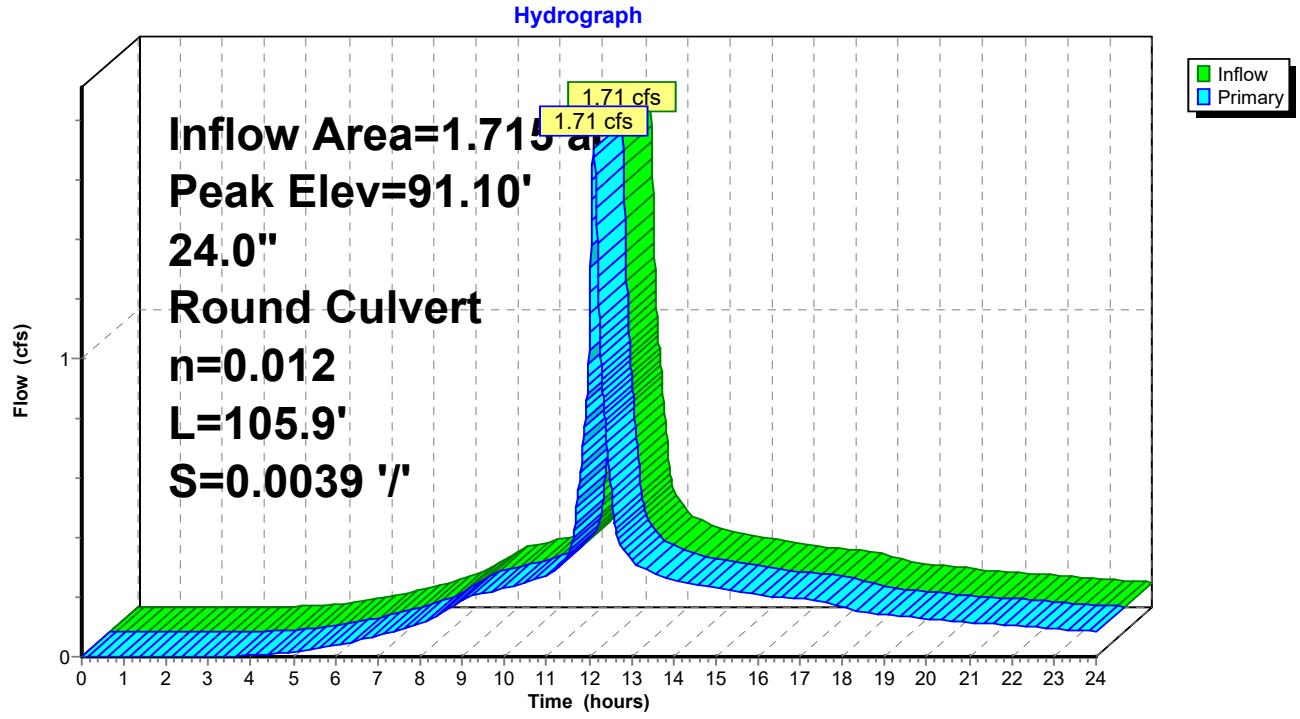
Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 2.22" for 10 yr event
Inflow = 1.71 cfs @ 12.12 hrs, Volume= 0.317 af
Outflow = 1.71 cfs @ 12.12 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min
Primary = 1.71 cfs @ 12.12 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.10' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=1.71 cfs @ 12.12 hrs HW=91.10' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 1.71 cfs @ 3.04 fps)

Pond DMH2: DMH2



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: West Site Runoff Area=62,055 sf 61.01% Impervious Runoff Depth>5.95"
Flow Length=350' Tc=7.6 min CN=90 Runoff=8.88 cfs 0.707 af

Subcatchment2S: South Site Runoff Area=29,613 sf 83.41% Impervious Runoff Depth>6.42"
Tc=5.0 min CN=94 Runoff=4.83 cfs 0.364 af

Subcatchment3S: East Site Runoff Area=12,646 sf 71.50% Impervious Runoff Depth>6.30"
Flow Length=288' Tc=8.5 min CN=93 Runoff=1.81 cfs 0.152 af

Reach AP 1: AP 1 Inflow=10.63 cfs 0.857 af
Outflow=10.63 cfs 0.857 af

Reach AP2: AP2 Inflow=4.83 cfs 0.364 af
Outflow=4.83 cfs 0.364 af

Pond 1P: Stormwater Pond Peak Elev=94.36' Storage=562 cf Inflow=8.88 cfs 0.707 af
Primary=0.32 cfs 0.232 af Secondary=8.49 cfs 0.472 af Outflow=8.81 cfs 0.705 af

Pond CB1: CB1 Peak Elev=96.02' Inflow=1.81 cfs 0.152 af
12.0" Round Culvert n=0.012 L=47.2' S=0.0405 '/' Outflow=1.81 cfs 0.152 af

Pond CB2: CB2 Peak Elev=99.09' Inflow=4.83 cfs 0.364 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=4.83 cfs 0.364 af

Pond CB3: CB3 Peak Elev=96.19' Inflow=4.83 cfs 0.364 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=4.83 cfs 0.364 af

Pond DMH1: DMH1 Peak Elev=93.35' Inflow=1.81 cfs 0.152 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=1.81 cfs 0.152 af

Pond DMH2: DMH2 Peak Elev=91.18' Inflow=2.14 cfs 0.385 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=2.14 cfs 0.385 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.223 af Average Runoff Depth = 6.13"
31.36% Pervious = 0.751 ac 68.64% Impervious = 1.644 ac

Summary for Subcatchment 1S: West Site

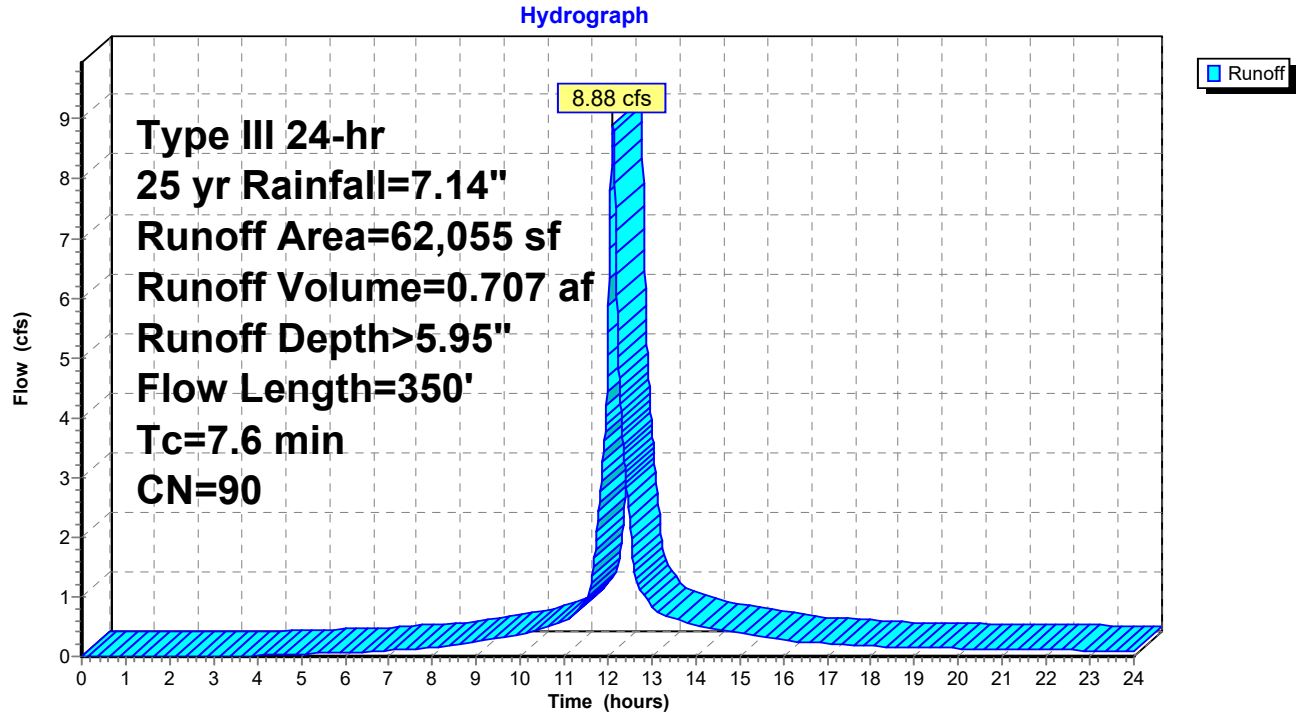
Runoff = 8.88 cfs @ 12.10 hrs, Volume= 0.707 af, Depth> 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

	Area (sf)	CN	Description
	19,963	74	>75% Grass cover, Good, HSG C
	15,667	98	Roofs, HSG C
	4,231	96	Gravel surface, HSG C
	21,772	98	Paved roads w/curbs & sewers, HSG C
*	315	98	Concrete, HSG C
*	107	98	Granite Curb, HSG C
	62,055	90	Weighted Average
	24,194		38.99% Pervious Area
	37,861		61.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.7	300	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.6	350	Total			

Subcatchment 1S: West Site



Summary for Subcatchment 2S: South Site

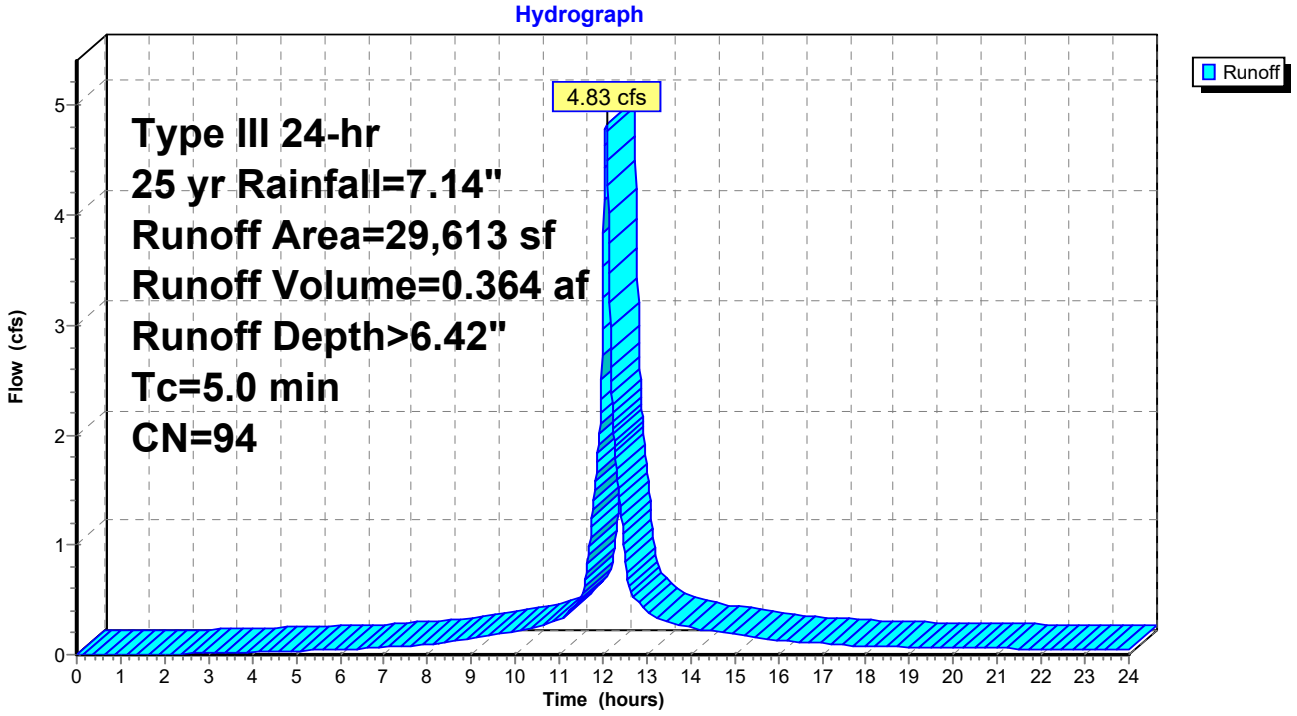
Runoff = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af, Depth> 6.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

Area (sf)	CN	Description
4,910	74	>75% Grass cover, Good, HSG C
3	96	Gravel surface, HSG C
24,700	98	Paved roads w/curbs & sewers, HSG C
29,613	94	Weighted Average
4,913		16.59% Pervious Area
24,700		83.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: South Site



Summary for Subcatchment 3S: East Site

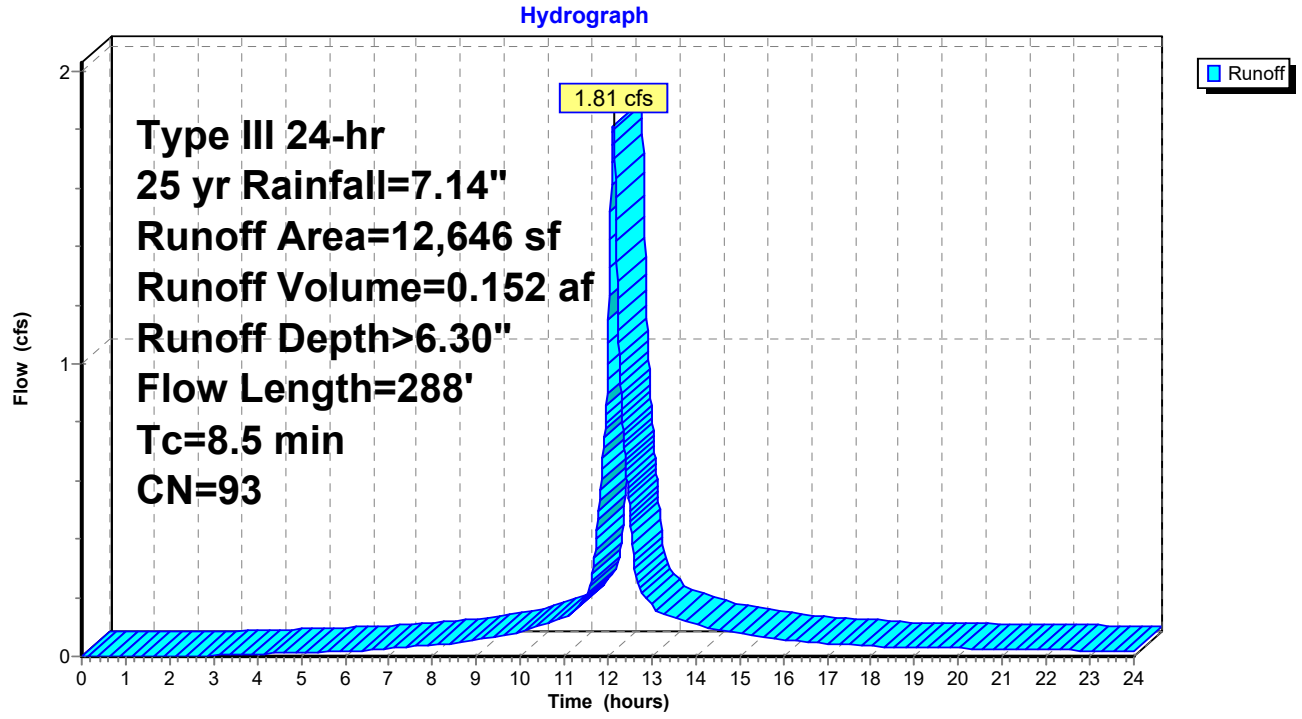
Runoff = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af, Depth> 6.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

Area (sf)	CN	Description
2,426	74	>75% Grass cover, Good, HSG C
1,845	98	Roofs, HSG C
1,178	96	Gravel surface, HSG C
7,197	98	Paved roads w/curbs & sewers, HSG C
12,646	93	Weighted Average
3,604		28.50% Pervious Area
9,042		71.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.7	237	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.5	288	Total			

Subcatchment 3S: East Site



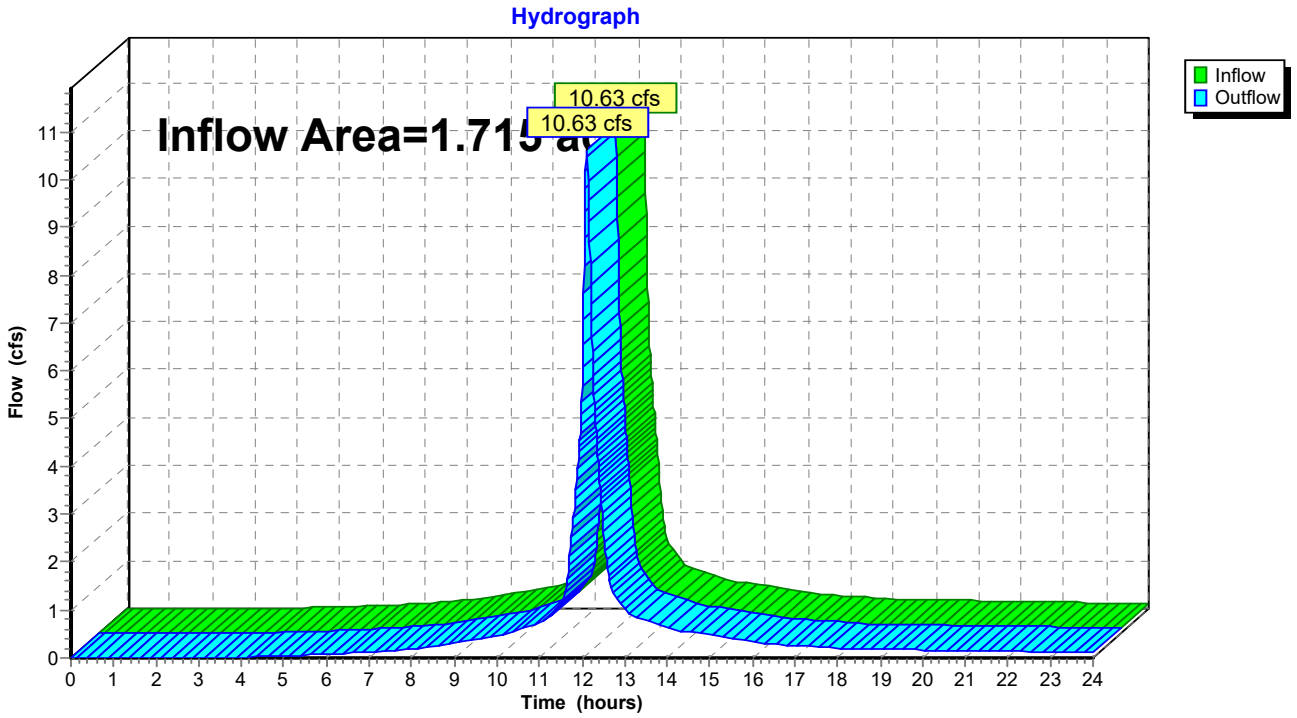
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 6.00" for 25 yr event
Inflow = 10.63 cfs @ 12.12 hrs, Volume= 0.857 af
Outflow = 10.63 cfs @ 12.12 hrs, Volume= 0.857 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP 1: AP 1



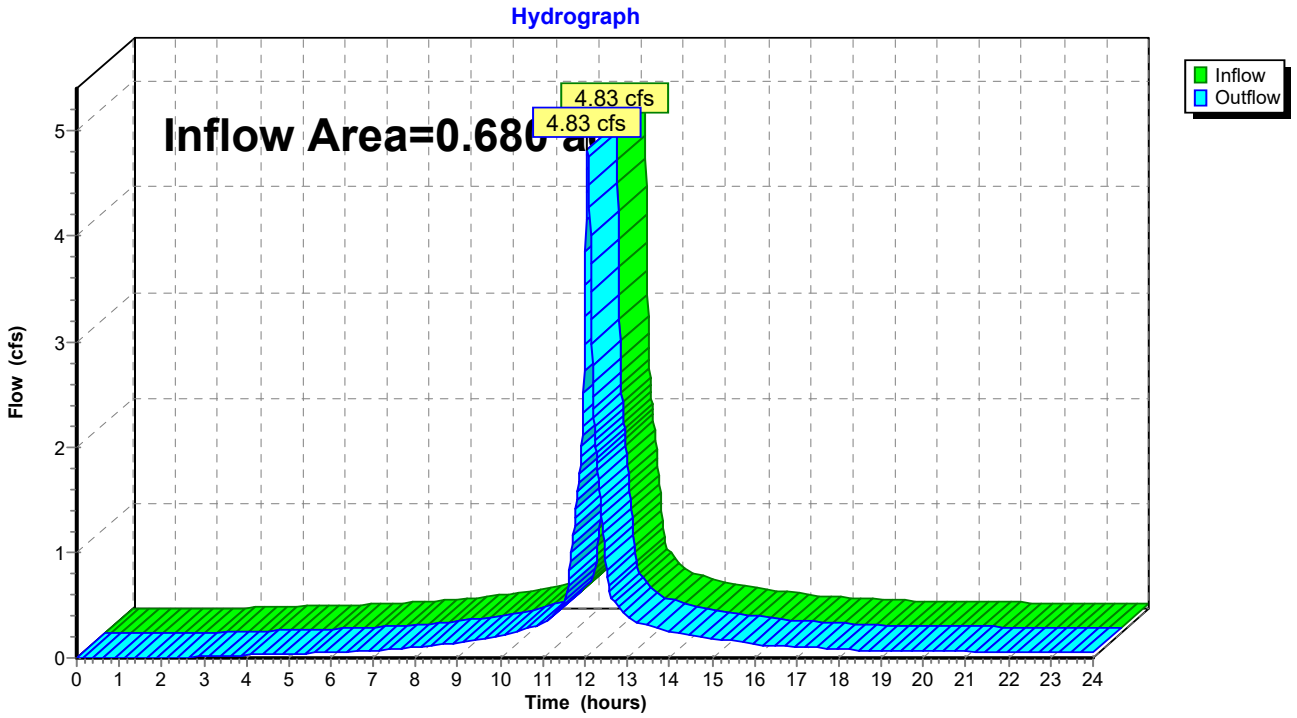
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 6.42" for 25 yr event
Inflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af
Outflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP2: AP2



Summary for Pond 1P: Stormwater Pond

Inflow Area = 1.425 ac, 61.01% Impervious, Inflow Depth > 5.95" for 25 yr event
Inflow = 8.88 cfs @ 12.10 hrs, Volume= 0.707 af
Outflow = 8.81 cfs @ 12.12 hrs, Volume= 0.705 af, Atten= 1%, Lag= 0.7 min
Primary = 0.32 cfs @ 12.12 hrs, Volume= 0.232 af
Secondary = 8.49 cfs @ 12.12 hrs, Volume= 0.472 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 94.36' @ 12.12 hrs Surf.Area= 1,155 sf Storage= 562 cf

Plug-Flow detention time=5.9 min calculated for 0.705 af (100% of inflow)
Center-of-Mass det. time=3.8 min (783.8 - 780.0)

Volume	Invert	Avail.Storage	Storage Description
#1	93.60'	1,541 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

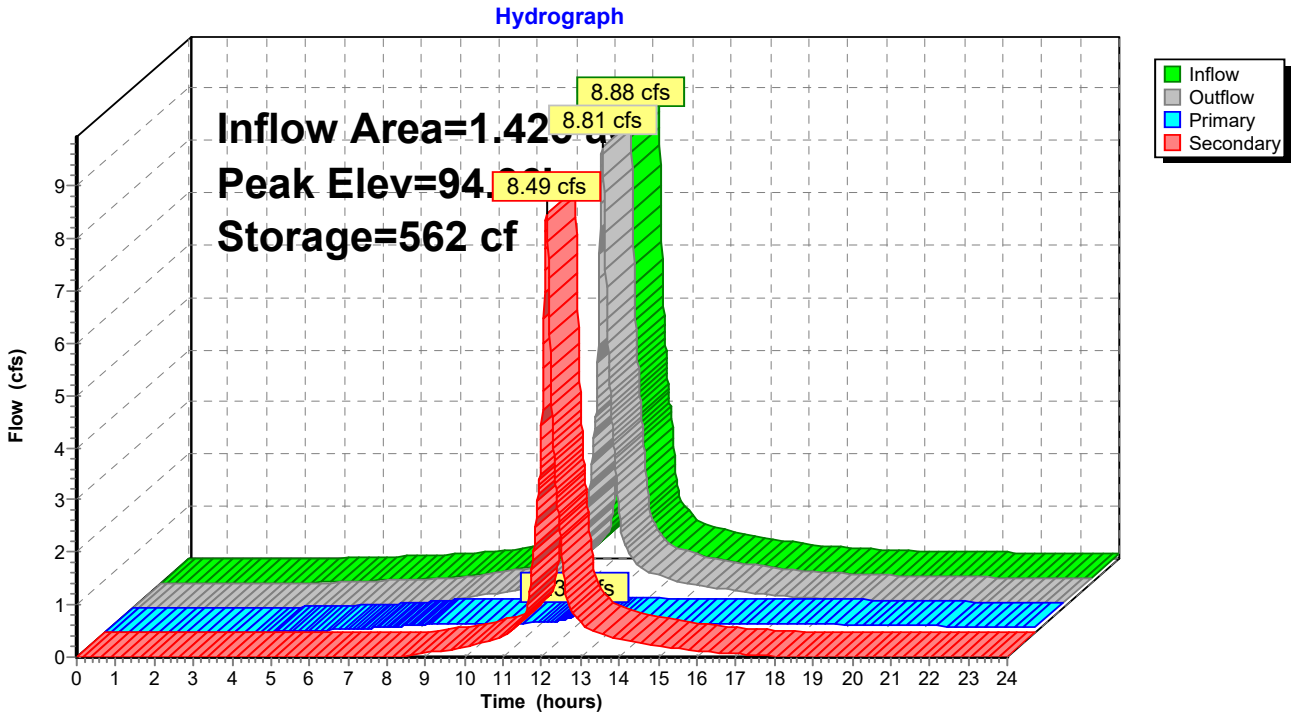
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

Device	Routing	Invert	Outlet Devices
#1	Primary	93.60'	**4.0" Round Culvert** L= 21.2' Ke= 0.500 Inlet / Outlet Invert= 93.60' / 92.24' S= 0.0642 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Secondary	93.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.32 cfs @ 12.12 hrs HW=94.36' TW=91.17' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.32 cfs @ 3.70 fps)

Secondary OutFlow Max=8.48 cfs @ 12.12 hrs HW=94.36' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 8.48 cfs @ 1.85 fps)

Pond 1P: Stormwater Pond



Summary for Pond CB1: CB1

[57] Hint: Peaked at 96.02' (Flood elevation advised)

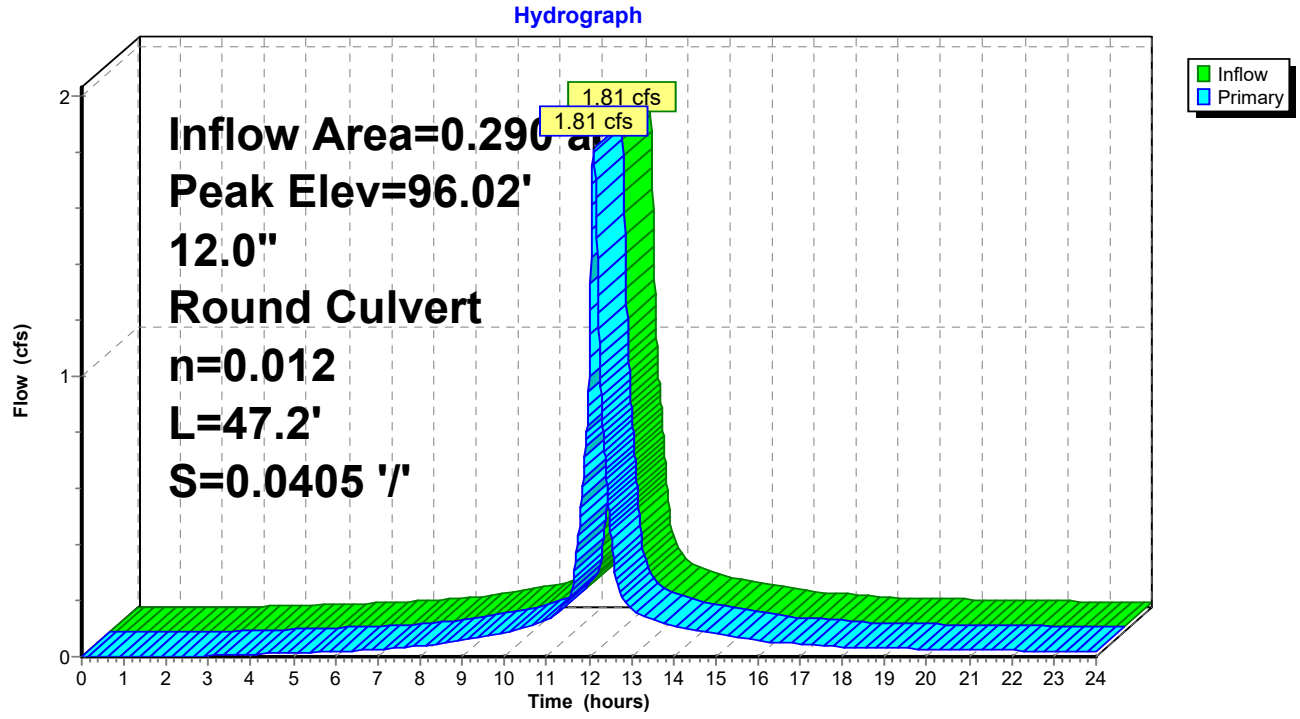
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af
Outflow = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 96.02' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**12.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.81 cfs @ 12.12 hrs HW=96.02' TW=93.35' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.81 cfs @ 2.92 fps)

Pond CB1: CB1



Summary for Pond CB2: CB2

[57] Hint: Peaked at 99.09' (Flood elevation advised)

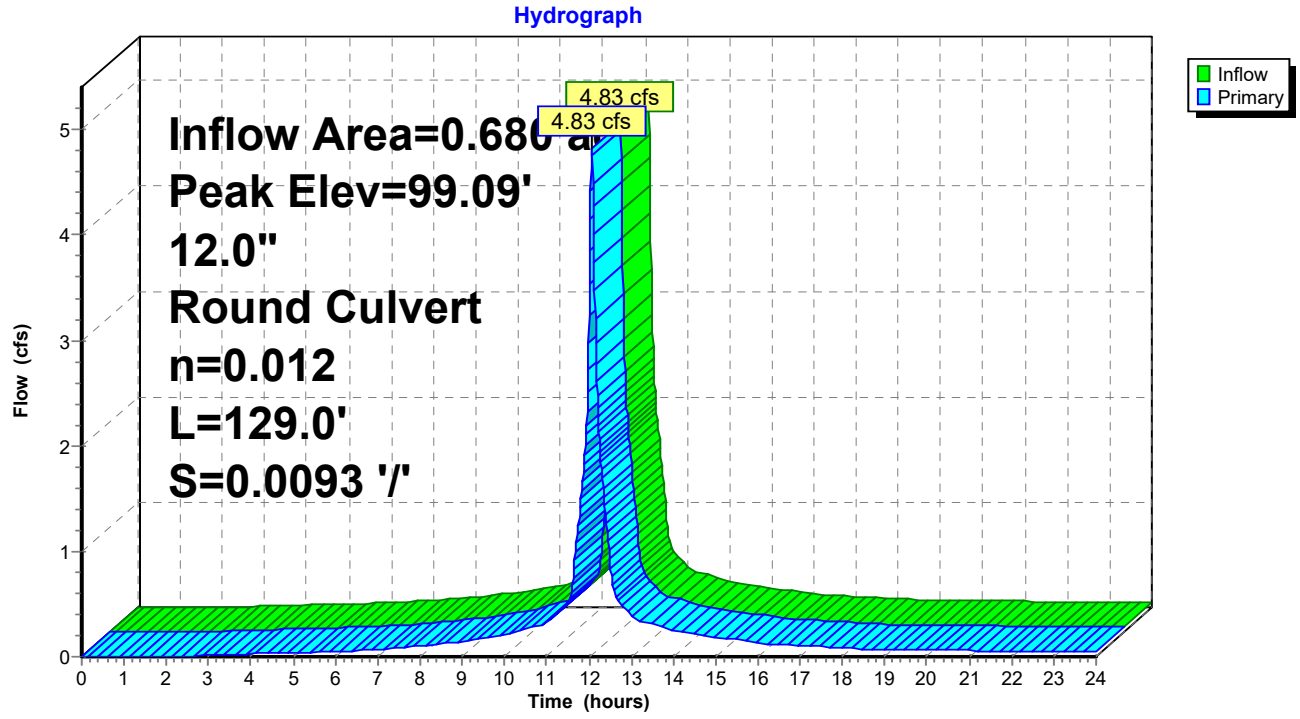
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 6.42" for 25 yr event
Inflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af
Outflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 99.09' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.82 cfs @ 12.07 hrs HW=99.09' TW=96.19' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 4.82 cfs @ 6.14 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 96.19' (Flood elevation advised)

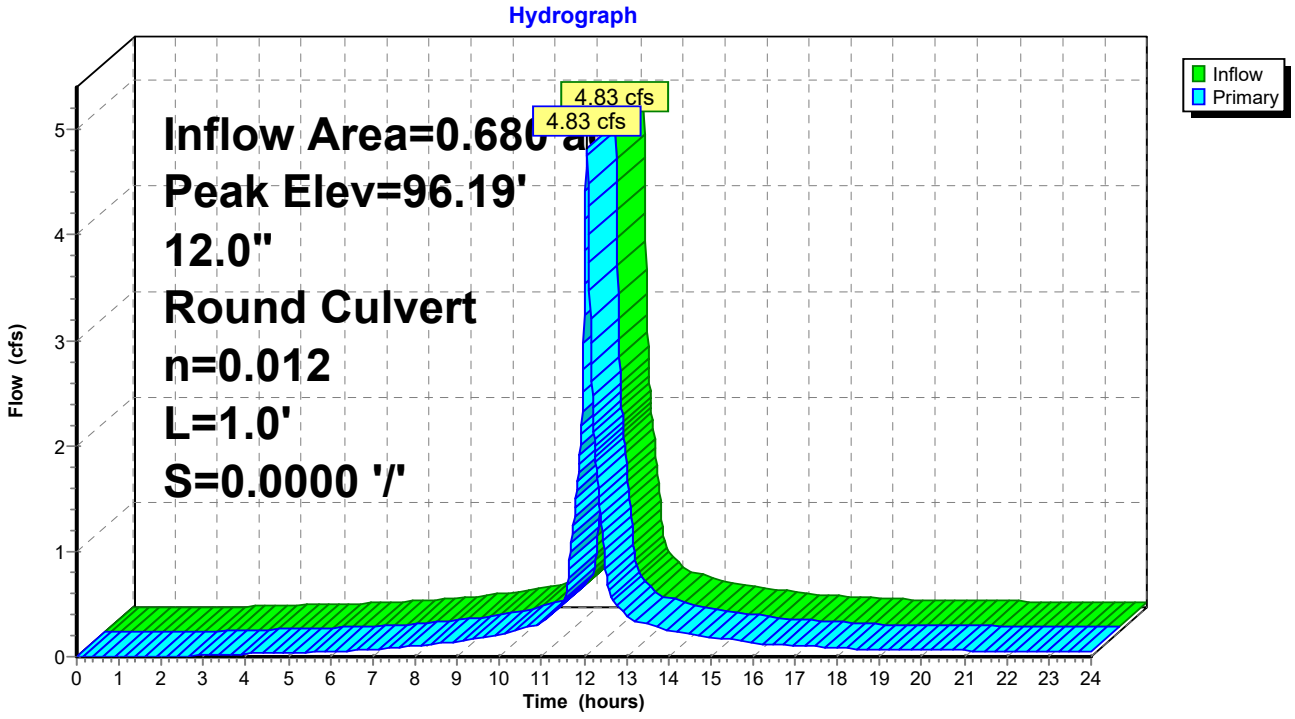
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 6.42" for 25 yr event
Inflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af
Outflow = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 96.19' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.82 cfs @ 12.07 hrs HW=96.19' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 4.82 cfs @ 6.14 fps)

Pond CB3: CB3



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.35' (Flood elevation advised)

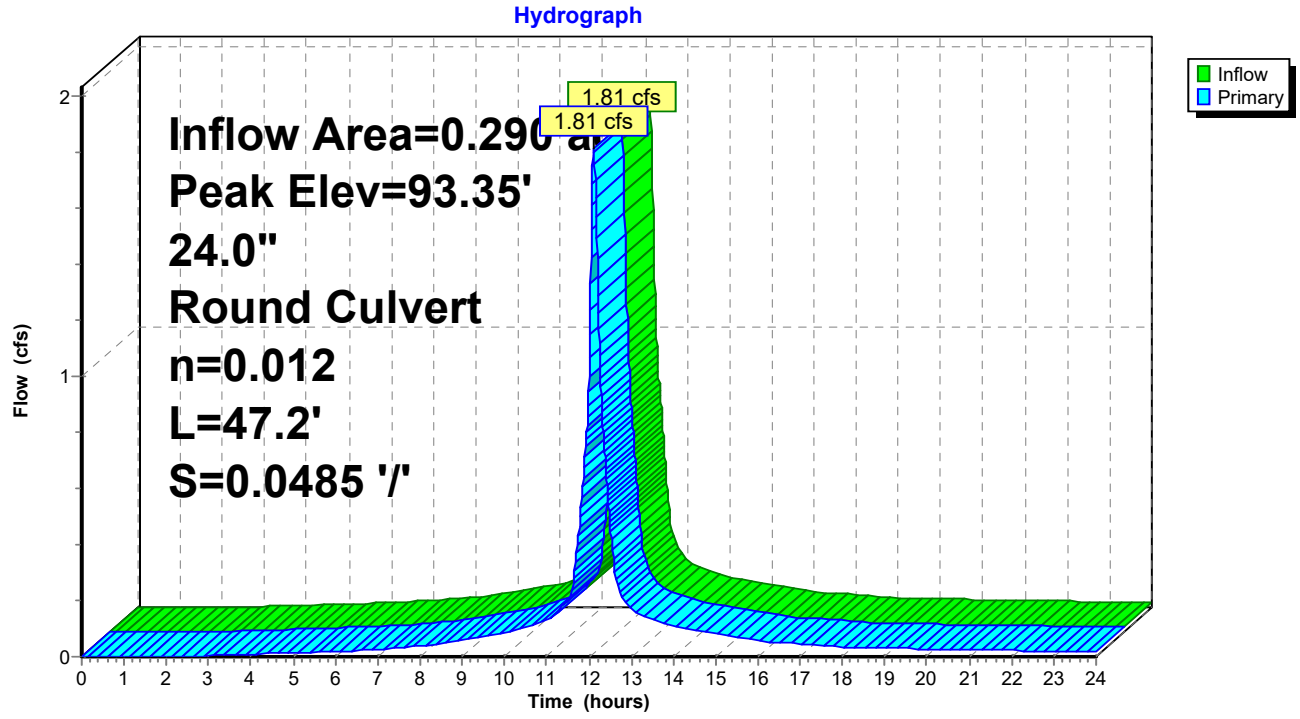
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af
Outflow = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 93.35' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=1.81 cfs @ 12.12 hrs HW=93.35' TW=91.17' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.81 cfs @ 2.54 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.18' (Flood elevation advised)

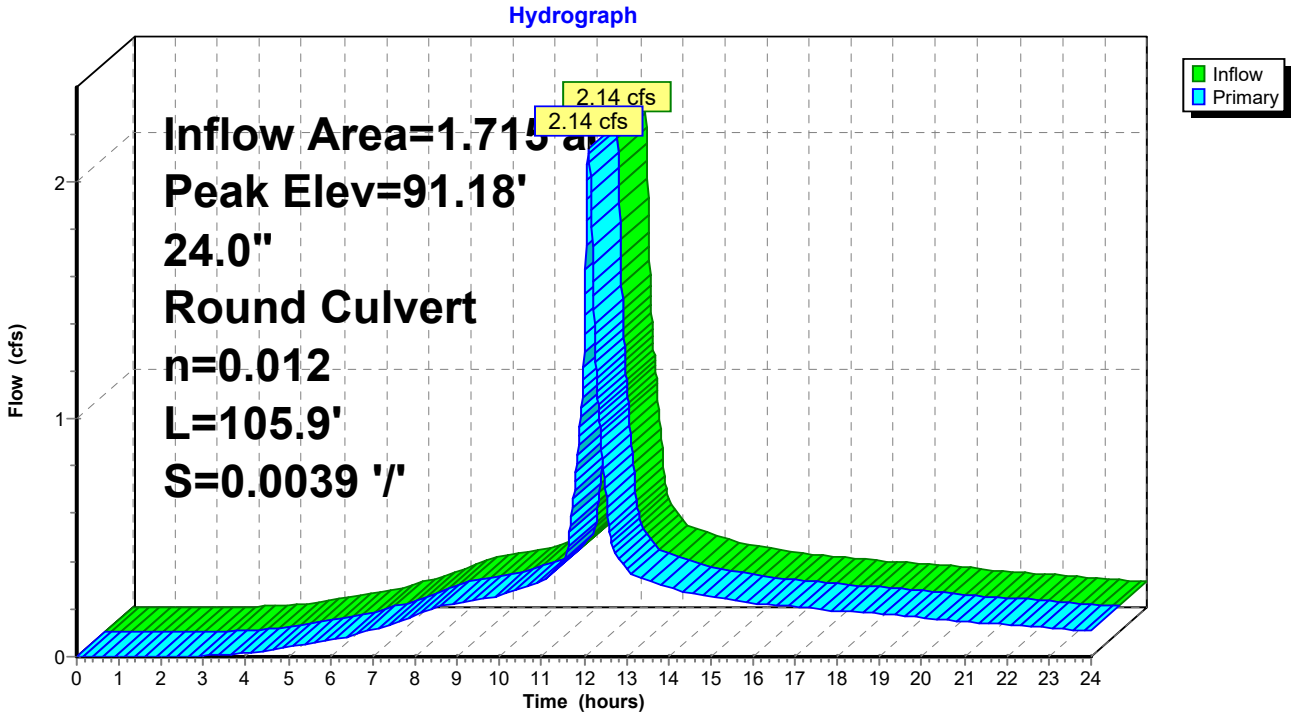
Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 2.69" for 25 yr event
Inflow = 2.14 cfs @ 12.12 hrs, Volume= 0.385 af
Outflow = 2.14 cfs @ 12.12 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.12 hrs, Volume= 0.385 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.18' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=2.14 cfs @ 12.12 hrs HW=91.17' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.14 cfs @ 3.22 fps)

Pond DMH2: DMH2



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: West Site Runoff Area=62,055 sf 61.01% Impervious Runoff Depth>7.35"
Flow Length=350' Tc=7.6 min CN=90 Runoff=10.84 cfs 0.872 af

Subcatchment2S: South Site Runoff Area=29,613 sf 83.41% Impervious Runoff Depth>7.83"
Tc=5.0 min CN=94 Runoff=5.83 cfs 0.444 af

Subcatchment3S: East Site Runoff Area=12,646 sf 71.50% Impervious Runoff Depth>7.71"
Flow Length=288' Tc=8.5 min CN=93 Runoff=2.20 cfs 0.187 af

Reach AP 1: AP 1 Inflow=12.94 cfs 1.056 af
Outflow=12.94 cfs 1.056 af

Reach AP2: AP2 Inflow=5.83 cfs 0.444 af
Outflow=5.83 cfs 0.444 af

Pond 1P: Stormwater Pond Peak Elev=94.42' Storage=640 cf Inflow=10.84 cfs 0.872 af
Primary=0.34 cfs 0.257 af Secondary=10.41 cfs 0.613 af Outflow=10.75 cfs 0.870 af

Pond CB1: CB1 Peak Elev=96.12' Inflow=2.20 cfs 0.187 af
12.0" Round Culvert n=0.012 L=47.2' S=0.0405 '/' Outflow=2.20 cfs 0.187 af

Pond CB2: CB2 Peak Elev=101.16' Inflow=5.83 cfs 0.444 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=5.83 cfs 0.444 af

Pond CB3: CB3 Peak Elev=96.93' Inflow=5.83 cfs 0.444 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=5.83 cfs 0.444 af

Pond DMH1: DMH1 Peak Elev=93.41' Inflow=2.20 cfs 0.187 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=2.20 cfs 0.187 af

Pond DMH2: DMH2 Peak Elev=91.24' Inflow=2.54 cfs 0.443 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=2.54 cfs 0.443 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.503 af Average Runoff Depth = 7.53"
31.36% Pervious = 0.751 ac 68.64% Impervious = 1.644 ac

Summary for Subcatchment 1S: West Site

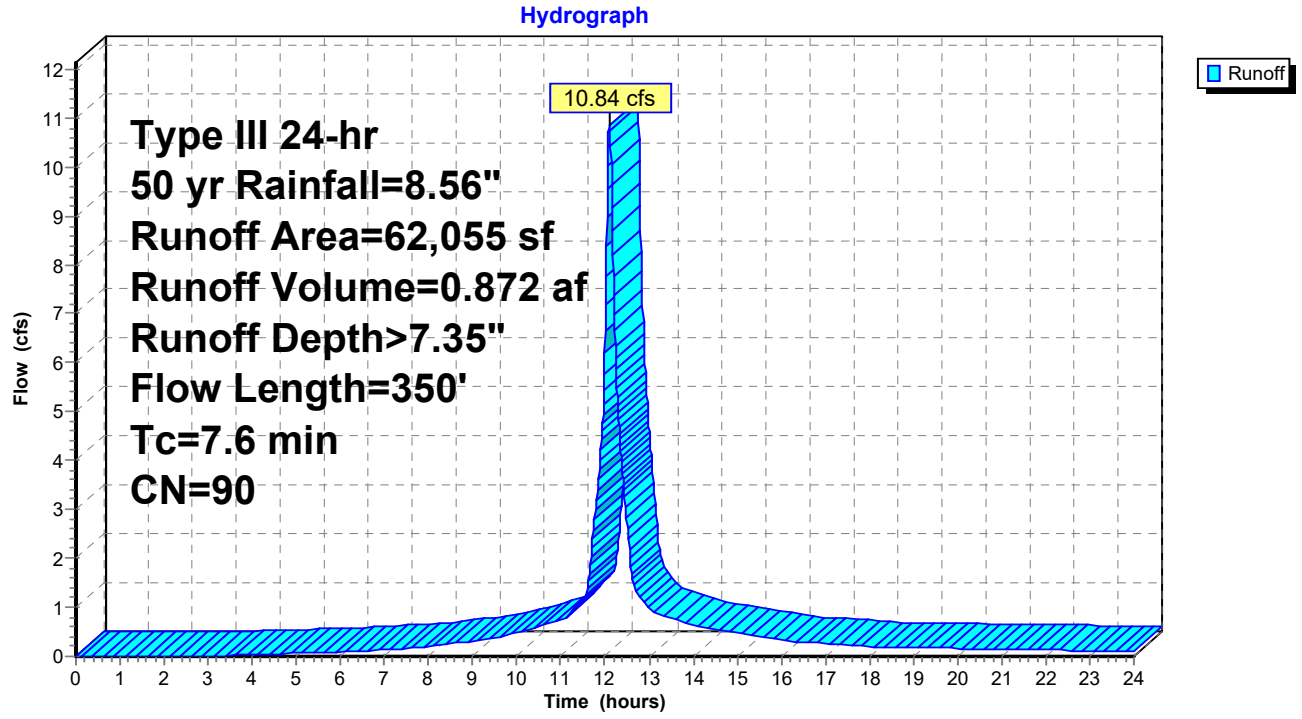
Runoff = 10.84 cfs @ 12.10 hrs, Volume= 0.872 af, Depth> 7.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

	Area (sf)	CN	Description
	19,963	74	>75% Grass cover, Good, HSG C
	15,667	98	Roofs, HSG C
	4,231	96	Gravel surface, HSG C
	21,772	98	Paved roads w/curbs & sewers, HSG C
*	315	98	Concrete, HSG C
*	107	98	Granite Curb, HSG C
	62,055	90	Weighted Average
	24,194		38.99% Pervious Area
	37,861		61.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.7	300	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.6	350	Total			

Subcatchment 1S: West Site



Summary for Subcatchment 2S: South Site

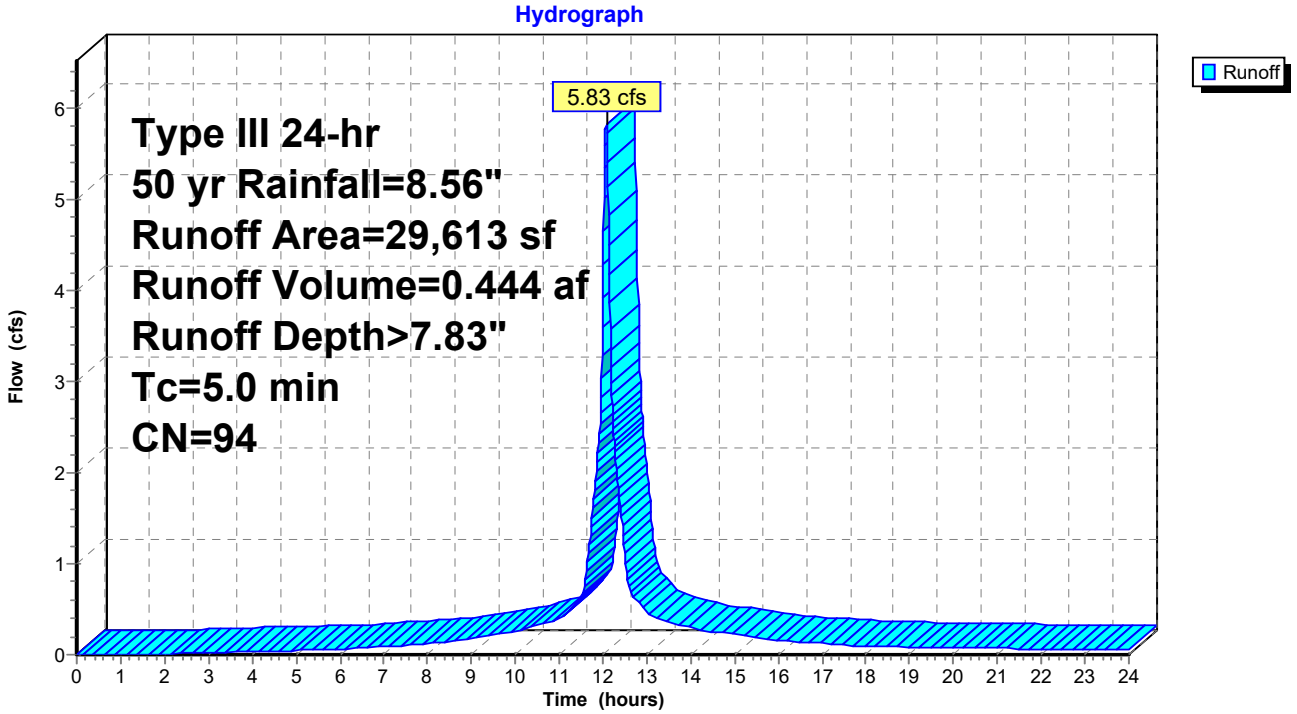
Runoff = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af, Depth> 7.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

Area (sf)	CN	Description
4,910	74	>75% Grass cover, Good, HSG C
3	96	Gravel surface, HSG C
24,700	98	Paved roads w/curbs & sewers, HSG C
29,613	94	Weighted Average
4,913		16.59% Pervious Area
24,700		83.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: South Site



Summary for Subcatchment 3S: East Site

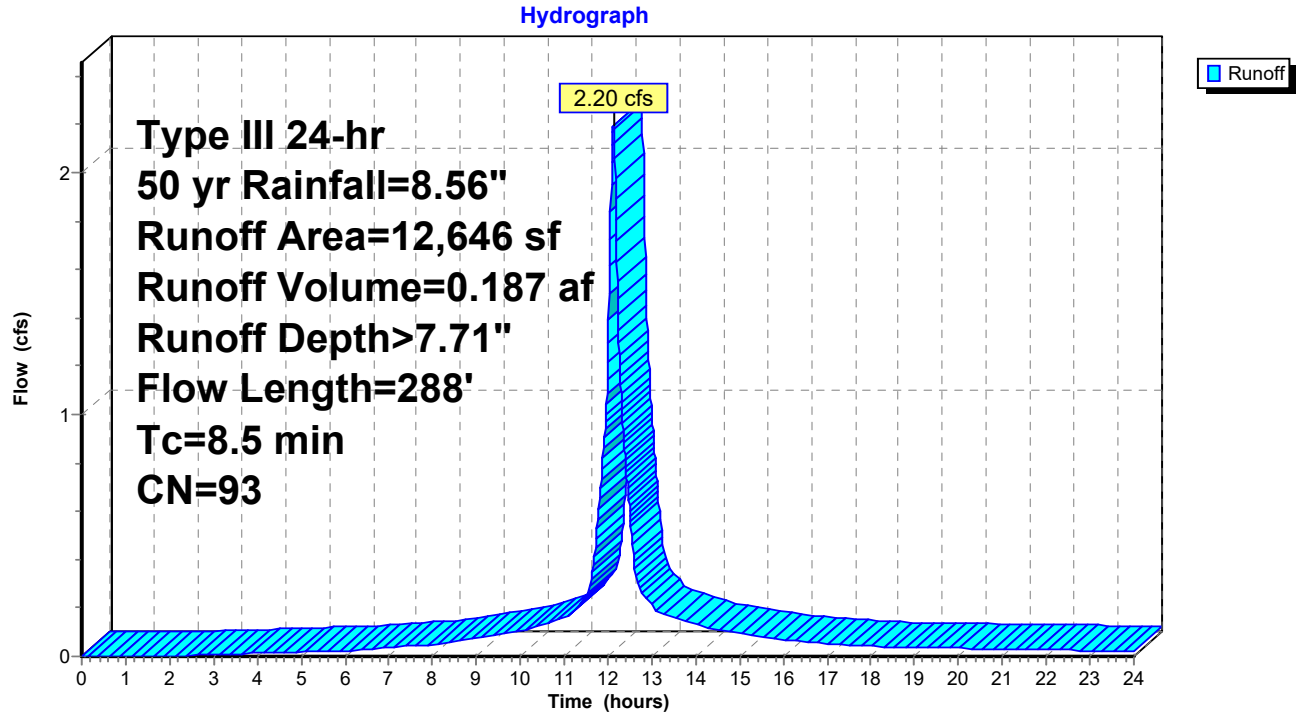
Runoff = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af, Depth> 7.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

Area (sf)	CN	Description
2,426	74	>75% Grass cover, Good, HSG C
1,845	98	Roofs, HSG C
1,178	96	Gravel surface, HSG C
7,197	98	Paved roads w/curbs & sewers, HSG C
12,646	93	Weighted Average
3,604		28.50% Pervious Area
9,042		71.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
3.7	237	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.5	288	Total			

Subcatchment 3S: East Site



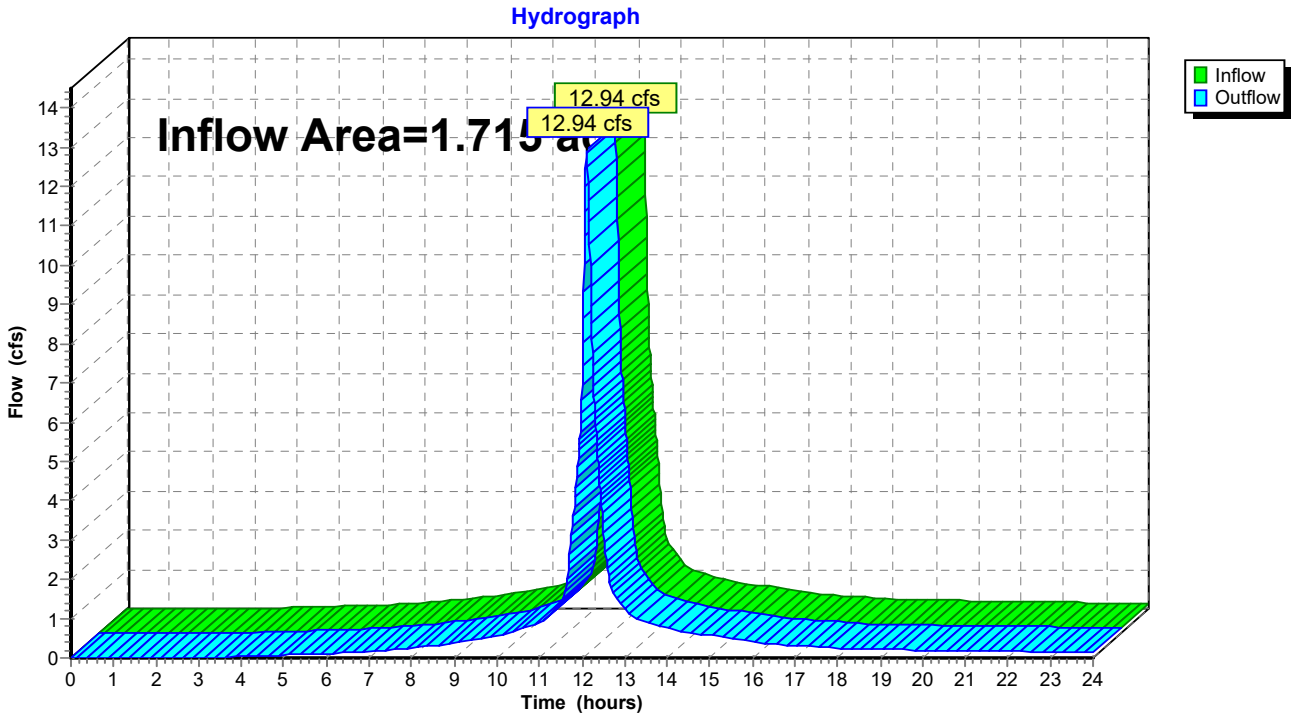
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 7.39" for 50 yr event
Inflow = 12.94 cfs @ 12.12 hrs, Volume= 1.056 af
Outflow = 12.94 cfs @ 12.12 hrs, Volume= 1.056 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP 1: AP 1



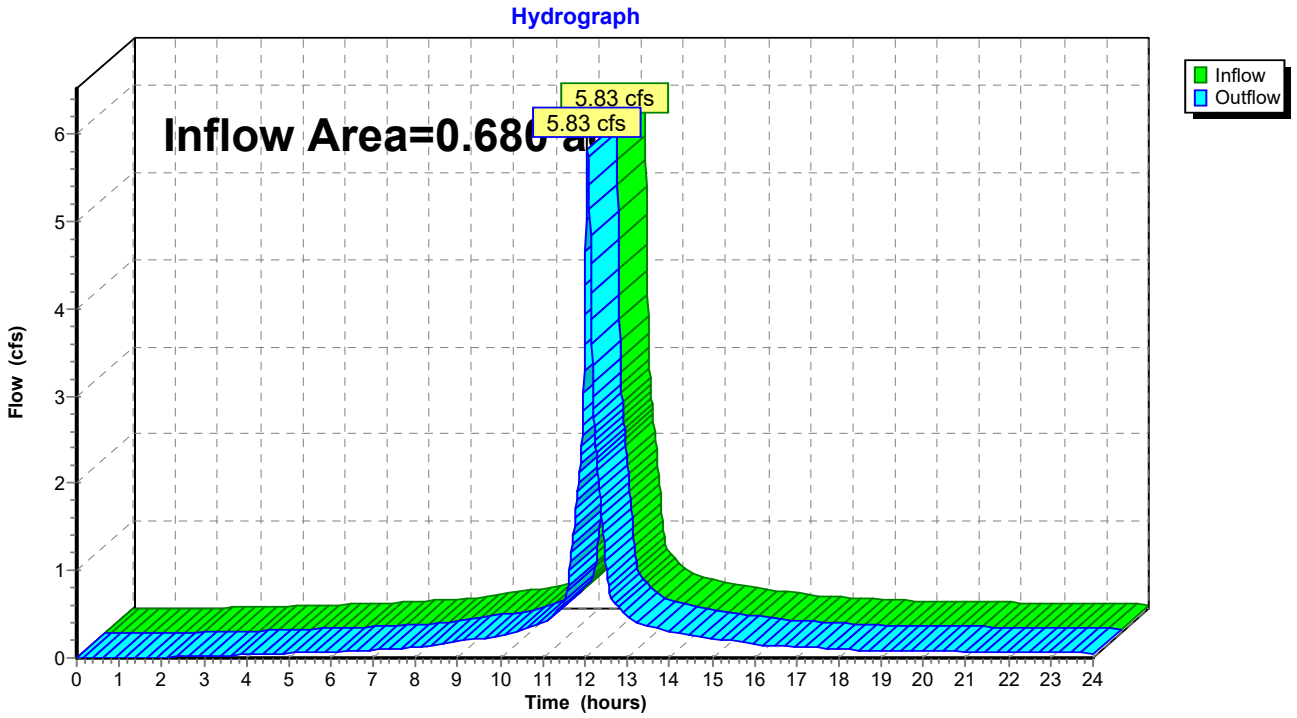
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 7.83" for 50 yr event
Inflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af
Outflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3

Reach AP2: AP2



Summary for Pond 1P: Stormwater Pond

Inflow Area = 1.425 ac, 61.01% Impervious, Inflow Depth > 7.35" for 50 yr event
Inflow = 10.84 cfs @ 12.10 hrs, Volume= 0.872 af
Outflow = 10.75 cfs @ 12.12 hrs, Volume= 0.870 af, Atten= 1%, Lag= 0.7 min
Primary = 0.34 cfs @ 12.12 hrs, Volume= 0.257 af
Secondary = 10.41 cfs @ 12.12 hrs, Volume= 0.613 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 94.42' @ 12.12 hrs Surf.Area= 1,231 sf Storage= 640 cf

Plug-Flow detention time=5.2 min calculated for 0.870 af (100% of inflow)
Center-of-Mass det. time=3.3 min (778.0 - 774.7)

Volume	Invert	Avail.Storage	Storage Description
#1	93.60'	1,541 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

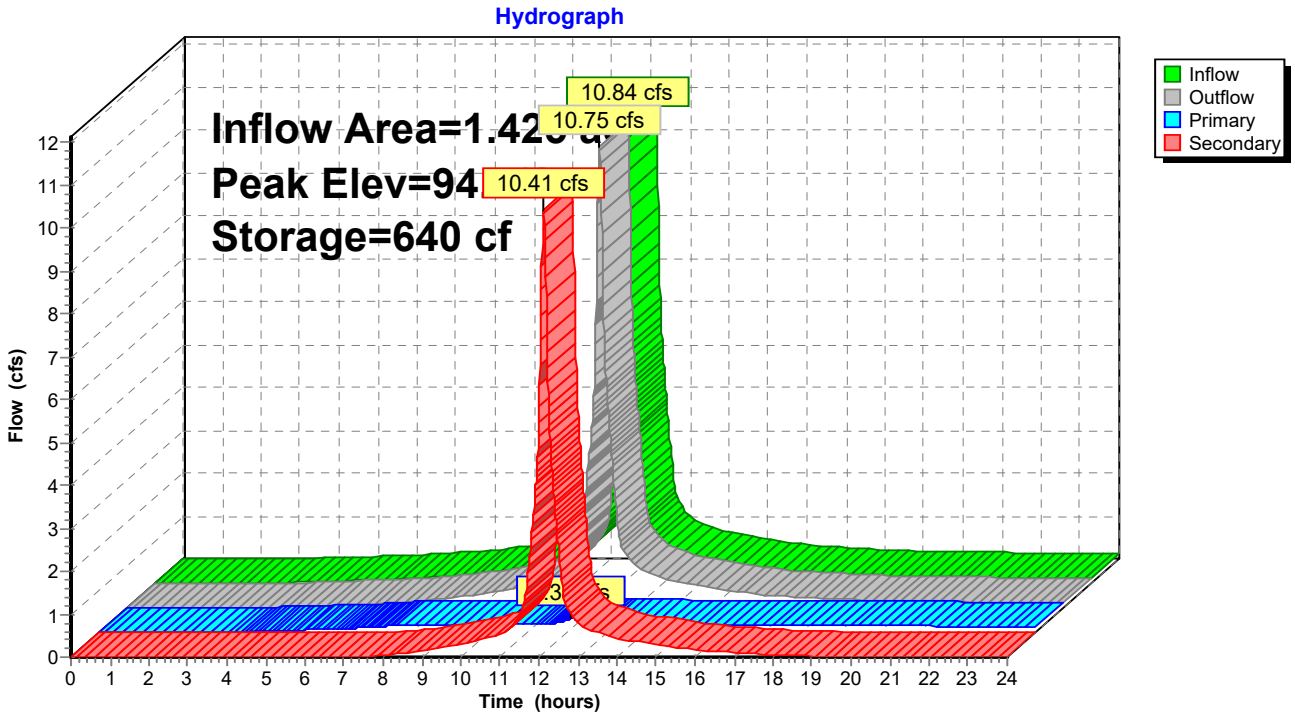
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

Device	Routing	Invert	Outlet Devices
#1	Primary	93.60'	**4.0" Round Culvert** L= 21.2' Ke= 0.500 Inlet / Outlet Invert= 93.60' / 92.24' S= 0.0642 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#2	Secondary	93.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.34 cfs @ 12.12 hrs HW=94.42' TW=91.24' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.34 cfs @ 3.90 fps)

Secondary OutFlow Max=10.39 cfs @ 12.12 hrs HW=94.42' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 10.39 cfs @ 1.98 fps)

Pond 1P: Stormwater Pond



Summary for Pond CB1: CB1

[57] Hint: Peaked at 96.12' (Flood elevation advised)

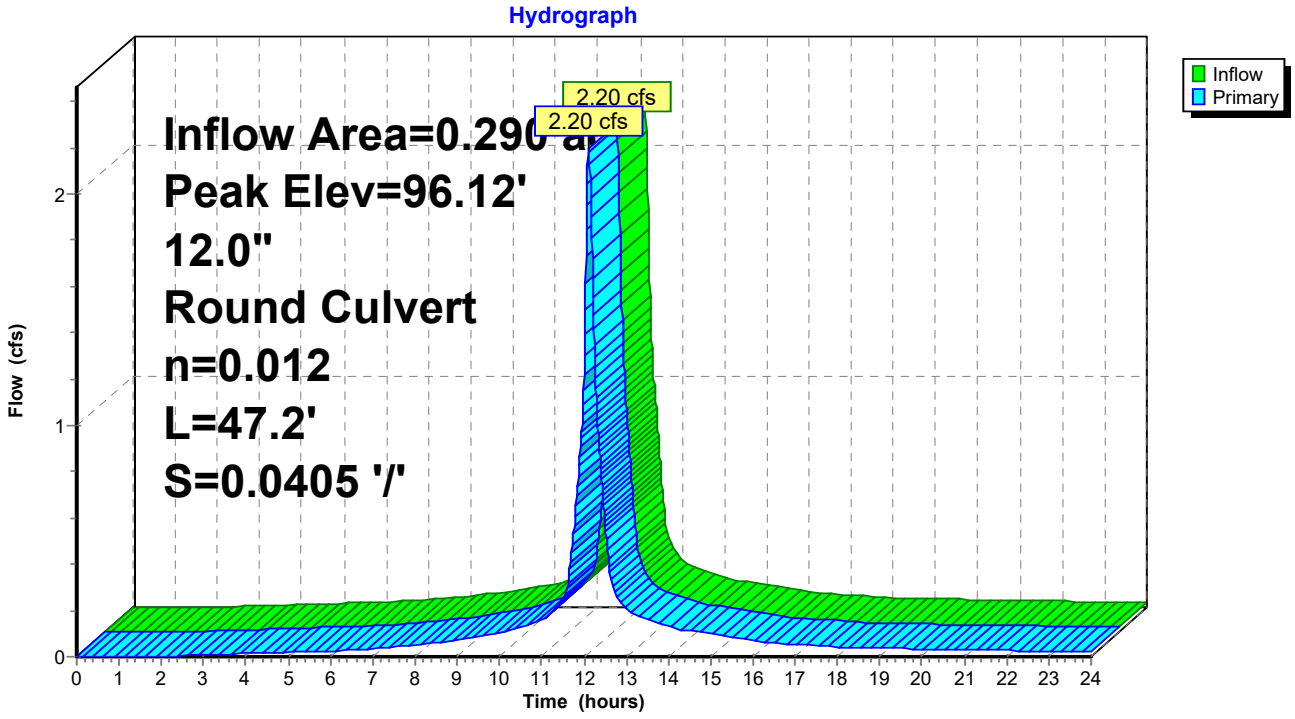
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 7.71" for 50 yr event
Inflow = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af
Outflow = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min
Primary = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 96.12' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**12.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.19 cfs @ 12.12 hrs HW=96.12' TW=93.41' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 2.19 cfs @ 3.12 fps)

Pond CB1: CB1



Summary for Pond CB2: CB2

[57] Hint: Peaked at 101.16' (Flood elevation advised)

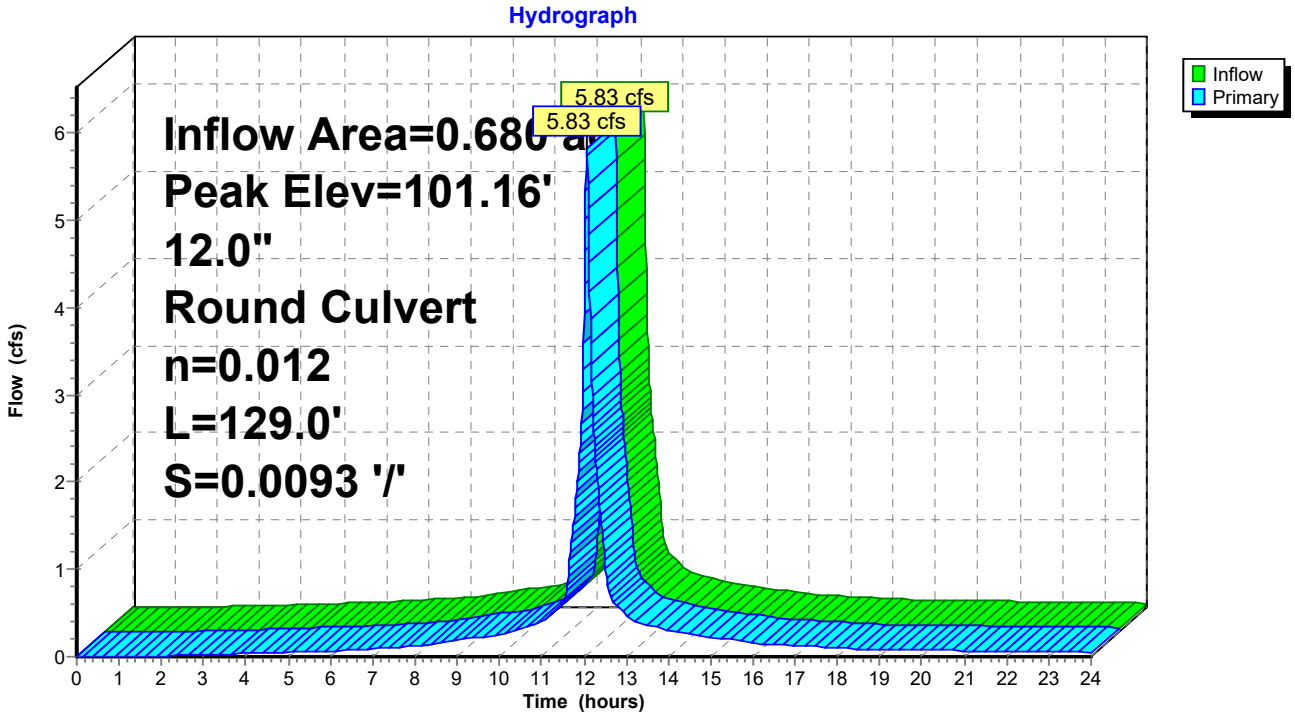
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 7.83" for 50 yr event
Inflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af
Outflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min
Primary = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 101.16'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.82 cfs @ 12.07 hrs HW=101.16' TW=96.93' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.82 cfs @ 7.42 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 96.93' (Flood elevation advised)

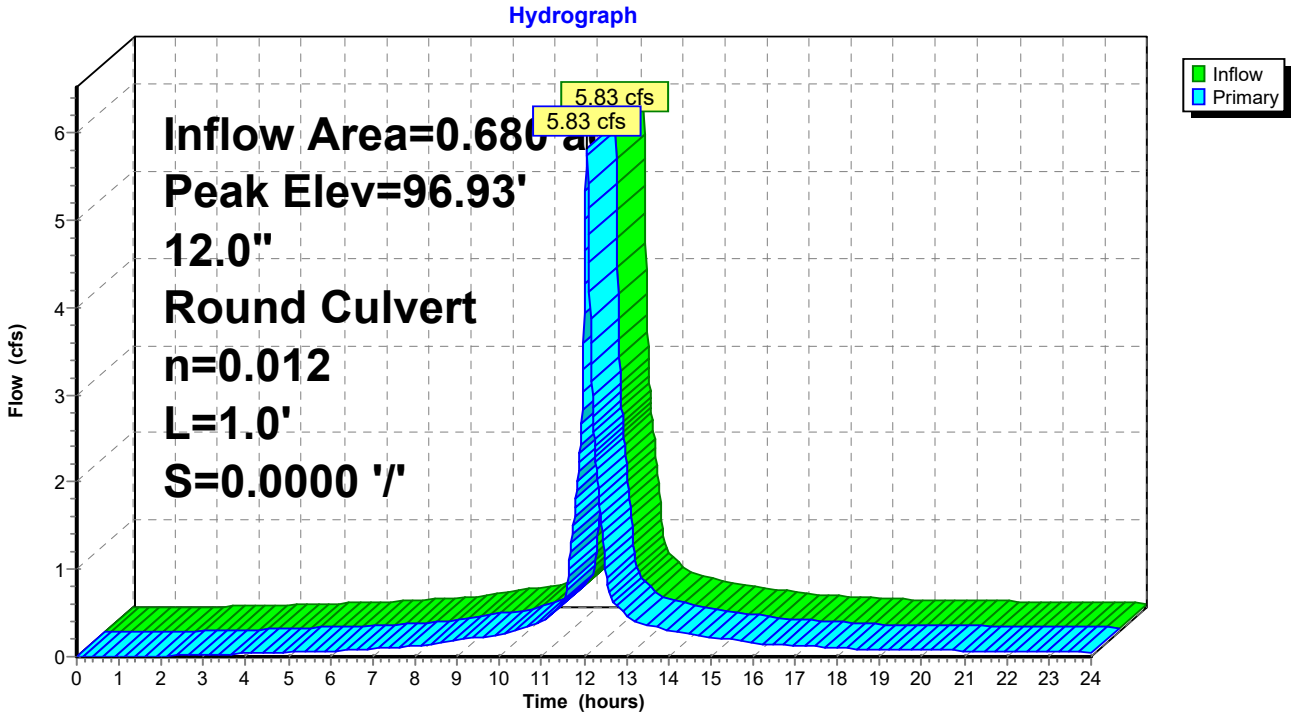
Inflow Area = 0.680 ac, 83.41% Impervious, Inflow Depth > 7.83" for 50 yr event
Inflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af
Outflow = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af, Atten= 0%, Lag= 0.0 min
Primary = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 96.93' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=5.82 cfs @ 12.07 hrs HW=96.93' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 5.82 cfs @ 7.42 fps)

Pond CB3: CB3



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.41' (Flood elevation advised)

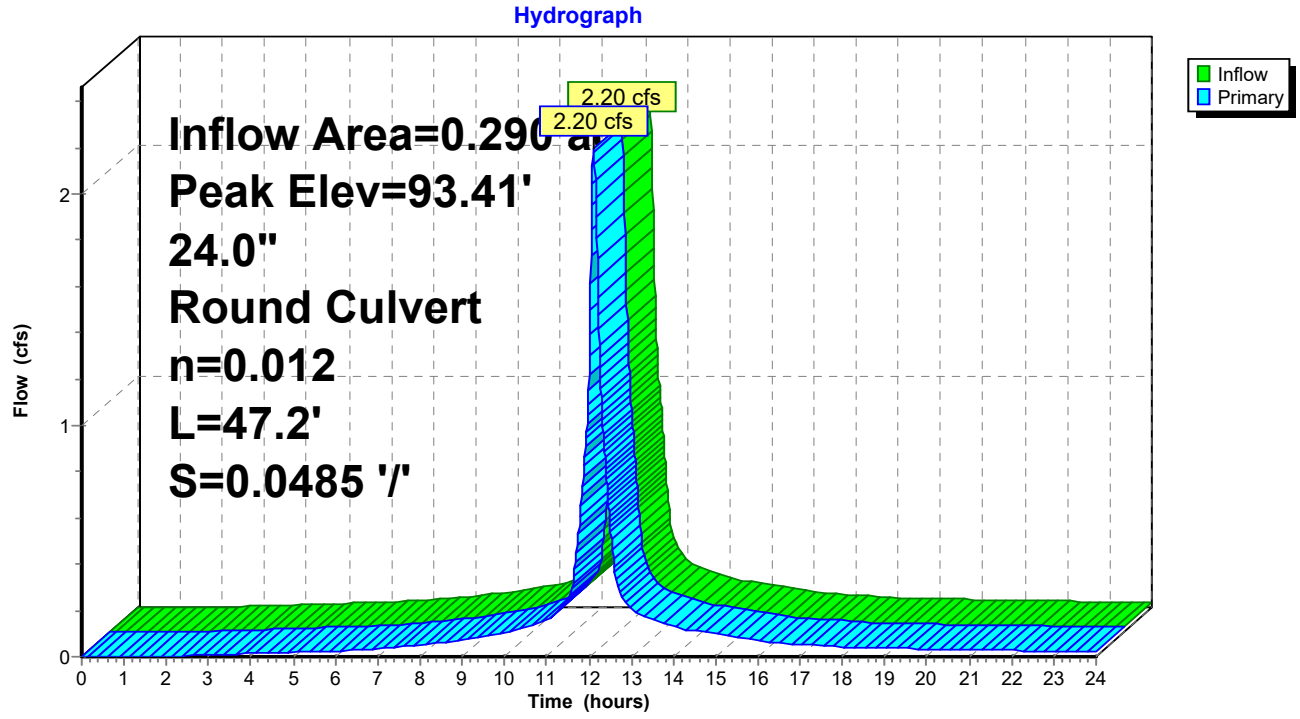
Inflow Area = 0.290 ac, 71.50% Impervious, Inflow Depth > 7.71" for 50 yr event
Inflow = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af
Outflow = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min
Primary = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 93.41'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=2.19 cfs @ 12.12 hrs HW=93.41' TW=91.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.19 cfs @ 2.67 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.24' (Flood elevation advised)

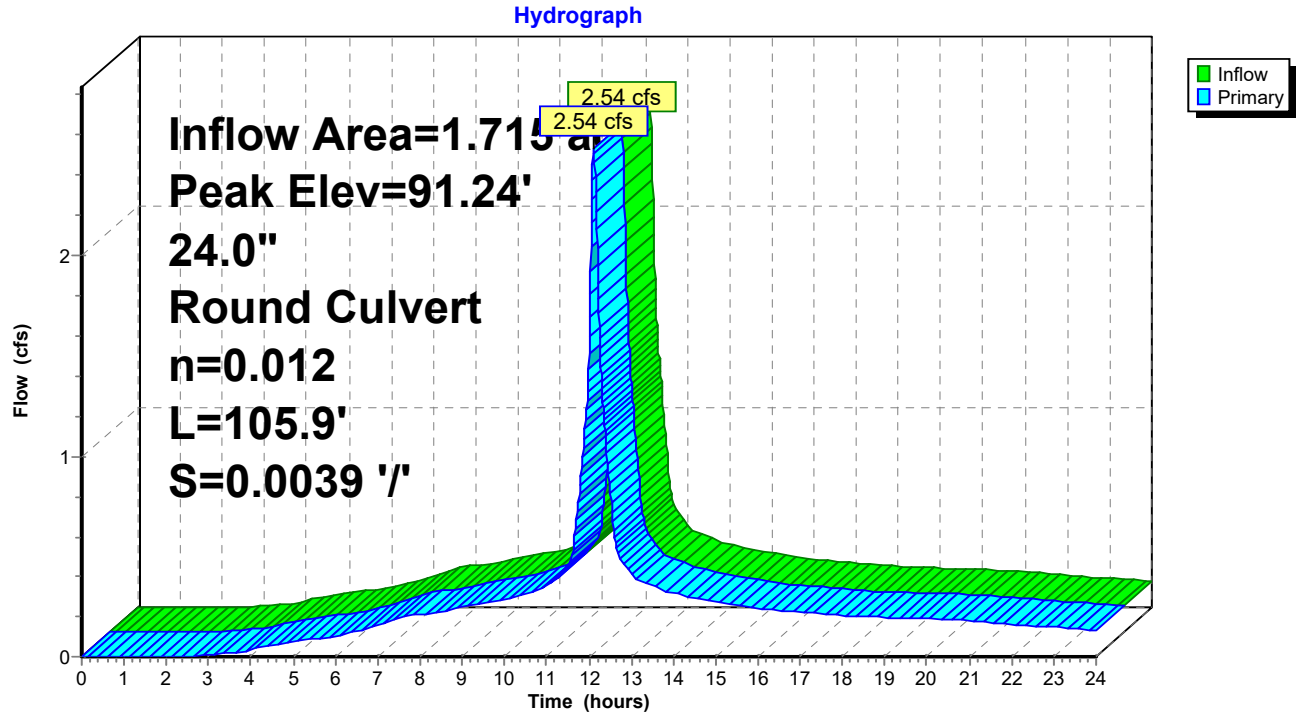
Inflow Area = 1.715 ac, 62.79% Impervious, Inflow Depth > 3.10" for 50 yr event
Inflow = 2.54 cfs @ 12.12 hrs, Volume= 0.443 af
Outflow = 2.54 cfs @ 12.12 hrs, Volume= 0.443 af, Atten= 0%, Lag= 0.0 min
Primary = 2.54 cfs @ 12.12 hrs, Volume= 0.443 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.24' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=2.53 cfs @ 12.12 hrs HW=91.24' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 2.53 cfs @ 3.36 fps)

Pond DMH2: DMH2



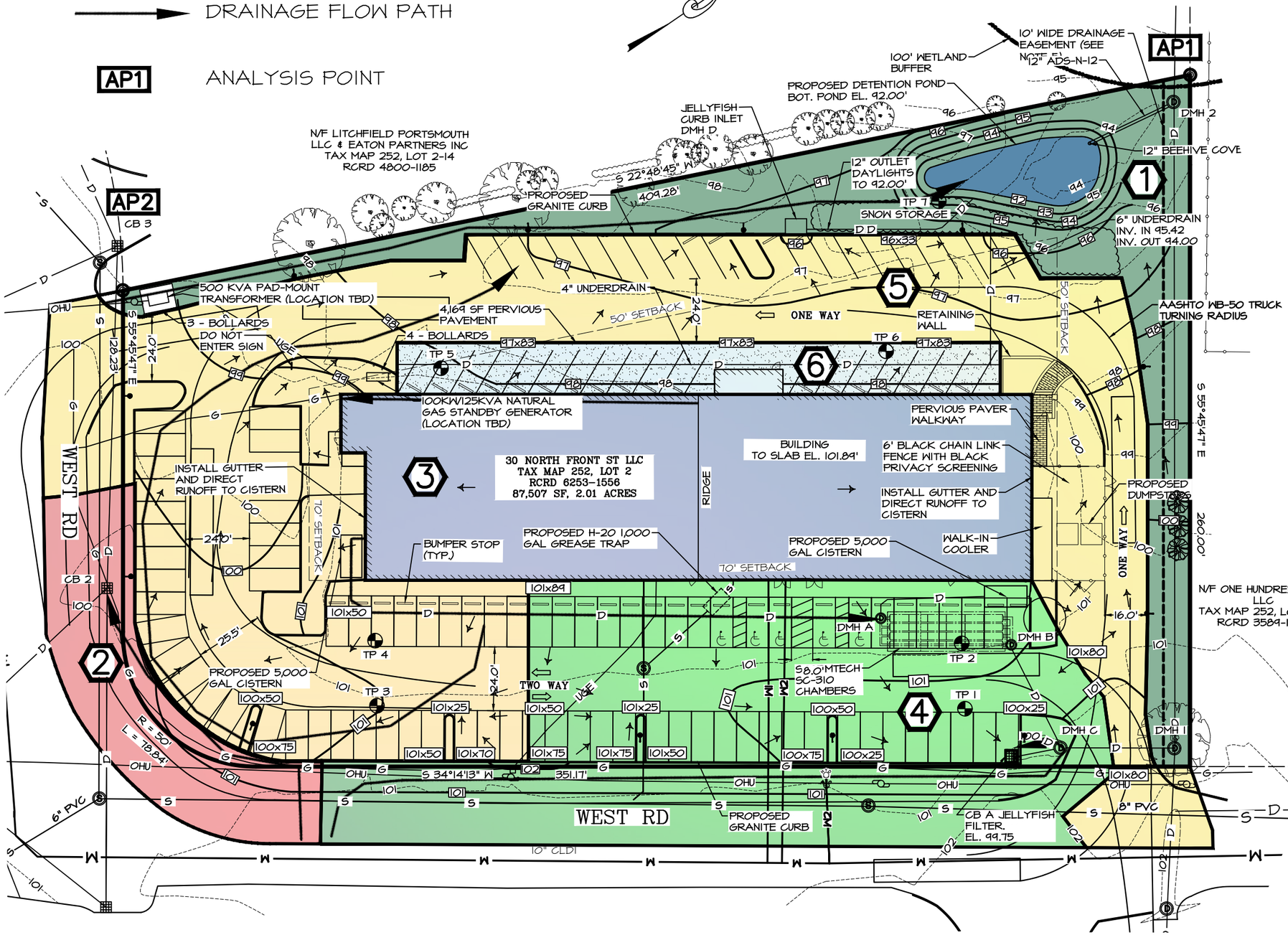
POST-DEVELOPMENT CALCULATIONS

LEGEND

(1) SUBCATCHMENT

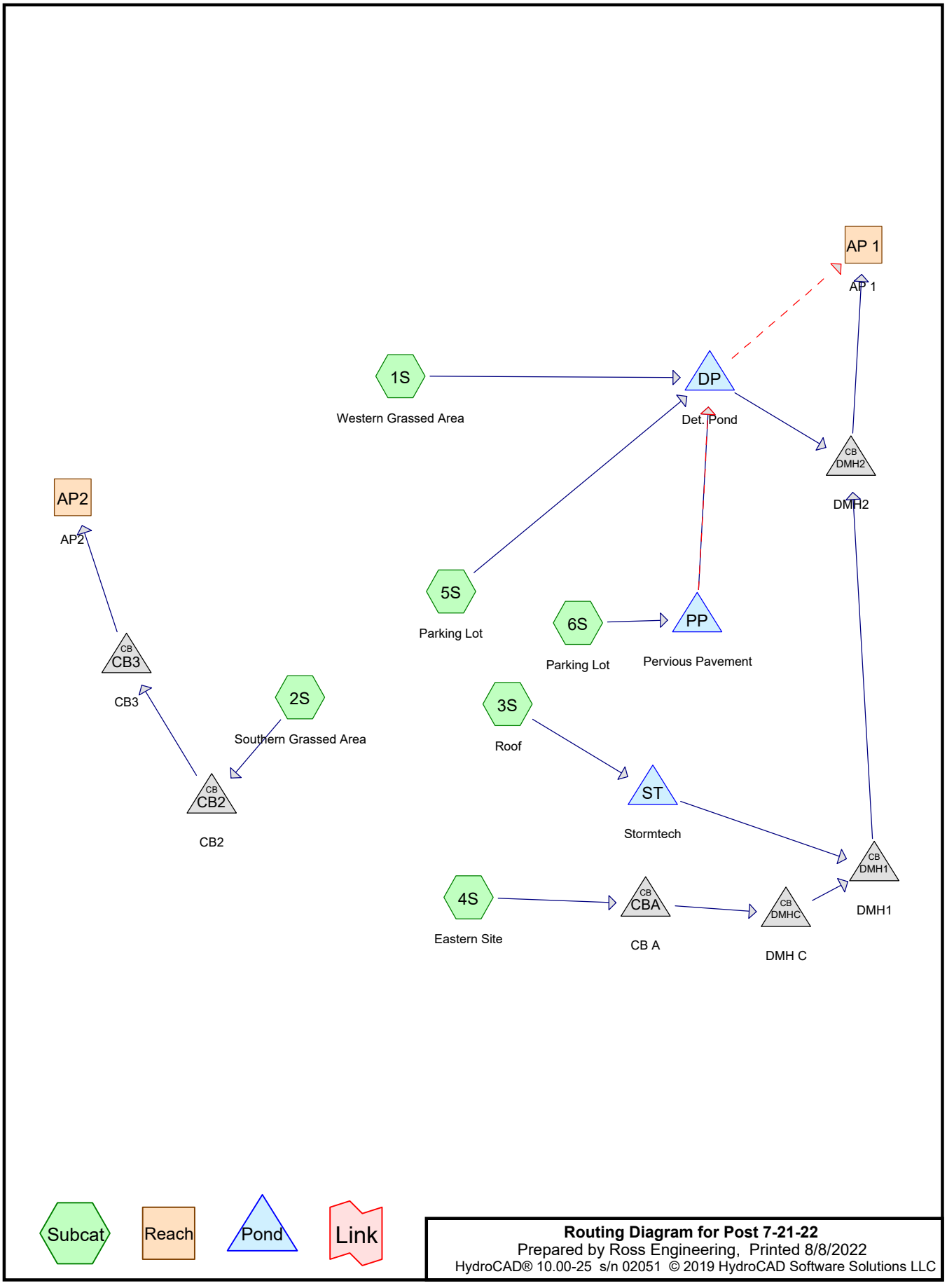
DRAINAGE FLOW PATH

AP1 ANALYSIS POINT



POST-DEVELOPMENT

SCALE: 1" = 40'



Routing Diagram for Post 7-21-22
Prepared by Ross Engineering, Printed 8/8/2022
HydroCAD® 10.00-25 s/n 02051 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.584	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 5S)
0.003	98	Concrete (1S, 5S)
1.286	98	Paved roads w/curbs & sewers, HSG C (1S, 2S, 4S, 5S)
0.096	61	Pervious Pavement, HSG C (6S)
0.005	42	Pervious Pavers, HSG C (5S)
0.002	98	Retaining Wall & Stairs, HSG C (5S)
0.418	98	Roofs, HSG C (3S, 5S, 6S)
2.395	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.392	HSG C	1S, 2S, 3S, 4S, 5S, 6S
0.000	HSG D	
0.003	Other	1S, 5S
2.395		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.584	0.000	0.000	0.584	>75% Grass cover, Good	1S, 2S, 4S, 5S
0.000	0.000	0.000	0.000	0.003	0.003	Concrete	1S, 5S
0.000	0.000	1.286	0.000	0.000	1.286	Paved roads w/curbs & sewers	1S, 2S, 4S, 5S
0.000	0.000	0.096	0.000	0.000	0.096	Pervious Pavement	6S
0.000	0.000	0.005	0.000	0.000	0.005	Pervious Pavers	5S
0.000	0.000	0.002	0.000	0.000	0.002	Retaining Wall & Stairs	5S
0.000	0.000	0.418	0.000	0.000	0.418	Roofs	3S, 5S, 6S
0.000	**0.000**	**2.392**	**0.000**	**0.003**	**2.395**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	CB2	95.26	94.06	129.0	0.0093	0.012	12.0	0.0	0.0
2	CB3	94.06	94.06	1.0	0.0000	0.012	12.0	0.0	0.0
3	CBA	95.40	95.35	10.0	0.0050	0.012	12.0	0.0	0.0
4	DMH1	92.79	90.50	47.2	0.0485	0.012	24.0	0.0	0.0
5	DMH2	90.47	90.06	105.9	0.0039	0.012	24.0	0.0	0.0
6	DMHC	95.28	93.37	45.0	0.0424	0.012	24.0	0.0	0.0
7	DP	92.00	90.75	32.7	0.0382	0.010	12.0	0.0	0.0
8	PP	95.42	94.00	53.0	0.0268	0.012	6.0	0.0	0.0
9	ST	98.00	95.40	38.5	0.0675	0.010	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WesternGrassedArea Runoff Area=14,469 sf 3.15% Impervious Runoff Depth>1.45"
Flow Length=316' Tc=7.5 min CN=75 Runoff=0.52 cfs 0.040 af

Subcatchment2S: SouthernGrassedArea Runoff Area=5,631 sf 54.43% Impervious Runoff Depth>2.37"
Tc=5.0 min CN=87 Runoff=0.37 cfs 0.026 af

Subcatchment3S: Roof Runoff Area=17,704 sf 100.00% Impervious Runoff Depth>3.47"
Tc=5.0 min CN=98 Runoff=1.52 cfs 0.118 af

Subcatchment4S: EasternSite Runoff Area=23,278 sf 80.70% Impervious Runoff Depth>2.93"
Flow Length=303' Tc=8.8 min CN=93 Runoff=1.61 cfs 0.131 af

Subcatchment5S: ParkingLot Runoff Area=38,818 sf 88.18% Impervious Runoff Depth>3.14"
Tc=5.0 min CN=95 Runoff=3.19 cfs 0.233 af

Subcatchment6S: ParkingLot Runoff Area=4,414 sf 5.55% Impervious Runoff Depth>0.76"
Tc=5.0 min CN=63 Runoff=0.08 cfs 0.006 af

ReachAP 1: AP 1 Inflow=4.63 cfs 0.448 af
Outflow=4.63 cfs 0.448 af

ReachAP2: AP2 Inflow=0.37 cfs 0.026 af
Outflow=0.37 cfs 0.026 af

Pond CB2: CB2 Peak Elev=95.56' Inflow=0.37 cfs 0.026 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=0.37 cfs 0.026 af

Pond CB3: CB3 Peak Elev=94.44' Inflow=0.37 cfs 0.026 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=0.37 cfs 0.026 af

Pond CBA: CB A Peak Elev=96.23' Inflow=1.61 cfs 0.131 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=1.61 cfs 0.131 af

Pond DMH1: DMH1 Peak Elev=93.50' Inflow=2.88 cfs 0.171 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=2.88 cfs 0.171 af

Pond DMH2: DMH2 Peak Elev=91.55' Inflow=4.63 cfs 0.448 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=4.63 cfs 0.448 af

Pond DMHC: DMH C Peak Elev=95.80' Inflow=1.61 cfs 0.131 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=1.61 cfs 0.131 af

Pond DP: Det. Pond Peak Elev=93.21' Storage=1,783 cf Inflow=3.66 cfs 0.279 af
Primary=1.91 cfs 0.276 af Secondary=0.00 cfs 0.000 af Outflow=1.91 cfs 0.276 af

Pond PP: PerviousPavement Peak Elev=95.48' Storage=98 cf Inflow=0.08 cfs 0.006 af
Primary=0.01 cfs 0.005 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.005 af

Pond ST: Stormtech Peak Elev=98.60' Storage=386 cf Inflow=1.52 cfs 0.118 af
Discarded=0.11 cfs 0.077 af Primary=1.28 cfs 0.040 af Outflow=1.40 cfs 0.118 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.554 af Average Runoff Depth = 2.78"
28.60% Pervious = 0.685 ac 71.40% Impervious = 1.710 ac

Summary for Subcatchment 1S: Western Grassed Area

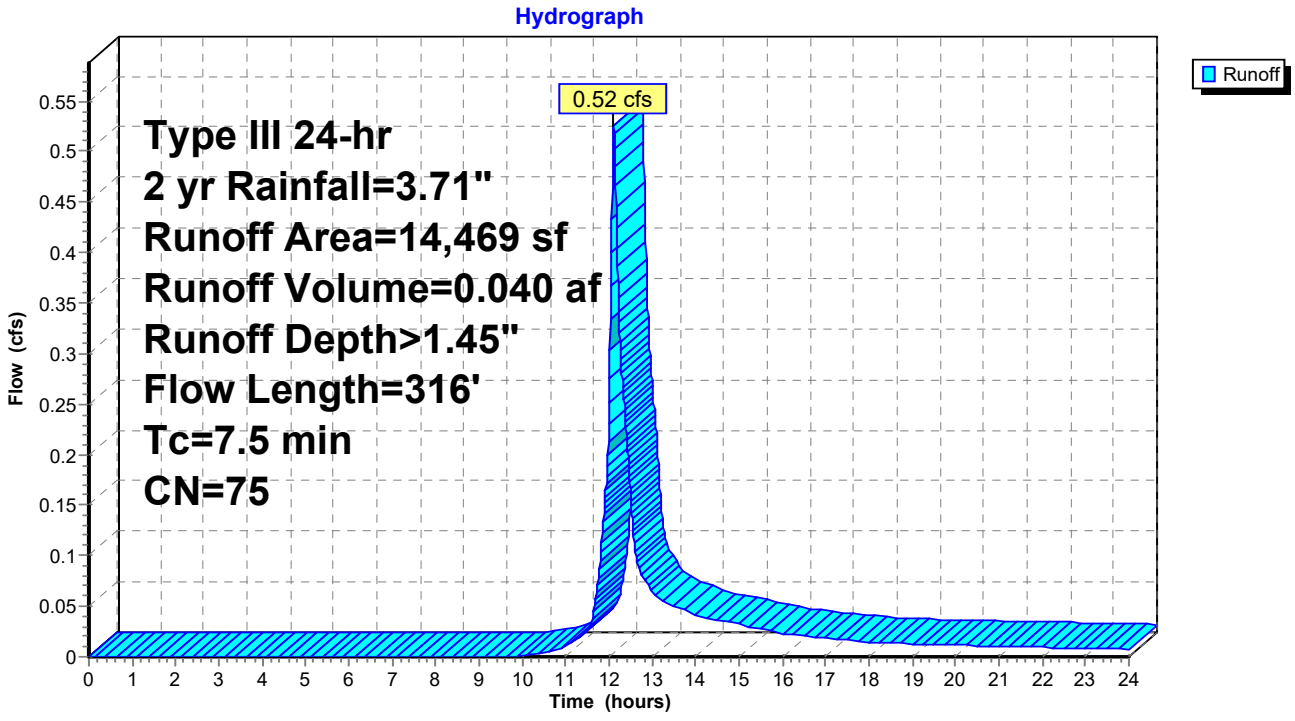
Runoff = 0.52 cfs @ 12.11 hrs, Volume= 0.040 af, Depth> 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

	Area (sf)	CN	Description
	14,013	74	>75% Grass cover, Good, HSG C
	342	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
	14,469	75	Weighted Average
	14,013		96.85% Pervious Area
	456		3.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.6	266	0.0132	1.72		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.5	316	Total			

Subcatchment 1S: Western Grassed Area



Summary for Subcatchment 2S: Southern Grassed Area

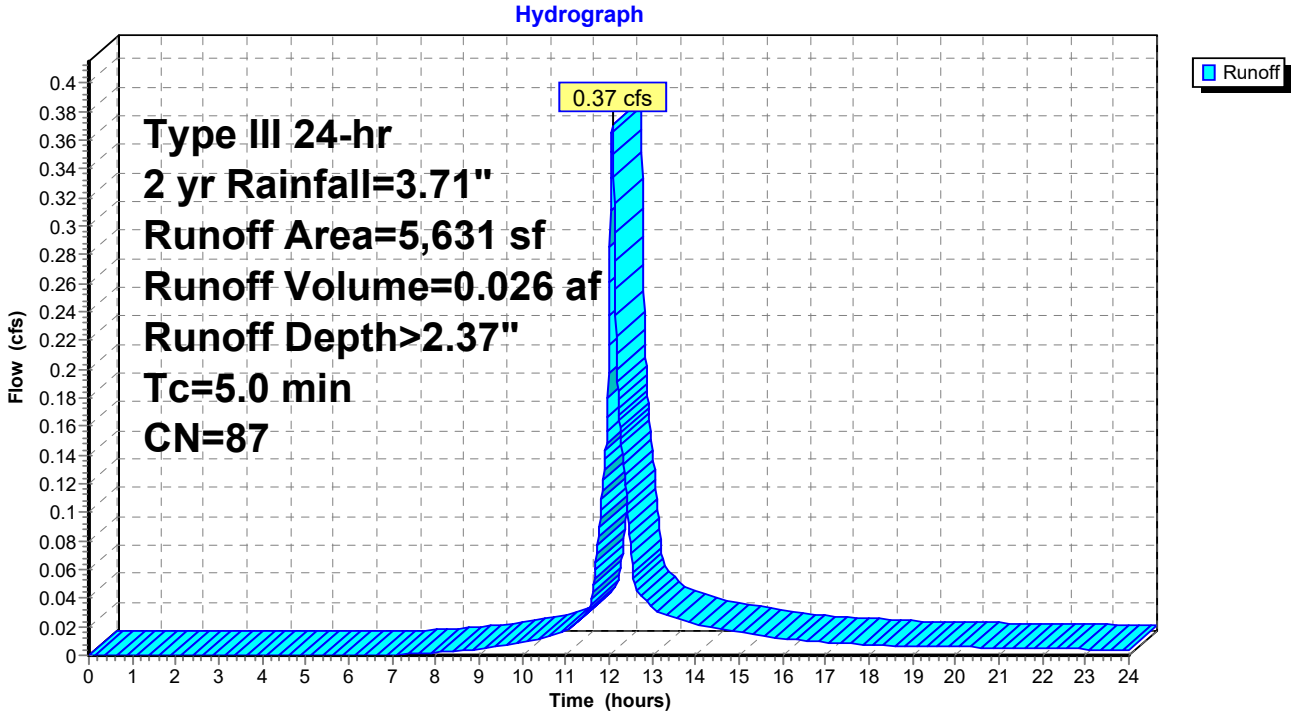
Runoff = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

Area (sf)	CN	Description
2,566	74	>75% Grass cover, Good, HSG C
3,065	98	Paved roads w/curbs & sewers, HSG C
5,631	87	Weighted Average
2,566		45.57% Pervious Area
3,065		54.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Southern Grassed Area



Summary for Subcatchment 3S: Roof

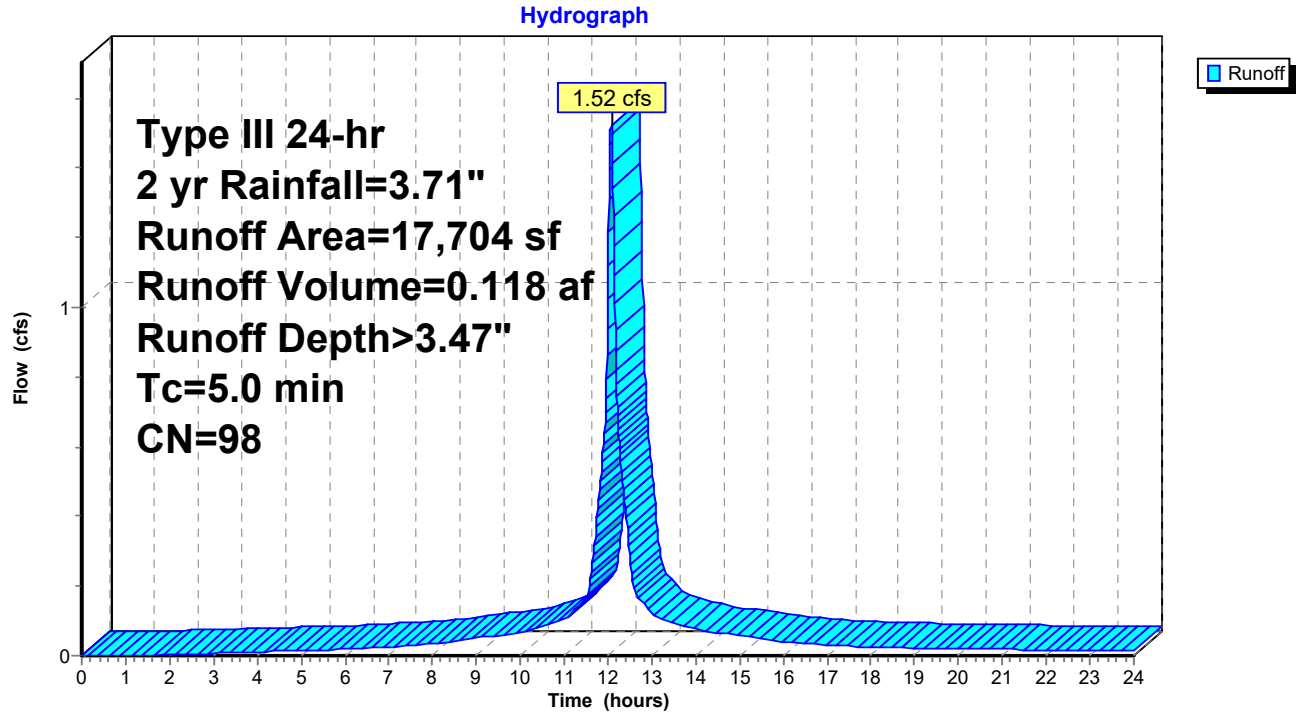
Runoff = 1.52 cfs @ 12.07 hrs, Volume= 0.118 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

Area (sf)	CN	Description
17,704	98	Roofs, HSG C
17,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Roof



Summary for Subcatchment 4S: Eastern Site

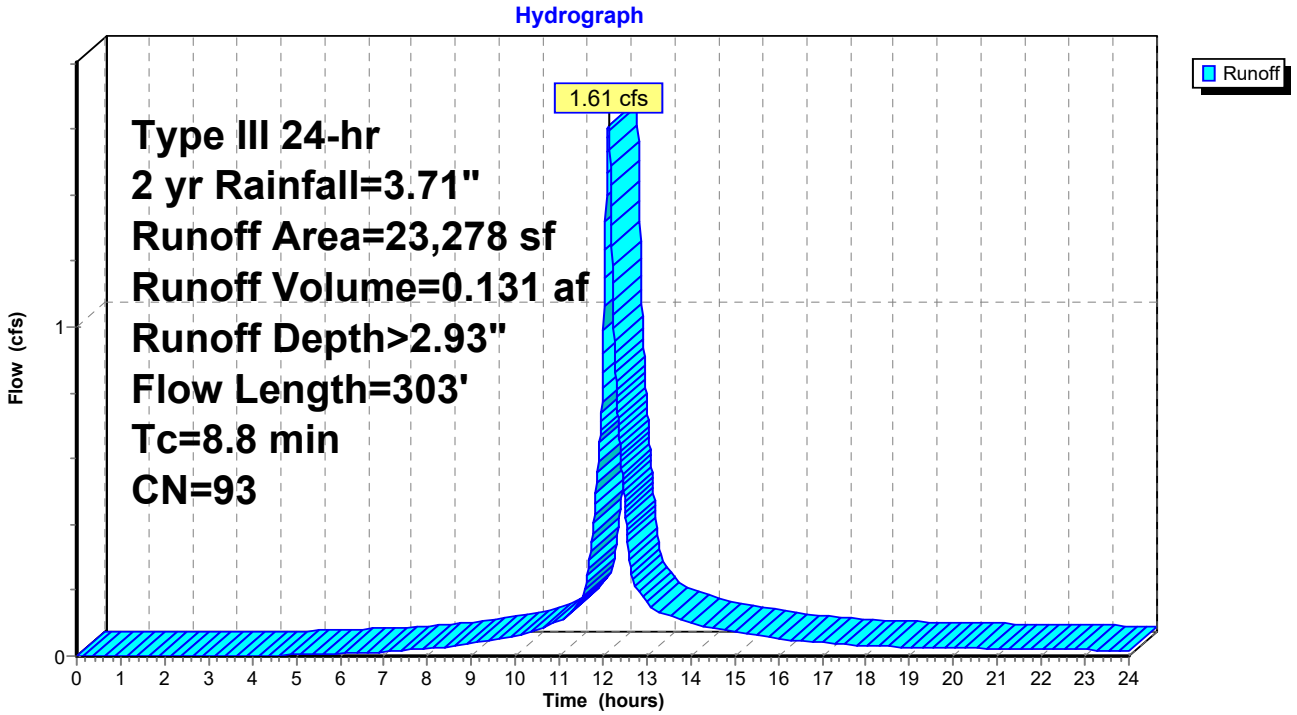
Runoff = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af, Depth> 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

Area (sf)	CN	Description
4,492	74	>75% Grass cover, Good, HSG C
18,786	98	Paved roads w/curbs & sewers, HSG C
23,278	93	Weighted Average
4,492		19.30% Pervious Area
18,786		80.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	252	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.8	303	Total			

Subcatchment 4S: Eastern Site



Summary for Subcatchment 5S: Parking Lot

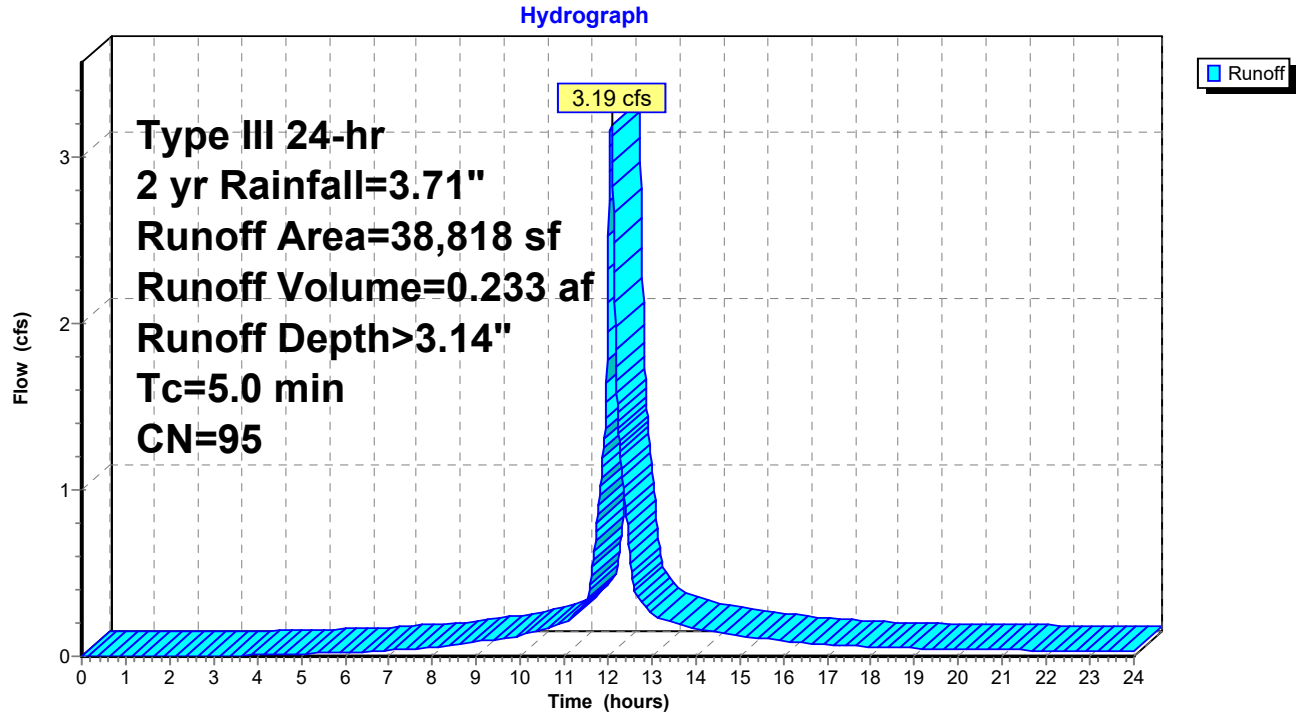
Runoff = 3.19 cfs @ 12.07 hrs, Volume= 0.233 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

	Area (sf)	CN	Description
	4,359	74	>75% Grass cover, Good, HSG C
	33,846	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
	248	98	Roofs, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	38,818	95	Weighted Average
	4,590		11.82% Pervious Area
	34,228		88.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



Summary for Subcatchment 6S: Parking Lot

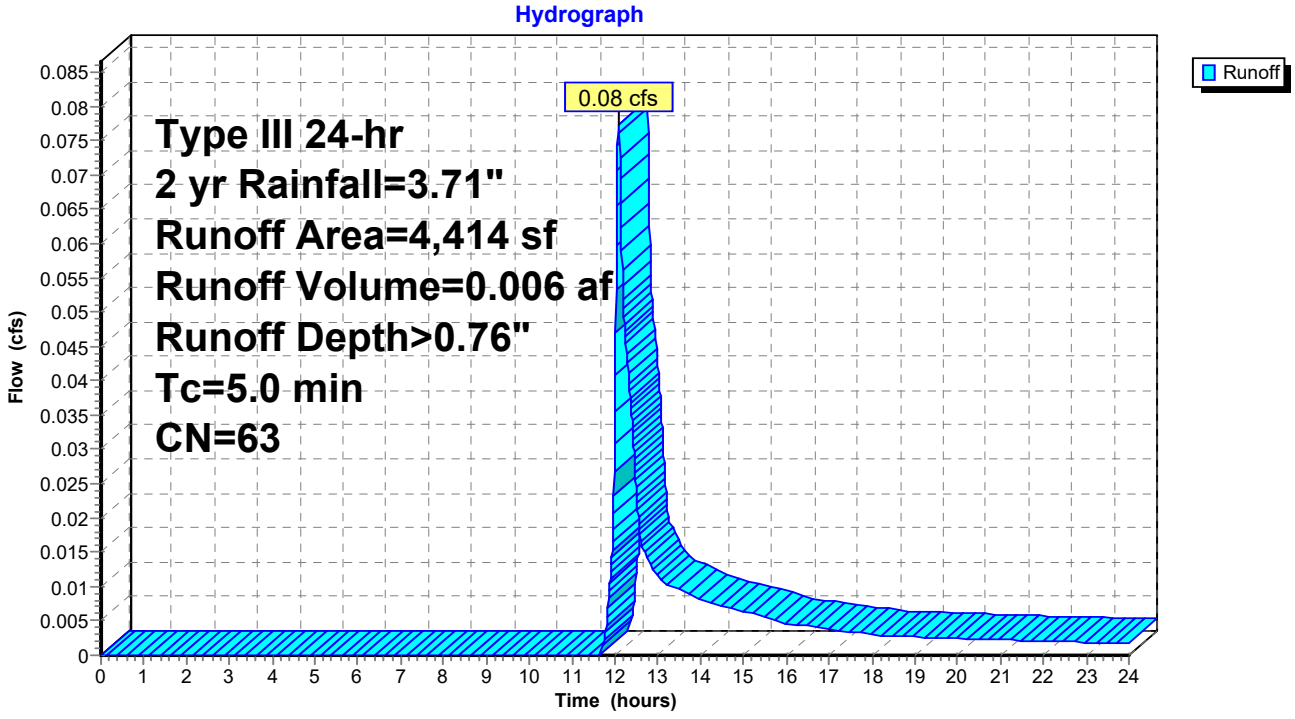
Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 yr Rainfall=3.71"

	Area (sf)	CN	Description
*	4,169	61	Pervious Pavement, HSG C
	245	98	Roofs, HSG C
	4,414	63	Weighted Average
	4,169		94.45% Pervious Area
	245		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Parking Lot



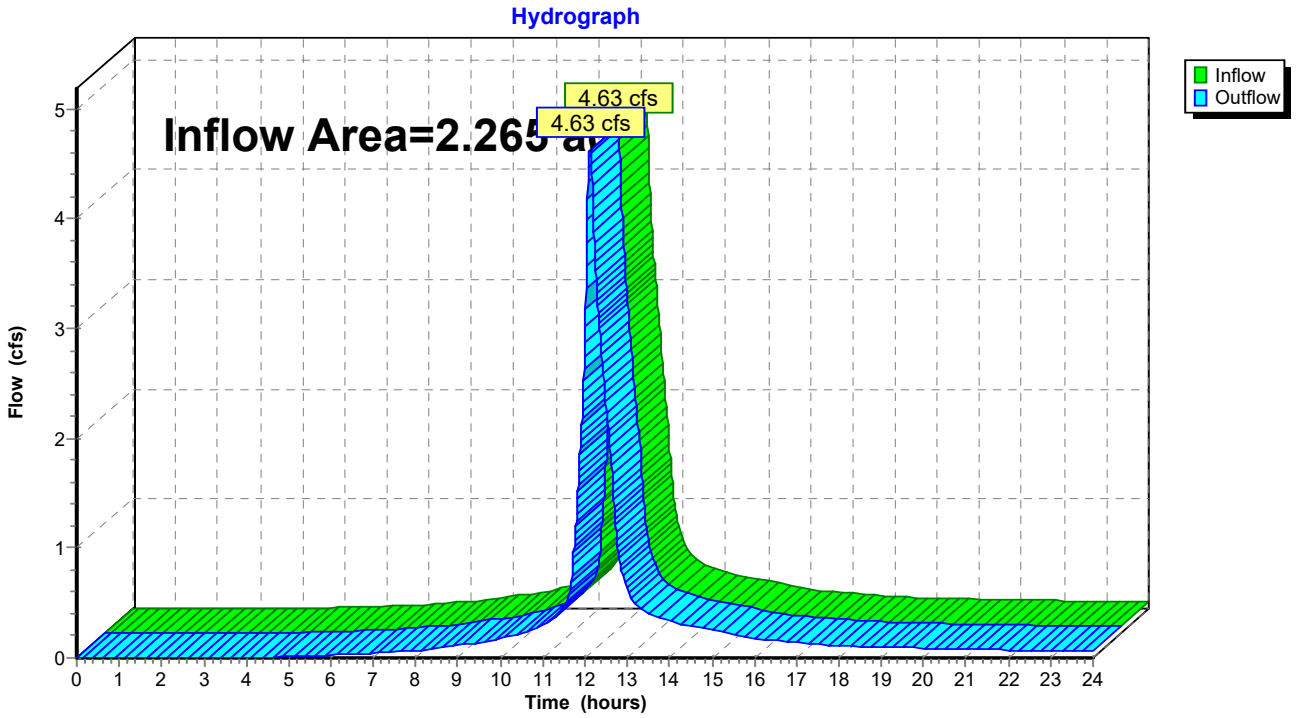
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 2.37" for 2 yr event
Inflow = 4.63 cfs @ 12.12 hrs, Volume= 0.448 af
Outflow = 4.63 cfs @ 12.12 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP 1: AP 1



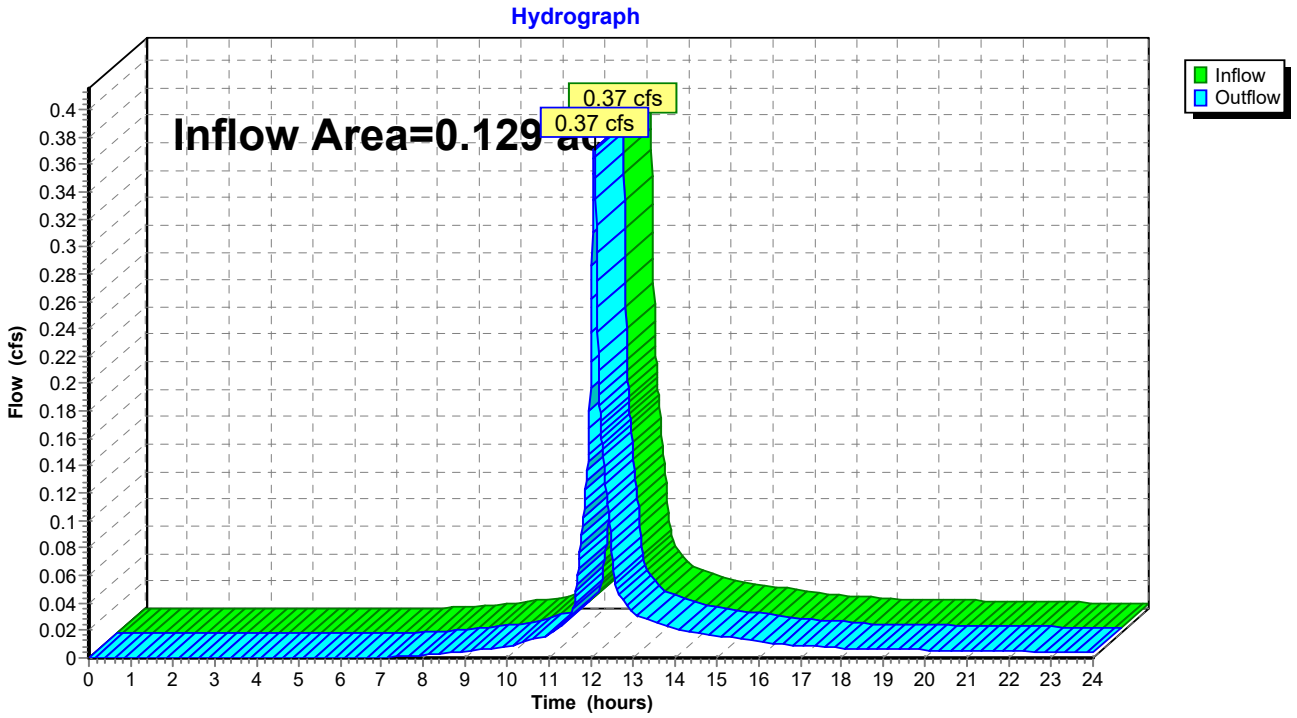
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 2.37" for 2 yr event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP2: AP2



Summary for Pond CB2: CB2

[57] Hint: Peaked at 95.56' (Flood elevation advised)

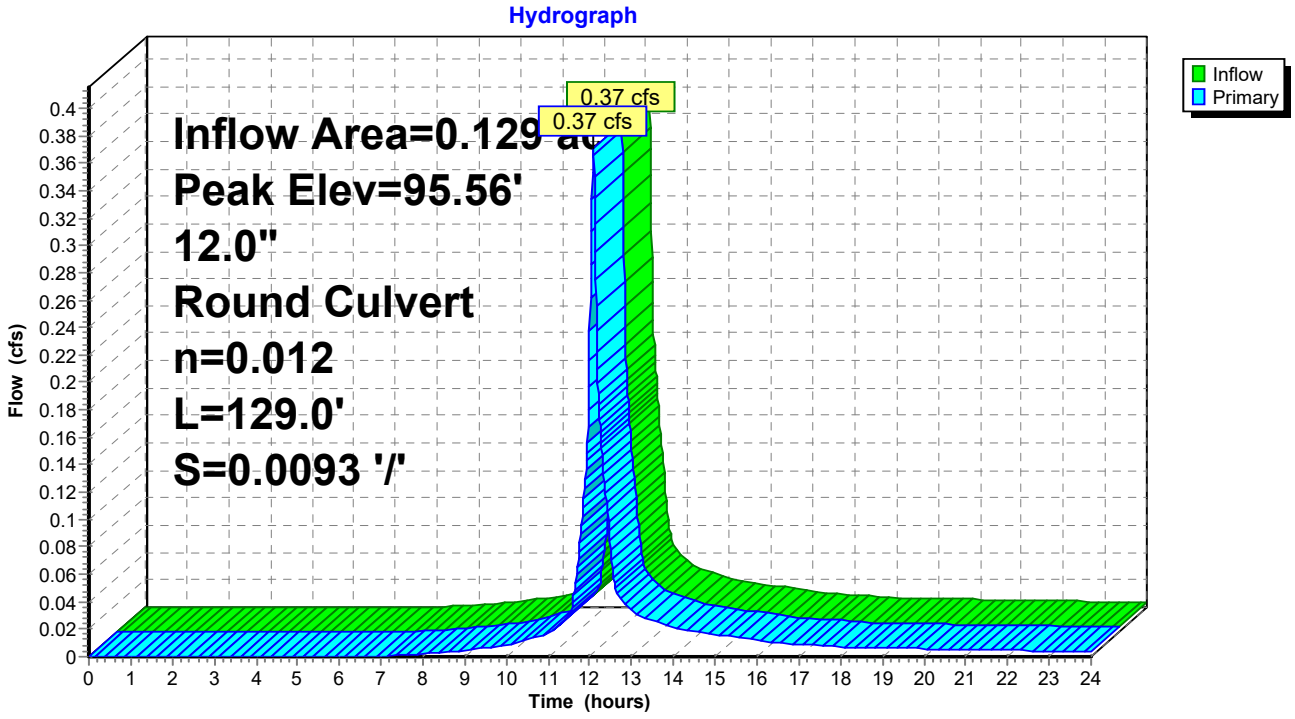
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 2.37" for 2 yr event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.56'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.07 hrs HW=95.56' TW=94.44' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 0.37 cfs @ 2.77 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.44' (Flood elevation advised)

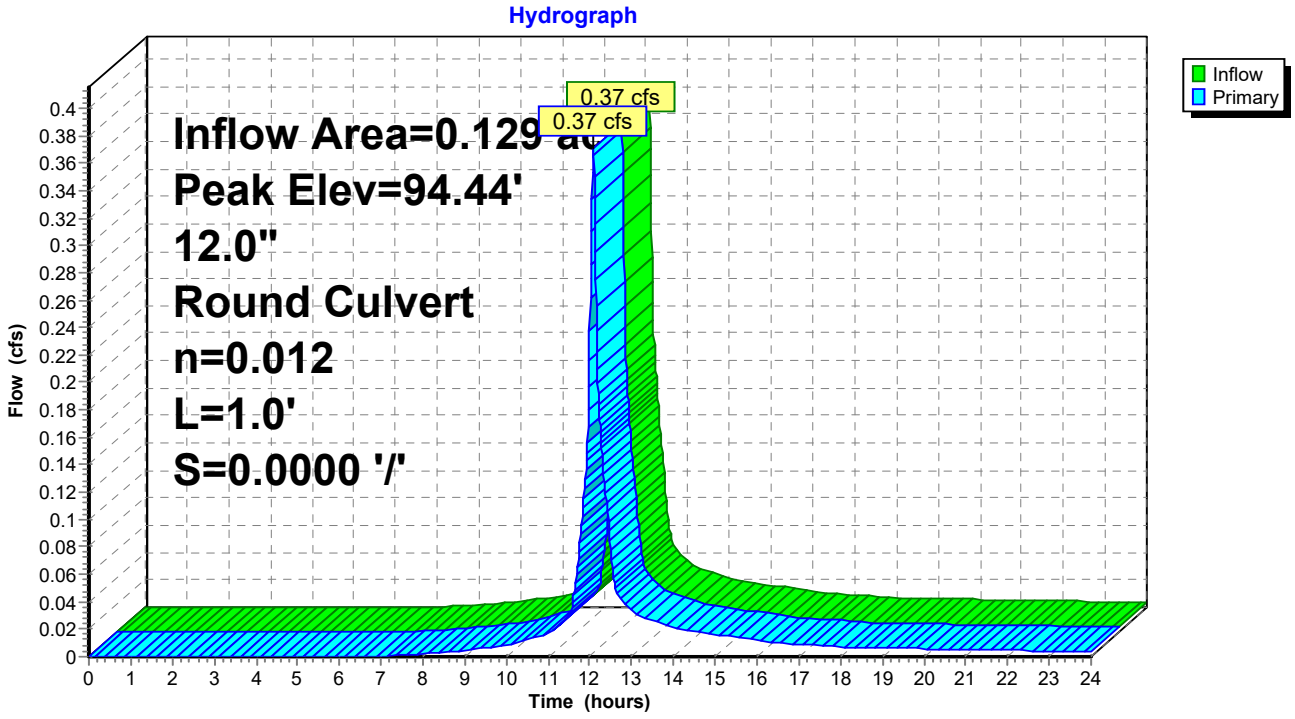
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 2.37" for 2 yr event
Inflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af
Outflow = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.44' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.07 hrs HW=94.44' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 0.37 cfs @ 1.99 fps)

Pond CB3: CB3



Summary for Pond CBA: CB A

[57] Hint: Peaked at 96.23' (Flood elevation advised)

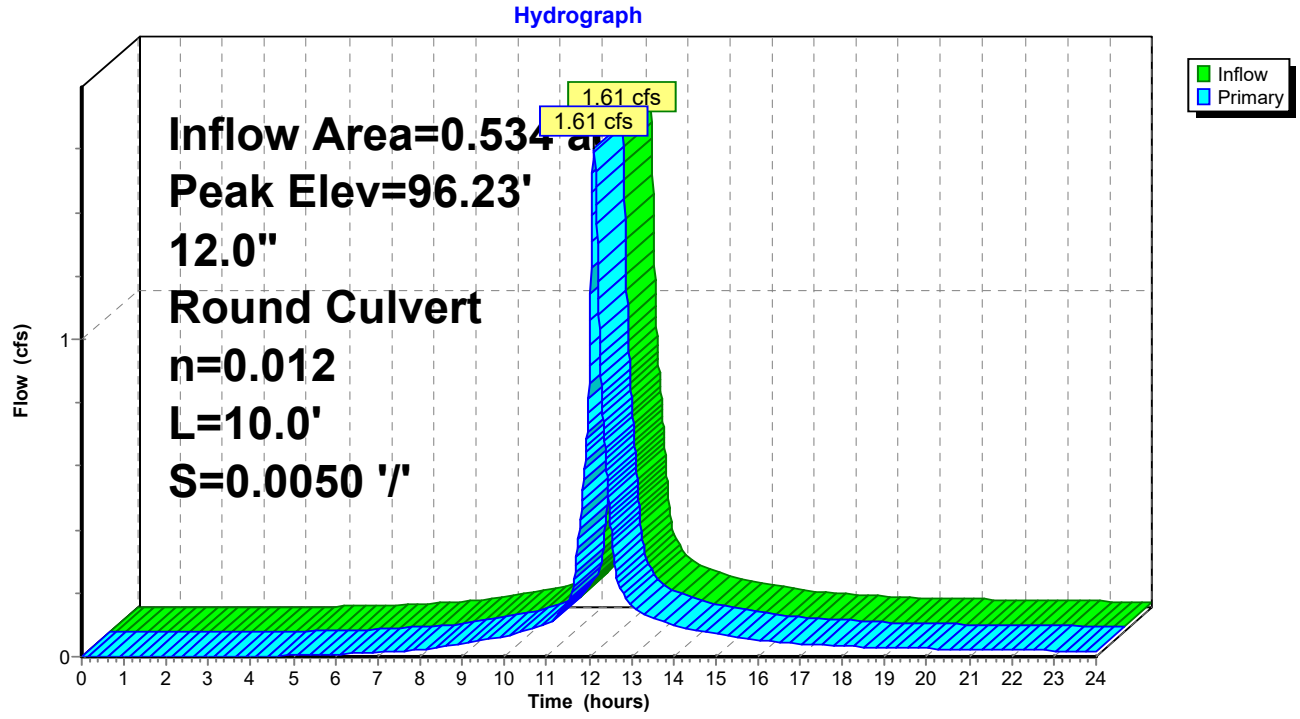
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 2.93" for 2 yr event
Inflow = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af
Outflow = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.23'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.40'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 95.40' / 95.35' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.61 cfs @ 12.12 hrs HW=96.23' TW=95.80' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.61 cfs @ 3.11 fps)

Pond CBA: CB A



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.50' (Flood elevation advised)

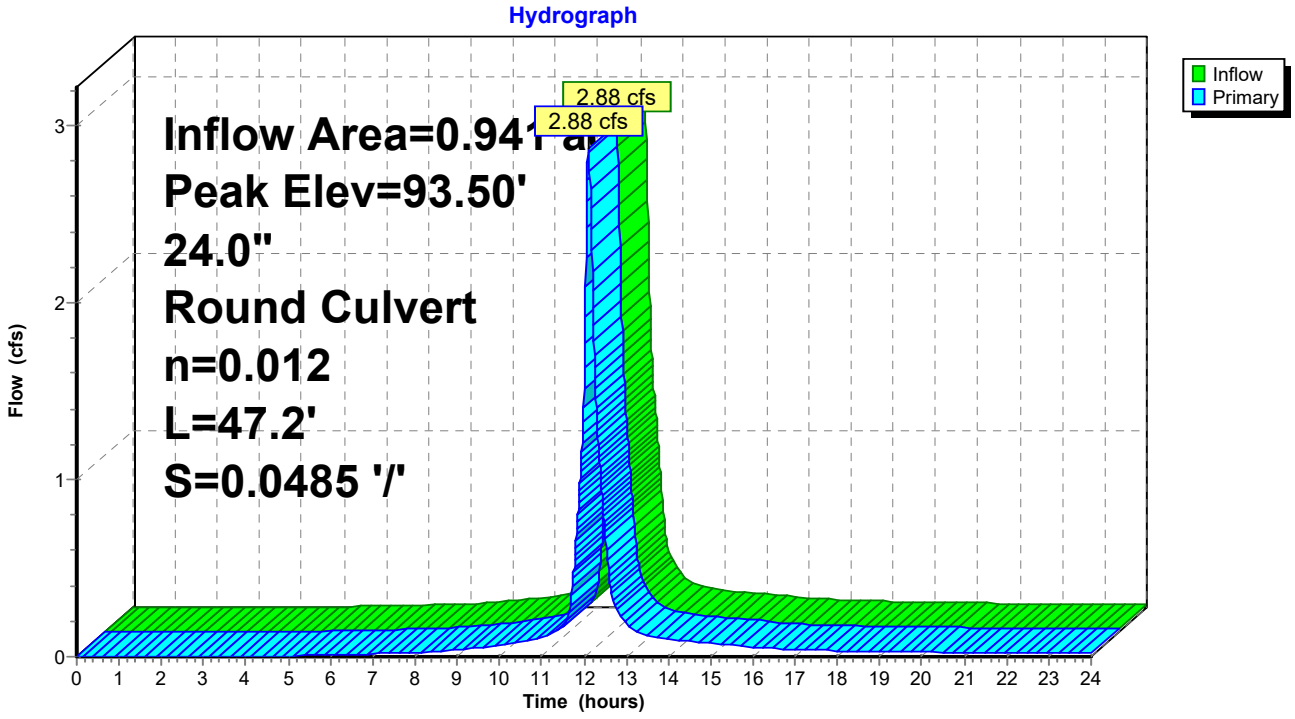
Inflow Area = 0.941 ac, 89.04% Impervious, Inflow Depth > 2.18" for 2 yr event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.171 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.171 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.171 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.50' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=2.87 cfs @ 12.11 hrs HW=93.50' TW=91.54' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.87 cfs @ 2.87 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.55' (Flood elevation advised)

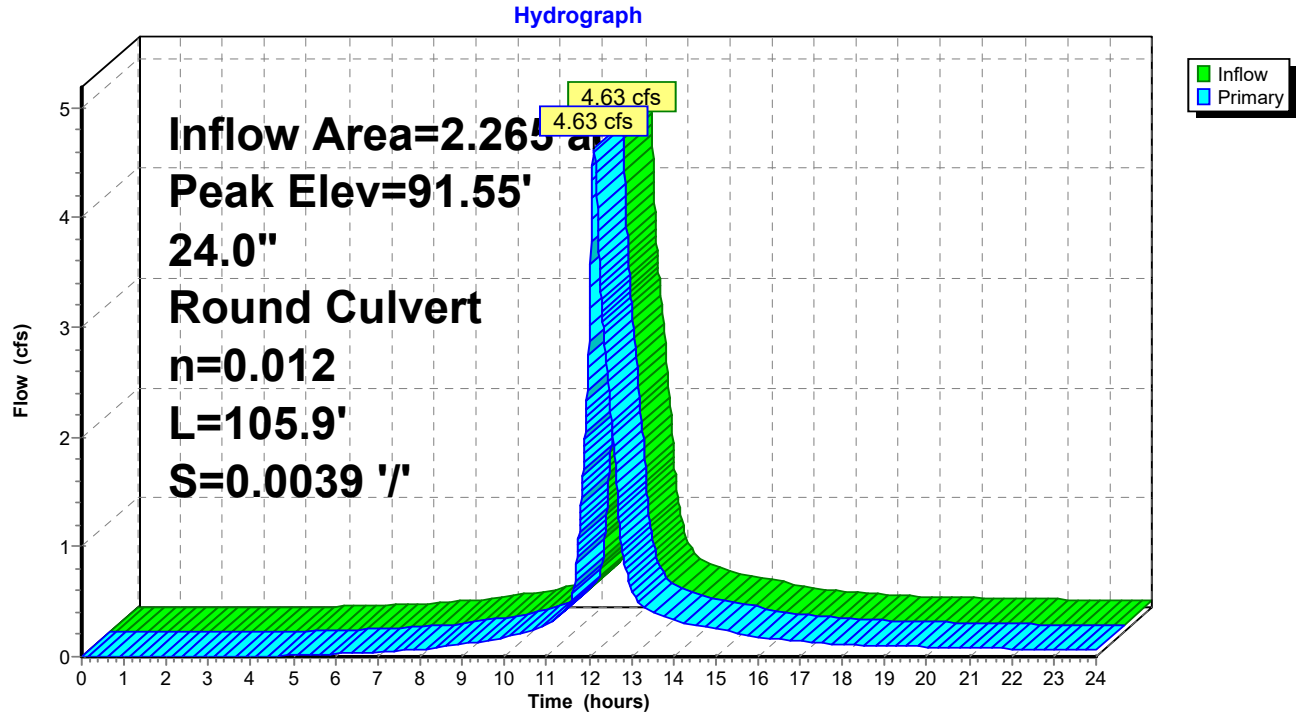
Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 2.37" for 2 yr event
Inflow = 4.63 cfs @ 12.12 hrs, Volume= 0.448 af
Outflow = 4.63 cfs @ 12.12 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min
Primary = 4.63 cfs @ 12.12 hrs, Volume= 0.448 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 91.55'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.63 cfs @ 12.12 hrs HW=91.55' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 4.63 cfs @ 3.90 fps)

Pond DMH2: DMH2



Summary for Pond DMHC: DMH C

[57] Hint: Peaked at 95.80' (Flood elevation advised)

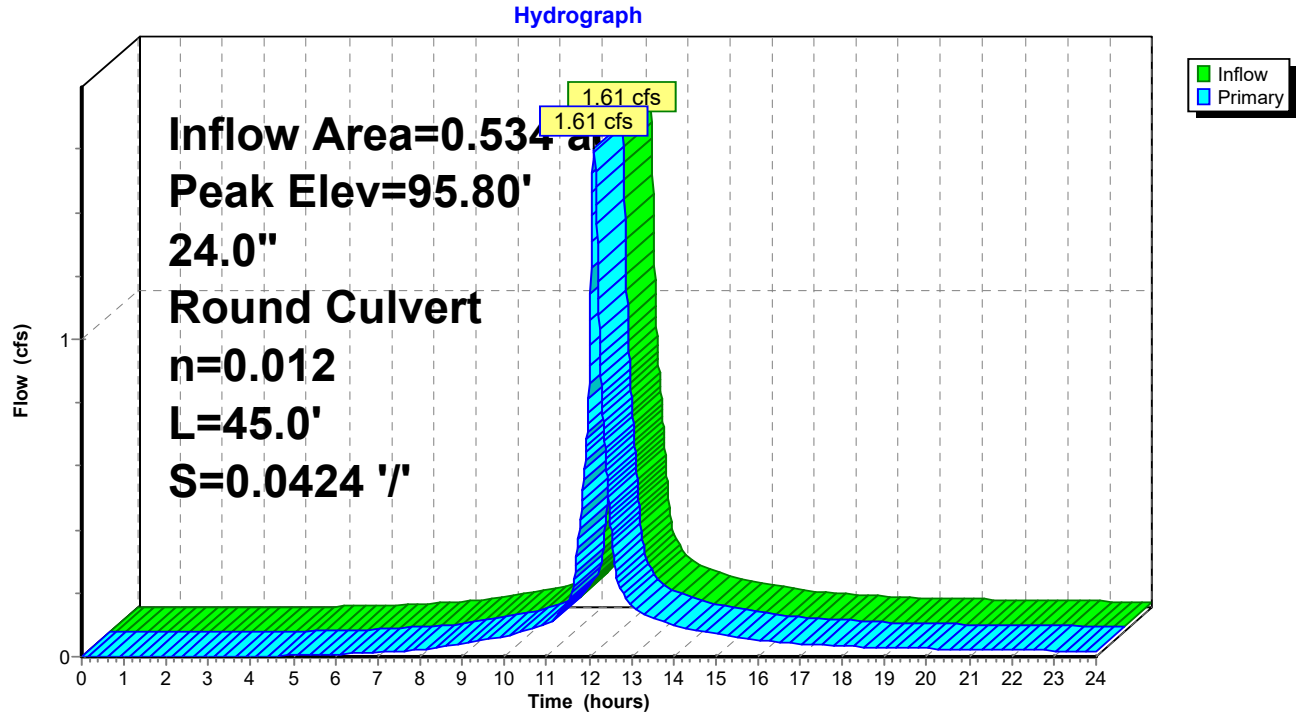
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 2.93" for 2 yr event
Inflow = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af
Outflow = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.12 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.80' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**24.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0424 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=1.61 cfs @ 12.12 hrs HW=95.80' TW=93.50' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.61 cfs @ 2.46 fps)

Pond DMHC: DMH C



Summary for Pond DP: Det. Pond

Inflow Area = 1.325 ac, 60.53% Impervious, Inflow Depth > 2.53" for 2 yr event
Inflow = 3.66 cfs @ 12.08 hrs, Volume= 0.279 af
Outflow = 1.91 cfs @ 12.21 hrs, Volume= 0.276 af, Atten= 48%, Lag= 8.0 min
Primary = 1.91 cfs @ 12.21 hrs, Volume= 0.276 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.21' @ 12.21 hrs Surf.Area= 1,788 sf Storage= 1,783 cf

Plug-Flow detention time=20.8 min calculated for 0.276 af (99% of inflow)
Center-of-Mass det. time=15.2 min (805.3 - 790.1)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	5,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

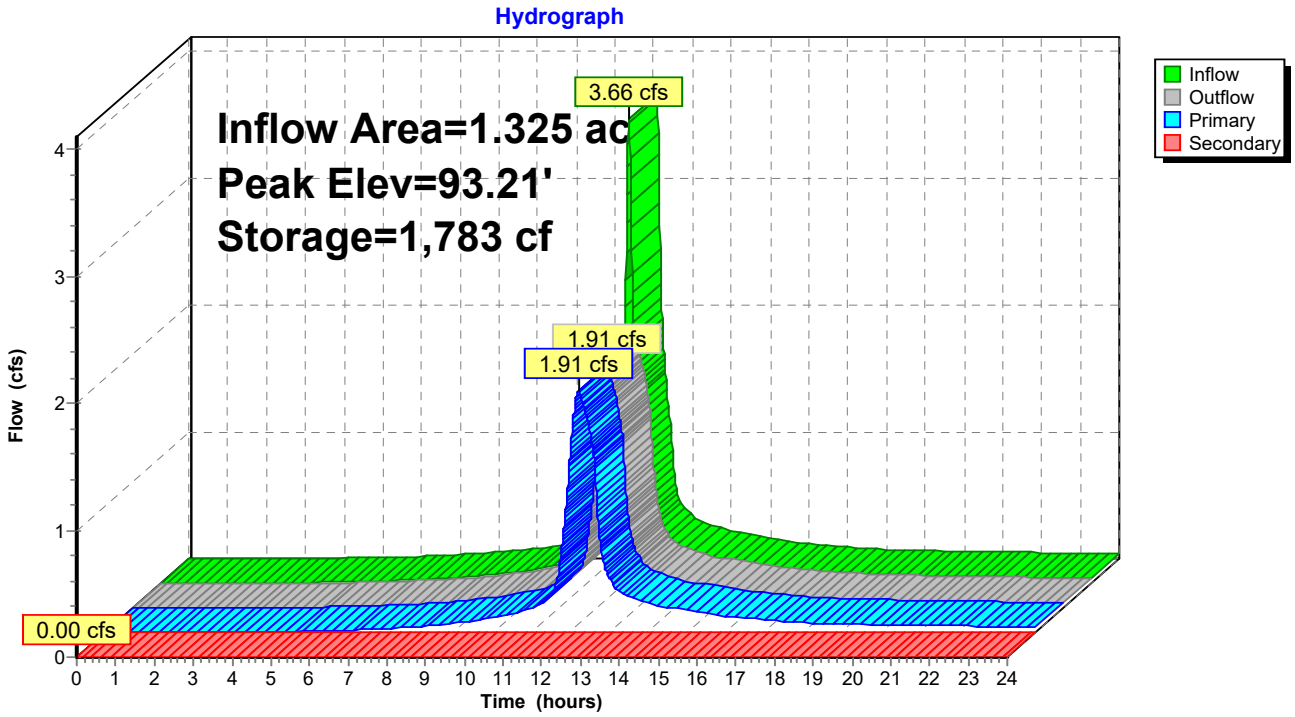
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1	0.0	0	0
92.01	1,176	100.0	6	6
93.00	1,671	100.0	1,409	1,415
94.00	2,222	100.0	1,947	3,362
95.00	2,830	100.0	2,526	5,888

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**12.0" Round Culvert** L= 32.7' Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.75' S= 0.0382 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	92.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	93.10'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.91 cfs @ 12.21 hrs HW=93.21' TW=91.45' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 1.91 cfs of 3.19 cfs potential flow)
↑├**3=Orifice/Grate** (Orifice Controls 1.85 cfs @ 5.30 fps)
└**4=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP: Det. Pond



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.101 ac, 5.55% Impervious, Inflow Depth > 0.76" for 2 yr event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af
Outflow = 0.01 cfs @ 13.09 hrs, Volume= 0.005 af, Atten= 86%, Lag= 59.8 min
Primary = 0.01 cfs @ 13.09 hrs, Volume= 0.005 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.48' @ 13.09 hrs Surf.Area= 4,169 sf Storage= 98 cf

Plug-Flow detention time= 171.4 min calculated for 0.005 af (84% of inflow)
Center-of-Mass det. time= 101.2 min (988.9 - 887.8)

Volume	Invert	Avail.Storage	Storage Description
#1	95.42'	1,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

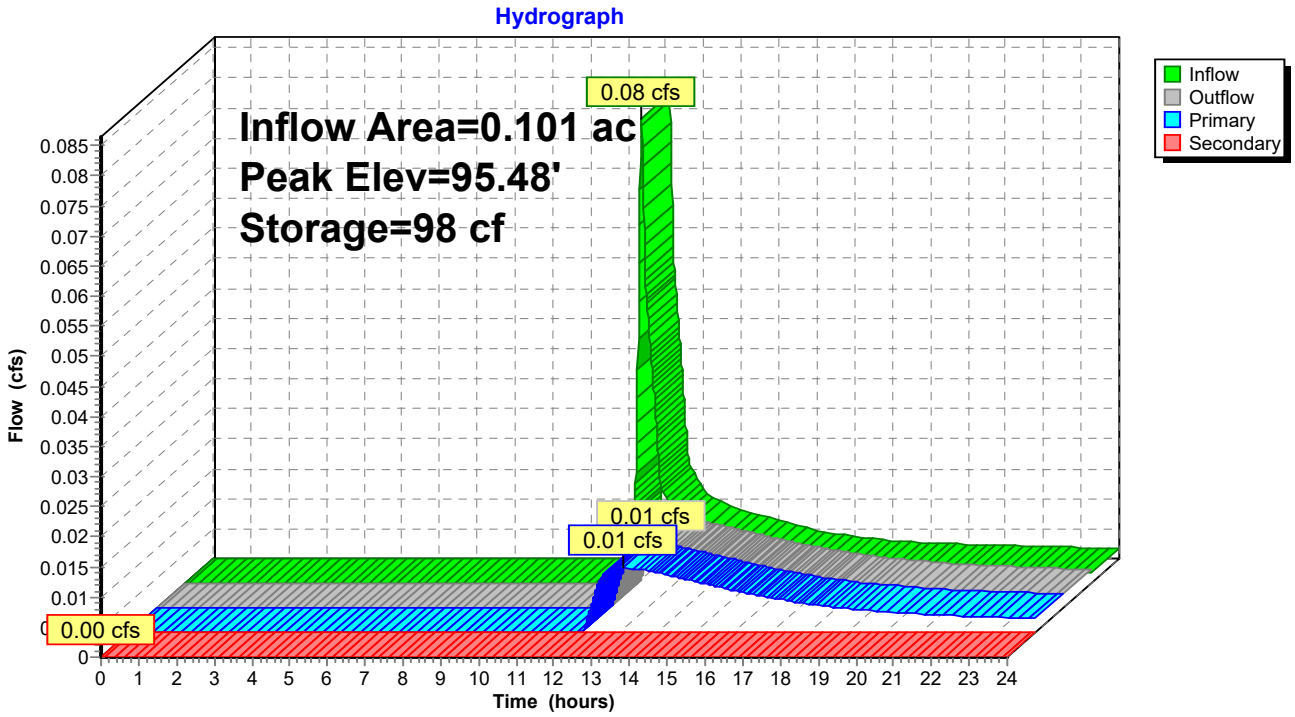
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.42	4,169	0.0	0	0
95.43	4,169	40.0	17	17
95.90	4,169	40.0	784	800
95.91	4,169	15.0	6	807
96.15	4,169	15.0	150	957
96.16	4,169	5.0	2	959
97.15	4,169	5.0	206	1,165
97.16	4,169	30.0	13	1,178
97.49	4,169	30.0	413	1,590
97.50	4,169	15.0	6	1,597
97.83	4,169	15.0	206	1,803

Device	Routing	Invert	Outlet Devices
#1	Primary	95.42'	**6.0" Round Culvert** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 95.42' / 94.00' S= 0.0268 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Secondary	97.73'	**200.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.01 cfs @ 13.09 hrs HW=95.48' TW=92.31' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.01 cfs @ 0.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.42' TW=92.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond ST: Stormtech

Inflow Area = 0.406 ac, 100.00% Impervious, Inflow Depth > 3.47" for 2 yr event
Inflow = 1.52 cfs @ 12.07 hrs, Volume= 0.118 af
Outflow = 1.40 cfs @ 12.10 hrs, Volume= 0.118 af, Atten= 8%, Lag= 2.0 min
Discarded = 0.11 cfs @ 11.25 hrs, Volume= 0.077 af
Primary = 1.28 cfs @ 12.10 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 98.60' @ 12.10 hrs Surf.Area= 656 sf Storage= 386 cf

Plug-Flow detention time=5.1 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time=5.1 min (757.1 - 752.0)

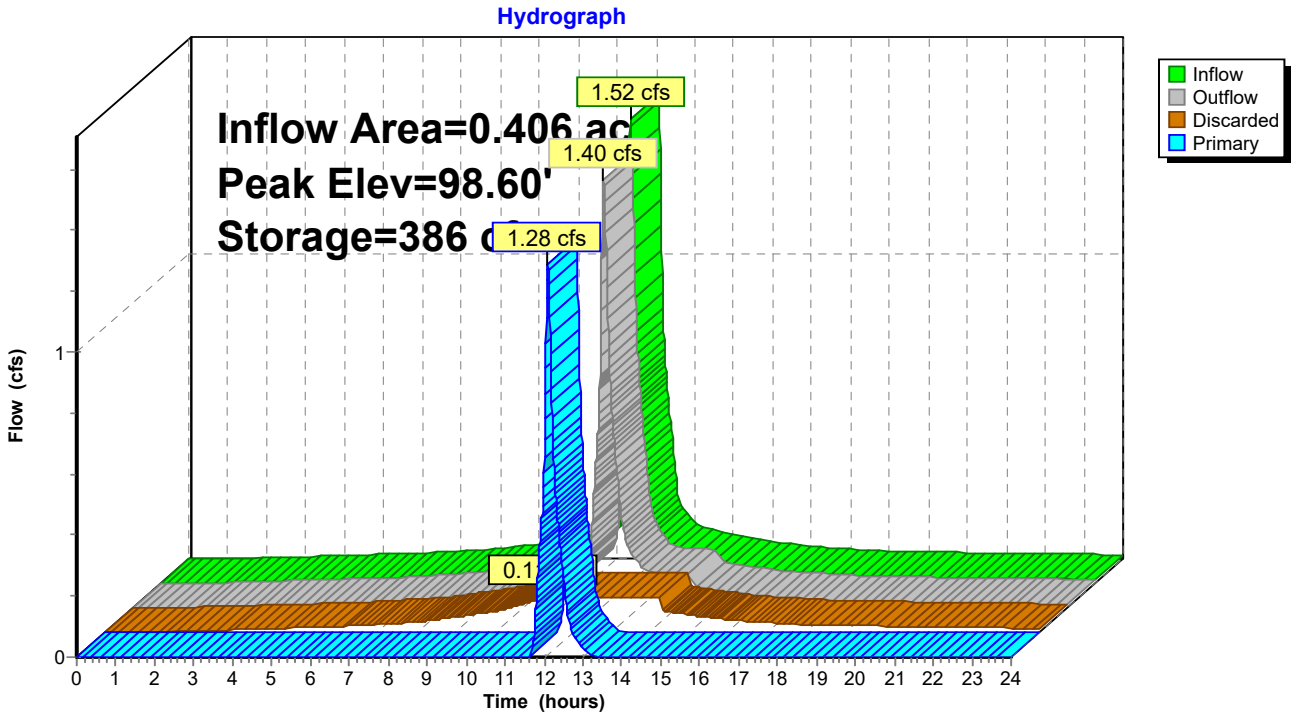
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	468 cf	**14.82'W x 44.24'L x 2.33'H Prismatoid** 1,528 cf Overall - 357 cf Embedded = 1,170 cf x 40.0% Voids
#2	98.08'	357 cf	**ADS_StormTech SC-310** x 24 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 4 rows
		826 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 38.5' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0675 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Discarded	97.58'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.11 cfs @ 11.25 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=1.28 cfs @ 12.10 hrs HW=98.60' TW=93.50' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.28 cfs @ 2.63 fps)

Pond ST: Stormtech



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WesternGrassedArea Runoff Area=14,469 sf 3.15% Impervious Runoff Depth>2.97"
Flow Length=316' Tc=7.5 min CN=75 Runoff=1.10 cfs 0.082 af

Subcatchment2S: SouthernGrassedArea Runoff Area=5,631 sf 54.43% Impervious Runoff Depth>4.17"
Tc=5.0 min CN=87 Runoff=0.64 cfs 0.045 af

Subcatchment3S: Roof Runoff Area=17,704 sf 100.00% Impervious Runoff Depth>5.40"
Tc=5.0 min CN=98 Runoff=2.33 cfs 0.183 af

Subcatchment4S: EasternSite Runoff Area=23,278 sf 80.70% Impervious Runoff Depth>4.82"
Flow Length=303' Tc=8.8 min CN=93 Runoff=2.57 cfs 0.215 af

Subcatchment5S: ParkingLot Runoff Area=38,818 sf 88.18% Impervious Runoff Depth>5.05"
Tc=5.0 min CN=95 Runoff=4.99 cfs 0.375 af

Subcatchment6S: ParkingLot Runoff Area=4,414 sf 5.55% Impervious Runoff Depth>1.93"
Tc=5.0 min CN=63 Runoff=0.23 cfs 0.016 af

ReachAP 1: AP 1 Inflow=8.13 cfs 0.761 af
Outflow=8.13 cfs 0.761 af

ReachAP2: AP2 Inflow=0.64 cfs 0.045 af
Outflow=0.64 cfs 0.045 af

Pond CB2: CB2 Peak Elev=95.67' Inflow=0.64 cfs 0.045 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=0.64 cfs 0.045 af

Pond CB3: CB3 Peak Elev=94.57' Inflow=0.64 cfs 0.045 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=0.64 cfs 0.045 af

Pond CBA: CB A Peak Elev=96.55' Inflow=2.57 cfs 0.215 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=2.57 cfs 0.215 af

Pond DMH1: DMH1 Peak Elev=93.71' Inflow=4.60 cfs 0.292 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=4.60 cfs 0.292 af

Pond DMH2: DMH2 Peak Elev=91.97' Inflow=8.13 cfs 0.761 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=8.13 cfs 0.761 af

Pond DMHC: DMH C Peak Elev=95.95' Inflow=2.57 cfs 0.215 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=2.57 cfs 0.215 af

Pond DP: Det. Pond Peak Elev=93.78' Storage=2,881 cf Inflow=6.01 cfs 0.472 af
Primary=3.83 cfs 0.469 af Secondary=0.00 cfs 0.000 af Outflow=3.83 cfs 0.469 af

Pond PP: PerviousPavement Peak Elev=95.56' Storage=238 cf Inflow=0.23 cfs 0.016 af
Primary=0.06 cfs 0.015 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.015 af

Pond ST: Stormtech Peak Elev=98.80' Storage=479 cf Inflow=2.33 cfs 0.183 af
Discarded=0.11 cfs 0.105 af Primary=2.06 cfs 0.078 af Outflow=2.17 cfs 0.183 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.916 af Average Runoff Depth = 4.59"
28.60% Pervious = 0.685 ac 71.40% Impervious = 1.710 ac

Summary for Subcatchment 1S: Western Grassed Area

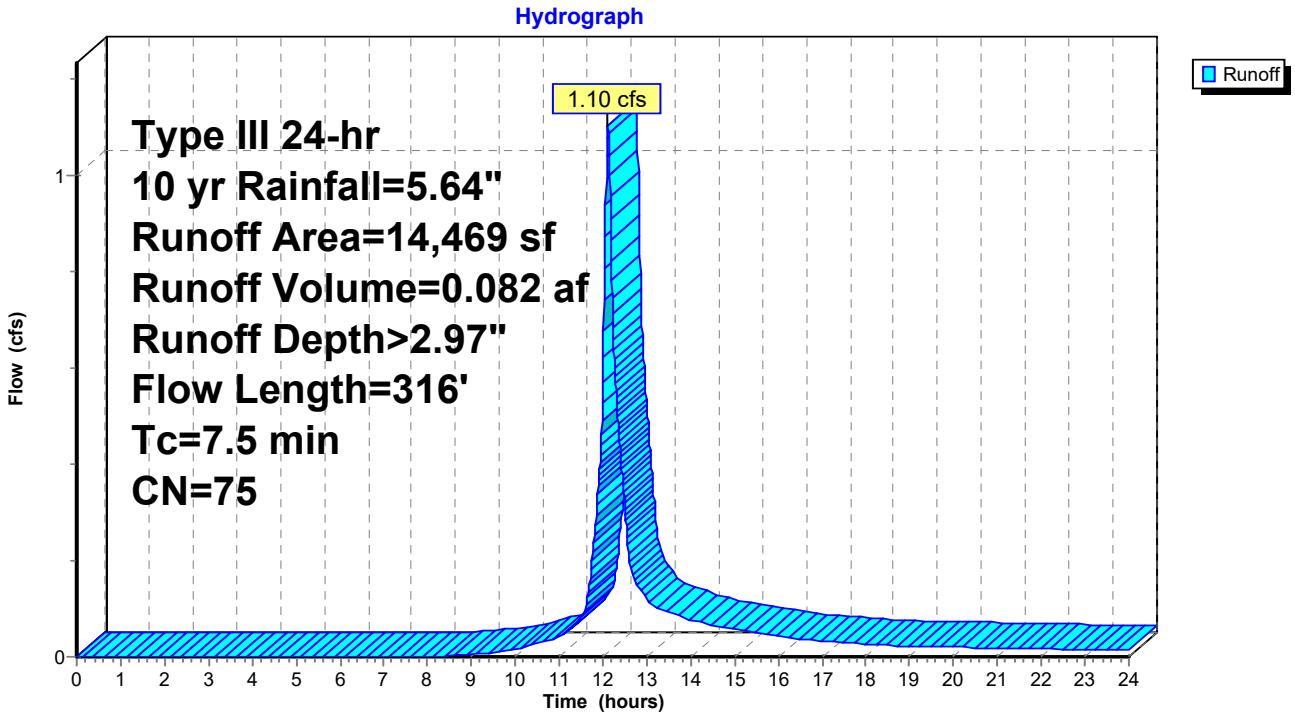
Runoff = 1.10 cfs @ 12.11 hrs, Volume= 0.082 af, Depth> 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

	Area (sf)	CN	Description
	14,013	74	>75% Grass cover, Good, HSG C
	342	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
	14,469	75	Weighted Average
	14,013		96.85% Pervious Area
	456		3.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.6	266	0.0132	1.72		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.5	316	Total			

Subcatchment 1S: Western Grassed Area



Summary for Subcatchment 2S: Southern Grassed Area

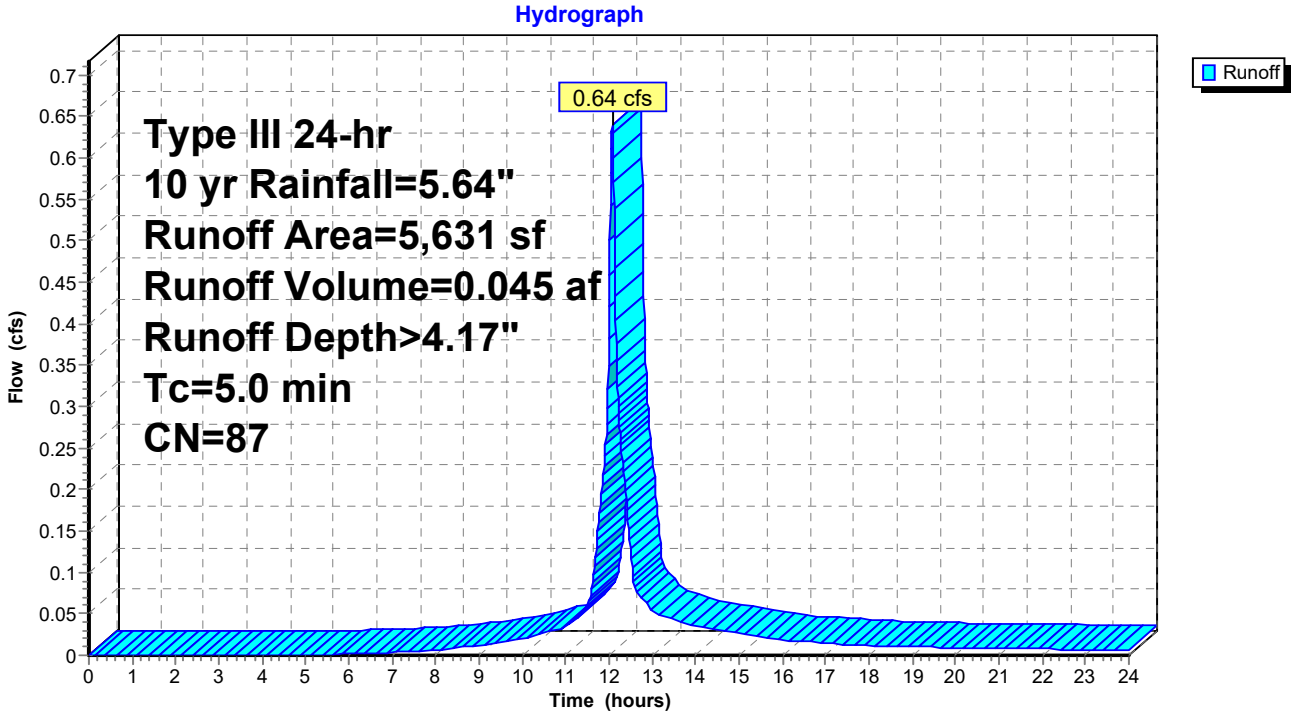
Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

Area (sf)	CN	Description
2,566	74	>75% Grass cover, Good, HSG C
3,065	98	Paved roads w/curbs & sewers, HSG C
5,631	87	Weighted Average
2,566		45.57% Pervious Area
3,065		54.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Southern Grassed Area



Summary for Subcatchment 3S: Roof

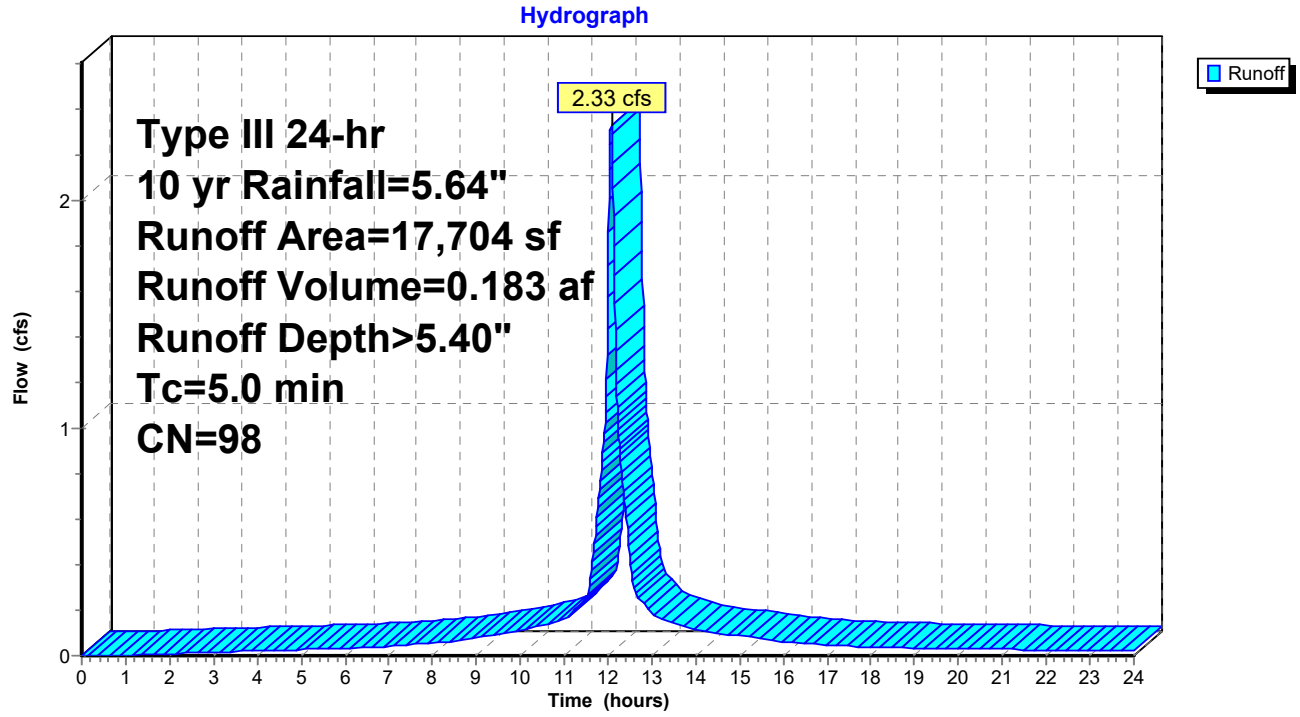
Runoff = 2.33 cfs @ 12.07 hrs, Volume= 0.183 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

Area (sf)	CN	Description
17,704	98	Roofs, HSG C
17,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Roof



Summary for Subcatchment 4S: Eastern Site

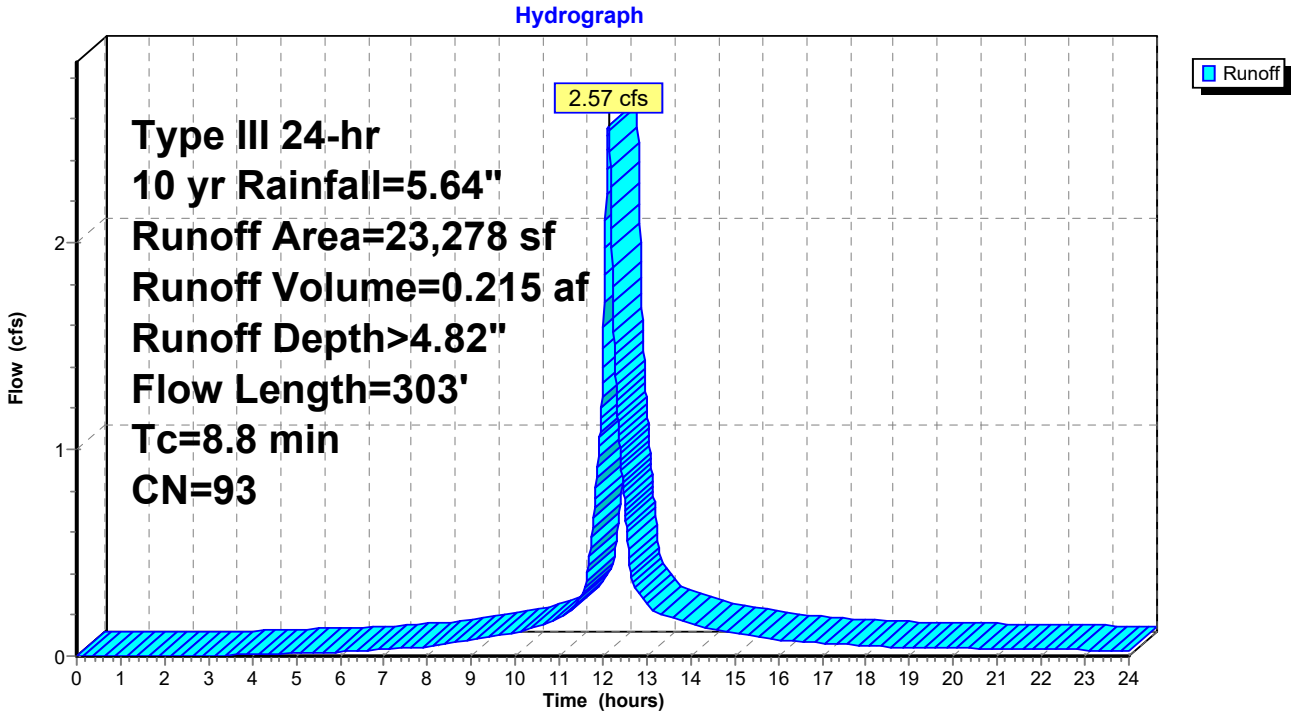
Runoff = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af, Depth> 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

Area (sf)	CN	Description
4,492	74	>75% Grass cover, Good, HSG C
18,786	98	Paved roads w/curbs & sewers, HSG C
23,278	93	Weighted Average
4,492		19.30% Pervious Area
18,786		80.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	252	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.8	303	Total			

Subcatchment 4S: Eastern Site



Summary for Subcatchment 5S: Parking Lot

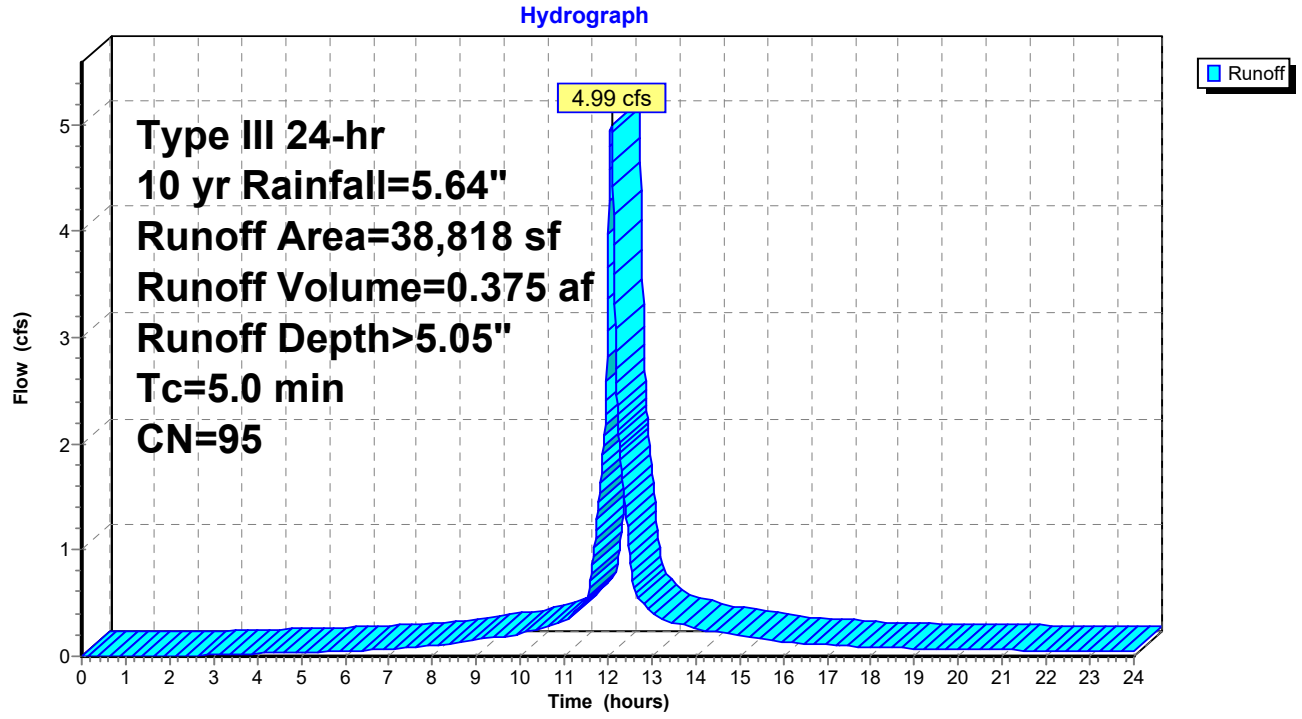
Runoff = 4.99 cfs @ 12.07 hrs, Volume= 0.375 af, Depth> 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

	Area (sf)	CN	Description
	4,359	74	>75% Grass cover, Good, HSG C
	33,846	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
	248	98	Roofs, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	38,818	95	Weighted Average
	4,590		11.82% Pervious Area
	34,228		88.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



Summary for Subcatchment 6S: Parking Lot

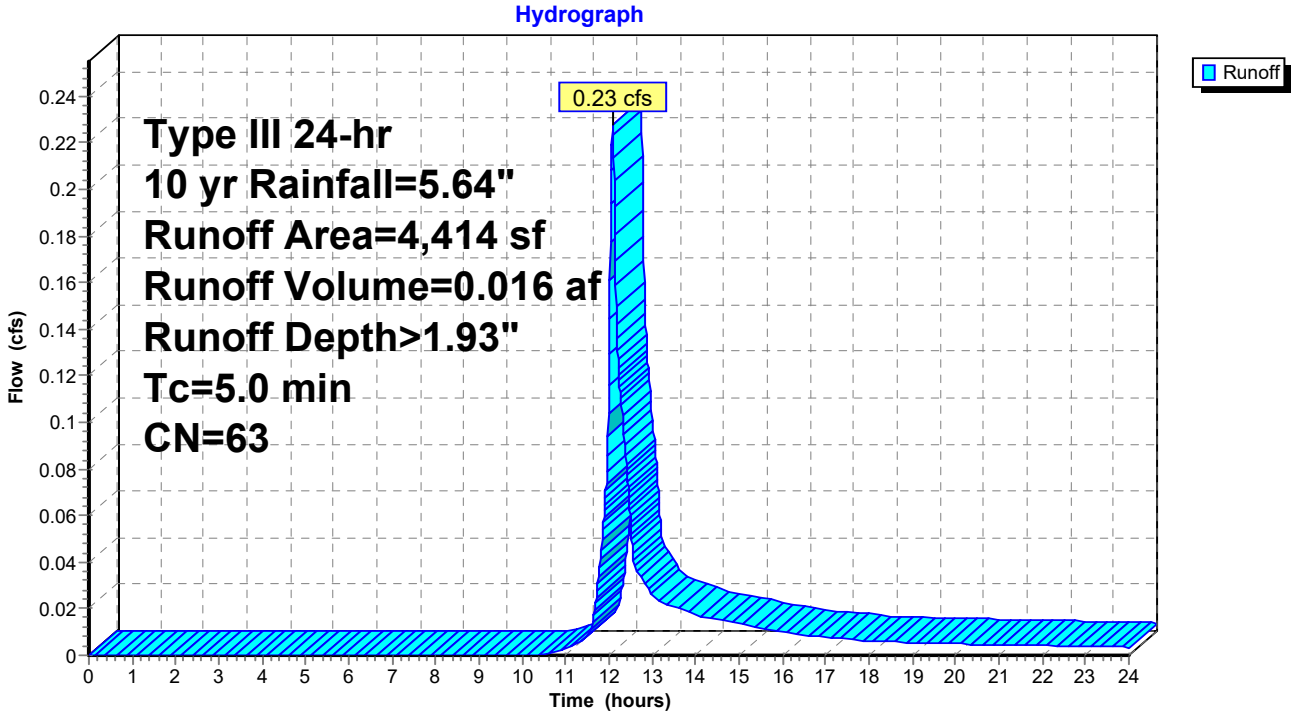
Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 yr Rainfall=5.64"

	Area (sf)	CN	Description
*	4,169	61	Pervious Pavement, HSG C
	245	98	Roofs, HSG C
	4,414	63	Weighted Average
	4,169		94.45% Pervious Area
	245		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Parking Lot



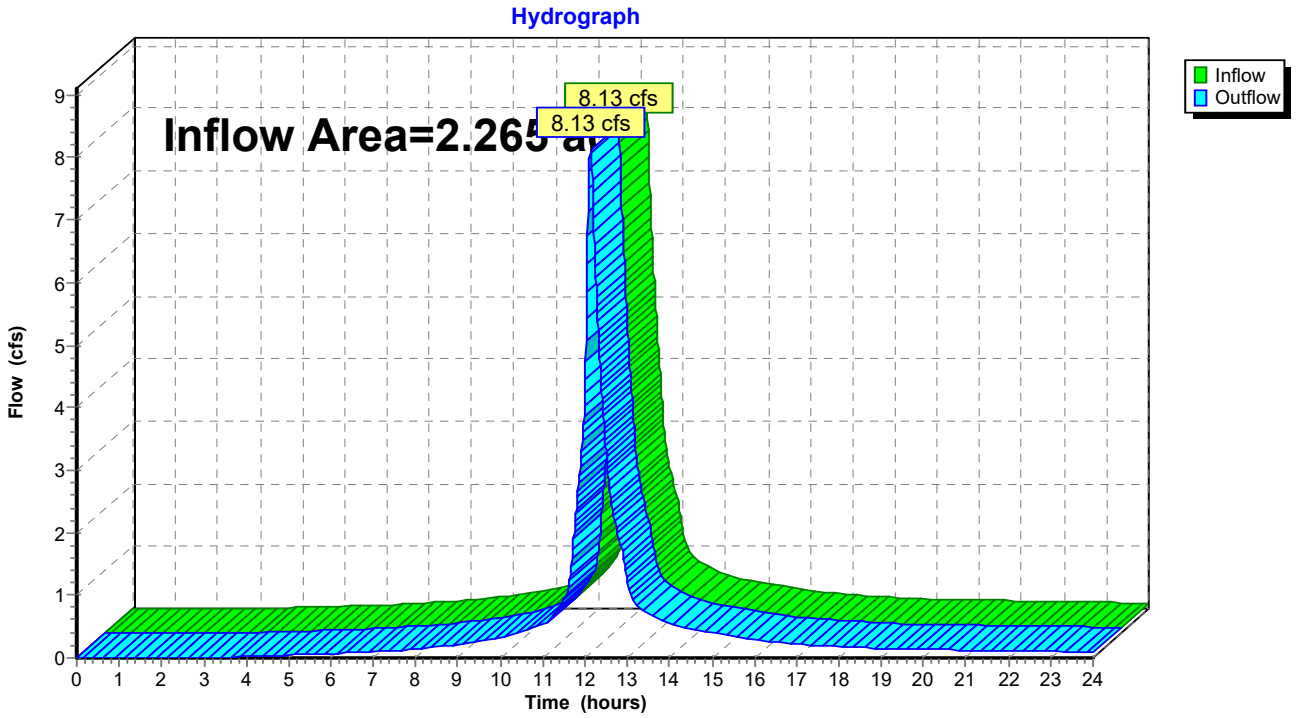
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 4.03" for 10 yr event
Inflow = 8.13 cfs @ 12.13 hrs, Volume= 0.761 af
Outflow = 8.13 cfs @ 12.13 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP 1: AP 1



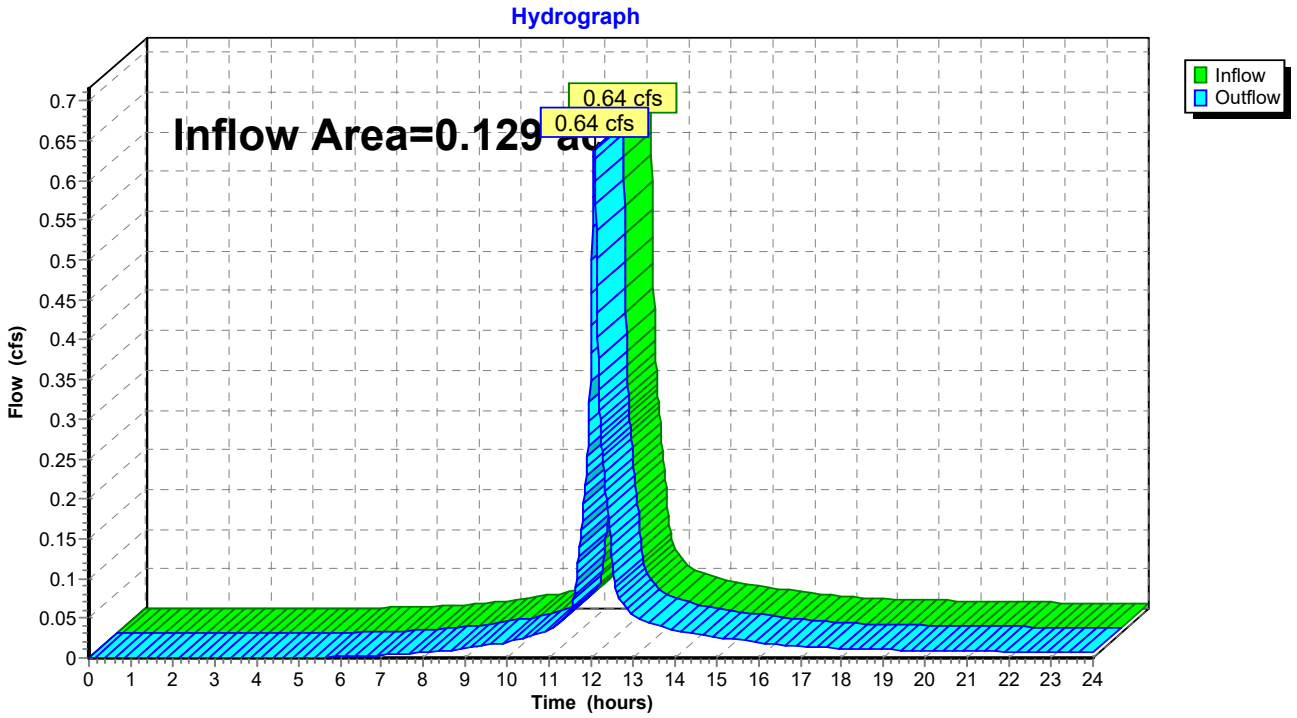
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 4.17" for 10 yr event
Inflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP2: AP2



Summary for Pond CB2: CB2

[57] Hint: Peaked at 95.67' (Flood elevation advised)

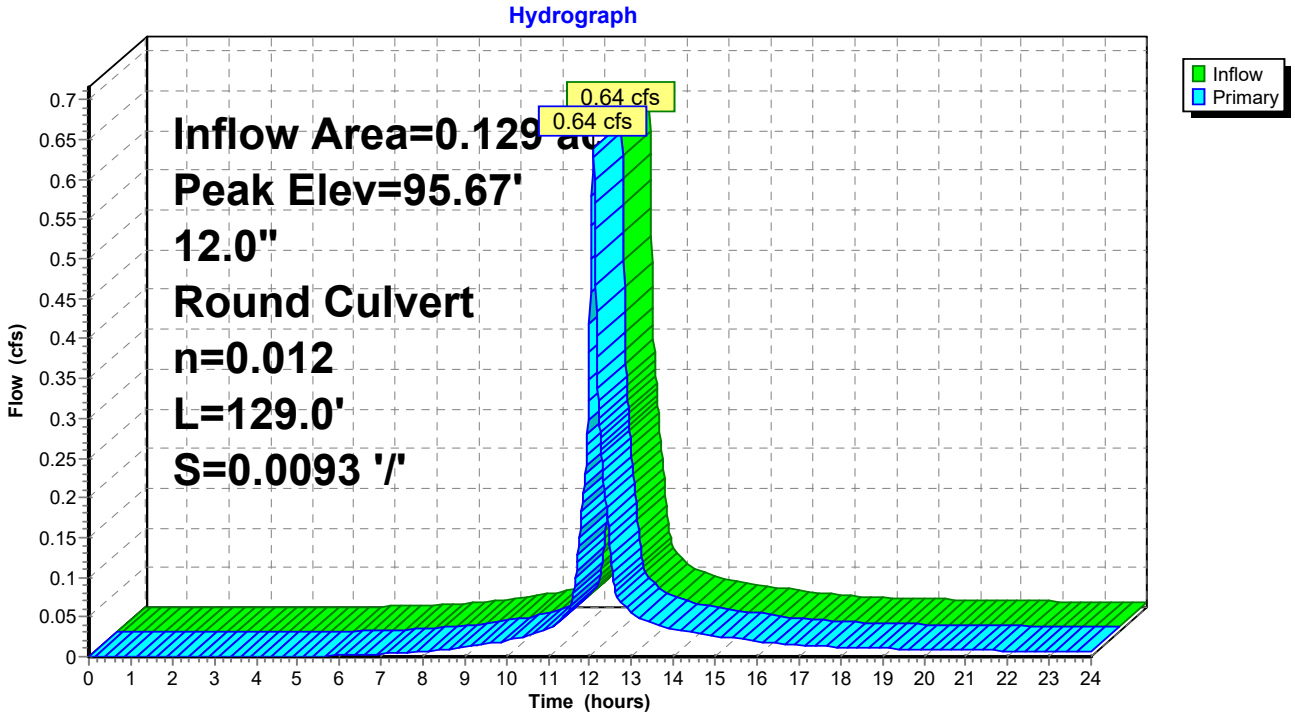
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 4.17" for 10 yr event
Inflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.67' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.07 hrs HW=95.67' TW=94.57' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.64 cfs @ 3.15 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.57' (Flood elevation advised)

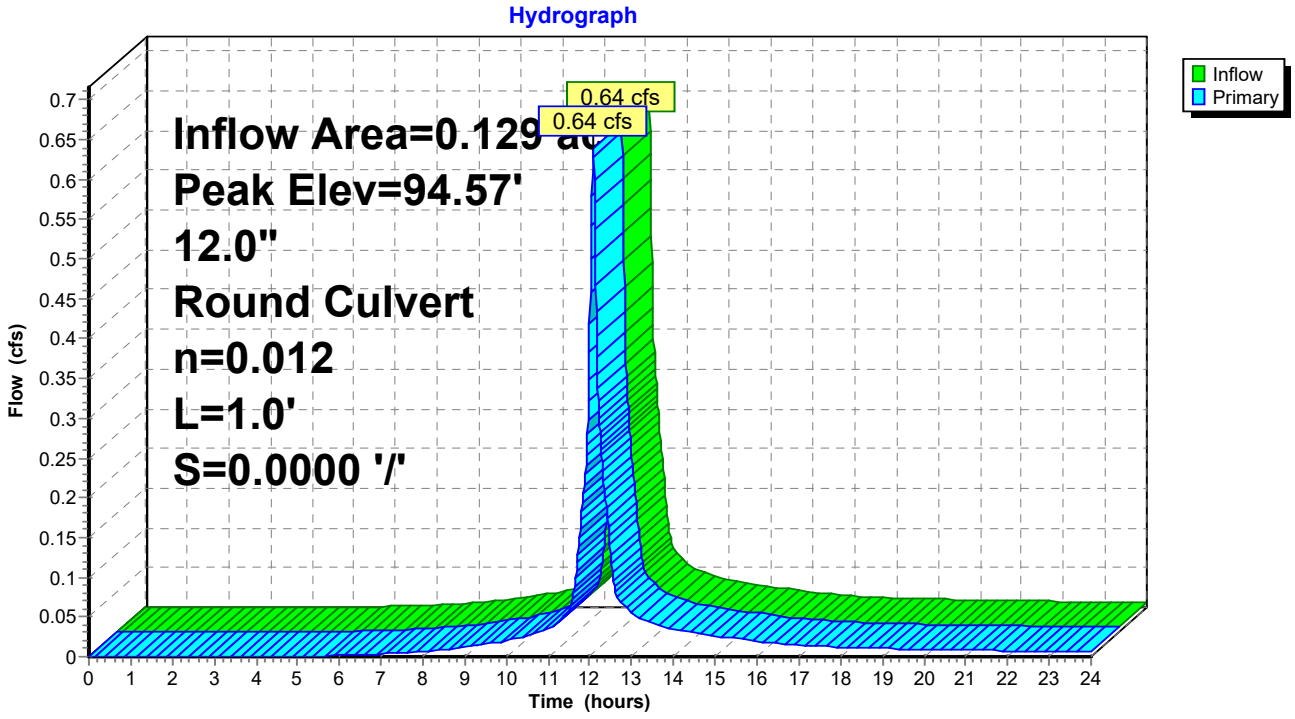
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 4.17" for 10 yr event
Inflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.57' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.64 cfs @ 12.07 hrs HW=94.57' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 0.64 cfs @ 2.31 fps)

Pond CB3: CB3



Summary for Pond CBA: CB A

[57] Hint: Peaked at 96.55' (Flood elevation advised)

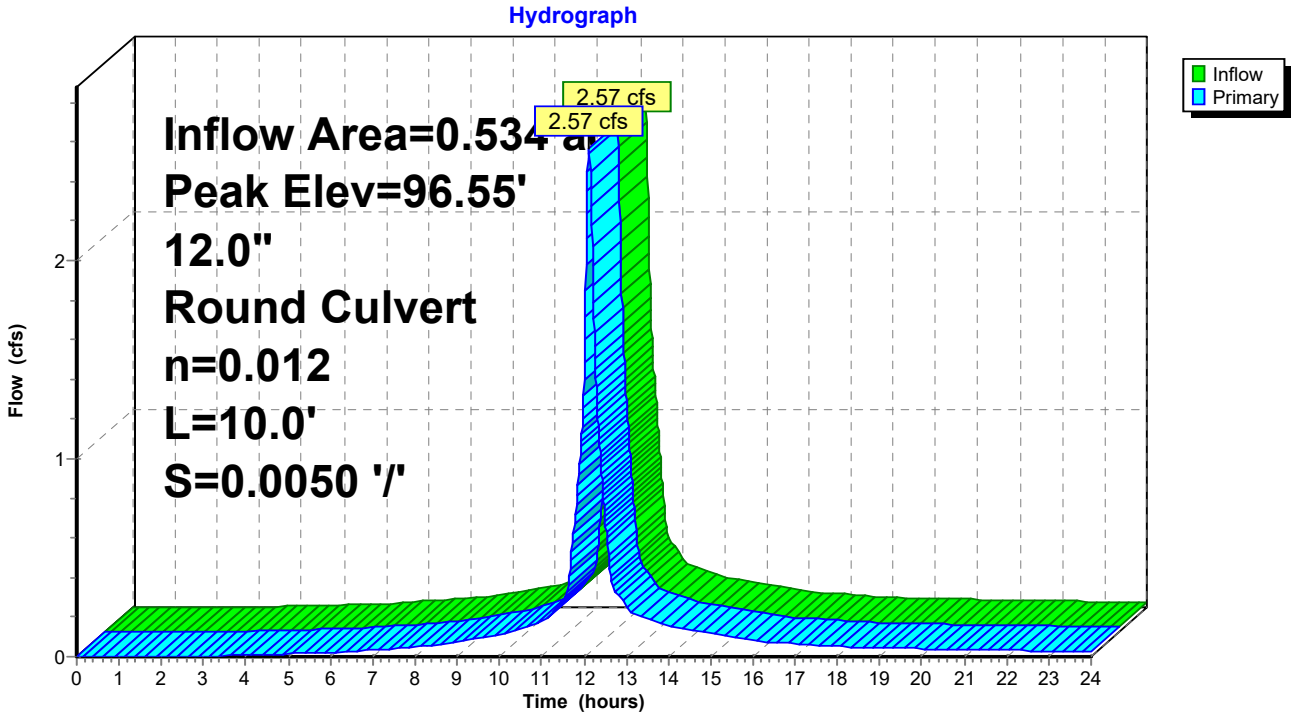
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 4.82" for 10 yr event
Inflow = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af
Outflow = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.55'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.40'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 95.40' / 95.35' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=2.57 cfs @ 12.12 hrs HW=96.55' TW=95.95' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.57 cfs @ 3.57 fps)

Pond CBA: CB A



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.71' (Flood elevation advised)

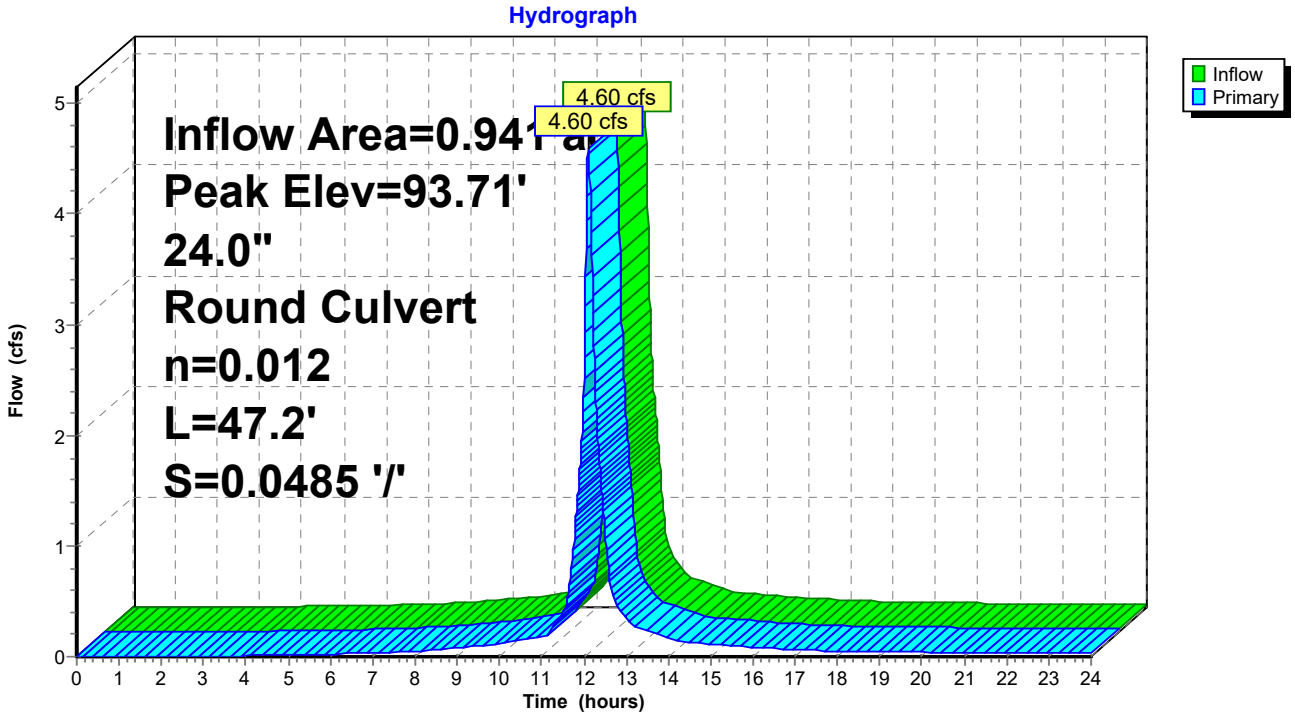
Inflow Area = 0.941 ac, 89.04% Impervious, Inflow Depth > 3.73" for 10 yr event
Inflow = 4.60 cfs @ 12.11 hrs, Volume= 0.292 af
Outflow = 4.60 cfs @ 12.11 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min
Primary = 4.60 cfs @ 12.11 hrs, Volume= 0.292 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.71'@ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.59 cfs @ 12.11 hrs HW=93.71' TW=91.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.59 cfs @ 3.26 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.97' (Flood elevation advised)

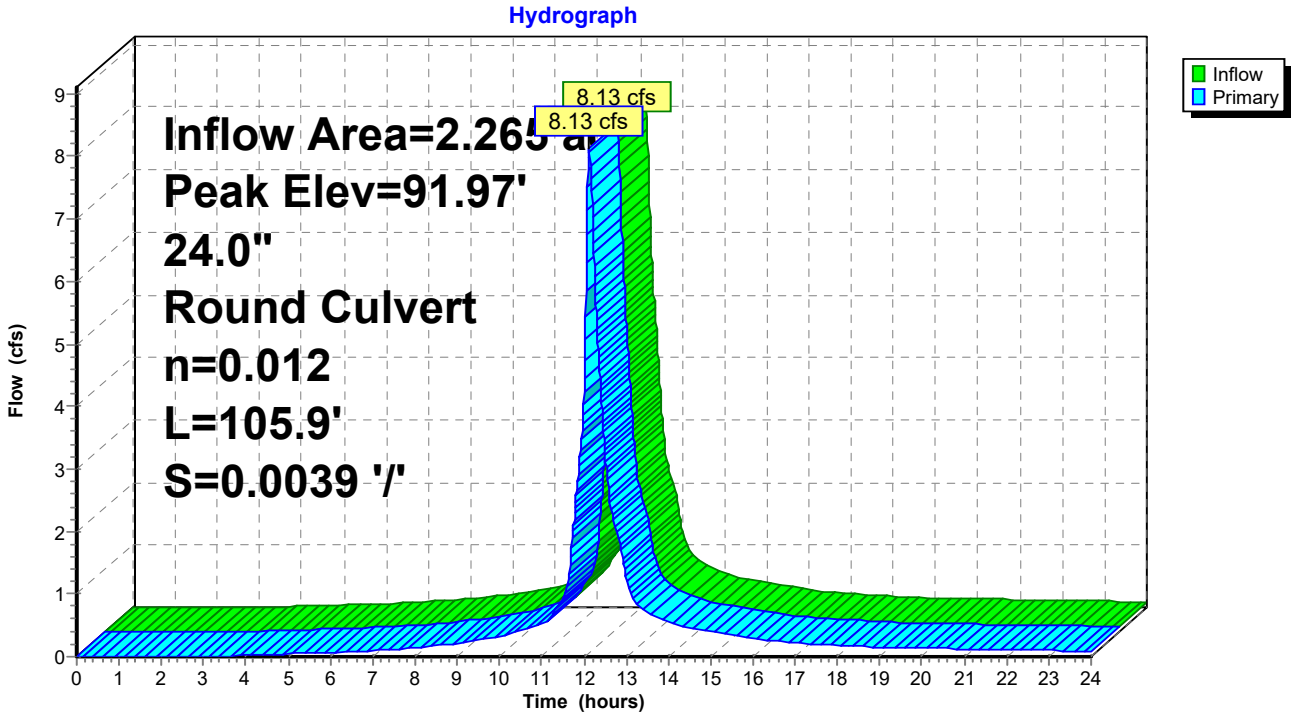
Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 4.03" for 10 yr event
Inflow = 8.13 cfs @ 12.13 hrs, Volume= 0.761 af
Outflow = 8.13 cfs @ 12.13 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min
Primary = 8.13 cfs @ 12.13 hrs, Volume= 0.761 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 91.97'@ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=8.13 cfs @ 12.13 hrs HW=91.97' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 8.13 cfs @ 4.47 fps)

Pond DMH2: DMH2



Summary for Pond DMHC: DMH C

[57] Hint: Peaked at 95.95' (Flood elevation advised)

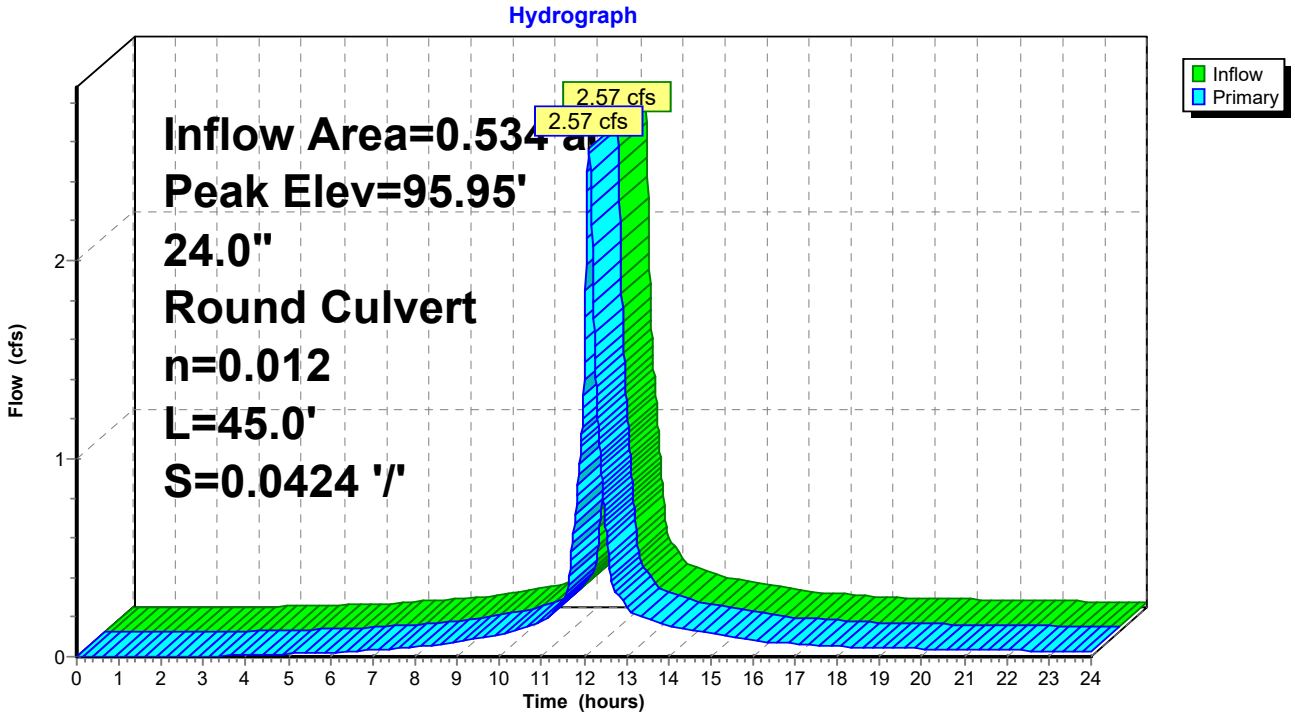
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 4.82" for 10 yr event
Inflow = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af
Outflow = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.12 hrs, Volume= 0.215 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.95'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**24.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0424 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=2.57 cfs @ 12.12 hrs HW=95.95' TW=93.71' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.57 cfs @ 2.79 fps)

Pond DMHC: DMH C



Summary for Pond DP: Det. Pond

Inflow Area = 1.325 ac, 60.53% Impervious, Inflow Depth > 4.28" for 10 yr event
Inflow = 6.01 cfs @ 12.08 hrs, Volume= 0.472 af
Outflow = 3.83 cfs @ 12.17 hrs, Volume= 0.469 af, Atten= 36%, Lag= 5.7 min
Primary = 3.83 cfs @ 12.17 hrs, Volume= 0.469 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.78' @ 12.17 hrs Surf.Area= 2,099 sf Storage= 2,881 cf

Plug-Flow detention time= 18.0 min calculated for 0.469 af (99% of inflow)
Center-of-Mass det. time= 13.6 min (793.9 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	5,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

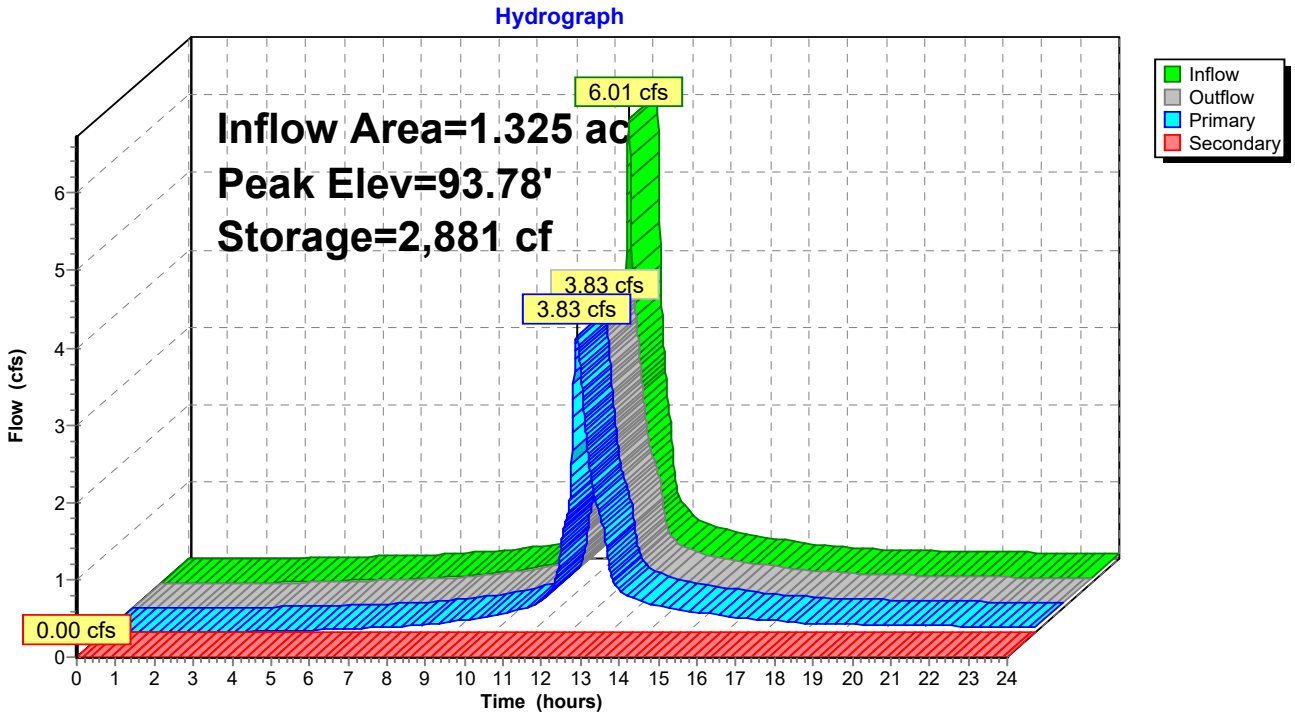
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1	0.0	0	0
92.01	1,176	100.0	6	6
93.00	1,671	100.0	1,409	1,415
94.00	2,222	100.0	1,947	3,362
95.00	2,830	100.0	2,526	5,888

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**12.0" Round Culvert** L= 32.7' Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.75' S= 0.0382 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	92.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	93.10'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.83 cfs @ 12.17 hrs HW=93.78' TW=91.91' (Dynamic Tailwater)
↑└**1=Culvert** (Passes 3.83 cfs of 4.27 cfs potential flow)
↑├**3=Orifice/Grate** (Orifice Controls 2.24 cfs @ 6.42 fps)
└**4=Orifice/Grate** (Orifice Controls 1.59 cfs @ 2.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP: Det. Pond



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.101 ac, 5.55% Impervious, Inflow Depth > 1.93" for 10 yr event
Inflow = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af
Outflow = 0.06 cfs @ 12.49 hrs, Volume= 0.015 af, Atten= 74%, Lag= 24.6 min
Primary = 0.06 cfs @ 12.49 hrs, Volume= 0.015 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.56' @ 12.49 hrs Surf.Area= 4,169 sf Storage= 238 cf

Plug-Flow detention time= 109.0 min calculated for 0.015 af (91% of inflow)
Center-of-Mass det. time= 66.2 min (923.4 - 857.1)

Volume	Invert	Avail.Storage	Storage Description
#1	95.42'	1,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

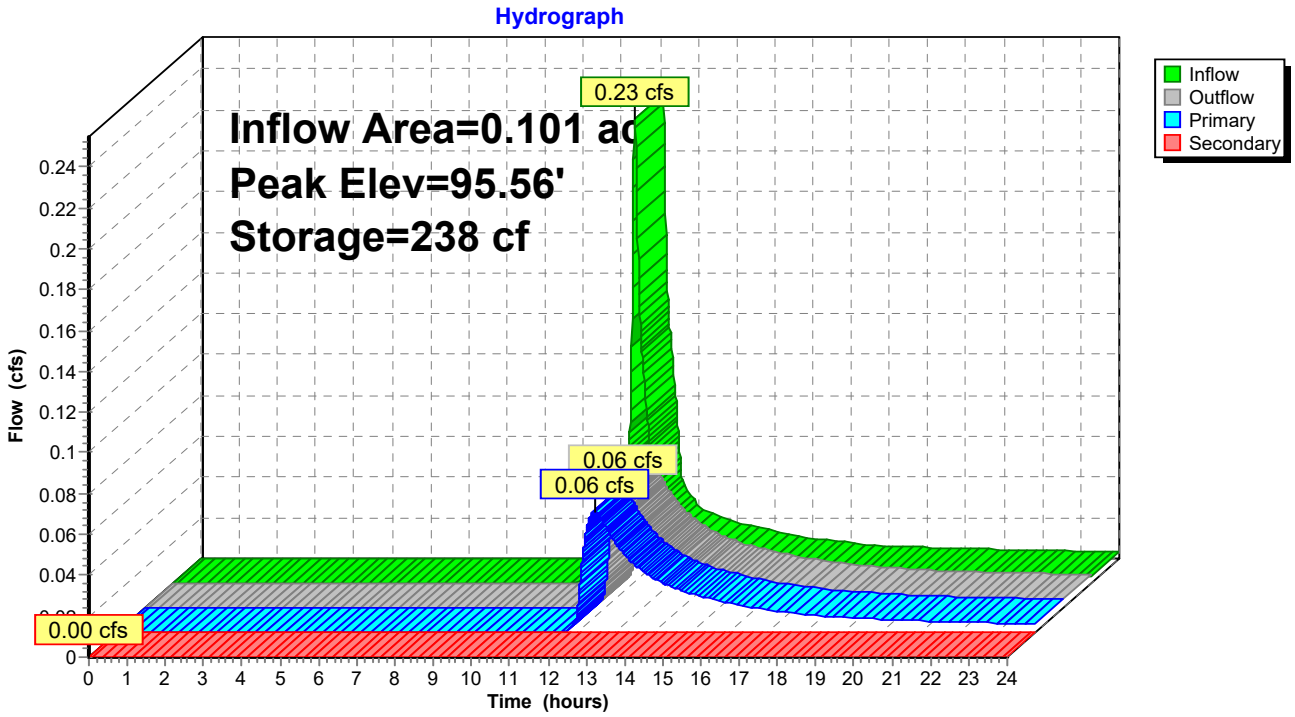
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.42	4,169	0.0	0	0
95.43	4,169	40.0	17	17
95.90	4,169	40.0	784	800
95.91	4,169	15.0	6	807
96.15	4,169	15.0	150	957
96.16	4,169	5.0	2	959
97.15	4,169	5.0	206	1,165
97.16	4,169	30.0	13	1,178
97.49	4,169	30.0	413	1,590
97.50	4,169	15.0	6	1,597
97.83	4,169	15.0	206	1,803

Device	Routing	Invert	Outlet Devices
#1	Primary	95.42'	**6.0" Round Culvert** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 95.42' / 94.00' S= 0.0268 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Secondary	97.73'	**200.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.06 cfs @ 12.49 hrs HW=95.56' TW=93.35' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.06 cfs @ 1.29 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.42' TW=92.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond ST: Stormtech

Inflow Area = 0.406 ac, 100.00% Impervious, Inflow Depth > 5.40" for 10 yr event
Inflow = 2.33 cfs @ 12.07 hrs, Volume= 0.183 af
Outflow = 2.17 cfs @ 12.10 hrs, Volume= 0.183 af, Atten= 7%, Lag= 1.8 min
Discarded = 0.11 cfs @ 10.34 hrs, Volume= 0.105 af
Primary = 2.06 cfs @ 12.10 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 98.80' @ 12.10 hrs Surf.Area= 656 sf Storage= 479 cf

Plug-Flow detention time=5.8 min calculated for 0.183 af (100% of inflow)
Center-of-Mass det. time=5.8 min (750.5 - 744.7)

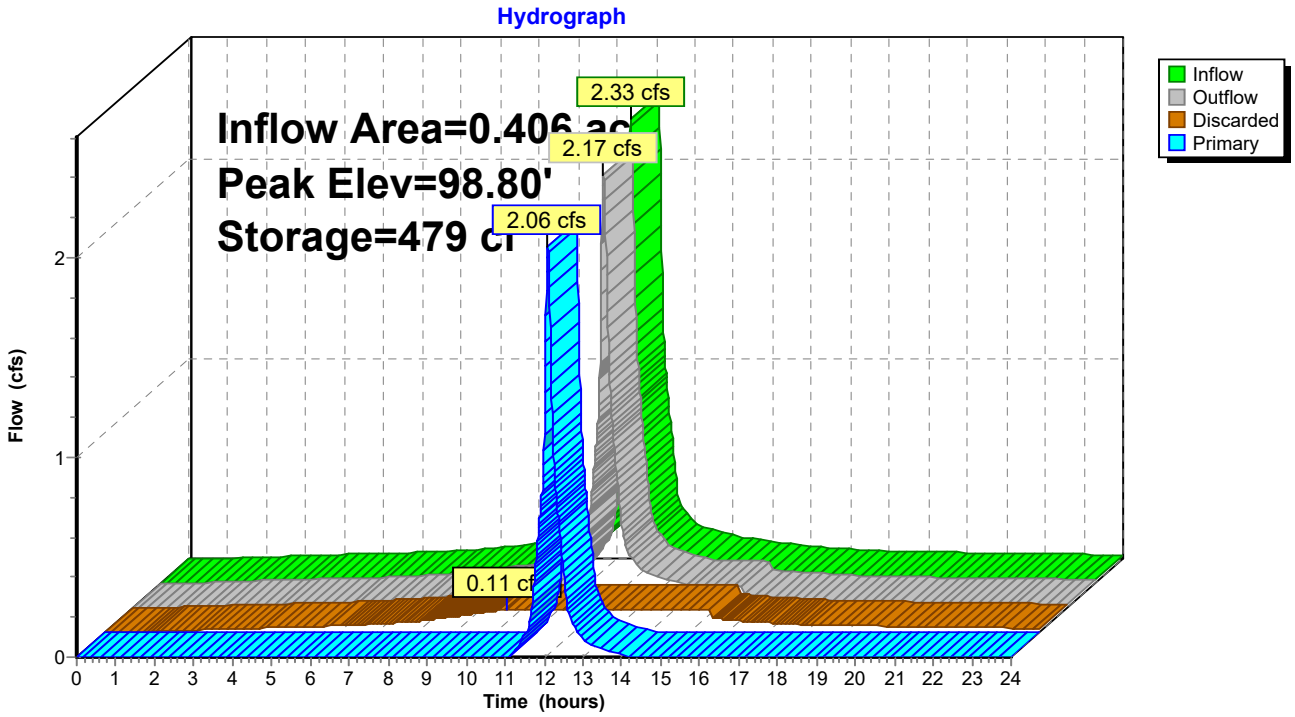
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	468 cf	**14.82'W x 44.24'L x 2.33'H Prismatoid** 1,528 cf Overall - 357 cf Embedded = 1,170 cf x 40.0% Voids
#2	98.08'	357 cf	**ADS_StormTech SC-310** x 24 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 4 rows
		826 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 38.5' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0675 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Discarded	97.58'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.11 cfs @ 10.34 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=2.06 cfs @ 12.10 hrs HW=98.80' TW=93.71' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.06 cfs @ 3.05 fps)

Pond ST: Stormtech



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WesternGrassedArea Runoff Area=14,469 sf 3.15% Impervious Runoff Depth>4.27"
Flow Length=316' Tc=7.5 min CN=75 Runoff=1.58 cfs 0.118 af

Subcatchment2S: SouthernGrassedArea Runoff Area=5,631 sf 54.43% Impervious Runoff Depth>5.61"
Tc=5.0 min CN=87 Runoff=0.85 cfs 0.060 af

Subcatchment3S: Roof Runoff Area=17,704 sf 100.00% Impervious Runoff Depth>6.90"
Tc=5.0 min CN=98 Runoff=2.95 cfs 0.234 af

Subcatchment4S: EasternSite Runoff Area=23,278 sf 80.70% Impervious Runoff Depth>6.30"
Flow Length=303' Tc=8.8 min CN=93 Runoff=3.31 cfs 0.281 af

Subcatchment5S: ParkingLot Runoff Area=38,818 sf 88.18% Impervious Runoff Depth>6.54"
Tc=5.0 min CN=95 Runoff=6.37 cfs 0.486 af

Subcatchment6S: ParkingLot Runoff Area=4,414 sf 5.55% Impervious Runoff Depth>3.00"
Tc=5.0 min CN=63 Runoff=0.37 cfs 0.025 af

ReachAP 1: AP 1 Inflow=10.63 cfs 1.016 af
Outflow=10.63 cfs 1.016 af

ReachAP2: AP2 Inflow=0.85 cfs 0.060 af
Outflow=0.85 cfs 0.060 af

Pond CB2: CB2 Peak Elev=95.74' Inflow=0.85 cfs 0.060 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=0.85 cfs 0.060 af

Pond CB3: CB3 Peak Elev=94.65' Inflow=0.85 cfs 0.060 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=0.85 cfs 0.060 af

Pond CBA: CB A Peak Elev=96.84' Inflow=3.31 cfs 0.281 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=3.31 cfs 0.281 af

Pond DMH1: DMH1 Peak Elev=93.85' Inflow=5.90 cfs 0.392 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=5.90 cfs 0.392 af

Pond DMH2: DMH2 Peak Elev=92.25' Inflow=10.63 cfs 1.016 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=10.63 cfs 1.016 af

Pond DMHC: DMH C Peak Elev=96.05' Inflow=3.31 cfs 0.281 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=3.31 cfs 0.281 af

Pond DP: Det. Pond Peak Elev=94.17' Storage=3,753 cf Inflow=7.88 cfs 0.628 af
Primary=4.89 cfs 0.624 af Secondary=0.00 cfs 0.000 af Outflow=4.89 cfs 0.624 af

Pond PP: PerviousPavement Peak Elev=95.63' Storage=351 cf Inflow=0.37 cfs 0.025 af
Primary=0.12 cfs 0.024 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.024 af

Pond ST: Stormtech Peak Elev=98.97' Storage=551 cf Inflow=2.95 cfs 0.234 af
Discarded=0.11 cfs 0.122 af Primary=2.62 cfs 0.111 af Outflow=2.73 cfs 0.234 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.204 af Average Runoff Depth = 6.03"
28.60% Pervious = 0.685 ac 71.40% Impervious = 1.710 ac

Summary for Subcatchment 1S: Western Grassed Area

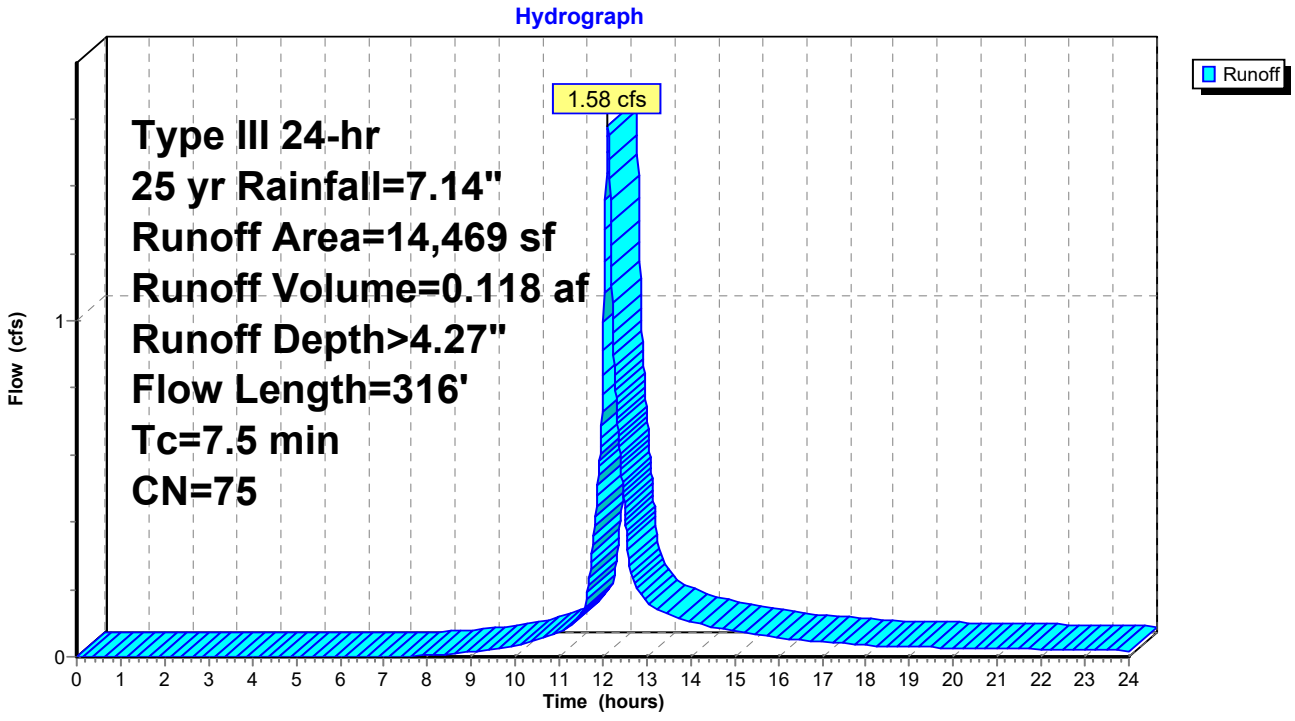
Runoff = 1.58 cfs @ 12.11 hrs, Volume= 0.118 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

	Area (sf)	CN	Description
	14,013	74	>75% Grass cover, Good, HSG C
	342	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
	14,469	75	Weighted Average
	14,013		96.85% Pervious Area
	456		3.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.6	266	0.0132	1.72		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.5	316	Total			

Subcatchment 1S: Western Grassed Area



Summary for Subcatchment 2S: Southern Grassed Area

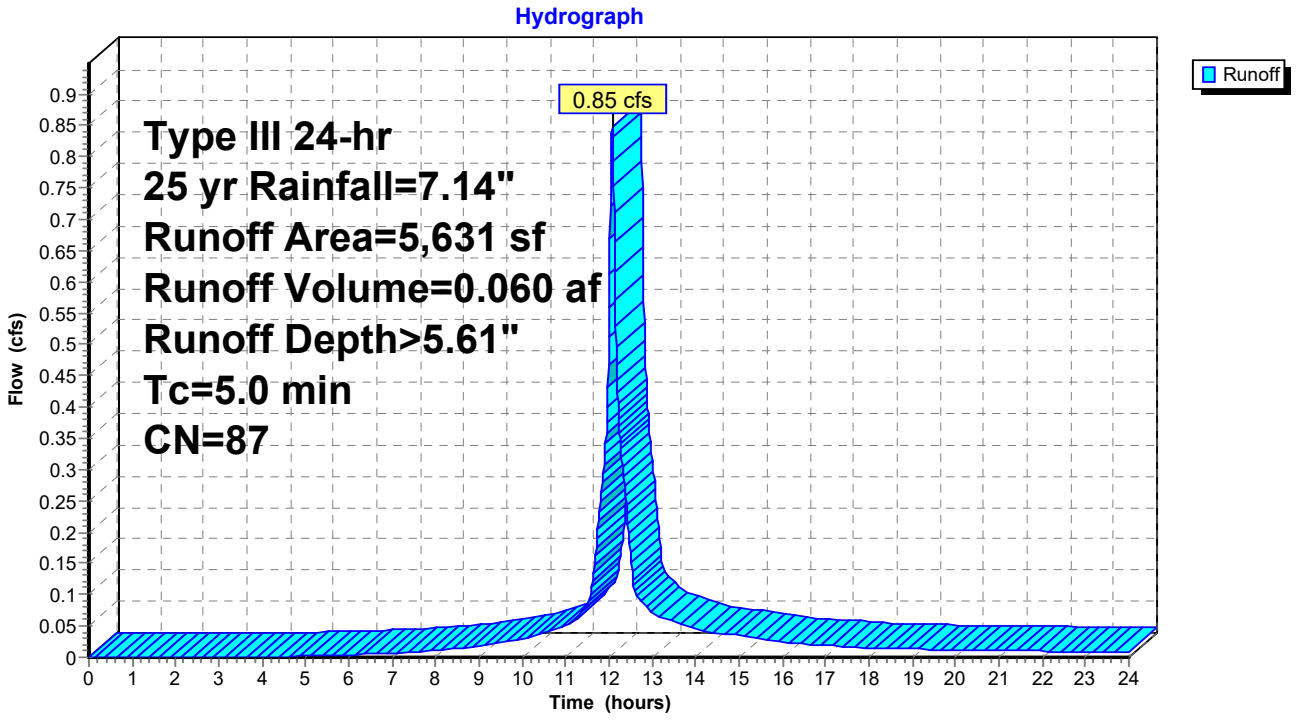
Runoff = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

Area (sf)	CN	Description
2,566	74	>75% Grass cover, Good, HSG C
3,065	98	Paved roads w/curbs & sewers, HSG C
5,631	87	Weighted Average
2,566		45.57% Pervious Area
3,065		54.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Southern Grassed Area



Summary for Subcatchment 3S: Roof

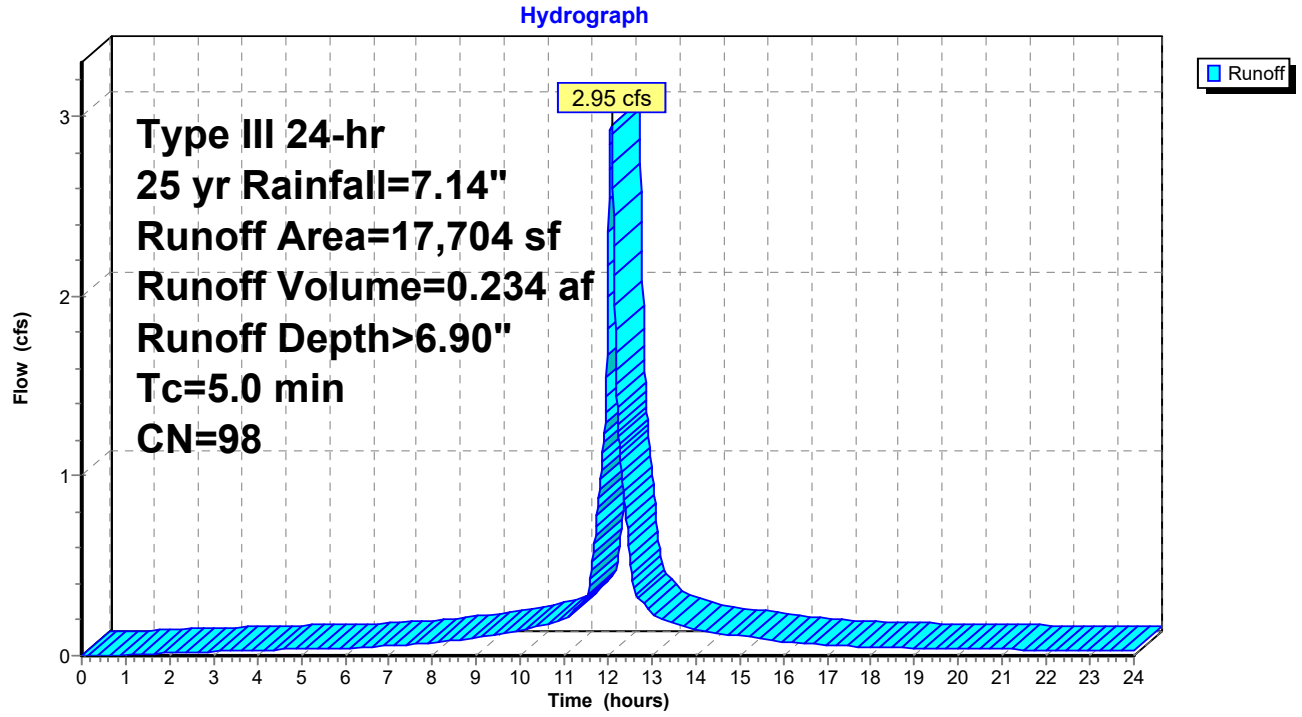
Runoff = 2.95 cfs @ 12.07 hrs, Volume= 0.234 af, Depth> 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

Area (sf)	CN	Description
17,704	98	Roofs, HSG C
17,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Roof



Summary for Subcatchment 4S: Eastern Site

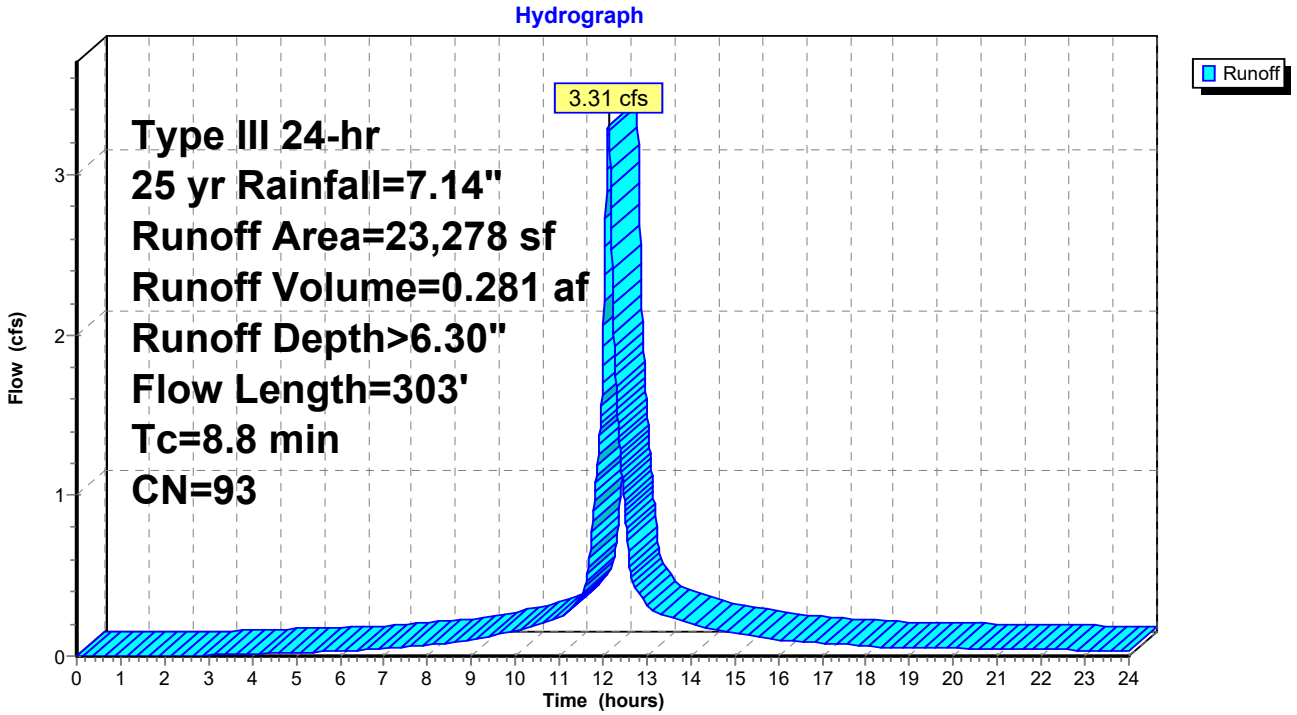
Runoff = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af, Depth> 6.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

Area (sf)	CN	Description
4,492	74	>75% Grass cover, Good, HSG C
18,786	98	Paved roads w/curbs & sewers, HSG C
23,278	93	Weighted Average
4,492		19.30% Pervious Area
18,786		80.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	252	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.8	303	Total			

Subcatchment 4S: Eastern Site



Summary for Subcatchment 5S: Parking Lot

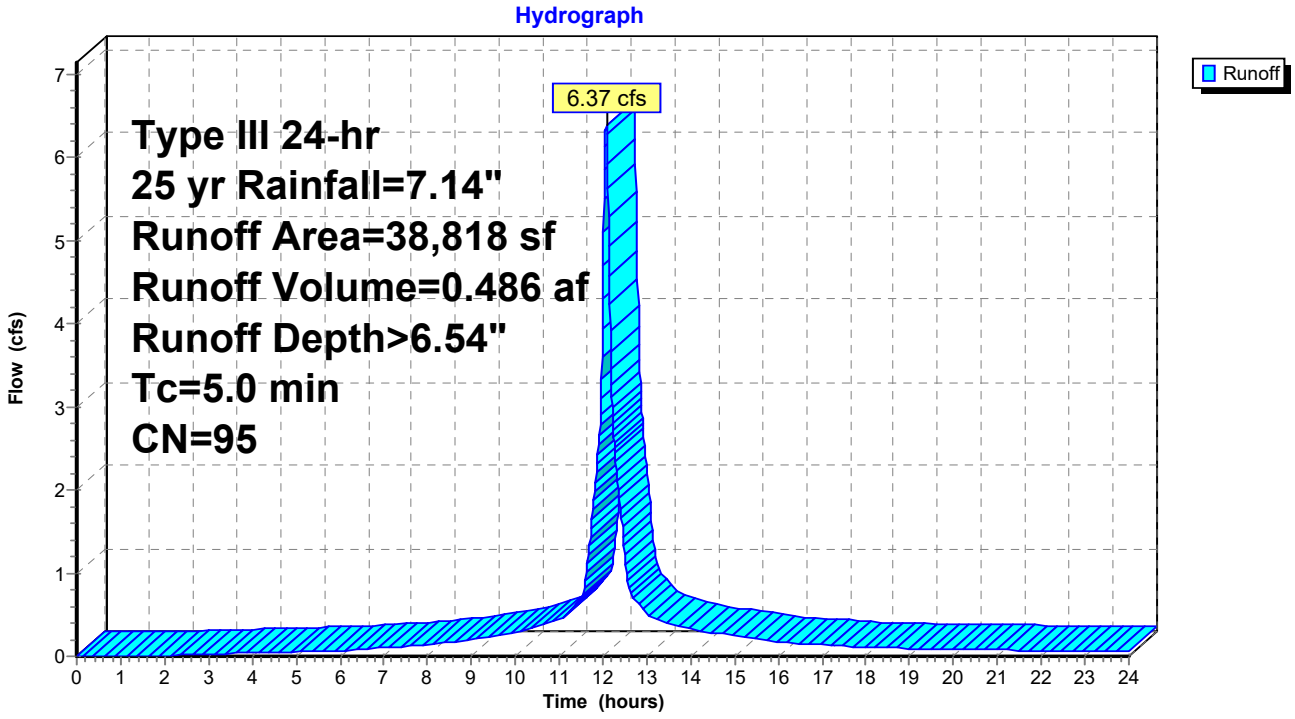
Runoff = 6.37 cfs @ 12.07 hrs, Volume= 0.486 af, Depth> 6.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

	Area (sf)	CN	Description
	4,359	74	>75% Grass cover, Good, HSG C
	33,846	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
	248	98	Roofs, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	38,818	95	Weighted Average
	4,590		11.82% Pervious Area
	34,228		88.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



Summary for Subcatchment 6S: Parking Lot

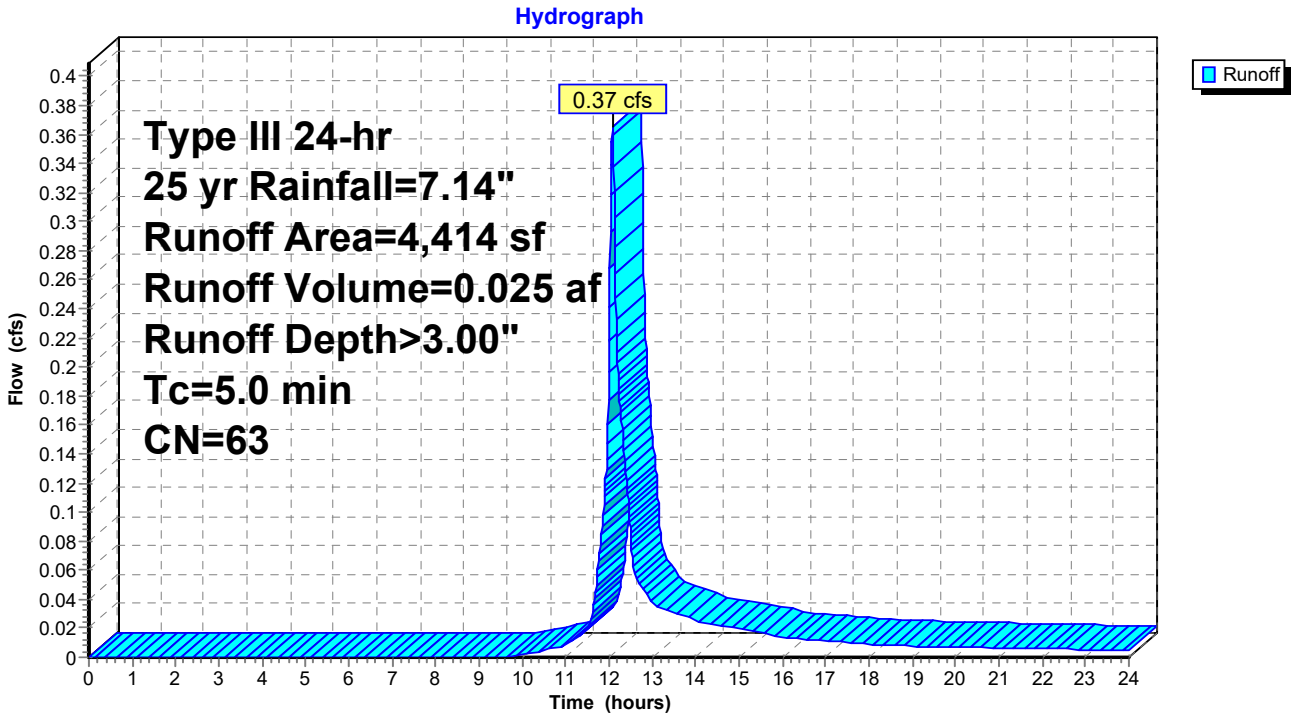
Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.025 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 yr Rainfall=7.14"

	Area (sf)	CN	Description
*	4,169	61	Pervious Pavement, HSG C
	245	98	Roofs, HSG C
	4,414	63	Weighted Average
	4,169		94.45% Pervious Area
	245		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Parking Lot



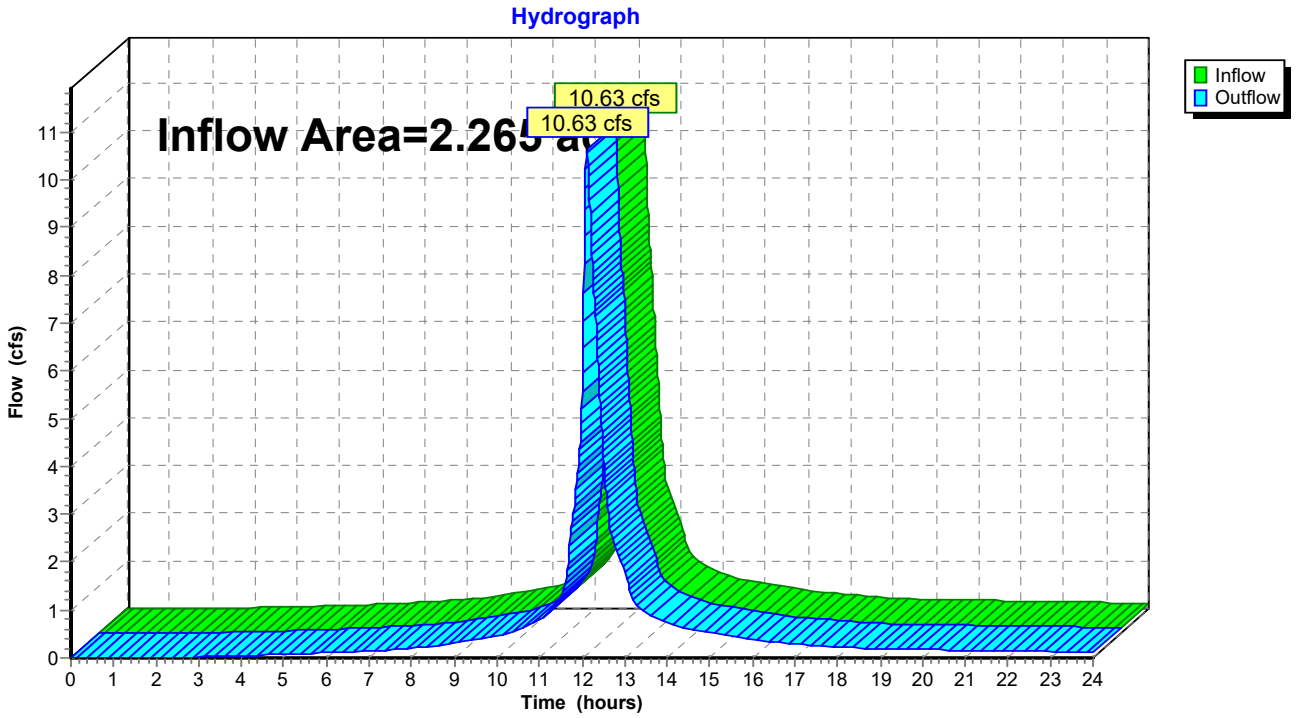
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 5.38" for 25 yr event
Inflow = 10.63 cfs @ 12.12 hrs, Volume= 1.016 af
Outflow = 10.63 cfs @ 12.12 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP 1: AP 1



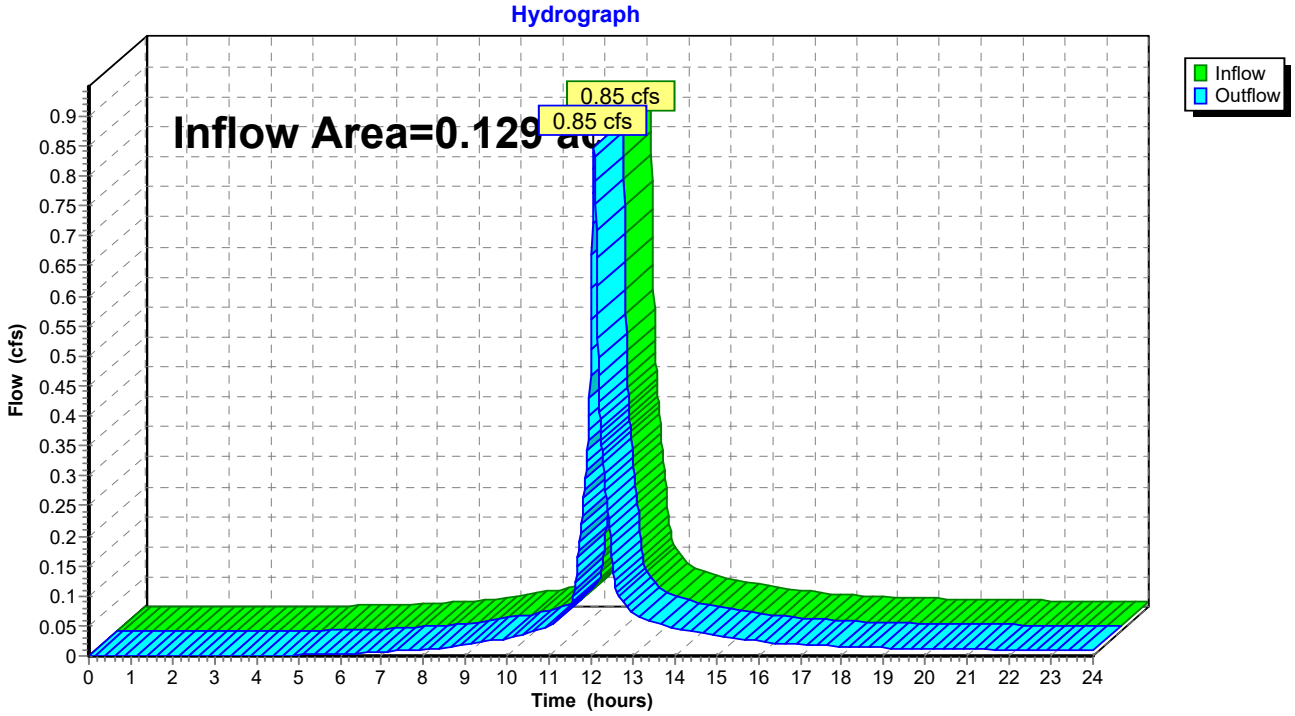
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 5.61" for 25 yr event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP2: AP2



Summary for Pond CB2: CB2

[57] Hint: Peaked at 95.74' (Flood elevation advised)

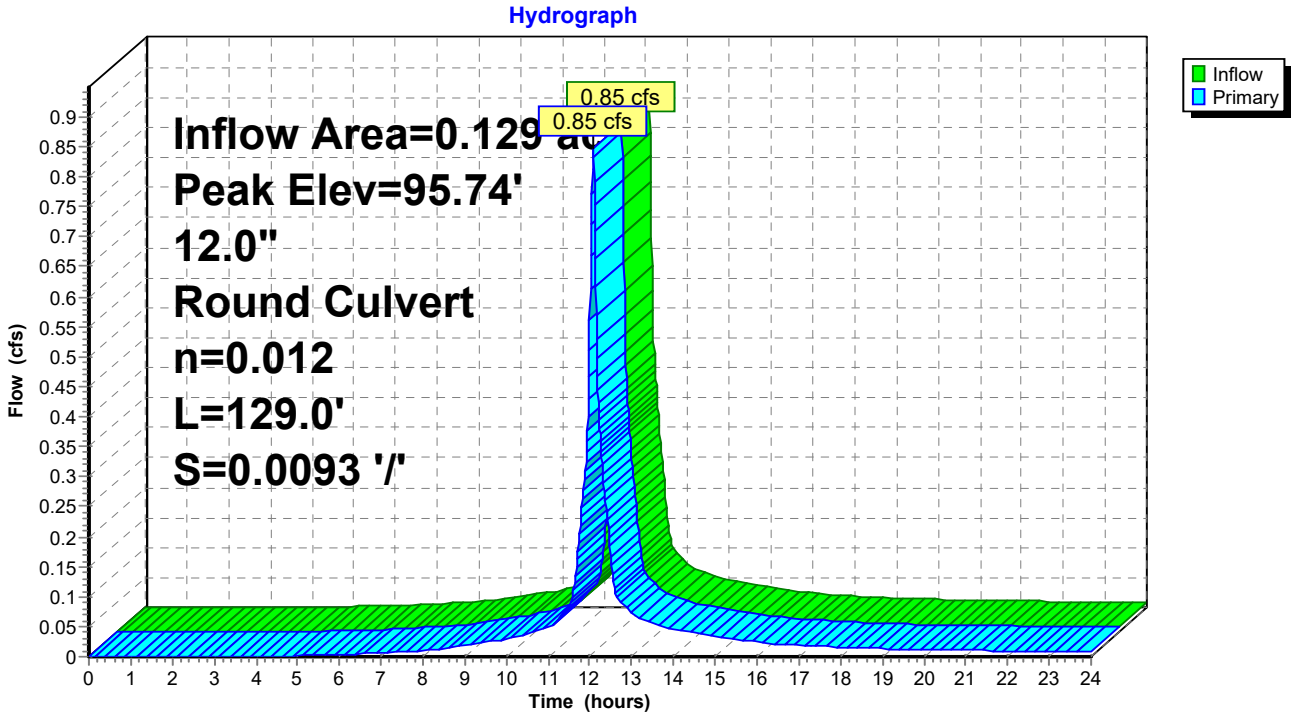
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 5.61" for 25 yr event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.74' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.07 hrs HW=95.74' TW=94.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.85 cfs @ 3.34 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.65' (Flood elevation advised)

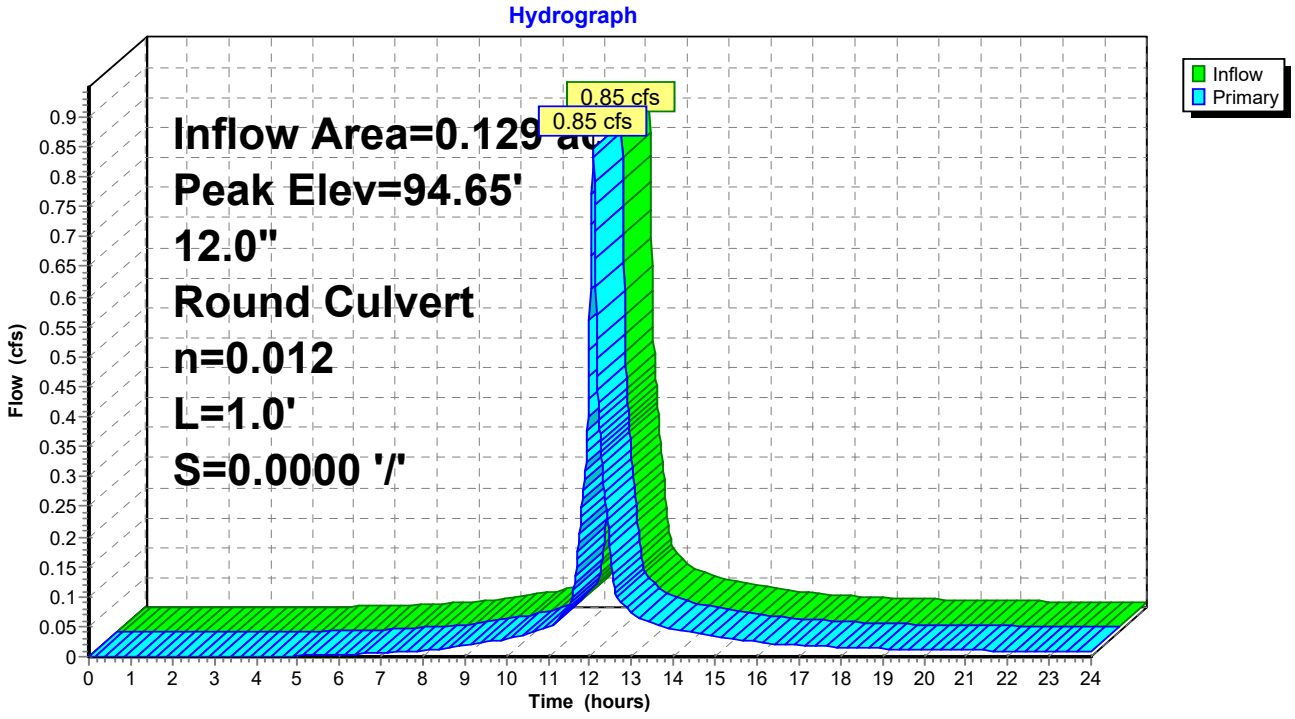
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 5.61" for 25 yr event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.65'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=0.85 cfs @ 12.07 hrs HW=94.65' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.85 cfs @ 2.50 fps)

Pond CB3: CB3



Summary for Pond CBA: CB A

[57] Hint: Peaked at 96.84' (Flood elevation advised)

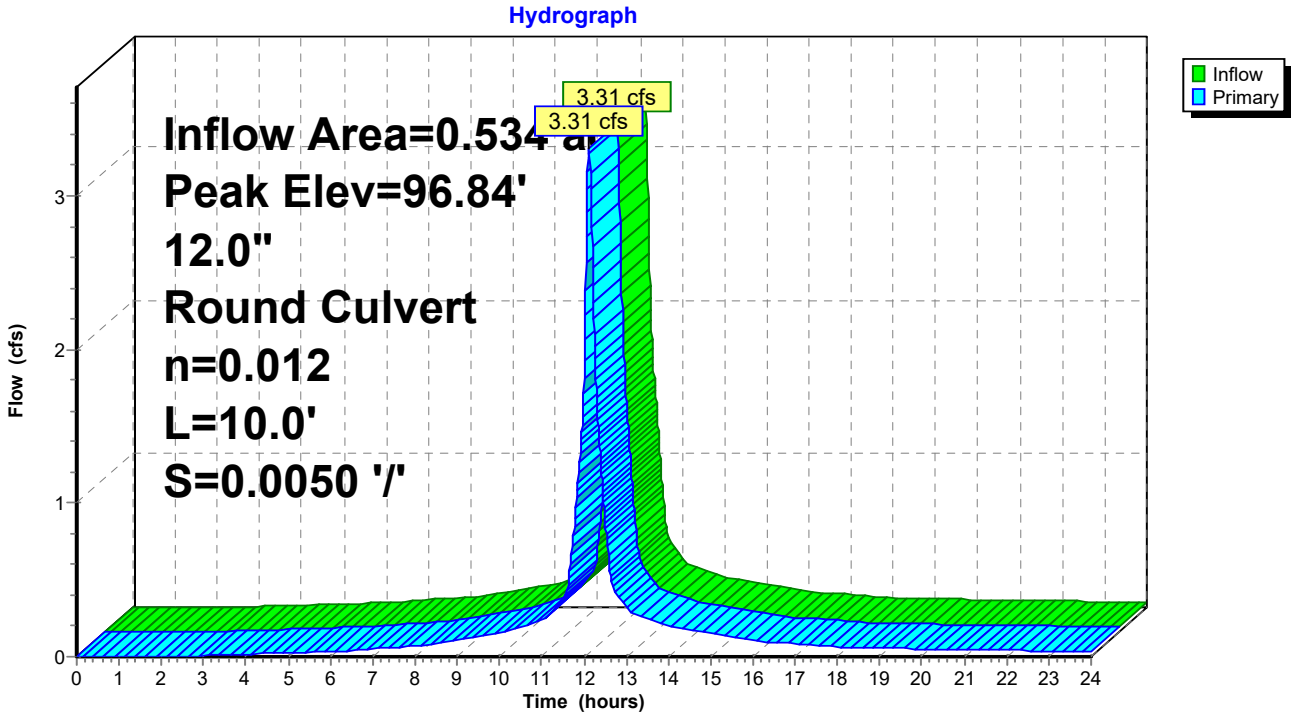
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af
Outflow = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.84' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.40'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 95.40' / 95.35' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=3.31 cfs @ 12.12 hrs HW=96.84' TW=96.05' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 3.31 cfs @ 4.21 fps)

Pond CBA: CB A



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.85' (Flood elevation advised)

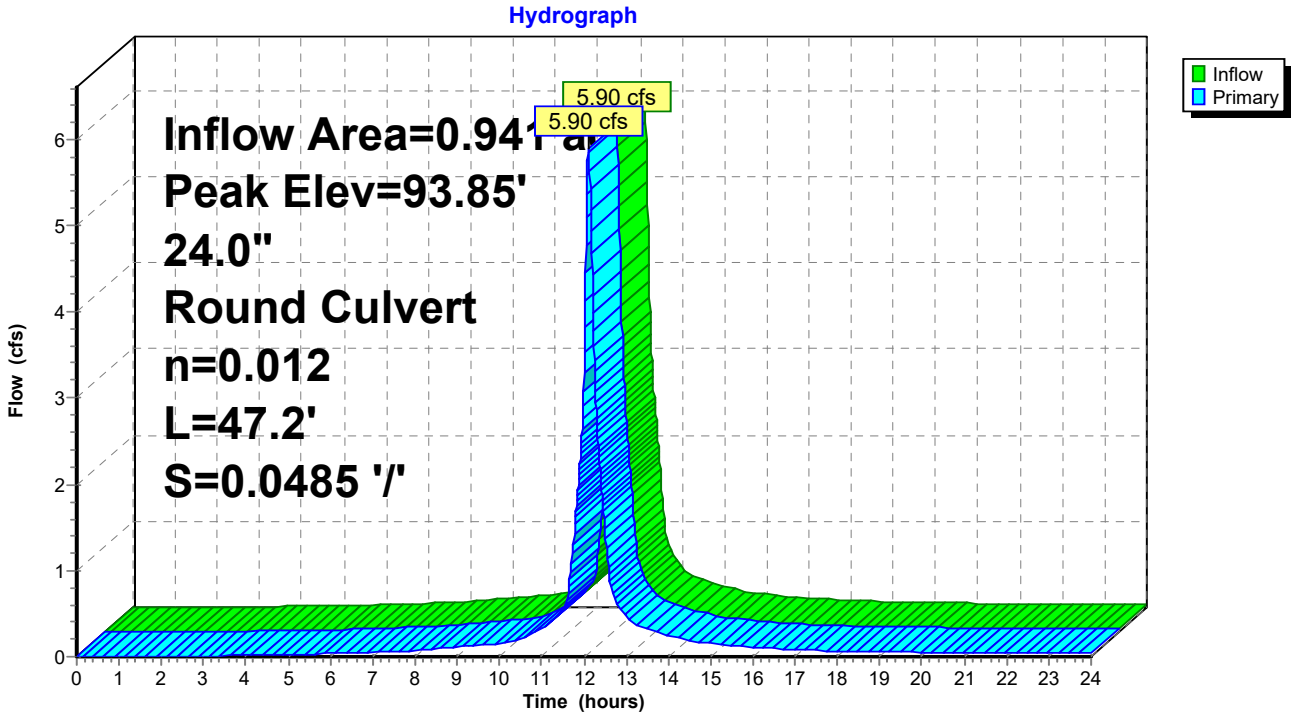
Inflow Area = 0.941 ac, 89.04% Impervious, Inflow Depth > 5.00" for 25 yr event
Inflow = 5.90 cfs @ 12.11 hrs, Volume= 0.392 af
Outflow = 5.90 cfs @ 12.11 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.0 min
Primary = 5.90 cfs @ 12.11 hrs, Volume= 0.392 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.85'@ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=5.90 cfs @ 12.11 hrs HW=93.85' TW=92.25' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 5.90 cfs @ 3.50 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 92.25' (Flood elevation advised)

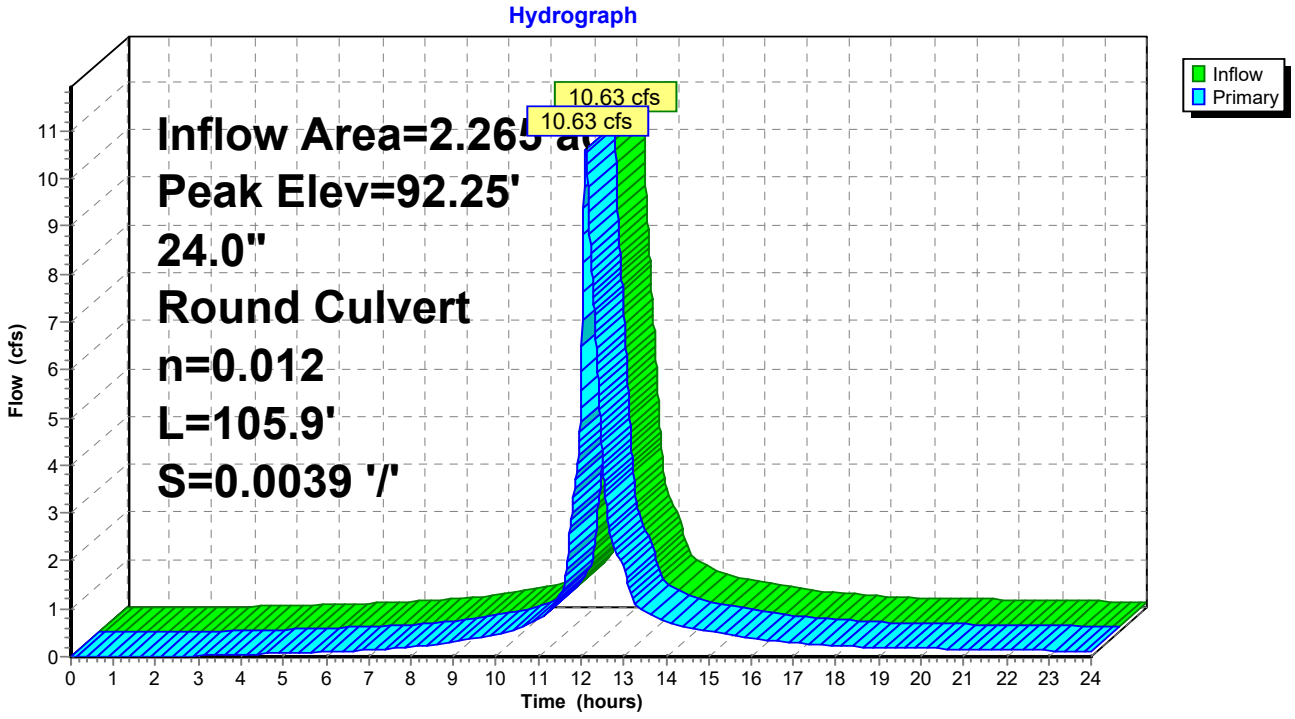
Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 5.38" for 25 yr event
Inflow = 10.63 cfs @ 12.12 hrs, Volume= 1.016 af
Outflow = 10.63 cfs @ 12.12 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.0 min
Primary = 10.63 cfs @ 12.12 hrs, Volume= 1.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 92.25' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=10.63 cfs @ 12.12 hrs HW=92.25' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 10.63 cfs @ 4.77 fps)

Pond DMH2: DMH2



Summary for Pond DMHC: DMH C

[57] Hint: Peaked at 96.05' (Flood elevation advised)

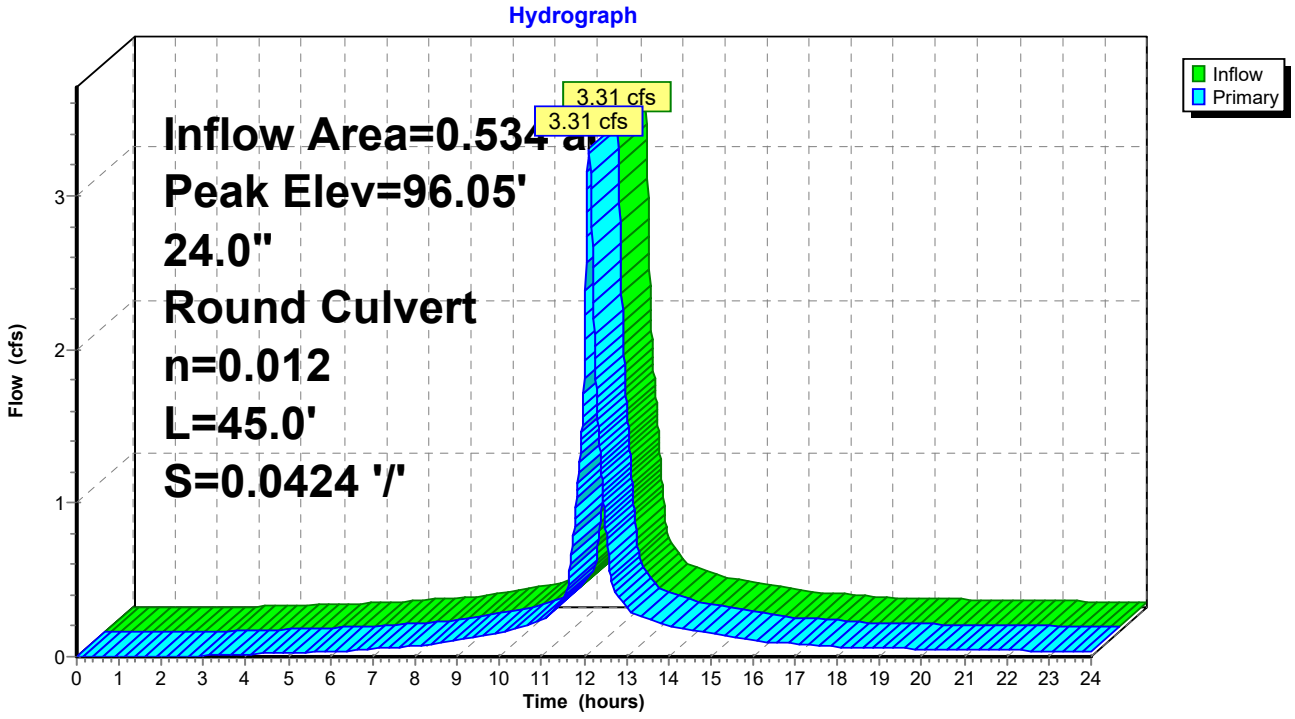
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af
Outflow = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.12 hrs, Volume= 0.281 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.05' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**24.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0424 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=3.31 cfs @ 12.12 hrs HW=96.05' TW=93.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.31 cfs @ 2.98 fps)

Pond DMHC: DMH C



Summary for Pond DP: Det. Pond

Inflow Area = 1.325 ac, 60.53% Impervious, Inflow Depth > 5.69" for 25 yr event
Inflow = 7.88 cfs @ 12.08 hrs, Volume= 0.628 af
Outflow = 4.89 cfs @ 12.18 hrs, Volume= 0.624 af, Atten= 38%, Lag= 6.0 min
Primary = 4.89 cfs @ 12.18 hrs, Volume= 0.624 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.17' @ 12.18 hrs Surf.Area= 2,327 sf Storage= 3,753 cf

Plug-Flow detention time= 16.6 min calculated for 0.624 af (99% of inflow)
Center-of-Mass det. time= 12.8 min (787.8 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	5,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

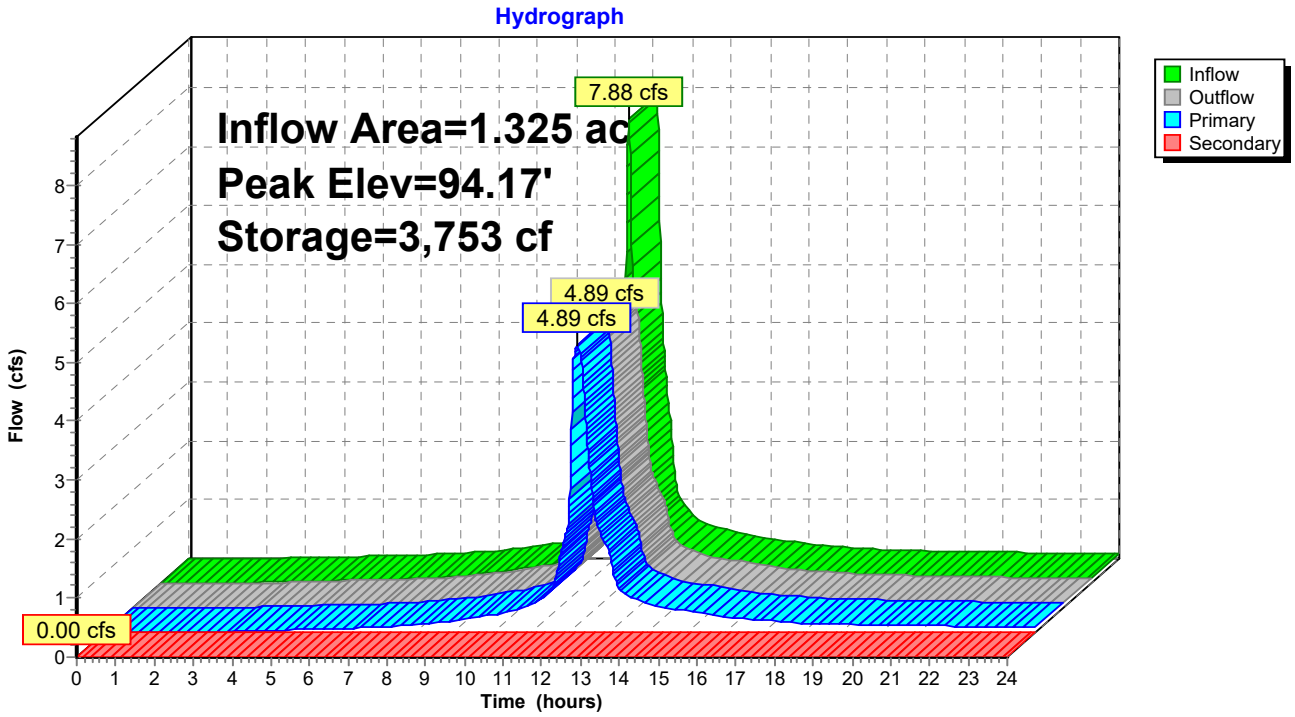
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1	0.0	0	0
92.01	1,176	100.0	6	6
93.00	1,671	100.0	1,409	1,415
94.00	2,222	100.0	1,947	3,362
95.00	2,830	100.0	2,526	5,888

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**12.0" Round Culvert** L= 32.7' Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.75' S= 0.0382 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	92.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	93.10'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=4.89 cfs @ 12.18 hrs HW=94.17' TW=92.14' (Dynamic Tailwater)
↑└**1=Culvert** (Inlet Controls 4.89 cfs @ 6.22 fps)
  ↑└**3=Orifice/Grate** (Passes < 2.39 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 2.86 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP: Det. Pond



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.101 ac, 5.55% Impervious, Inflow Depth > 3.00" for 25 yr event
Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.025 af
Outflow = 0.12 cfs @ 12.40 hrs, Volume= 0.024 af, Atten= 66%, Lag= 19.4 min
Primary = 0.12 cfs @ 12.40 hrs, Volume= 0.024 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.63' @ 12.40 hrs Surf.Area= 4,169 sf Storage= 351 cf

Plug-Flow detention time=88.0 min calculated for 0.024 af (93% of inflow)
Center-of-Mass det. time=54.4 min (898.3 - 843.9)

Volume	Invert	Avail.Storage	Storage Description
#1	95.42'	1,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

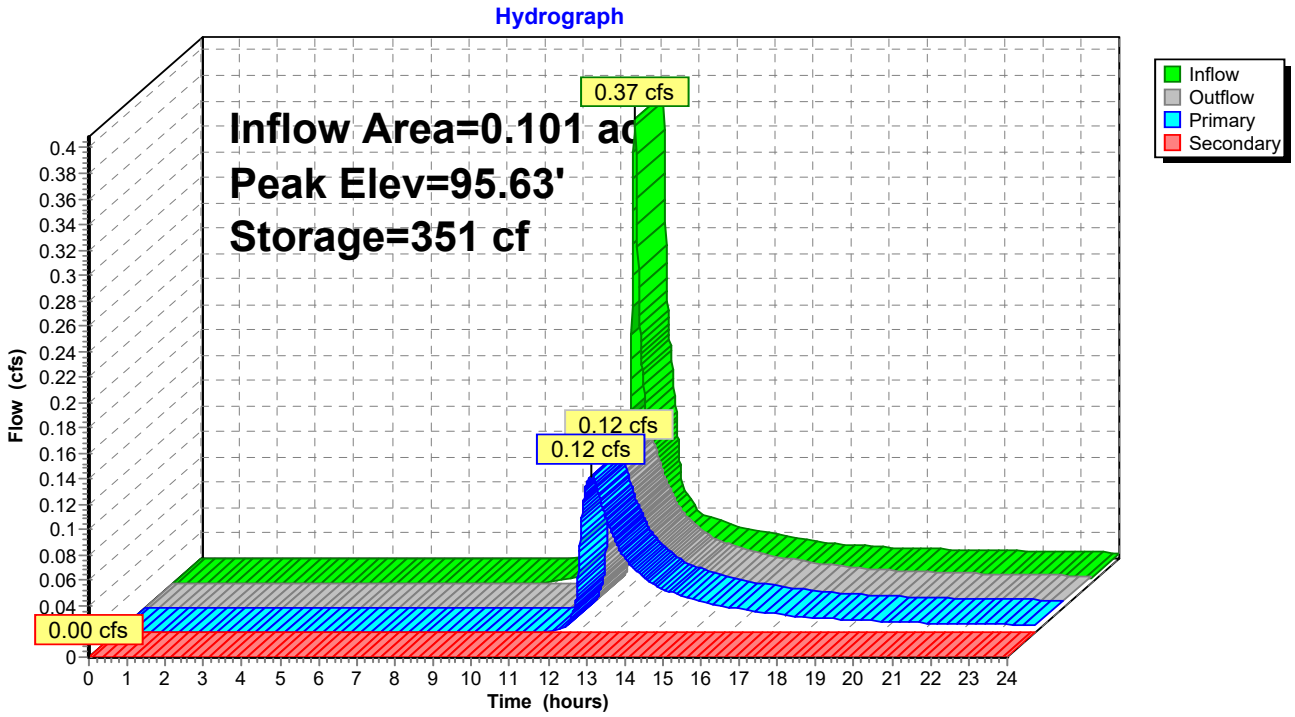
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.42	4,169	0.0	0	0
95.43	4,169	40.0	17	17
95.90	4,169	40.0	784	800
95.91	4,169	15.0	6	807
96.15	4,169	15.0	150	957
96.16	4,169	5.0	2	959
97.15	4,169	5.0	206	1,165
97.16	4,169	30.0	13	1,178
97.49	4,169	30.0	413	1,590
97.50	4,169	15.0	6	1,597
97.83	4,169	15.0	206	1,803

Device	Routing	Invert	Outlet Devices
#1	Primary	95.42'	**6.0" Round Culvert** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 95.42' / 94.00' S= 0.0268 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Secondary	97.73'	**200.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.12 cfs @ 12.40 hrs HW=95.63' TW=93.75' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.12 cfs @ 1.56 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.42' TW=92.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond ST: Stormtech

Inflow Area = 0.406 ac, 100.00% Impervious, Inflow Depth > 6.90" for 25 yr event
Inflow = 2.95 cfs @ 12.07 hrs, Volume= 0.234 af
Outflow = 2.73 cfs @ 12.10 hrs, Volume= 0.234 af, Atten= 7%, Lag= 1.8 min
Discarded = 0.11 cfs @ 9.53 hrs, Volume= 0.122 af
Primary = 2.62 cfs @ 12.10 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 98.97' @ 12.10 hrs Surf.Area= 656 sf Storage= 551 cf

Plug-Flow detention time=6.2 min calculated for 0.233 af (100% of inflow)
Center-of-Mass det. time=6.2 min (747.5 - 741.3)

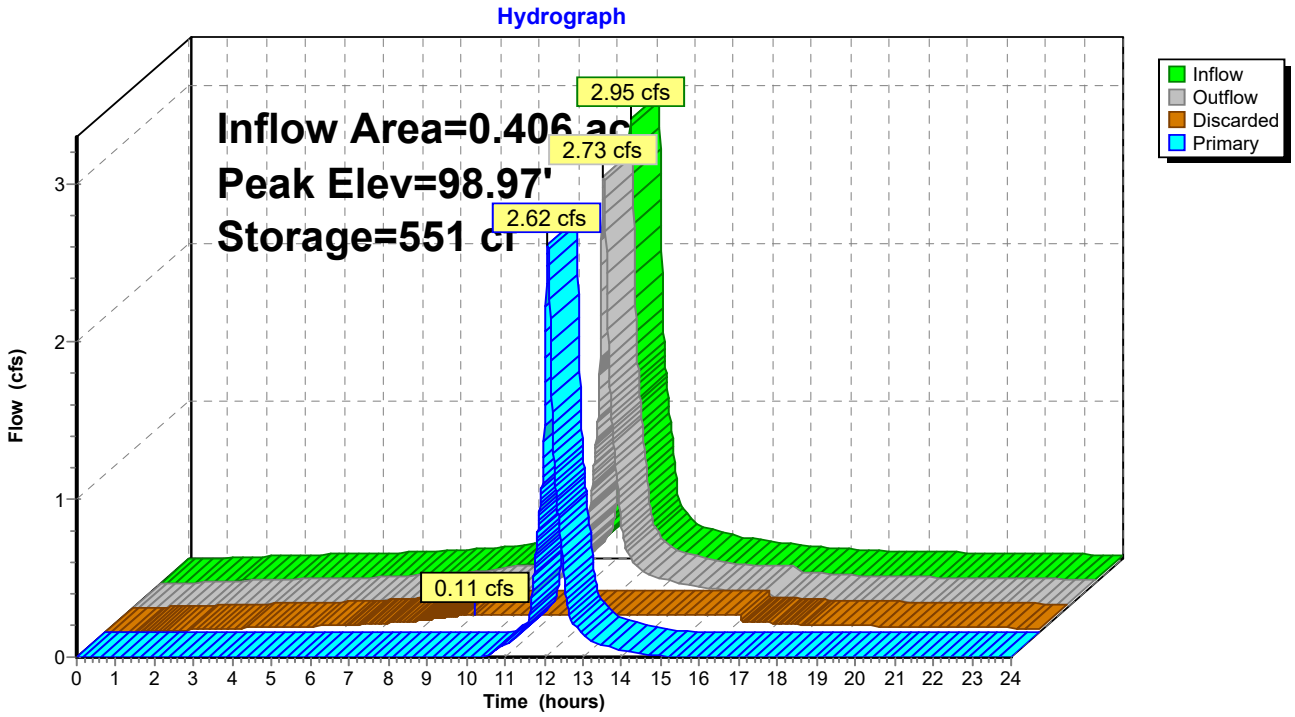
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	468 cf	**14.82'W x 44.24'L x 2.33'H Prismatoid** 1,528 cf Overall - 357 cf Embedded = 1,170 cf x 40.0% Voids
#2	98.08'	357 cf	**ADS_StormTech SC-310** x 24 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 4 rows
		826 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 38.5' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0675 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Discarded	97.58'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.11 cfs @ 9.53 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=2.62 cfs @ 12.10 hrs HW=98.97' TW=93.84' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.62 cfs @ 3.36 fps)

Pond ST: Stormtech



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points x 4
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: WesternGrassedArea Runoff Area=14,469 sf 3.15% Impervious Runoff Depth>5.54"
Flow Length=316' Tc=7.5 min CN=75 Runoff=2.04 cfs 0.153 af

Subcatchment2S: SouthernGrassedArea Runoff Area=5,631 sf 54.43% Impervious Runoff Depth>6.99"
Tc=5.0 min CN=87 Runoff=1.04 cfs 0.075 af

Subcatchment3S: Roof Runoff Area=17,704 sf 100.00% Impervious Runoff Depth>8.31"
Tc=5.0 min CN=98 Runoff=3.54 cfs 0.282 af

Subcatchment4S: EasternSite Runoff Area=23,278 sf 80.70% Impervious Runoff Depth>7.71"
Flow Length=303' Tc=8.8 min CN=93 Runoff=4.00 cfs 0.343 af

Subcatchment5S: ParkingLot Runoff Area=38,818 sf 88.18% Impervious Runoff Depth>7.95"
Tc=5.0 min CN=95 Runoff=7.68 cfs 0.591 af

Subcatchment6S: ParkingLot Runoff Area=4,414 sf 5.55% Impervious Runoff Depth>4.11"
Tc=5.0 min CN=63 Runoff=0.50 cfs 0.035 af

ReachAP 1: AP 1 Inflow=12.35 cfs 1.262 af
Outflow=12.35 cfs 1.262 af

ReachAP2: AP2 Inflow=1.04 cfs 0.075 af
Outflow=1.04 cfs 0.075 af

Pond CB2: CB2 Peak Elev=95.80' Inflow=1.04 cfs 0.075 af
12.0" Round Culvert n=0.012 L=129.0' S=0.0093 '/' Outflow=1.04 cfs 0.075 af

Pond CB3: CB3 Peak Elev=94.73' Inflow=1.04 cfs 0.075 af
12.0" Round Culvert n=0.012 L=1.0' S=0.0000 '/' Outflow=1.04 cfs 0.075 af

Pond CBA: CB A Peak Elev=97.25' Inflow=4.00 cfs 0.343 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=4.00 cfs 0.343 af

Pond DMH1: DMH1 Peak Elev=93.97' Inflow=7.11 cfs 0.489 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=7.11 cfs 0.489 af

Pond DMH2: DMH2 Peak Elev=92.45' Inflow=12.35 cfs 1.262 af
24.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=12.35 cfs 1.262 af

Pond DMHC: DMH C Peak Elev=96.13' Inflow=4.00 cfs 0.343 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=4.00 cfs 0.343 af

Pond DP: Det. Pond Peak Elev=94.59' Storage=4,788 cf Inflow=9.68 cfs 0.777 af
Primary=5.47 cfs 0.773 af Secondary=0.00 cfs 0.000 af Outflow=5.47 cfs 0.773 af

Pond PP: PerviousPavement Peak Elev=95.69' Storage=455 cf Inflow=0.50 cfs 0.035 af
Primary=0.19 cfs 0.033 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.033 af

Pond ST: Stormtech Peak Elev=99.19' Storage=630 cf Inflow=3.54 cfs 0.282 af
Discarded=0.11 cfs 0.136 af Primary=3.13 cfs 0.146 af Outflow=3.25 cfs 0.282 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.479 af Average Runoff Depth = 7.41"
28.60% Pervious = 0.685 ac 71.40% Impervious = 1.710 ac

Summary for Subcatchment 1S: Western Grassed Area

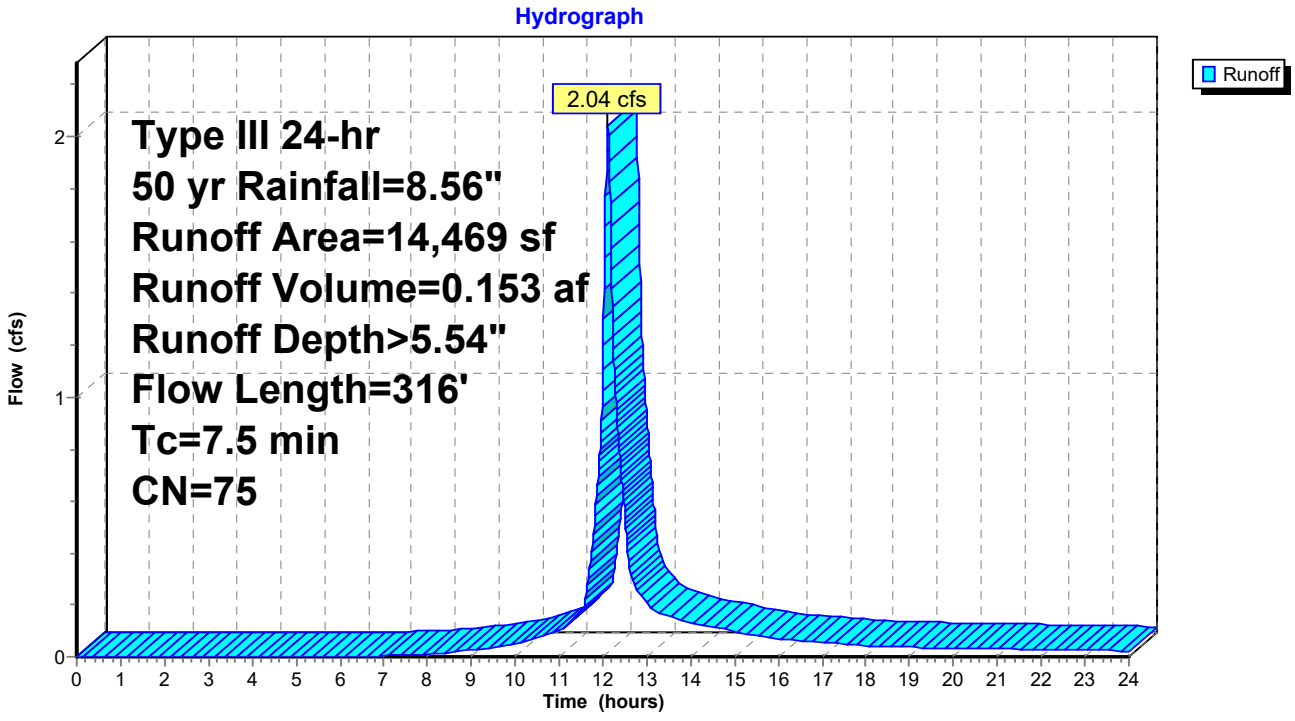
Runoff = 2.04 cfs @ 12.11 hrs, Volume= 0.153 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

	Area (sf)	CN	Description
	14,013	74	>75% Grass cover, Good, HSG C
	342	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
	14,469	75	Weighted Average
	14,013		96.85% Pervious Area
	456		3.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0232	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
2.6	266	0.0132	1.72		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
7.5	316	Total			

Subcatchment 1S: Western Grassed Area



Summary for Subcatchment 2S: Southern Grassed Area

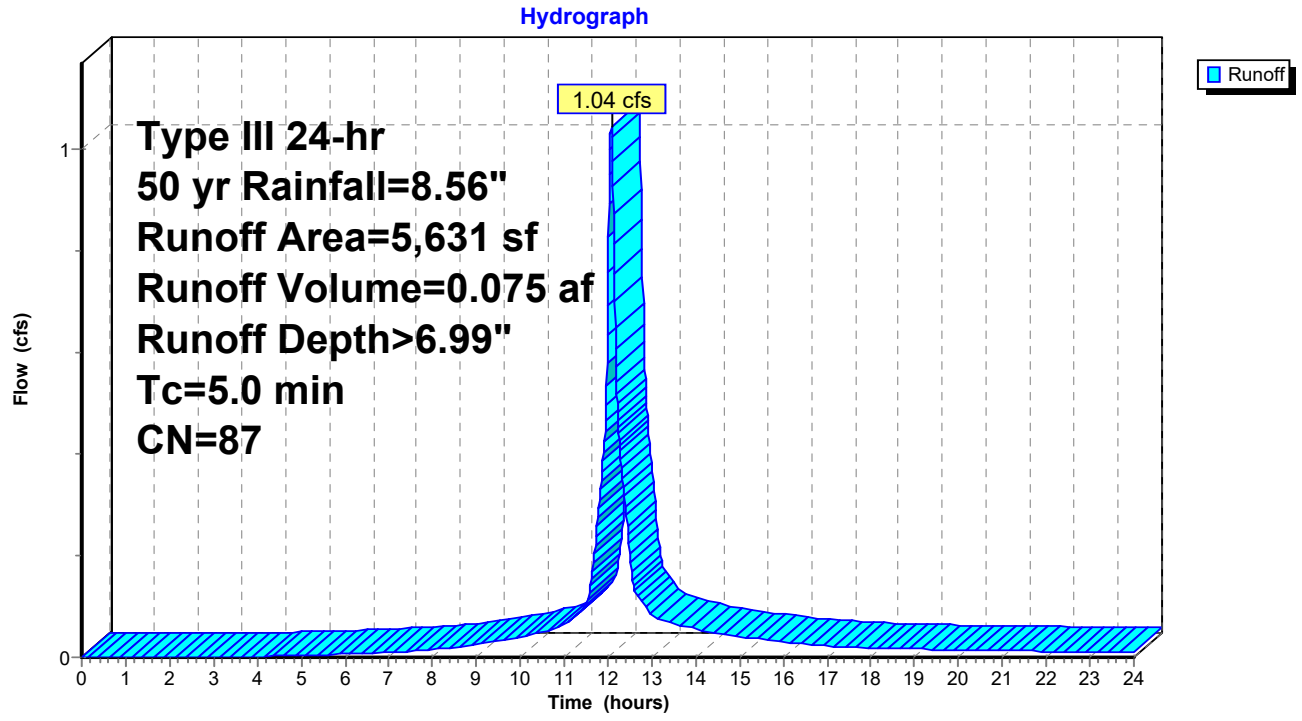
Runoff = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af, Depth> 6.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

Area (sf)	CN	Description
2,566	74	>75% Grass cover, Good, HSG C
3,065	98	Paved roads w/curbs & sewers, HSG C
5,631	87	Weighted Average
2,566		45.57% Pervious Area
3,065		54.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Southern Grassed Area



Summary for Subcatchment 3S: Roof

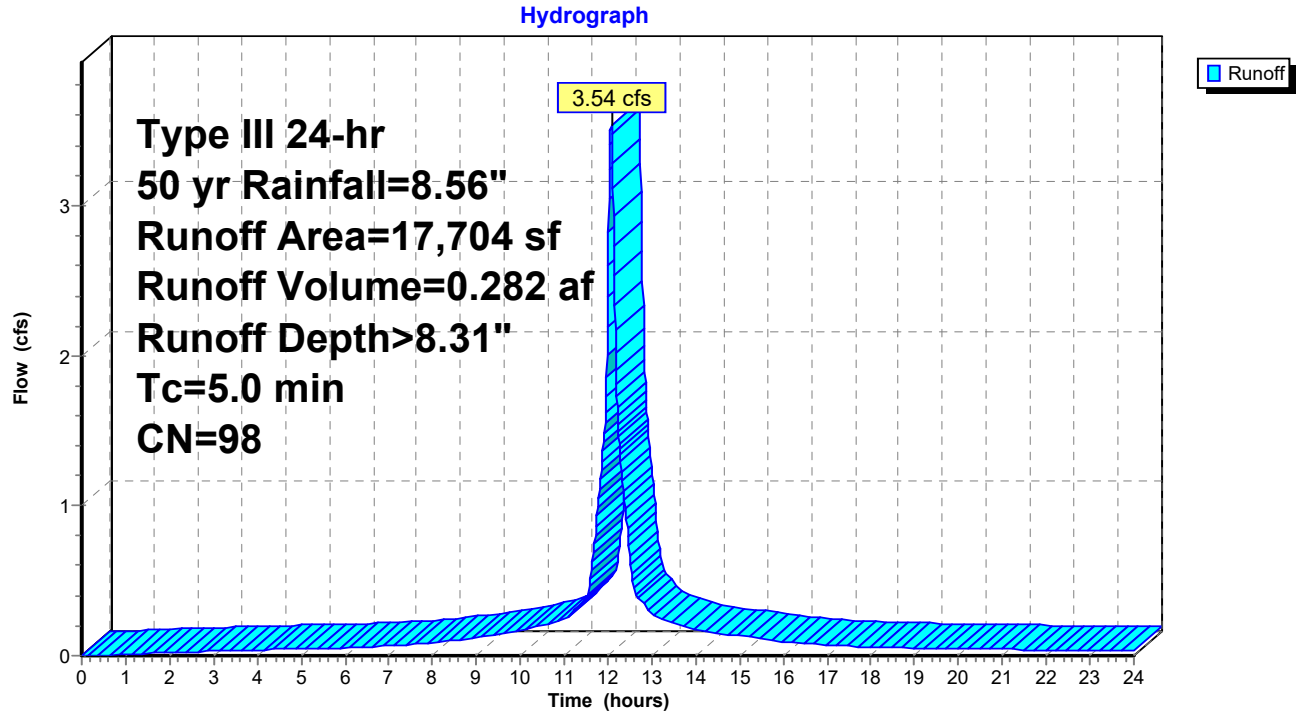
Runoff = 3.54 cfs @ 12.07 hrs, Volume= 0.282 af, Depth> 8.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

Area (sf)	CN	Description
17,704	98	Roofs, HSG C
17,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Roof



Summary for Subcatchment 4S: Eastern Site

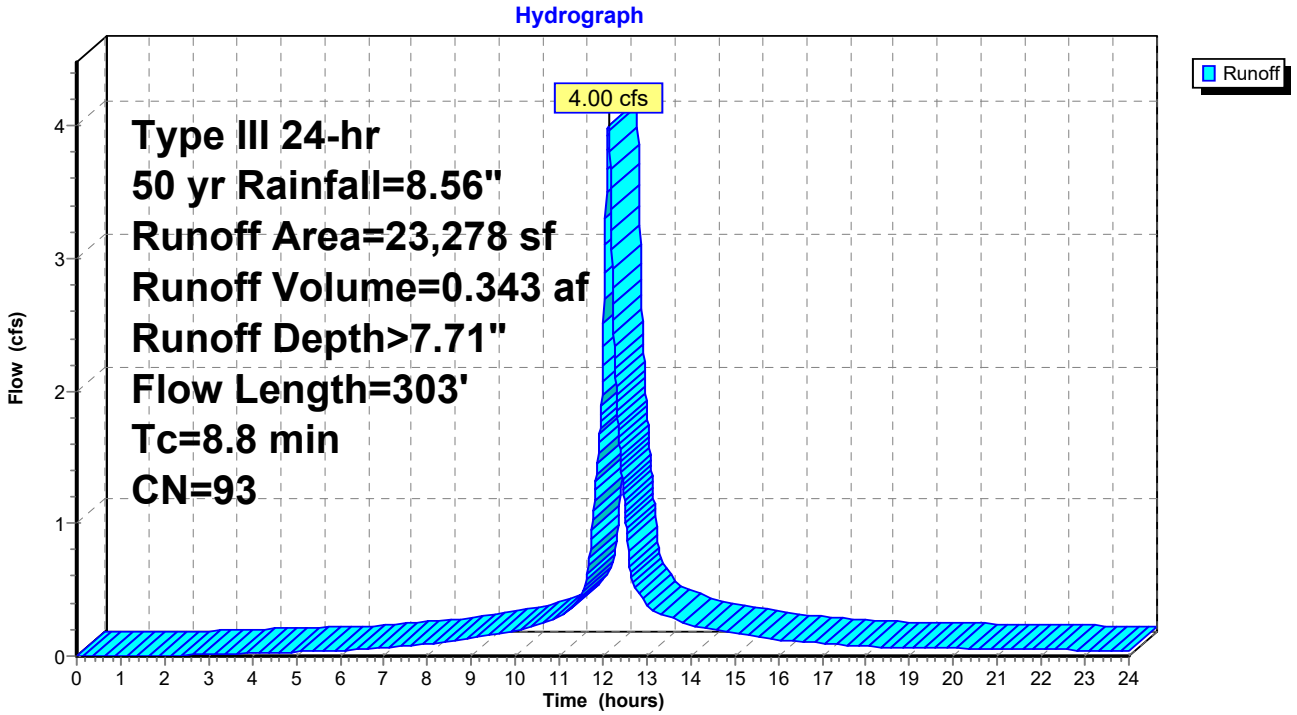
Runoff = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af, Depth> 7.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

Area (sf)	CN	Description
4,492	74	>75% Grass cover, Good, HSG C
18,786	98	Paved roads w/curbs & sewers, HSG C
23,278	93	Weighted Average
4,492		19.30% Pervious Area
18,786		80.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	14	0.0208	1.01		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70"
4.6	37	0.0154	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
4.0	252	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.8	303	Total			

Subcatchment 4S: Eastern Site



Summary for Subcatchment 5S: Parking Lot

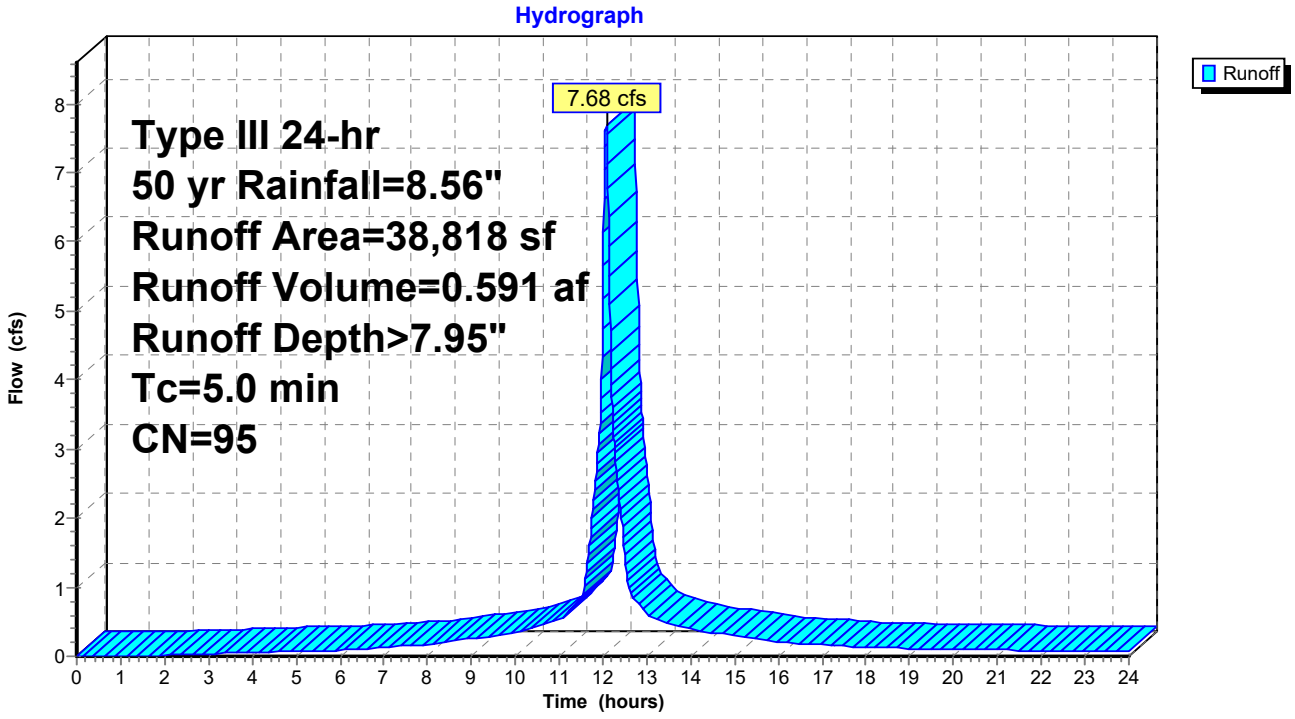
Runoff = 7.68 cfs @ 12.07 hrs, Volume= 0.591 af, Depth> 7.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

	Area (sf)	CN	Description
	4,359	74	>75% Grass cover, Good, HSG C
	33,846	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
	248	98	Roofs, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	38,818	95	Weighted Average
	4,590		11.82% Pervious Area
	34,228		88.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



Summary for Subcatchment 6S: Parking Lot

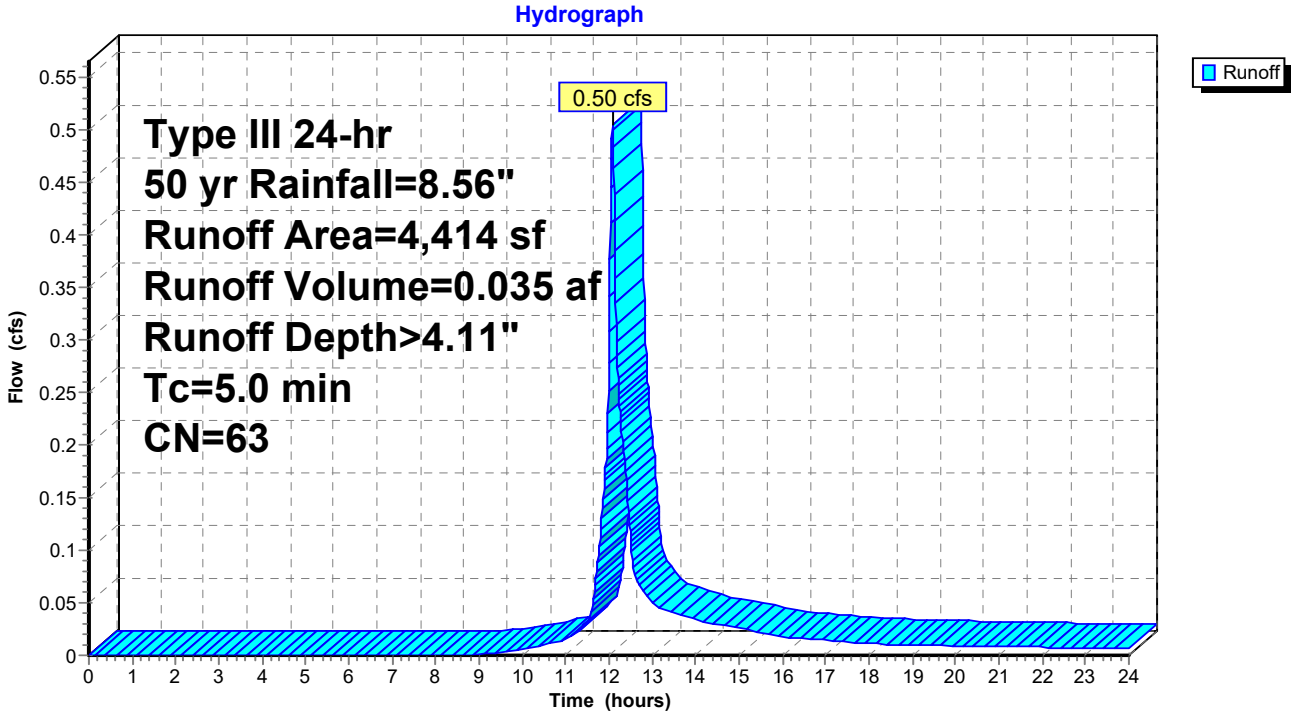
Runoff = 0.50 cfs @ 12.08 hrs, Volume= 0.035 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=8.56"

	Area (sf)	CN	Description
*	4,169	61	Pervious Pavement, HSG C
	245	98	Roofs, HSG C
	4,414	63	Weighted Average
	4,169		94.45% Pervious Area
	245		5.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Parking Lot



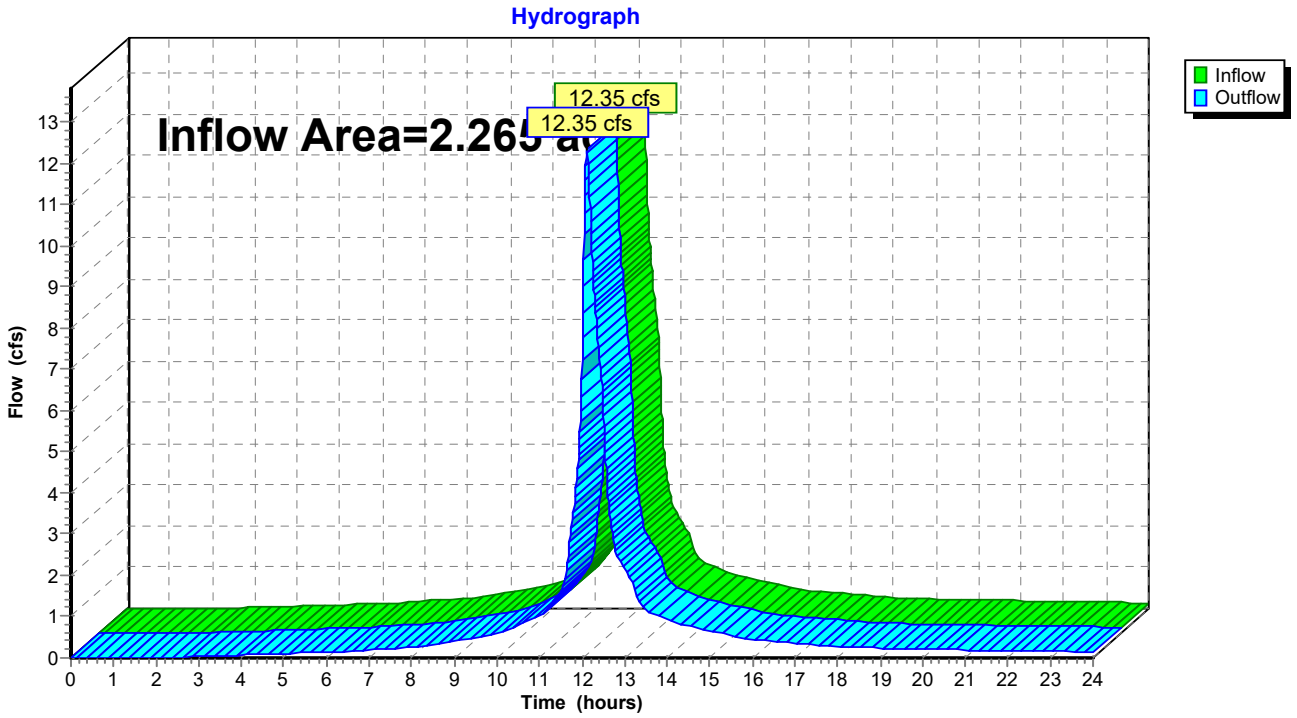
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 6.69" for 50 yr event
Inflow = 12.35 cfs @ 12.12 hrs, Volume= 1.262 af
Outflow = 12.35 cfs @ 12.12 hrs, Volume= 1.262 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP 1: AP 1



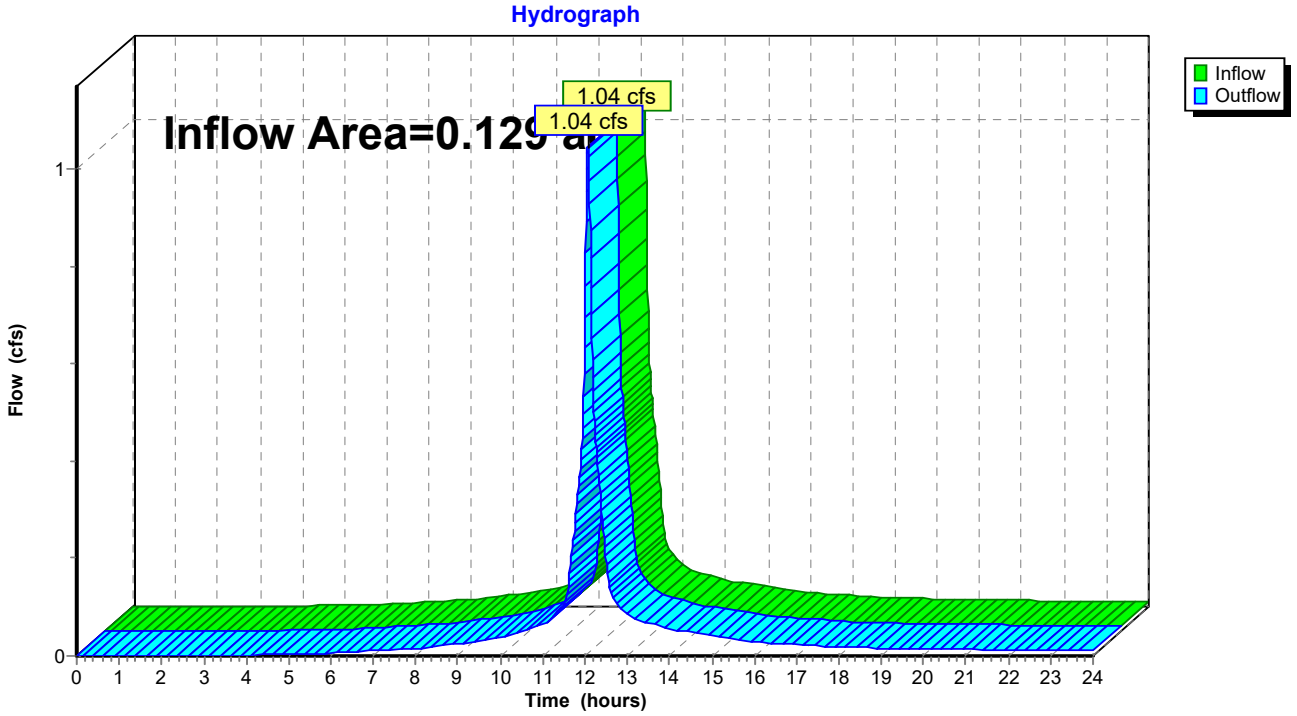
Summary for Reach AP2: AP2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 6.99" for 50 yr event
Inflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af
Outflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4

Reach AP2: AP2



Summary for Pond CB2: CB2

[57] Hint: Peaked at 95.80' (Flood elevation advised)

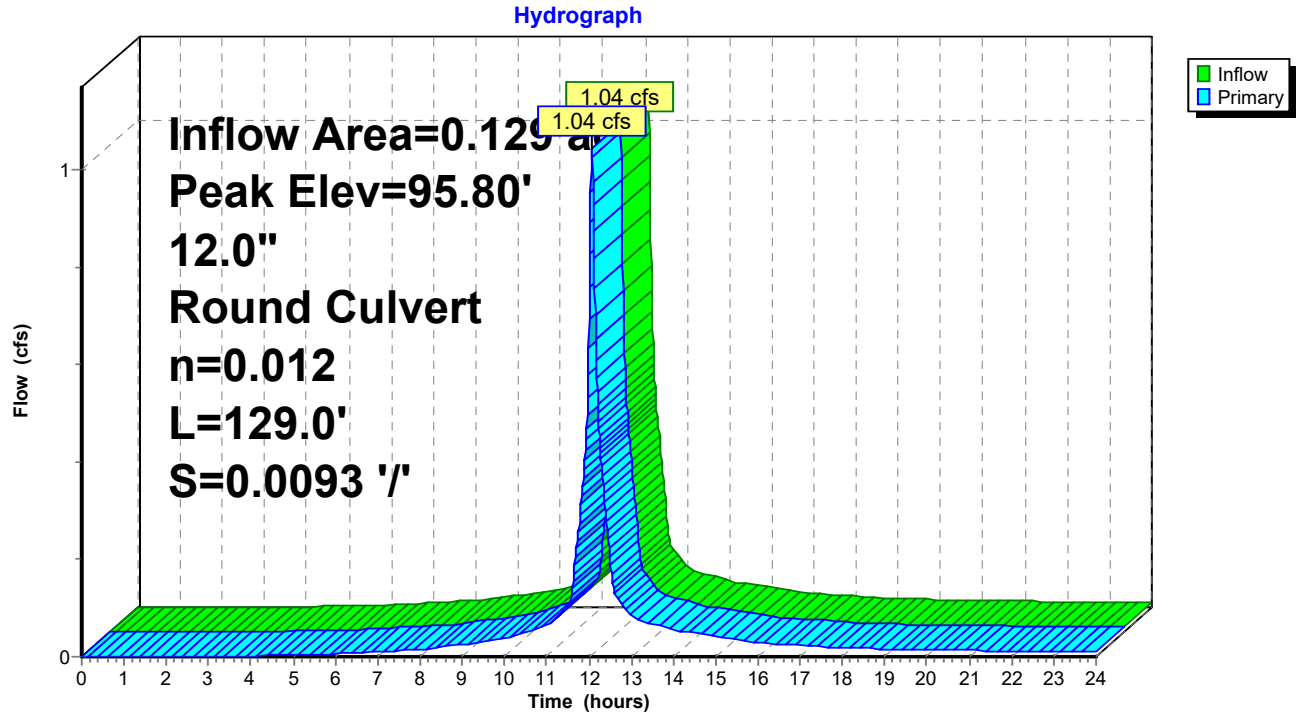
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 6.99" for 50 yr event
Inflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af
Outflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.80' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.26'	**12.0" Round Culvert** L= 129.0' Ke= 0.500 Inlet / Outlet Invert= 95.26' / 94.06' S= 0.0093 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=95.80' TW=94.73' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.04 cfs @ 3.49 fps)

Pond CB2: CB2



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.73' (Flood elevation advised)

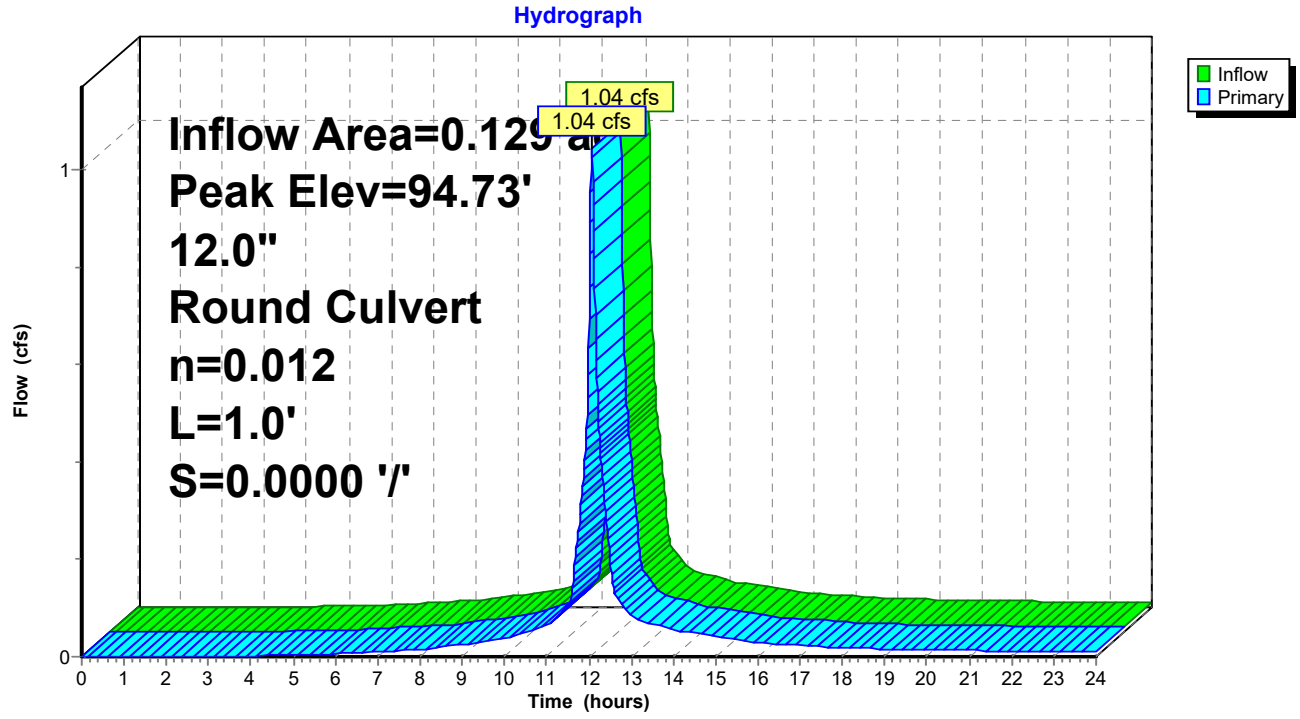
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 6.99" for 50 yr event
Inflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af
Outflow = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.73'@ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.06'	**12.0" Round Culvert** L= 1.0' Ke= 0.500 Inlet / Outlet Invert= 94.06' / 94.06' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=94.73' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 1.04 cfs @ 2.65 fps)

Pond CB3: CB3



Summary for Pond CBA: CB A

[57] Hint: Peaked at 97.25' (Flood elevation advised)

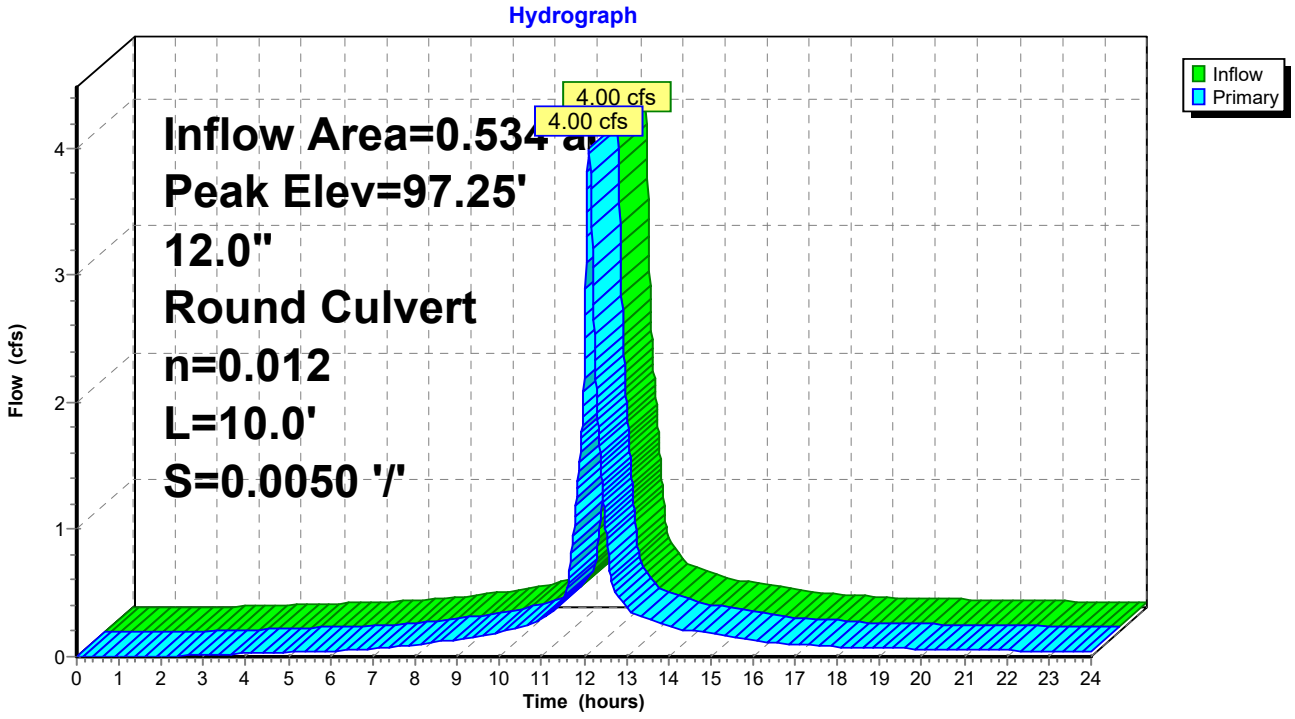
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 7.71" for 50 yr event
Inflow = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af
Outflow = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min
Primary = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 97.25'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.40'	**12.0" Round Culvert** L= 10.0' Ke= 0.500 Inlet / Outlet Invert= 95.40' / 95.35' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

Primary OutFlow Max=4.00 cfs @ 12.12 hrs HW=97.25' TW=96.13' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.00 cfs @ 5.09 fps)

Pond CBA: CB A



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.97' (Flood elevation advised)

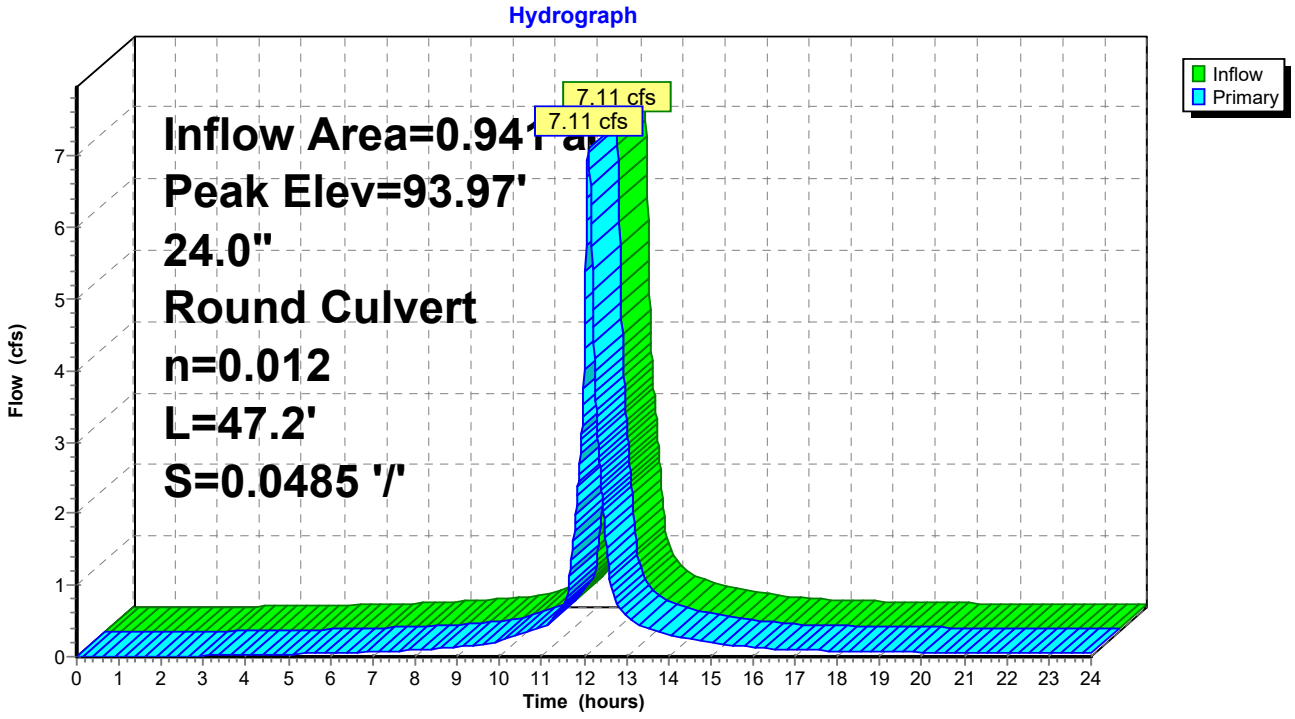
Inflow Area = 0.941 ac, 89.04% Impervious, Inflow Depth > 6.24" for 50 yr event
Inflow = 7.11 cfs @ 12.11 hrs, Volume= 0.489 af
Outflow = 7.11 cfs @ 12.11 hrs, Volume= 0.489 af, Atten= 0%, Lag= 0.0 min
Primary = 7.11 cfs @ 12.11 hrs, Volume= 0.489 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.97' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	92.79'	**24.0" Round Culvert** L= 47.2' Ke= 0.500 Inlet / Outlet Invert= 92.79' / 90.50' S= 0.0485 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=7.10 cfs @ 12.11 hrs HW=93.97' TW=92.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.10 cfs @ 3.69 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 92.45' (Flood elevation advised)

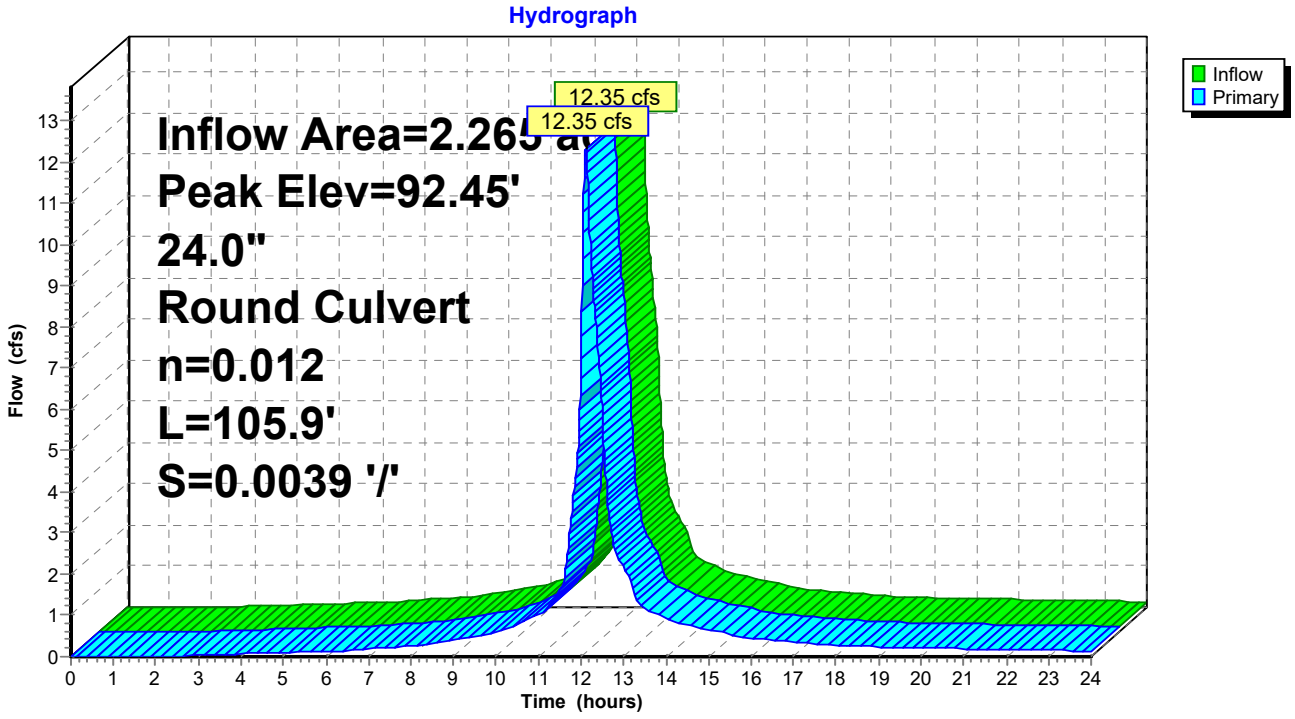
Inflow Area = 2.265 ac, 72.37% Impervious, Inflow Depth > 6.69" for 50 yr event
Inflow = 12.35 cfs @ 12.12 hrs, Volume= 1.262 af
Outflow = 12.35 cfs @ 12.12 hrs, Volume= 1.262 af, Atten= 0%, Lag= 0.0 min
Primary = 12.35 cfs @ 12.12 hrs, Volume= 1.262 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 92.45' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**24.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=12.34 cfs @ 12.12 hrs HW=92.45' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 12.34 cfs @ 4.95 fps)

Pond DMH2: DMH2



Summary for Pond DMHC: DMH C

[57] Hint: Peaked at 96.13' (Flood elevation advised)

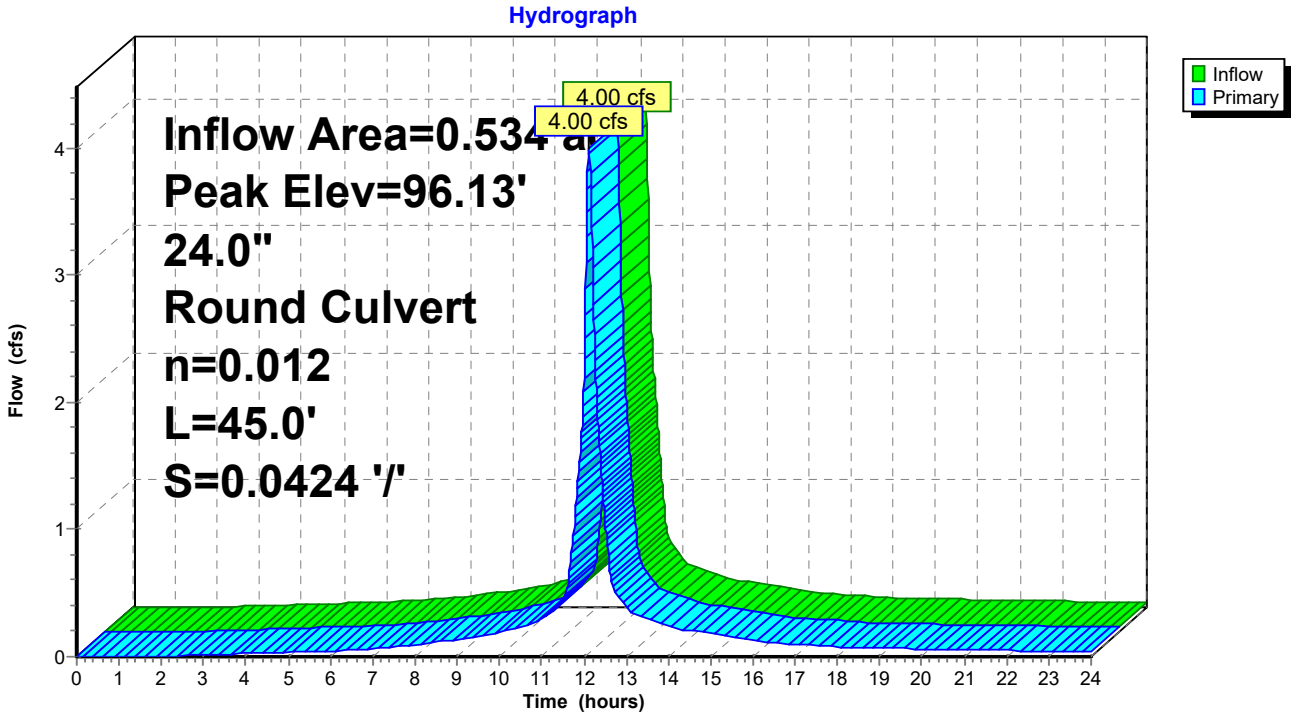
Inflow Area = 0.534 ac, 80.70% Impervious, Inflow Depth > 7.71" for 50 yr event
Inflow = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af
Outflow = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.0 min
Primary = 4.00 cfs @ 12.12 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.13'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	95.28'	**24.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 95.28' / 93.37' S= 0.0424 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf

Primary OutFlow Max=4.00 cfs @ 12.12 hrs HW=96.13' TW=93.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.00 cfs @ 3.14 fps)

Pond DMHC: DMH C



Summary for Pond DP: Det. Pond

Inflow Area = 1.325 ac, 60.53% Impervious, Inflow Depth > 7.04" for 50 yr event
Inflow = 9.68 cfs @ 12.08 hrs, Volume= 0.777 af
Outflow = 5.47 cfs @ 12.20 hrs, Volume= 0.773 af, Atten= 43%, Lag= 7.1 min
Primary = 5.47 cfs @ 12.20 hrs, Volume= 0.773 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.59' @ 12.20 hrs Surf.Area= 2,583 sf Storage= 4,788 cf

Plug-Flow detention time= 16.1 min calculated for 0.773 af (99% of inflow)
Center-of-Mass det. time= 12.7 min (783.7 - 771.1)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	5,888 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

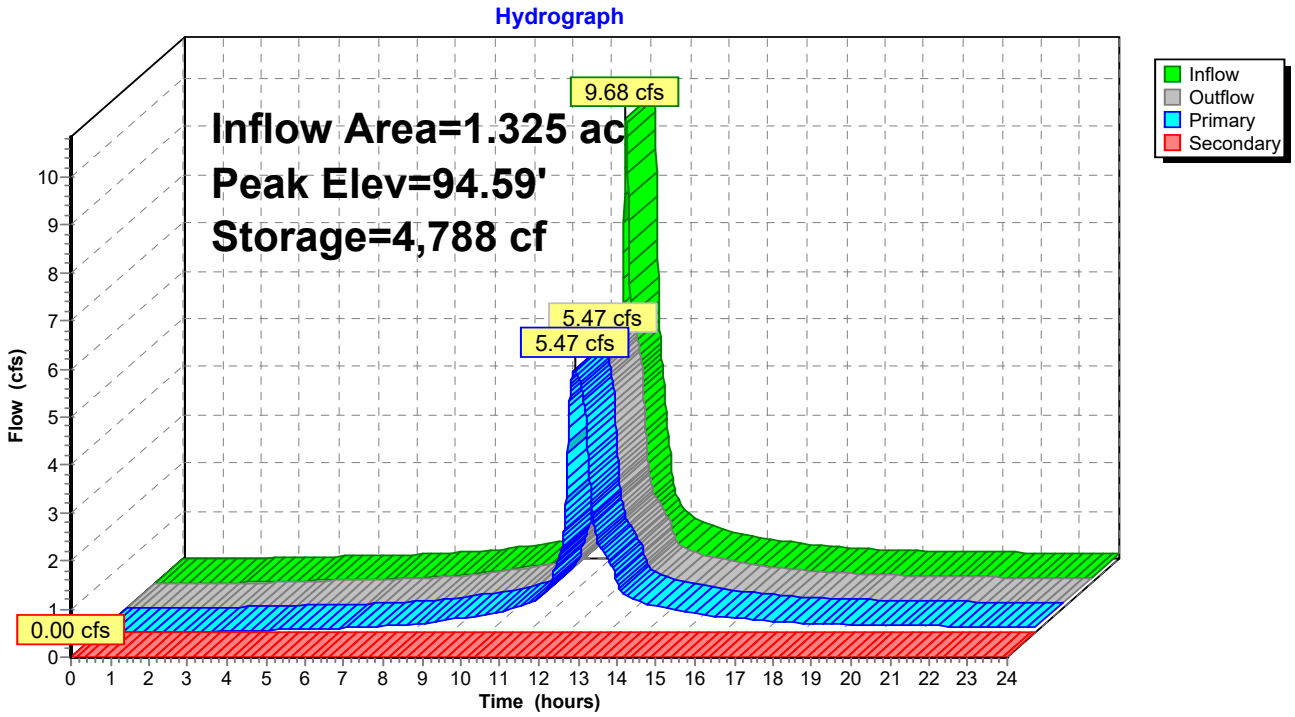
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1	0.0	0	0
92.01	1,176	100.0	6	6
93.00	1,671	100.0	1,409	1,415
94.00	2,222	100.0	1,947	3,362
95.00	2,830	100.0	2,526	5,888

Device	Routing	Invert	Outlet Devices
#1	Primary	92.00'	**12.0" Round Culvert** L= 32.7' Ke= 0.500 Inlet / Outlet Invert= 92.00' / 90.75' S= 0.0382 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#3	Device 1	92.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	93.10'	**12.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=5.47 cfs @ 12.20 hrs HW=94.59' TW=92.26' (Dynamic Tailwater)
↑└**1=Culvert** (Inlet Controls 5.47 cfs @ 6.97 fps)
  ↑├**3=Orifice/Grate** (Passes < 2.57 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 3.77 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DP: Det. Pond



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.101 ac, 5.55% Impervious, Inflow Depth > 4.11" for 50 yr event
Inflow = 0.50 cfs @ 12.08 hrs, Volume= 0.035 af
Outflow = 0.19 cfs @ 12.33 hrs, Volume= 0.033 af, Atten= 61%, Lag= 15.5 min
Primary = 0.19 cfs @ 12.33 hrs, Volume= 0.033 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.69' @ 12.33 hrs Surf.Area= 4,169 sf Storage= 455 cf

Plug-Flow detention time=76.3 min calculated for 0.033 af (95% of inflow)
Center-of-Mass det. time=47.9 min (882.6 - 834.7)

Volume	Invert	Avail.Storage	Storage Description
#1	95.42'	1,803 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

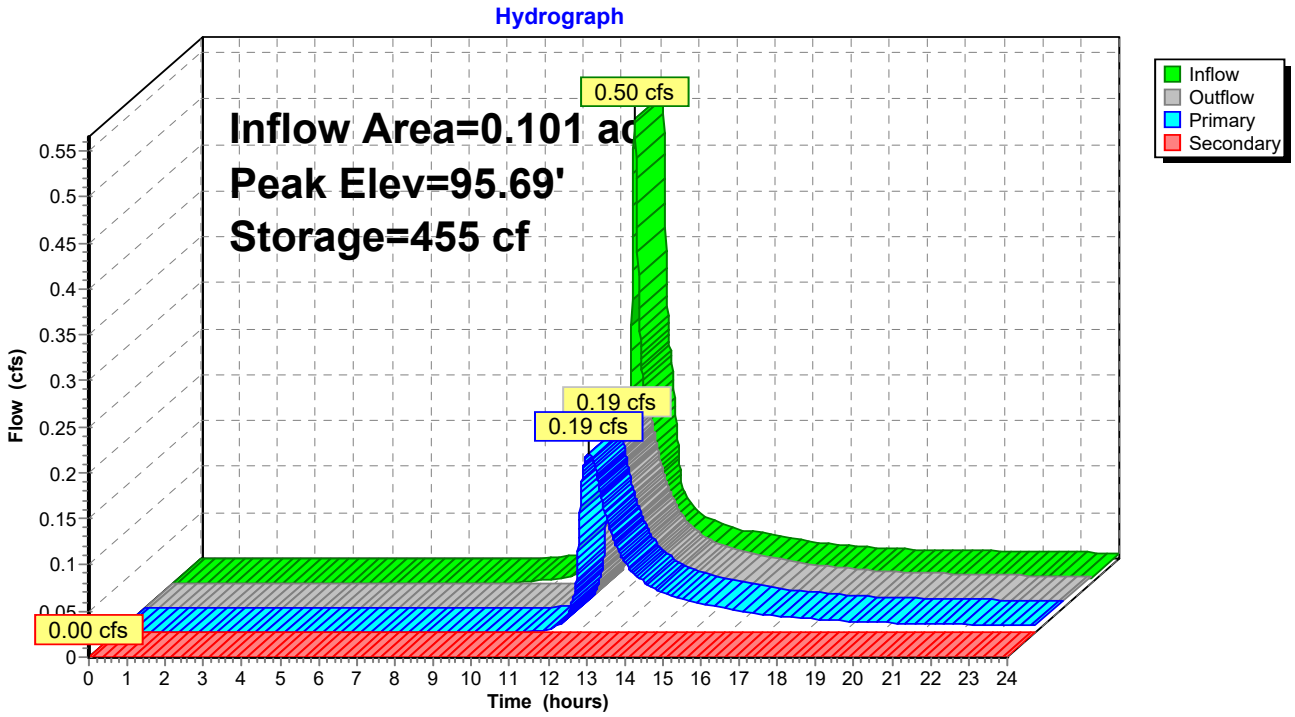
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.42	4,169	0.0	0	0
95.43	4,169	40.0	17	17
95.90	4,169	40.0	784	800
95.91	4,169	15.0	6	807
96.15	4,169	15.0	150	957
96.16	4,169	5.0	2	959
97.15	4,169	5.0	206	1,165
97.16	4,169	30.0	13	1,178
97.49	4,169	30.0	413	1,590
97.50	4,169	15.0	6	1,597
97.83	4,169	15.0	206	1,803

Device	Routing	Invert	Outlet Devices
#1	Primary	95.42'	**6.0" Round Culvert** L= 53.0' Ke= 0.500 Inlet / Outlet Invert= 95.42' / 94.00' S= 0.0268 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf
#2	Secondary	97.73'	**200.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.19 cfs @ 12.33 hrs HW=95.69' TW=94.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.19 cfs @ 1.78 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.42' TW=92.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond ST: Stormtech

Inflow Area = 0.406 ac, 100.00% Impervious, Inflow Depth > 8.31" for 50 yr event
Inflow = 3.54 cfs @ 12.07 hrs, Volume= 0.282 af
Outflow = 3.25 cfs @ 12.10 hrs, Volume= 0.282 af, Atten= 8%, Lag= 2.0 min
Discarded = 0.11 cfs @ 8.93 hrs, Volume= 0.136 af
Primary = 3.13 cfs @ 12.10 hrs, Volume= 0.146 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 99.19' @ 12.10 hrs Surf.Area= 656 sf Storage= 630 cf

Plug-Flow detention time=6.4 min calculated for 0.282 af (100% of inflow)
Center-of-Mass det. time=6.3 min (745.4 - 739.0)

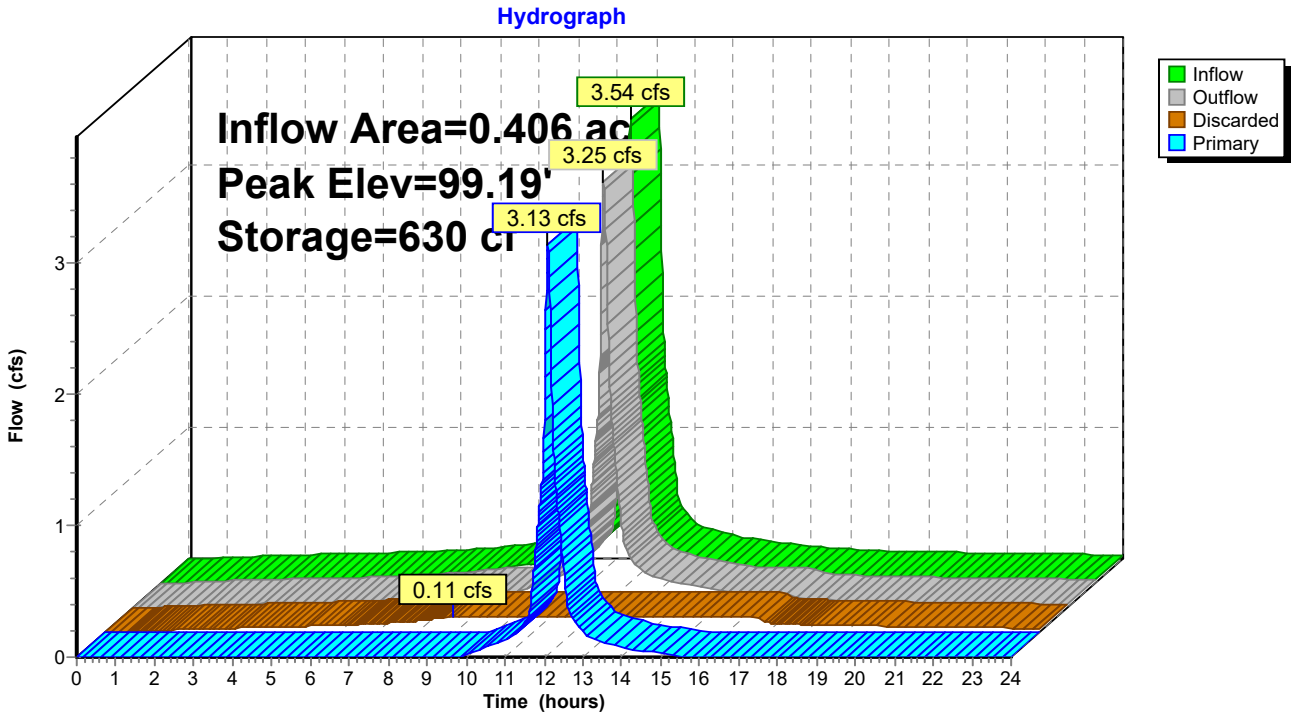
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	468 cf	**14.82'W x 44.24'L x 2.33'H Prismatoid** 1,528 cf Overall - 357 cf Embedded = 1,170 cf x 40.0% Voids
#2	98.08'	357 cf	**ADS_StormTech SC-310** x 24 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 4 rows
		826 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 38.5' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0675 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Discarded	97.58'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.11 cfs @ 8.93 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=3.13 cfs @ 12.10 hrs HW=99.18' TW=93.96' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.13 cfs @ 3.98 fps)

Pond ST: Stormtech



Appendix - A

Extreme Precipitation Tables

Northeast Regional Climate Center

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.776 degrees West
Latitude	43.043 degrees North
Elevation	0 feet
Date/Time	Thu, 14 Apr 2022 16:44:01 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.71	0.98	1.22	1.57	2.04	2.67	2.94	**1yr**	2.37	2.83	3.24	3.96	4.58	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.50	3.23	3.59	**2yr**	2.86	3.45	3.96	4.71	5.36	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.09	4.61	**5yr**	3.62	4.43	5.08	5.97	6.74	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.90	**10yr**	1.26	1.73	2.24	2.90	3.77	4.90	5.57	**10yr**	4.34	5.35	6.13	7.16	8.03	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.35	**25yr**	1.54	2.15	2.79	3.65	4.77	6.21	7.15	**25yr**	5.50	6.87	7.87	9.09	10.12	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.77	**50yr**	1.79	2.53	3.30	4.35	5.70	7.44	8.64	**50yr**	6.59	8.31	9.51	10.90	12.06	**50yr**
100yr	0.60	0.97	1.25	1.78	2.43	3.27	**100yr**	2.09	2.99	3.92	5.19	6.81	8.92	10.45	**100yr**	7.89	10.05	11.49	13.08	14.38	**100yr**
200yr	0.68	1.11	1.43	2.05	2.84	3.85	**200yr**	2.45	3.53	4.64	6.17	8.14	10.69	12.64	**200yr**	9.46	12.16	13.90	15.69	17.16	**200yr**
500yr	0.80	1.32	1.72	2.50	3.49	4.79	**500yr**	3.02	4.40	5.80	7.75	10.29	13.59	16.27	**500yr**	12.03	15.64	17.87	19.97	21.67	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.87	0.92	1.33	1.68	2.25	2.54	**1yr**	1.99	2.45	2.88	3.18	3.92	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.33	3.08	3.48	**2yr**	2.72	3.35	3.85	4.58	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.41	**5yr**	1.01	1.38	1.61	2.12	2.73	3.82	4.24	**5yr**	3.38	4.07	4.76	5.59	6.30	**5yr**
10yr	0.39	0.60	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.41	4.92	**10yr**	3.91	4.74	5.52	6.49	7.27	**10yr**
25yr	0.44	0.67	0.84	1.19	1.57	1.91	**25yr**	1.36	1.86	2.10	2.75	3.53	4.76	5.99	**25yr**	4.21	5.76	6.77	7.91	8.79	**25yr**
50yr	0.49	0.74	0.92	1.32	1.78	2.17	**50yr**	1.54	2.13	2.35	3.07	3.93	5.38	6.93	**50yr**	4.77	6.66	7.89	9.20	10.16	**50yr**
100yr	0.54	0.82	1.02	1.48	2.03	2.48	**100yr**	1.75	2.42	2.63	3.41	4.35	6.06	8.02	**100yr**	5.36	7.71	9.21	10.72	11.74	**100yr**
200yr	0.60	0.90	1.14	1.65	2.31	2.83	**200yr**	1.99	2.76	2.94	3.77	4.79	6.80	9.28	**200yr**	6.02	8.92	10.75	12.50	13.59	**200yr**
500yr	0.70	1.04	1.33	1.94	2.75	3.38	**500yr**	2.38	3.31	3.42	4.31	5.46	7.93	11.25	**500yr**	7.02	10.82	13.20	15.34	16.47	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	3.00	3.17	**1yr**	2.66	3.05	3.60	4.39	5.08	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.44	3.72	**2yr**	3.05	3.57	4.10	4.86	5.66	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.16	1.59	1.88	2.53	3.25	4.36	4.97	**5yr**	3.86	4.78	5.41	6.39	7.18	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.10	3.95	5.37	6.20	**10yr**	4.75	5.97	6.81	7.85	8.77	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.52	2.95	4.07	5.14	7.82	8.33	**25yr**	6.92	8.01	9.12	10.35	11.42	**25yr**
50yr	0.67	1.02	1.27	1.83	2.47	3.14	**50yr**	2.13	3.07	3.59	4.99	6.30	9.79	10.42	**50yr**	8.66	10.02	11.37	12.73	13.97	**50yr**
100yr	0.79	1.20	1.50	2.16	2.97	3.82	**100yr**	2.56	3.73	4.37	6.15	7.74	12.24	13.04	**100yr**	10.84	12.54	14.19	15.69	17.08	**100yr**
200yr	0.93	1.39	1.77	2.56	3.56	4.66	**200yr**	3.08	4.56	5.33	7.57	9.50	15.36	16.33	**200yr**	13.59	15.70	17.72	19.32	20.90	**200yr**
500yr	1.15	1.71	2.20	3.19	4.54	6.05	**500yr**	3.92	5.92	6.92	10.01	12.49	20.74	21.99	**500yr**	18.36	21.15	23.77	25.45	27.30	**500yr**

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Northeast Regional Climate Center

Appendix - B

Soil Information

Map Scale: 1:860 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 19, 2021—Nov 1, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
299	Udorthents, smoothed	2.4	100.0%
Totals for Area of Interest		**2.4**	**100.0%**

Lumark

DESCRIPTION

The patented Lumark Crosstour™ MAXX LED wall pack series of luminaries provides low-profile architectural style with super bright, energy-efficient LEDs. The rugged die-cast aluminum construction, back box with secure lock hinges, stainless steel hardware along with a sealed and gasketed optical compartment make Crosstour impervious to contaminants. The Crosstour MAXX wall luminaire is ideal for wall/surface, inverted mount for facade/canopy illumination, perimeter and site lighting. Typical applications include pedestrian walkways, building entrances, multi-use facilities, industrial facilities, perimeter parking areas, storage facilities, institutions, schools and loading docks.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

SPECIFICATION FEATURES

Construction
Low-profile LED design with rugged one-piece, die-cast aluminum back box and hinged removable door. Matching housing styles incorporate both a full cutoff and refractive lens design. Full cutoff and refractive lens models are available in 58W, 81W and 102W. Patent pending secure lock hinge feature allows for safe and easy tool-less electrical connections with the supplied push-in connectors. Back box includes four 1/2" NPT threaded conduit entry points. The back box is secured by four lag bolts (supplied by others). External fin design extracts heat from the fixture surface. One-piece silicone gasket seals door and back box. Not recommended for car wash applications.

Optical
Silicone sealed optical LED chamber incorporates a custom engineered reflector providing high-efficiency illumination. Full cutoff models integrate an impact-resistant molded refractive prism optical lens assembly meeting requirements for Dark Sky compliance. Refractive lens models incorporate a molded lens assembly designed for maximum forward throw. Solid state LED Crosstour MAXX luminaries are thermally optimized with eight lumen packages in cool 5000K, neutral 4000K, or warm 3000K LED color temperature (CCT).

Electrical
LED driver is mounted to the die-cast aluminum housing for optimal heat sinking. LED thermal management system incorporates both conduction and natural convection to transfer heat rapidly away from the LED source. 58W, 81W and 102W models operate in -40°C to 40°C [-40°F to 104°F]. High ambient 50°C [122°F] models available in 58W and 81W models only. Crosstour MAXX luminaires maintain greater than 89% of initial light output after 72,000 hours of operation. Four half-inch NPT threaded conduit entry points allow for thru-branch wiring. Back box is an authorized electrical wiring compartment. Integral LED electronic driver incorporates surge protection. 120-277V 50/60Hz, 480V 60Hz, or 347V 60Hz electrical operation. 480V is compatible for use with 480V Wye systems only.

Emergency Egress
Optional integral cold weather battery emergency egress includes emergency operation test switch (available in 58W and 81W models only), an AC-ON indicator light and a premium extended rated sealed maintenance-free nickel-metal hydride battery pack. The separate emergency lighting LEDs are wired to provide redundant emergency lighting. Listed to UL Standard 924, Emergency Lighting.

Area and Site Pole Mounting
Optional extruded aluminum 6-1/2" arm features internal bolt guides for supplied twin support rods, allowing for easy positioning of the fixture during installation to pole. Supplied with round plate adapter plate. Optional tenon adapter fits 2-3/8" or 3-1/2" O.D. Tenon.

Finish
Crosstour MAXX is protected with a super TGIC carbon bronze or summit white polyester powder coat paint. Super TGIC powder coat paint finishes withstand extreme climate conditions while providing optimal color and gloss retention of the installed life.

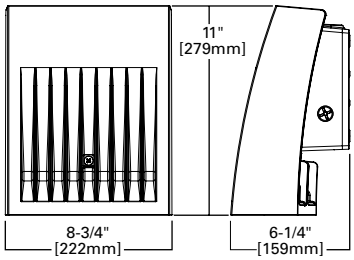
Warranty
Five-year warranty.

XTOR
CROSSTOUR
MAXX LED

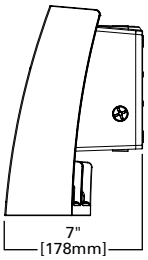
APPLICATIONS:
WALL / SURFACE
INVERTED
SITE LIGHTING

DIMENSIONS

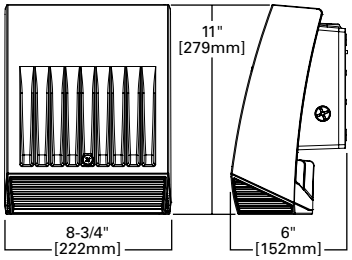
FULL CUTOFF



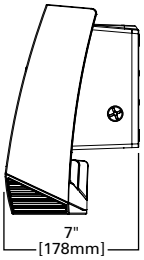
DEEP BACK BOX



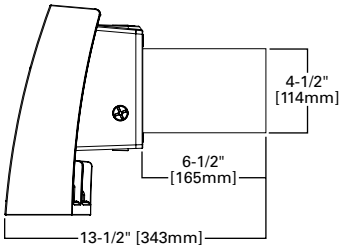
REFRACTIVE LENS



DEEP BACK BOX

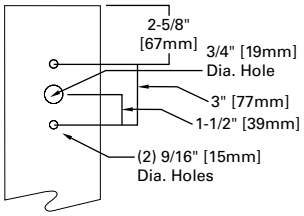


OPTIONAL POLE MOUNT ARM

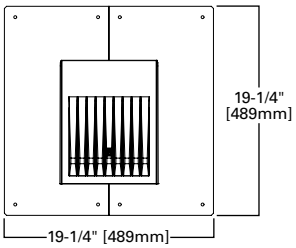


ARM DRILLING

TYPE "C"



ESCUTCHEON PLATES



CERTIFICATION DATA
UL/cUL Wet Location Listed
LM79 / LM80 Compliant
ROHS Compliant
NOM Compliant Models
3G Vibration Tested
UL924 Listed (CBP Models)
IP66 Rated
DesignLights Consortium® Qualified*

TECHNICAL DATA
40°C Ambient Temperature
External Supply Wiring 90°C Minimum

EPA
Effective Projected Area (Sq. Ft.):
XTOR6B, XTOR8B, XTOR12B=0.54
With Pole Mount Arm=0.98

SHIPPING DATA:
Approximate Net Weight:
12-15 lbs. [5.4-6.8 kgs.]

*www.designlights.org

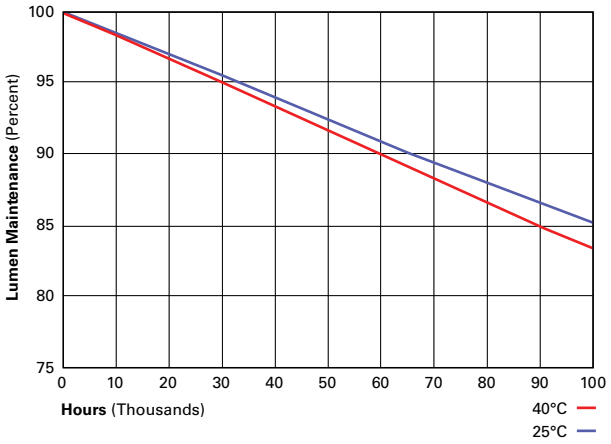
POWER AND LUMENS BY FIXTURE MODEL

58W Series						
LED Information	**XTOR6B**	**XTOR6BRL**	**XTOR6B-W**	**XTOR6BRL-W**	**XTOR6B-Y**	**XTOR6BRL-Y**
Delivered Lumens	6,129	6,225	6,038	6,133	5,611	5,826
B.U.G. Rating	B1-U0-G1	B2-U4-G3	B1-U0-G1	B2-U4-G3	B1-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	58W	58W	58W	58W	58W	58W
81W Series						
LED Information	**XTOR8B**	**XTOR8BRL**	**XTOR8B-W**	**XTOR8BRL-W**	**XTOR8B-Y**	**XTOR8BRL-Y**
Delivered Lumens	8,502	8,635	8,373	8,504	7,748	8,079
B.U.G. Rating	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	81W	81W	81W	81W	81W	81W
102W Series						
LED Information	**XTOR12B**	**XTOR12BRL**	**XTOR12B-W**	**XTOR12BRL-W**	**XTOR12B-Y**	**XTOR12BRL-Y**
Delivered Lumens	12,728	13,458	12,539	13,258	11,861	12,595
B.U.G. Rating	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3	B2-U0-G1	B2-U4-G3
CCT (Kelvin)	5000K	5000K	4000K	4000K	3000K	3000K
CRI (Color Rendering Index)	70	70	70	70	70	70
Power Consumption (Watts)	102W	102W	102W	102W	102W	102W

EGRESS Information	**XTOR6B, XTOR8B and XTOR12B Full Cutoff CBP Egress LED**	**XTOR6B, XTOR8B and XTOR12B Refractive Lens CBP Egress LED**
Delivered Lumens	509	468
B.U.G. Rating	N.A.	N.A.
CCT (Kelvin)	4000K	4000K
CRI (Color Rendering Index)	65	65
Power Consumption (Watts)	1.8W	1.8W

LUMEN MAINTENANCE

Ambient Temperature	**TM-21 Lumen Maintenance** (72,000 Hours)	**Theoretical L70** (Hours)
XTOR6B Model		
25°C	> 90%	246,000
40°C	> 88%	217,000
50°C	> 88%	201,000
XTOR8B Model		
25°C	> 89%	219,000
40°C	> 87%	195,000
50°C	> 86%	181,000
XTOR12B Model		
25°C	> 89%	222,000
40°C	> 87%	198,000



CURRENT DRAW

Voltage	**Model Series**				
	XTOR6B	**XTOR8B**	**XTOR12B**	**XTOR6B-CBP (Fixture/Battery)**	**XTOR8B-CBP (Fixture/Battery)**
120V	0.51	0.71	0.94	0.60/0.25	0.92/0.25
208V	0.25	0.39	0.52	- -	- -
240V	0.25	0.35	0.45	- -	- -
277V	0.22	0.31	0.39	0.36/0.21	0.50/0.21
347V	0.19	0.25	0.33		- -
480V	0.14	0.19	0.24		- -

ORDERING INFORMATION

Sample Number: XTOR6B-W-WT-PC1

Series [1]	**LED Kelvin Color**	**Housing Color**	**Options** (Add as Suffix)
Full Cutoff **XTOR6B**=58W **XTOR8B**=81W **XTOR12B**=102W **Refractive Lens** **XTOR6BRL**=58W **XTOR8BRL**=81W **XTOR12BRL**=102W	**[Blank]**=Bright White (Standard) 5000K **W**=Neutral, 4000K **Y**=Warm, 3000K	**[Blank]**=Carbon Bronze (Standard) **WT**=Summit White **BK**=Black **BZ**=Bronze **AP**=Grey **GM**=Graphite Metallic **DP**=Dark Platinum	**347V**=347V [2, 3, 4, 5] **480V**=480V [2, 3, 4, 5, 6] **PC1**=Photocontrol 120V [7] **PC2**=Photocontrol 208-277V [7, 8] **PMA**=Pole Mount Arm (C Drilling) with Round Adapter [3, 9] **MS-L20**=Motion Sensor for ON/OFF Operation [2, 3, 10, 11] **MS/DIM-L20**=Motion Sensor for Dimming Operation [2, 3, 10, 11, 12, 13, 14] **CBP**=Cold Weather Battery Pack [2, 3, 15, 16, 17] **HA**=50°C High Ambient [17]

Accessories (Order Separately)	
WG-XTORMX=Crosstour MAXX Wire Guard **PB120V**=Field Installed 120V Photocontrol **PB277V BUTTON PC**=Field Installed 208-277V Photocontrol [8] **VA1040-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1041-XX**=2@180° Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1042-XX**=3@120° Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1043-XX**=4@90° Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1044-XX**=2@90° Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1045-XX**=3@90° Tenon Adapter for 3-1/2" O.D. Tenon [18] **VA1046-XX**=2@120° Tenon Adapter for 3-1/2" O.D. Tenon [18]	**VA1033-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1034-XX**=2@180° Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1035-XX**=3@120° Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1036-XX**=4@90° Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1037-XX**=2@90° Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1038-XX**=3@90° Tenon Adapter for 2-3/8" O.D. Tenon [18] **VA1039-XX**=2@120° Tenon Adapter for 2-3/8" O.D. Tenon [18] **EWP/XTORMX**=Escutcheon Wall Plate, Carbon Bronze **EWP/XTORMX-WT**=Escutcheon Wall Plate, Summit White **FSIR-100**=Wireless Configuration Tool for Occupancy Sensor [14]

NOTES:

1. DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to www.designlights.org for details.
2. Not available with HA option.
3. Deep back box is standard for 347V, 480V, CBP, PMA, MS-L20 and MS/DIM-L20.
4. Not available with CBP option.
5. Thru-branch wiring not available with HA option or with 347V.
6. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
7. Not available with MS-L20 and MS/DIM-L20 options.
8. Use PC2 with 347V or 480V option for photocontrol. Factory wired to 208-277V lead.
9. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
10. For use in downlight orientation only. Optimal coverage at mounting heights of 9'-20'.
11. 120V thru 277V only.
12. Factory set to 50% power reduction after 15-minutes of inactivity. Dimming driver included.
13. Includes integral photo sensor.
14. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff, and more. Consult your lighting representative at Eaton for more information.
15. 120V or 277V operation only.
16. Operating temperatures -20°C to 25°C.
17. Not available in XTOR12B or XTOR12BRL models.
18. Replace XX with housing color.

STOCK ORDERING INFORMATION

58W Series	**81W Series**	**102W Series**
Full Cutoff		
XTOR6B=58W, 5000K, Carbon Bronze	**XTOR8B**=81W, 5000K, Carbon Bronze	**XTOR12B**=102W, 5000K, Carbon Bronze
XTOR6B-PC1=58W, 5000K, 120V PC, Carbon Bronze	**XTOR8B-PC1**=81W, 5000K, 120V PC, Carbon Bronze	
XTOR6B-WT= 58W, 5000K, Summit White	**XTOR8B-WT**=81W, 5000K, Summit White	
XTOR6B-W=58W, 4000K, Carbon Bronze	**XTOR8B-PC2**=81W, 5000K, 208-277V PC, Carbon Bronze	
XTOR6B-PMA= 58W, 5000K, Pole Mount Arm, Carbon Bronze	**XTOR8B-PMA**=81W, 5000K, Pole Mount Arm, Carbon Bronze	
XTOR6B-PC2= 58W, 5000K, 208-277V PC, Carbon Bronze	**XTOR8B-347V**=81W, 5000K, Carbon Bronze, 347V	
Refractive Lens		
XTOR6BRL=58W, 5000K, Refractive Lens, Carbon Bronze	**XTOR8BRL**=81W, 5000K, Refractive Lens, Carbon Bronze	**XTOR12BRL**=102W, 5000K, Refractive Lens, Carbon Bronze
XTOR6BRL-PC1=58W, 5000K, Refractive Lens, 120V PC, Carbon Bronze	**XTOR8BRL-PC1**=81W, 5000K, Refractive Lens, 120V PC, Carbon Bronze	**XTOR12BRL-W**=102W, 4000K, Refractive Lens, Carbon Bronze
XTOR6BRL-WT=58W, 5000K, Refractive Lens, Summit White	**XTOR8BRL-WT**=81W, 5000K, Refractive Lens, Summit White	**XTOR12RBL-347V**=102W, 5000K, Refractive Lens, Carbon Bronze, 347V
XTOR6BRL-W=58W, 4000K, Refractive Lens, Carbon Bronze	**XTOR8BRL-PC2**=81W, 5000K, Refractive Lens, 208-277V PC, Carbon Bronze	
XTOR6BRL-PMA=58W, 5000K, Refractive Lens, Pole Mount Arm, Carbon Bronze	**XTOR8BRL-PMA**=81W, 5000K, Refractive Lens, Pole Mount Arm, Carbon Bronze	
XTOR6BRL-PC2=58W, 5000K, Refractive Lens, 208-277V PC, Carbon Bronze	**XTOR8BRL-W**=81W, 4000K, Refractive Lens, Carbon Bronze	
XTOR6BRL-347V=58W, 5000K, Refractive Lens, Carbon Bronze, 347V	**XTOR8BRL-347V** = 81W, 5000K, Refractive Lens, Carbon Bronze, 347V	

SL630 SOLANA SERIES

LED

EPA .8 (ft²)
WEIGHT 33 LBS

7 YEAR WARRANTY

LUMEN RANGE 2,820 to 14,020

LIFE SPAN L70 MINIMUM 100,000 HOURS

UL LISTED

CLICK FOR FAQ's

IP RATING IP66

JOB NAME 140 West Rd

FIXTURE TYPE EX-P2

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 1A-SL630-12L40T3-MDL18-SV1-RP34-FHD-BLOC/RSA14A500-D1-SL900-5/UGMT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Option Round Pole Adapter	Optional Control Receptacle	Option Control	Option Motion Sensor	Option Fuse	Option House Side Shield	Pole See Pole Spec Sheets	Finish
	SL630	24L	40	T2	MDL014	SV1	RP56					BLOC	RSA20G50	

Mounting Configuration
(Click here to link to mounting configuration specification page)

- 1W
- 1A
- 2A
- 2A90
- 3A
- 3A90
- 4A
- 1AM
- 2AM

W = Wall Mount **A** = Arm Mount **AM** = Arm Mid-Mount

Fixture
- SL630

LED
- 24L
- 12L

CCT - Color Temperature (K)
- 27(00)
- 30(00)
- 35(00)
- 40(00)
- 50(00)

Distribution Type
- T2
- T3
- T4
- T5

Driver
- **MDL018** (120v-277v, 180mA)
- **MDH018** (347v-480v, 180mA)
- **MDL014** (120v-277v, 140mA)
- **MDH014** (347v-480v, 140mA)
- **MDL008**[1] (120v-277v, 80mA)
- **MDH008**[1] (347v-480v, 80mA)

[1] 12L system only.

Lens
- **CA** (Clear Acrylic)
- **FG** (Flat Glass)
- **SA** (Sag Acrylic)
- **FFG** (Frosted Flat Glass)
- **SV1** (Flat Soft Vue Light Diffused Acrylic)
- **SV2** (Flat Soft Vue Moderate Diffused Acrylic)
- **SV4** (Flat Soft Vue Maximum Diffused Acrylic)
- **SV1SA** (Soft Vue Light Diffused Sag Acrylic)
- **SV2SA** (Soft Vue Moderate Diffused Sag Acrylic)
- **SV4SA** (Soft Vue Maximum Diffused Sag Acrylic)

Options (Click here to view accessories sheet)
- **RP34**[2] For 3" to 4" diameter poles
- **RP56**[2] For 5" to 6" diameter poles
- **R** 3-Pin control receptacle only
- **R5** 5-Pin control receptacle only
- **R7** 7-Pin control receptacle only
- **PE**[3] Twist-Lock Photocontrol (120V-277V)
- **PE3**[3] Twist-Lock Photocontrol (347V)
- **PE4**[3] Twist-Lock Photocontrol (480V)
- **SC**[3] Shorting Cap
- **PEC** Electronic Button Photocontrol (120V-277V)
- **PEC4** Electronic Button Photocontrol (480V)
- **MOT1**[4] 360° lens, maximum coverage 40' diameter from 20' height
- **MOT2**[4] 360° lens, maximum coverage 70' diameter from 20' height
- **FHD**[5] Double Fuse and Holder
- **HSS** External 120° House Side Shield
- **BLOC** Back Light Optical Control

[2] Required for round poles
[3] Requires control receptacle
[4] Requires FLAT acrylic lens
[5] Ships loose for installation in base

Pole (Click here to link to pole specification page)
See Pole specification sheets.

Finish
TBD

Standard Urban Finishes (Click here to view paint finish sheet)
- **UGMT** Gun Metal Textured
- **UGM** Gun Metal Matte
- **UBT** Urban Bronze Textured
- **UB** Urban Bronze Matte
- **USLT** Urban Silver Textured
- **USL** Urban Silver Matte
- **UWHT** Urban White Textured
- **UWH** Urban White Matte
- **BKT** Black Textured

Custom Urban Finishes[6]
- **CM** Custom Match

[6] Smooth finishes are available upon request.

Specifications

Fixture
The medium scale SL630 Solana® arm mount luminaire's stylish design is a perfect accent for urban settings. The subtle, yet sophisticated look enhances the impact of any project. The Solana's wide array of optics, lenses and distributions makes this an easy choice for a variety of commercial, institutional and municipal projects. The Luminaire shall be UL listed in US and Canada.

LEDs
The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 5000K (4500K, 3000K, 3500K or 2700K option) color temperature with a minimum CRI of 70. Consult factory for custom color CCT. The luminaire shall have a minimum _____ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics
The luminaire shall be provided with refractor type optics applied to each LED array. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.

BLOC Optic: An optional "Back Light Optical Control" shield can be provided at the factory. This is an internal optic level "House Side Shield" offering significantly reduced backlight and glare while maintaining the original design aesthetics of the luminaire.

Electronic Drivers
The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload, overheat and short circuit

See next page

SternbergLighting
ESTABLISHED 1923

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
contactus@sternberglighting.com
www.sternberglighting.com

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protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be a high efficiency driver with a THD less than 20% and a high power factor greater than .9. It shall be dimming capable using a 0-10v signal, consult factory for more information.

Photocontrols

Button Style: The photocontrol shall be mounted on the fixture and pre-wired to driver. The electronic button type photocontrol is instant on with a 5-10 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.See pole spec sheet for pole mounted version.

Twist-Lock Style: The photocontrol shall be mounted externally on the fixture and pre-wired to driver. The twist lock type photocontrol is instant on with a 3-6 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.

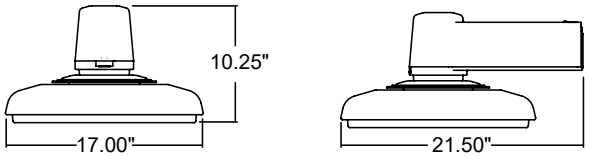
Warranty

Seven-year limited warranty. See product and finish warranty guide for details.

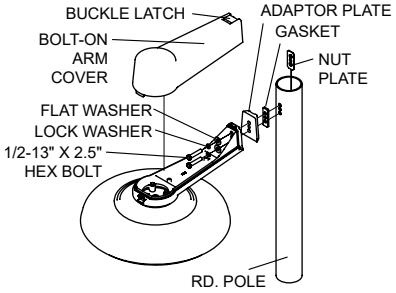
Finish

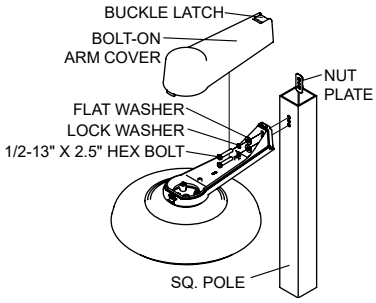
Refer to website for details.

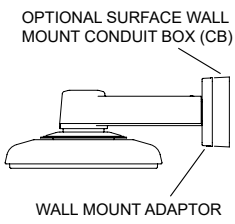
Fixtures

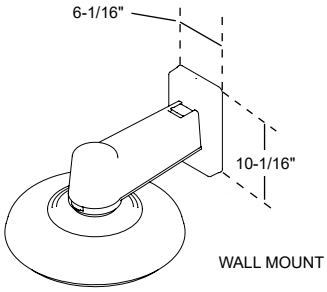


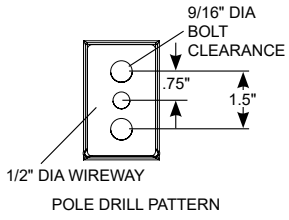
Mounting Details



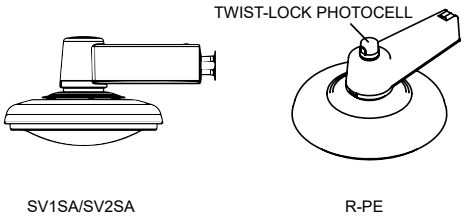


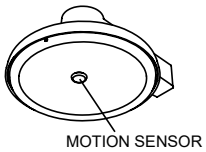


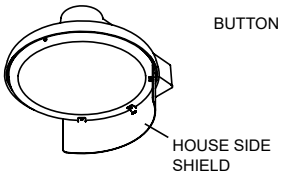


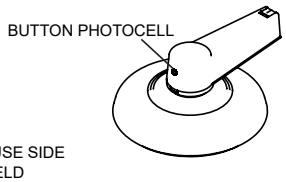


Options









SternbergLighting
ESTABLISHED 1923

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
contactus@sternberglighting.com
www.sternberglighting.com

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SL630 SOLANA SERIES

LED

Performance (Based on CA Lens)

MODEL #	T2 LUMENS	BUG	EFFICACY (LPW)	T3 LUMENS	BUG	EFFICACY (LPW)	T4 LUMENS	BUG	EFFICACY (LPW)	T5 LUMENS	BUG	EFFICACY (LPW)	WATTS
24L40T_-MDL018	13815	B2U0G2	117.1	13895	B2U0G2	117.8	13345	B2U0G2	113.1	14020	B3U0G1	118.8	118
24L30T_-MDL018	13170	B2U0G2	111.6	13250	B2U0G2	112.3	12725	B2U0G2	107.8	13365	B3U0G1	113.3	118
24L27T_-MDL018	11910	B2U0G2	100.9	11980	B2U0G2	101.5	11505	B2U0G2	97.5	12085	B3U0G1	102.4	118
24L40T_-MDL014	11105	B2U0G2	126.2	11190	B2U0G2	127.2	10720	B2U0G2	121.8	11270	B3U0G1	128.1	88
24L30T_-MDL014	10590	B2U0G2	120.3	10670	B2U0G2	121.3	10220	B2U0G2	116.1	10745	B3U0G1	122.1	88
24L27T_-MDL014	9575	B2U0G2	108.8	9645	B2U0G2	109.6	9240	B2U0G2	105.0	9715	B3U0G1	110.4	88
12L40T_-MDL018	6905	B1U0G1	115.1	6945	B1U0G1	115.8	6635	B1U0G1	110.6	6985	B2U0G1	116.4	60
12L30T_-MDL018	6585	B1U0G1	109.8	6620	B1U0G1	110.3	6325	B1U0G1	105.4	6660	B2U0G1	111.0	60
12L27T_-MDL018	5955	B1U0G1	99.3	5985	B1U0G1	99.8	5720	B1U0G1	95.3	6020	B2U0G1	100.3	60
12L40T_-MDL014	5635	B1U0G1	122.5	5640	B1U0G1	122.6	5400	B1U0G1	117.4	5690	B2U0G1	123.7	46
12L30T_-MDL014	5375	B1U0G1	116.8	5375	B1U0G1	116.8	5150	B1U0G1	112.0	5425	B2U0G1	117.9	46
12L27T_-MDL014	4860	B1U0G1	105.7	4860	B1U0G1	105.7	4655	B1U0G1	101.2	4905	B2U0G1	106.6	46
12L40T_-MDL008	3405	B1U0G1	126.1	3425	B1U0G1	126.9	3270	B1U0G1	121.1	3440	B1U0G0	127.4	27
12L30T_-MDL008	3245	B1U0G1	120.2	3265	B1U0G1	120.9	3120	B1U0G1	115.6	3280	B1U0G0	121.5	27
12L27T_-MDL008	2935	B1U0G1	108.7	2955	B1U0G1	109.4	2820	B1U0G1	104.4	2965	B1U0G0	109.8	27

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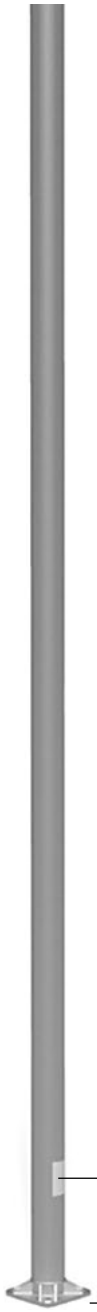
urbanline

SternbergLighting
ESTABLISHED 1923

10' TO 30' ROUND STRAIGHT ALUMINUM POLES (RSA)

Job Name: 140 West Rd | Client Name: | Job Location: Portsmouth, NH | Created By: | Date: | Product: RSA20G500 | Quote: | Customer Approval: | Date:

Sternberg Model	Pole Height	Shaft Size	Wall Thick-ness	Slotted SQ Base Width	Hand-hole Size	Weight Lbs	Bolt Circle	Bolt Proj +/- .25	DBL Nutted Anchor bolt ASTM F1554 GRADE 55 Galv thread	Max Loading Capacities								Base Cover Options
										90 MPH w/1.3 Gust		110MPH w/1.3 Gust		130MPH w/1.3 Gust		150MPH w/1.3 Gust		
										MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	
RSA10G400	10	4	0.125	8.91	2 x 4	34	6.75"-8.25"	3.25	0.75	4.3	100	2.6	100	1.8	100	1.2	100	2401-4, SL900-4
RSA10G500	10	5	0.125	9.61	2 x 4	39	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.1	100	3.0	100	2401-5, SL900-5
RSA12G400	12	4	0.125	8.91	2 x 4	38	6.75"-8.25"	3.25	0.75	3.0	100	1.7	100	1.1	100	0.7	100	2401-4, SL900-4
RSA12G500	12	5	0.125	9.61	2 x 4	44	7.75"-9.5"	3.25	0.75	6.9	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA12A500	12	5	0.156	9.61	2 x 4	50	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.0	100	2.9	100	2401-5, SL900-5
RSA12T500	12	5	0.188	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	10.9	100	7.1	100	4.9	100	3.6	100	2401-5, SL900-5
RSA14G400	14	4	0.125	8.91	2 x 4	41	6.75"-8.25"	3.25	0.75	1.9	100	0.9	100	-	100	-	100	2401-4, SL900-4
RSA14G500	14	5	0.125	9.61	2 x 4	48	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA14A500	14	5	0.156	9.61	2 x 4	56	7.75"-9.5"	3.25	0.75	7.0	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA14T500	14	5	0.188	9.61	2 x 4	63	7.75"-9.5"	3.25	0.75	8.7	100	5.6	100	3.8	100	2.8	100	2401-5, SL900-5
RSA16G400	16	4	0.125	8.91	2 x 4	45	6.75"-8.25"	3.25	0.75	1.0	100	-	100	-	100	-	100	2401-4, SL900-4
RSA16G500	16	5	0.125	9.61	2 x 4	53	7.75"-9.5"	3.25	0.75	3.8	100	2.3	100	1.5	100	1.0	100	2401-5, SL900-5
RSA16A500	16	5	0.156	9.61	2 x 4	61	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA16T500	16	5	0.188	9.61	2 x 4	70	7.75"-9.5"	3.25	0.75	6.7	100	4.2	100	2.8	100	2.0	100	2401-5, SL900-5
RSA18G500	18	5	0.125	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	2.7	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA18A500	18	5	0.156	9.61	2 x 4	67	7.75"-9.5"	3.25	0.75	3.9	100	2.3	100	1.5	100	1	100	2401-5, SL900-5
RSA18T500	18	5	0.188	9.61	2 x 4	77	7.75"-9.5"	3.25	0.75	5.1	100	3.2	100	2.1	100	1.4	100	2401-5, SL900-5
RSA18T600	18	6	0.188	10.32	2 x 4	96	8.75"-10.25"	3.50	0.75	10.5	100	6.7	100	4.6	100	3.1	100	2401-6
RSA20G500	20	5	0.125	9.61	2 x 4	62	7.75"-9.5"	3.25	0.75	1.7	100	0.8	100	-	100	-	100	2401-5, SL900-5
RSA20A500	20	5	0.156	9.61	2 x 4	73	7.75"-9.5"	3.25	0.75	2.8	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA20T500	20	5	0.188	9.61	2 x 4	84	7.75"-9.5"	3.25	0.75	3.8	100	2.2	100	1.4	100	0.9	100	2401-5, SL900-5
RSA20A600	20	6	0.156	10.32	2 x 4	90	8.75"-10.25"	3.50	0.75	6.7	100	4.2	100	2.8	100	1.6	100	2401-6
RSA20T600	20	6	0.188	10.32	2 x 4	104	8.75"-10.25"	3.50	0.75	8.5	100	5.4	100	3.6	100	2.3	100	2401-6
RSA25A600	25	6	0.156	10.32	2 x 4	115	8.75"-10.25"	3.50	0.75	3.6	100	2	100	1.1	100	-	100	2401-6
RSA25T600 *	25	6	0.188	10.32	2 x 4	124	8.75"-10.25"	3.50	0.75	4.9	100	2.9	100	1.8	100	0.8	100	2401-6
RSA30T600 *	30	6	0.188	10.32	2 x 4	151	8.75"-10.25"	3.50	1.0	2.3	100	1.1	100	-	100	-	100	2401-6



CROSS SECTION

RSA

RSA = Round Straight Aluminum

MODEL NUMBER

RSA20G500

RSA10G400	RSA14T500	RSA20A500
RSA12G500	RSA16G400	RSA20T500
RSA12G400	RSA16G500	RSA20A600
RSA12G500	RSA16A500	RSA20T600
RSA12A500	RSA16T500	RSA25A600
RSA12T500	RSA18G500	RSA25T600*
RSA14G400	RSA18A500	RSA30T600*
RSA14G500	RSA18T600	
RSA14A500	RSA20G500	

FIXTURE MOUNTING

D1

Arm Mounting
D1 = 1 Luminaire
D2 = 2 @ 180°
D3 = 3 @ 120°
D4 = 4 @ 90°
D5 = 2 @ 90°
D6 = 3 @ 90°

Tenon Mounting
P2 = 2.38" OD x 4.00"
P3 = 3.00" OD x 3.00"
P4 = 4.00" OD x 6.00"
P5 = 4.50" OD x 3.50"
P6 = 3.50" OD x 3.50"

BASE COVER

2401-5

2401-4
2401-5
2401-6
SL900-4
SL900-5
LU900-4
LU900-5

OPTIONS

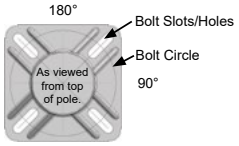
See Accessories at www.sternberglighting.com (Please specify with code)

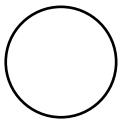
COLOR

TO BE DETERMINED

UGMT - Urban Gun Metal Textured
UGM - Urban Gun Metal Matte
UBT - Urban Bronze Textured
USLT - Urban Silver Textured
UWHT - Urban White Textured
UB - Urban Bronze Matte
USL - Urban Silver Matte
UWH - Urban White Matte
BKT - Black Textured

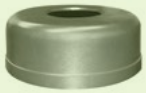
Anchor Base Detail





4", 5" or 6" Dia. Round Profile

OPTIONAL BASE COVERS



Round 2401
15" Dia. x 6" H
Throat Size 4", 5" or 6" Dia.
2401-4
2401-5
2401-6

Round SL900
18.5" Dia. x 6" H
Throat Size 4" or 5" Dia.
SL900-4
SL900-5

Round LU900
19" Dia. x 9" H
Throat Size 4" or 5" Dia.
LU900-4
LU900-5

CLICK FOR FAQ's

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* Factory installed vibration damper.

140 WEST ROAD - TYPE EX-P3

SL630 SOLANA SERIES

LED

EPA .8 (ft²)
WEIGHT 33 LBS

7 YEAR WARRANTY

LUMEN RANGE 2,820 to 14,020

LIFE SPAN L70 MINIMUM 100,000 HOURS

UL LISTED

CLICK FOR FAQ's

IP RATING IP66

JOB NAME 140 West Rd

FIXTURE TYPE EX-P2

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 1A-SL630-12L40T3-MDL18-SV1-RP34-FHD-BLOC/RSA14A500-D1-SL900-5/UGMT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Option Round Pole Adapter	Optional Control Receptacle	Option Control	Option Motion Sensor	Option Fuse	Option House Side Shield	Pole See Pole Spec Sheets	Finish
	SL630	24L	40	T2	MDL014	SV1	RP56					BLOC	RSA20G50	

Mounting Configuration
(Click here to link to mounting configuration specification page)

- 1W
- 1A
- 2A
- 2A90
- 3A
- 3A90
- 4A
- 1AM
- 2AM

W = Wall Mount **A** = Arm Mount **AM** = Arm Mid-Mount

Fixture
- SL630

LED
- 24L
- 12L

CCT - Color Temperature (K)
- 27(00)
- 30(00)
- 35(00)
- 40(00)
- 50(00)

Distribution Type
- T2
- T3
- T4
- T5

Driver
- **MDL018** (120v-277v, 180mA)
- **MDH018** (347v-480v, 180mA)
- **MDL014** (120v-277v, 140mA)
- **MDH014** (347v-480v, 140mA)
- **MDL008**[1] (120v-277v, 80mA)
- **MDH008**[1] (347v-480v, 80mA)

[1] 12L system only.

Lens
- **CA** (Clear Acrylic)
- **FG** (Flat Glass)
- **SA** (Sag Acrylic)
- **FFG** (Frosted Flat Glass)
- **SV1** (Flat Soft Vue Light Diffused Acrylic)
- **SV2** (Flat Soft Vue Moderate Diffused Acrylic)
- **SV4** (Flat Soft Vue Maximum Diffused Acrylic)
- **SV1SA** (Soft Vue Light Diffused Sag Acrylic)
- **SV2SA** (Soft Vue Moderate Diffused Sag Acrylic)
- **SV4SA** (Soft Vue Maximum Diffused Sag Acrylic)

Options (Click here to view accessories sheet)
- **RP34**[2] For 3" to 4" diameter poles
- **RP56**[2] For 5" to 6" diameter poles
- **R** 3-Pin control receptacle only
- **R5** 5-Pin control receptacle only
- **R7** 7-Pin control receptacle only
- **PE**[3] Twist-Lock Photocontrol (120V-277V)
- **PE3**[3] Twist-Lock Photocontrol (347V)
- **PE4**[3] Twist-Lock Photocontrol (480V)
- **SC**[3] Shorting Cap
- **PEC** Electronic Button Photocontrol (120V-277V)
- **PEC4** Electronic Button Photocontrol (480V)
- **MOT1**[4] 360° lens, maximum coverage 40' diameter from 20' height
- **MOT2**[4] 360° lens, maximum coverage 70' diameter from 20' height
- **FHD**[5] Double Fuse and Holder
- **HSS** External 120° House Side Shield
- **BLOC** Back Light Optical Control

[2] Required for round poles
[3] Requires control receptacle
[4] Requires FLAT acrylic lens
[5] Ships loose for installation in base

Pole (Click here to link to pole specification page)
See Pole specification sheets.

Finish
TBD

Standard Urban Finishes (Click here to view paint finish sheet)
- **UGMT** Gun Metal Textured
- **UGM** Gun Metal Matte
- **UBT** Urban Bronze Textured
- **UB** Urban Bronze Matte
- **USLT** Urban Silver Textured
- **USL** Urban Silver Matte
- **UWHT** Urban White Textured
- **UWH** Urban White Matte
- **BKT** Black Textured

Custom Urban Finishes[6]
- **CM** Custom Match

[6] Smooth finishes are available upon request.

Specifications

Fixture
The medium scale SL630 Solana® arm mount luminaire's stylish design is a perfect accent for urban settings. The subtle, yet sophisticated look enhances the impact of any project. The Solana's wide array of optics, lenses and distributions makes this an easy choice for a variety of commercial, institutional and municipal projects. The Luminaire shall be UL listed in US and Canada.

LEDs
The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 5000K (4500K, 3000K, 3500K or 2700K option) color temperature with a minimum CRI of 70. Consult factory for custom color CCT. The luminaire shall have a minimum _____ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics
The luminaire shall be provided with refractor type optics applied to each LED array. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.

BLOC Optic: An optional "Back Light Optical Control" shield can be provided at the factory. This is an internal optic level "House Side Shield" offering significantly reduced backlight and glare while maintaining the original design aesthetics of the luminaire.

Electronic Drivers
The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload, overheat and short circuit

See next page

SternbergLighting
ESTABLISHED 1923

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www.sternberglighting.com

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protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be a high efficiency driver with a THD less than 20% and a high power factor greater than .9. It shall be dimming capable using a 0-10v signal, consult factory for more information.

Photocontrols

Button Style: The photocontrol shall be mounted on the fixture and pre-wired to driver. The electronic button type photocontrol is instant on with a 5-10 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.See pole spec sheet for pole mounted version.

Twist-Lock Style: The photocontrol shall be mounted externally on the fixture and pre-wired to driver. The twist lock type photocontrol is instant on with a 3-6 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.

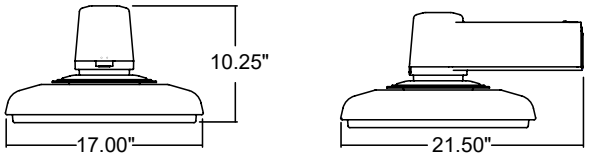
Warranty

Seven-year limited warranty. See product and finish warranty guide for details.

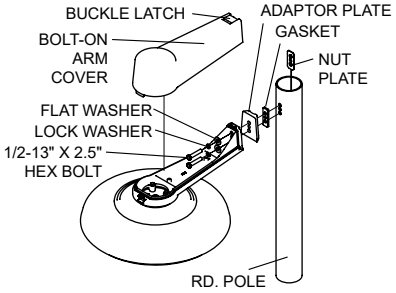
Finish

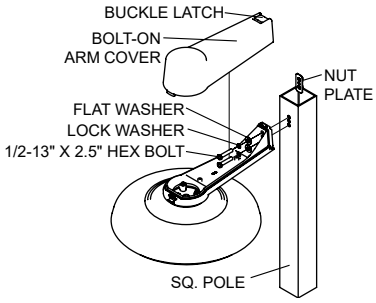
Refer to website for details.

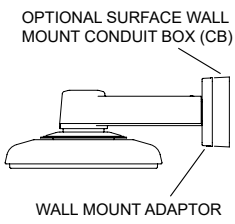
Fixtures

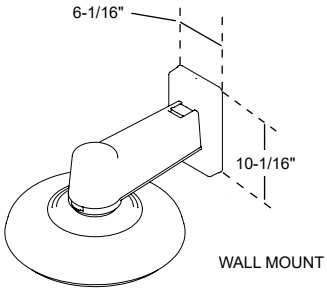


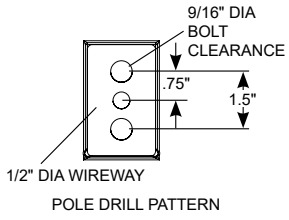
Mounting Details



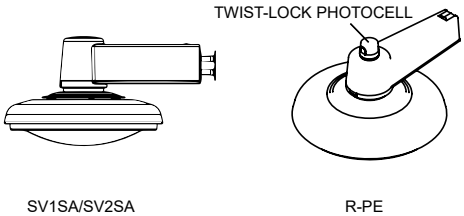


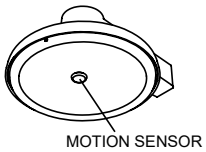


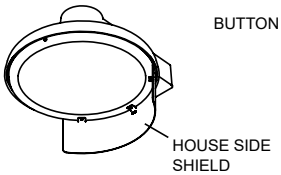


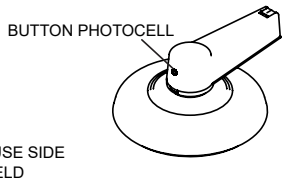


Options









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SL630 SOLANA SERIES

LED

Performance (Based on CA Lens)

MODEL #	T2 LUMENS	BUG	EFFICACY (LPW)	T3 LUMENS	BUG	EFFICACY (LPW)	T4 LUMENS	BUG	EFFICACY (LPW)	T5 LUMENS	BUG	EFFICACY (LPW)	WATTS
24L40T_-MDL018	13815	B2U0G2	117.1	13895	B2U0G2	117.8	13345	B2U0G2	113.1	14020	B3U0G1	118.8	118
24L30T_-MDL018	13170	B2U0G2	111.6	13250	B2U0G2	112.3	12725	B2U0G2	107.8	13365	B3U0G1	113.3	118
24L27T_-MDL018	11910	B2U0G2	100.9	11980	B2U0G2	101.5	11505	B2U0G2	97.5	12085	B3U0G1	102.4	118
24L40T_-MDL014	11105	B2U0G2	126.2	11190	B2U0G2	127.2	10720	B2U0G2	121.8	11270	B3U0G1	128.1	88
24L30T_-MDL014	10590	B2U0G2	120.3	10670	B2U0G2	121.3	10220	B2U0G2	116.1	10745	B3U0G1	122.1	88
24L27T_-MDL014	9575	B2U0G2	108.8	9645	B2U0G2	109.6	9240	B2U0G2	105.0	9715	B3U0G1	110.4	88
12L40T_-MDL018	6905	B1U0G1	115.1	6945	B1U0G1	115.8	6635	B1U0G1	110.6	6985	B2U0G1	116.4	60
12L30T_-MDL018	6585	B1U0G1	109.8	6620	B1U0G1	110.3	6325	B1U0G1	105.4	6660	B2U0G1	111.0	60
12L27T_-MDL018	5955	B1U0G1	99.3	5985	B1U0G1	99.8	5720	B1U0G1	95.3	6020	B2U0G1	100.3	60
12L40T_-MDL014	5635	B1U0G1	122.5	5640	B1U0G1	122.6	5400	B1U0G1	117.4	5690	B2U0G1	123.7	46
12L30T_-MDL014	5375	B1U0G1	116.8	5375	B1U0G1	116.8	5150	B1U0G1	112.0	5425	B2U0G1	117.9	46
12L27T_-MDL014	4860	B1U0G1	105.7	4860	B1U0G1	105.7	4655	B1U0G1	101.2	4905	B2U0G1	106.6	46
12L40T_-MDL008	3405	B1U0G1	126.1	3425	B1U0G1	126.9	3270	B1U0G1	121.1	3440	B1U0G0	127.4	27
12L30T_-MDL008	3245	B1U0G1	120.2	3265	B1U0G1	120.9	3120	B1U0G1	115.6	3280	B1U0G0	121.5	27
12L27T_-MDL008	2935	B1U0G1	108.7	2955	B1U0G1	109.4	2820	B1U0G1	104.4	2965	B1U0G0	109.8	27

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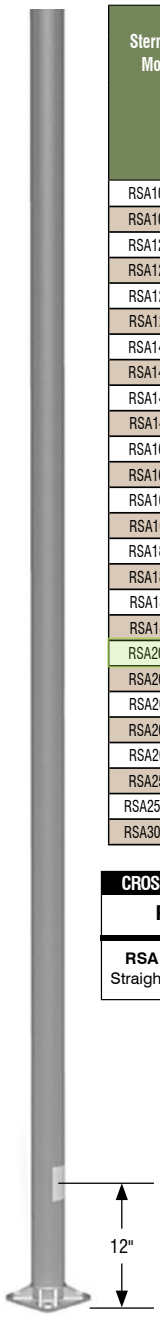
urbanline

SternbergLighting
ESTABLISHED 1923

10' TO 30' ROUND STRAIGHT ALUMINUM POLES (RSA)

Job Name: 140 West Rd | Client Name: | Job Location: Portsmouth, NH | Created By: | Date: | Product: RSA20G500 | Quote: | Customer Approval: | Date:

Sternberg Model	Pole Height	Shaft Size	Wall Thick-ness	Slotted SQ Base Width	Hand-hole Size	Weight Lbs	Bolt Circle	Bolt Proj +/- .25	DBL Nutted Anchor bolt ASTM F1554 GRADE 55 Galv thread	Max Loading Capacities								Base Cover Options
										90 MPH w/1.3 Gust		110MPH w/1.3 Gust		130MPH w/1.3 Gust		150MPH w/1.3 Gust		
										MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	
RSA10G400	10	4	0.125	8.91	2 x 4	34	6.75"-8.25"	3.25	0.75	4.3	100	2.6	100	1.8	100	1.2	100	2401-4, SL900-4
RSA10G500	10	5	0.125	9.61	2 x 4	39	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.1	100	3.0	100	2401-5, SL900-5
RSA12G400	12	4	0.125	8.91	2 x 4	38	6.75"-8.25"	3.25	0.75	3.0	100	1.7	100	1.1	100	0.7	100	2401-4, SL900-4
RSA12G500	12	5	0.125	9.61	2 x 4	44	7.75"-9.5"	3.25	0.75	6.9	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA12A500	12	5	0.156	9.61	2 x 4	50	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.0	100	2.9	100	2401-5, SL900-5
RSA12T500	12	5	0.188	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	10.9	100	7.1	100	4.9	100	3.6	100	2401-5, SL900-5
RSA14G400	14	4	0.125	8.91	2 x 4	41	6.75"-8.25"	3.25	0.75	1.9	100	0.9	100	-	100	-	100	2401-4, SL900-4
RSA14G500	14	5	0.125	9.61	2 x 4	48	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA14A500	14	5	0.156	9.61	2 x 4	56	7.75"-9.5"	3.25	0.75	7.0	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA14T500	14	5	0.188	9.61	2 x 4	63	7.75"-9.5"	3.25	0.75	8.7	100	5.6	100	3.8	100	2.8	100	2401-5, SL900-5
RSA16G400	16	4	0.125	8.91	2 x 4	45	6.75"-8.25"	3.25	0.75	1.0	100	-	100	-	100	-	100	2401-4, SL900-4
RSA16G500	16	5	0.125	9.61	2 x 4	53	7.75"-9.5"	3.25	0.75	3.8	100	2.3	100	1.5	100	1.0	100	2401-5, SL900-5
RSA16A500	16	5	0.156	9.61	2 x 4	61	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA16T500	16	5	0.188	9.61	2 x 4	70	7.75"-9.5"	3.25	0.75	6.7	100	4.2	100	2.8	100	2.0	100	2401-5, SL900-5
RSA18G500	18	5	0.125	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	2.7	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA18A500	18	5	0.156	9.61	2 x 4	67	7.75"-9.5"	3.25	0.75	3.9	100	2.3	100	1.5	100	1	100	2401-5, SL900-5
RSA18T500	18	5	0.188	9.61	2 x 4	77	7.75"-9.5"	3.25	0.75	5.1	100	3.2	100	2.1	100	1.4	100	2401-5, SL900-5
RSA18T600	18	6	0.188	10.32	2 x 4	96	8.75"-10.25"	3.50	0.75	10.5	100	6.7	100	4.6	100	3.1	100	2401-6
RSA20G500	20	5	0.125	9.61	2 x 4	62	7.75"-9.5"	3.25	0.75	1.7	100	0.8	100	-	100	-	100	2401-5, SL900-5
RSA20A500	20	5	0.156	9.61	2 x 4	73	7.75"-9.5"	3.25	0.75	2.8	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA20T500	20	5	0.188	9.61	2 x 4	84	7.75"-9.5"	3.25	0.75	3.8	100	2.2	100	1.4	100	0.9	100	2401-5, SL900-5
RSA20A600	20	6	0.156	10.32	2 x 4	90	8.75"-10.25"	3.50	0.75	6.7	100	4.2	100	2.8	100	1.6	100	2401-6
RSA20T600	20	6	0.188	10.32	2 x 4	104	8.75"-10.25"	3.50	0.75	8.5	100	5.4	100	3.6	100	2.3	100	2401-6
RSA25A600	25	6	0.156	10.32	2 x 4	115	8.75"-10.25"	3.50	0.75	3.6	100	2	100	1.1	100	-	100	2401-6
RSA25T600 *	25	6	0.188	10.32	2 x 4	124	8.75"-10.25"	3.50	0.75	4.9	100	2.9	100	1.8	100	0.8	100	2401-6
RSA30T600 *	30	6	0.188	10.32	2 x 4	151	8.75"-10.25"	3.50	1.0	2.3	100	1.1	100	-	100	-	100	2401-6



CROSS SECTION

RSA

RSA = Round Straight Aluminum

MODEL NUMBER

RSA20G500

RSA10G400	RSA14T500	RSA20A500
RSA12G500	RSA16G400	RSA20T500
RSA12G400	RSA16G500	RSA20A600
RSA12G500	RSA16A500	RSA20T600
RSA12A500	RSA16T500	RSA25A600
RSA12T500	RSA18G500	RSA25T600*
RSA14G400	RSA18A500	RSA30T600*
RSA14G500	RSA18T600	
RSA14A500	RSA20G500	

FIXTURE MOUNTING

D1

Arm Mounting
D1 = 1 Luminaire
D2 = 2 @ 180°
D3 = 3 @ 120°
D4 = 4 @ 90°
D5 = 2 @ 90°
D6 = 3 @ 90°

Tenon Mounting
P2 = 2.38" OD x 4.00"
P3 = 3.00" OD x 3.00"
P4 = 4.00" OD x 6.00"
P5 = 4.50" OD x 3.50"
P6 = 3.50" OD x 3.50"

BASE COVER

2401-5

2401-4
2401-5
2401-6
SL900-4
SL900-5
LU900-4
LU900-5

OPTIONS

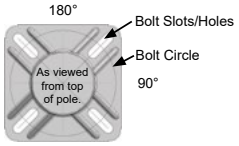
See Accessories at www.sternberglighting.com (Please specify with code)

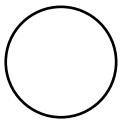
COLOR

TO BE DETERMINED

UGMT - Urban Gun Metal Textured
UGM - Urban Gun Metal Matte
UBT - Urban Bronze Textured
USLT - Urban Silver Textured
UWHT - Urban White Textured
UB - Urban Bronze Matte
USL - Urban Silver Matte
UWH - Urban White Matte
BKT - Black Textured

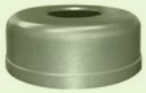
Anchor Base Detail





4", 5" or 6" Dia. Round Profile

OPTIONAL BASE COVERS



Round 2401
15" Dia. x 6" H
Throat Size 4", 5" or 6" Dia.
2401-4
2401-5
2401-6

Round SL900
18.5" Dia. x 6" H
Throat Size 4" or 5" Dia.
SL900-4
SL900-5

Round LU900
19" Dia. x 9" H
Throat Size 4" or 5" Dia.
LU900-4
LU900-5

CLICK FOR FAQ's

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* Factory installed vibration damper.

140 WEST ROAD - TYPE EX-P4

SL630 SOLANA SERIES

LED

EPA .8 (ft²)
WEIGHT 33 LBS

7 YEAR WARRANTY

LUMEN RANGE 2,820 to 14,020

LIFE SPAN L70 MINIMUM 100,000 HOURS

UL LISTED

CLICK FOR FAQ's

IP RATING IP66

JOB NAME 140 West Rd

FIXTURE TYPE EX-P2

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 1A-SL630-12L40T3-MDL18-SV1-RP34-FHD-BLOC/RSA14A500-D1-SL900-5/UGMT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Option Round Pole Adapter	Optional Control Receptacle	Option Control	Option Motion Sensor	Option Fuse	Option House Side Shield	Pole See Pole Spec Sheets	Finish
	SL630	24L	40	T2	MDL014	SV1	RP56					BLOC	RSA20G50	

Mounting Configuration
(Click here to link to mounting configuration specification page)

- 1W
- 1A
- 2A
- 2A90
- 3A
- 3A90
- 4A
- 1AM
- 2AM

W = Wall Mount **A** = Arm Mount **AM** = Arm Mid-Mount

Fixture
- SL630

LED
- 24L
- 12L

CCT - Color Temperature (K)
- 27(00)
- 30(00)
- 35(00)
- 40(00)
- 50(00)

Distribution Type
- T2
- T3
- T4
- T5

Driver
- **MDL018** (120v-277v, 180mA)
- **MDH018** (347v-480v, 180mA)
- **MDL014** (120v-277v, 140mA)
- **MDH014** (347v-480v, 140mA)
- **MDL008**[1] (120v-277v, 80mA)
- **MDH008**[1] (347v-480v, 80mA)

[1] 12L system only.

Lens
- **CA** (Clear Acrylic)
- **FG** (Flat Glass)
- **SA** (Sag Acrylic)
- **FFG** (Frosted Flat Glass)
- **SV1** (Flat Soft Vue Light Diffused Acrylic)
- **SV2** (Flat Soft Vue Moderate Diffused Acrylic)
- **SV4** (Flat Soft Vue Maximum Diffused Acrylic)
- **SV1SA** (Soft Vue Light Diffused Sag Acrylic)
- **SV2SA** (Soft Vue Moderate Diffused Sag Acrylic)
- **SV4SA** (Soft Vue Maximum Diffused Sag Acrylic)

Options (Click here to view accessories sheet)
- **RP34**[2] For 3" to 4" diameter poles
- **RP56**[2] For 5" to 6" diameter poles
- **R** 3-Pin control receptacle only
- **R5** 5-Pin control receptacle only
- **R7** 7-Pin control receptacle only
- **PE**[3] Twist-Lock Photocontrol (120V-277V)
- **PE3**[3] Twist-Lock Photocontrol (347V)
- **PE4**[3] Twist-Lock Photocontrol (480V)
- **SC**[3] Shorting Cap
- **PEC** Electronic Button Photocontrol (120V-277V)
- **PEC4** Electronic Button Photocontrol (480V)
- **MOT1**[4] 360° lens, maximum coverage 40' diameter from 20' height
- **MOT2**[4] 360° lens, maximum coverage 70' diameter from 20' height
- **FHD**[5] Double Fuse and Holder
- **HSS** External 120° House Side Shield
- **BLOC** Back Light Optical Control

[2] Required for round poles
[3] Requires control receptacle
[4] Requires FLAT acrylic lens
[5] Ships loose for installation in base

Pole (Click here to link to pole specification page)
See Pole specification sheets.

Finish
TBD

Standard Urban Finishes (Click here to view paint finish sheet)
- **UGMT** Gun Metal Textured
- **UGM** Gun Metal Matte
- **UBT** Urban Bronze Textured
- **UB** Urban Bronze Matte
- **USLT** Urban Silver Textured
- **USL** Urban Silver Matte
- **UWHT** Urban White Textured
- **UWH** Urban White Matte
- **BKT** Black Textured

Custom Urban Finishes[6]
- **CM** Custom Match

[6] Smooth finishes are available upon request.

Specifications

Fixture
The medium scale SL630 Solana® arm mount luminaire's stylish design is a perfect accent for urban settings. The subtle, yet sophisticated look enhances the impact of any project. The Solana's wide array of optics, lenses and distributions makes this an easy choice for a variety of commercial, institutional and municipal projects. The Luminaire shall be UL listed in US and Canada.

LEDs
The luminaire shall use high output, high brightness LED's. They shall be mounted in arrays, on printed circuit boards designed to maximize heat transfer to the heat sink surface. The arrays shall be roof mounted to minimize up-light. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 5000K (4500K, 3000K, 3500K or 2700K option) color temperature with a minimum CRI of 70. Consult factory for custom color CCT. The luminaire shall have a minimum _____ (see table) delivered initial lumen rating when operated at steady state with an average ambient temperature of 25°C (77°F).

Optics
The luminaire shall be provided with refractor type optics applied to each LED array. The luminaire shall provide Type ___ (2, 3, 4 or 5) light distribution per the IESNA classifications. Testing shall be done in accordance with IESNA LM-79.

BLOC Optic: An optional "Back Light Optical Control" shield can be provided at the factory. This is an internal optic level "House Side Shield" offering significantly reduced backlight and glare while maintaining the original design aesthetics of the luminaire.

Electronic Drivers
The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload, overheat and short circuit

See next page

SternbergLighting
ESTABLISHED 1923

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protection, and have a DC voltage output, constant current design, 50/60HZ. It shall be supplied with line-ground, line-neutral and neutral-ground electrical surge protection in accordance with IEEE/ANSI C62.41.2 guidelines. It shall be a high efficiency driver with a THD less than 20% and a high power factor greater than .9. It shall be dimming capable using a 0-10v signal, consult factory for more information.

Photocontrols

Button Style: The photocontrol shall be mounted on the fixture and pre-wired to driver. The electronic button type photocontrol is instant on with a 5-10 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.See pole spec sheet for pole mounted version.

Twist-Lock Style: The photocontrol shall be mounted externally on the fixture and pre-wired to driver. The twist lock type photocontrol is instant on with a 3-6 second turn off, and shall turn on at 1.5 footcandles with a turn-off at 2-3 footcandles. Photocontrol is 120-277 volt and warranted for 6 years.

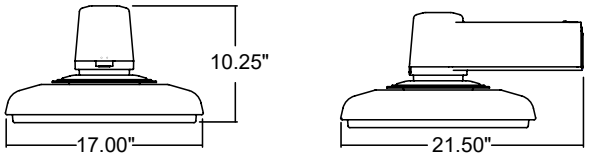
Warranty

Seven-year limited warranty. See product and finish warranty guide for details.

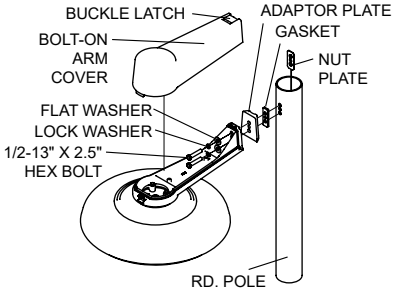
Finish

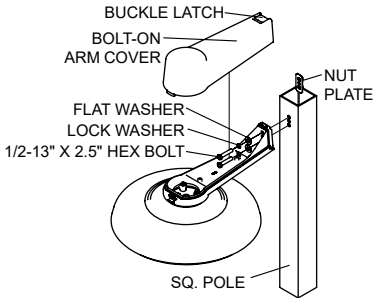
Refer to website for details.

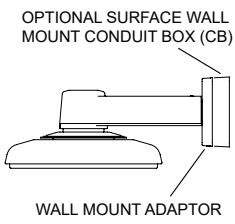
Fixtures

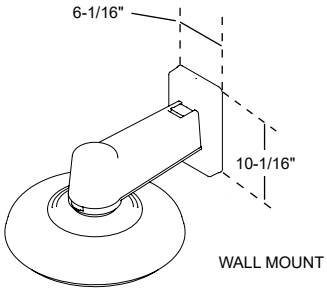


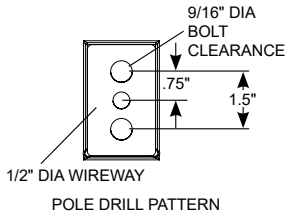
Mounting Details



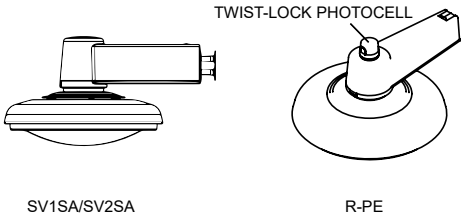


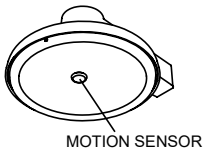


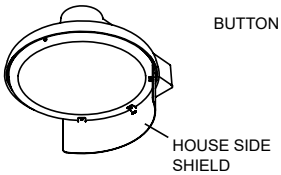


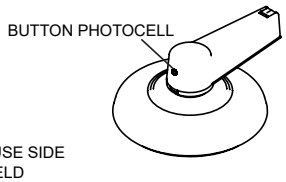


Options









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SL630 SOLANA SERIES

LED

Performance (Based on CA Lens)

MODEL #	T2 LUMENS	BUG	EFFICACY (LPW)	T3 LUMENS	BUG	EFFICACY (LPW)	T4 LUMENS	BUG	EFFICACY (LPW)	T5 LUMENS	BUG	EFFICACY (LPW)	WATTS
24L40T_-MDL018	13815	B2U0G2	117.1	13895	B2U0G2	117.8	13345	B2U0G2	113.1	14020	B3U0G1	118.8	118
24L30T_-MDL018	13170	B2U0G2	111.6	13250	B2U0G2	112.3	12725	B2U0G2	107.8	13365	B3U0G1	113.3	118
24L27T_-MDL018	11910	B2U0G2	100.9	11980	B2U0G2	101.5	11505	B2U0G2	97.5	12085	B3U0G1	102.4	118
24L40T_-MDL014	11105	B2U0G2	126.2	11190	B2U0G2	127.2	10720	B2U0G2	121.8	11270	B3U0G1	128.1	88
24L30T_-MDL014	10590	B2U0G2	120.3	10670	B2U0G2	121.3	10220	B2U0G2	116.1	10745	B3U0G1	122.1	88
24L27T_-MDL014	9575	B2U0G2	108.8	9645	B2U0G2	109.6	9240	B2U0G2	105.0	9715	B3U0G1	110.4	88
12L40T_-MDL018	6905	B1U0G1	115.1	6945	B1U0G1	115.8	6635	B1U0G1	110.6	6985	B2U0G1	116.4	60
12L30T_-MDL018	6585	B1U0G1	109.8	6620	B1U0G1	110.3	6325	B1U0G1	105.4	6660	B2U0G1	111.0	60
12L27T_-MDL018	5955	B1U0G1	99.3	5985	B1U0G1	99.8	5720	B1U0G1	95.3	6020	B2U0G1	100.3	60
12L40T_-MDL014	5635	B1U0G1	122.5	5640	B1U0G1	122.6	5400	B1U0G1	117.4	5690	B2U0G1	123.7	46
12L30T_-MDL014	5375	B1U0G1	116.8	5375	B1U0G1	116.8	5150	B1U0G1	112.0	5425	B2U0G1	117.9	46
12L27T_-MDL014	4860	B1U0G1	105.7	4860	B1U0G1	105.7	4655	B1U0G1	101.2	4905	B2U0G1	106.6	46
12L40T_-MDL008	3405	B1U0G1	126.1	3425	B1U0G1	126.9	3270	B1U0G1	121.1	3440	B1U0G0	127.4	27
12L30T_-MDL008	3245	B1U0G1	120.2	3265	B1U0G1	120.9	3120	B1U0G1	115.6	3280	B1U0G0	121.5	27
12L27T_-MDL008	2935	B1U0G1	108.7	2955	B1U0G1	109.4	2820	B1U0G1	104.4	2965	B1U0G0	109.8	27

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urbanline

SternbergLighting
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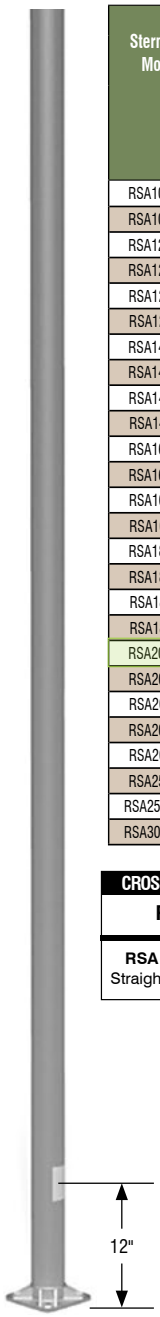
10' TO 30' ROUND STRAIGHT ALUMINUM POLES (RSA)

Job Name: 140 West Rd | Client Name: | Job Location: Portsmouth, NH | Created By: | Date: | Product: RSA20G500 | Quote: | Customer Approval: | Date:

Sternberg Model	Pole Height	Shaft Size	Wall Thick-ness	Slotted SQ Base Width	Hand-hole Size	Weight Lbs	Bolt Circle	Bolt Proj +/- .25	DBL Nutted Anchor bolt ASTM F1554 GRADE 55 Galv thread	Max Loading Capacities								Base Cover Options
										90 MPH w/1.3 Gust		110MPH w/1.3 Gust		130MPH w/1.3 Gust		150MPH w/1.3 Gust		
										MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	MAX EPA 1 (SQ FT)	MAX WEIGHT (lbs)	
RSA10G400	10	4	0.125	8.91	2 x 4	34	6.75"-8.25"	3.25	0.75	4.3	100	2.6	100	1.8	100	1.2	100	2401-4, SL900-4
RSA10G500	10	5	0.125	9.61	2 x 4	39	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.1	100	3.0	100	2401-5, SL900-5
RSA12G400	12	4	0.125	8.91	2 x 4	38	6.75"-8.25"	3.25	0.75	3.0	100	1.7	100	1.1	100	0.7	100	2401-4, SL900-4
RSA12G500	12	5	0.125	9.61	2 x 4	44	7.75"-9.5"	3.25	0.75	6.9	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA12A500	12	5	0.156	9.61	2 x 4	50	7.75"-9.5"	3.25	0.75	8.9	100	5.8	100	4.0	100	2.9	100	2401-5, SL900-5
RSA12T500	12	5	0.188	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	10.9	100	7.1	100	4.9	100	3.6	100	2401-5, SL900-5
RSA14G400	14	4	0.125	8.91	2 x 4	41	6.75"-8.25"	3.25	0.75	1.9	100	0.9	100	-	100	-	100	2401-4, SL900-4
RSA14G500	14	5	0.125	9.61	2 x 4	48	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA14A500	14	5	0.156	9.61	2 x 4	56	7.75"-9.5"	3.25	0.75	7.0	100	4.4	100	3.0	100	2.2	100	2401-5, SL900-5
RSA14T500	14	5	0.188	9.61	2 x 4	63	7.75"-9.5"	3.25	0.75	8.7	100	5.6	100	3.8	100	2.8	100	2401-5, SL900-5
RSA16G400	16	4	0.125	8.91	2 x 4	45	6.75"-8.25"	3.25	0.75	1.0	100	-	100	-	100	-	100	2401-4, SL900-4
RSA16G500	16	5	0.125	9.61	2 x 4	53	7.75"-9.5"	3.25	0.75	3.8	100	2.3	100	1.5	100	1.0	100	2401-5, SL900-5
RSA16A500	16	5	0.156	9.61	2 x 4	61	7.75"-9.5"	3.25	0.75	5.3	100	3.3	100	2.2	100	1.5	100	2401-5, SL900-5
RSA16T500	16	5	0.188	9.61	2 x 4	70	7.75"-9.5"	3.25	0.75	6.7	100	4.2	100	2.8	100	2.0	100	2401-5, SL900-5
RSA18G500	18	5	0.125	9.61	2 x 4	57	7.75"-9.5"	3.25	0.75	2.7	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA18A500	18	5	0.156	9.61	2 x 4	67	7.75"-9.5"	3.25	0.75	3.9	100	2.3	100	1.5	100	1	100	2401-5, SL900-5
RSA18T500	18	5	0.188	9.61	2 x 4	77	7.75"-9.5"	3.25	0.75	5.1	100	3.2	100	2.1	100	1.4	100	2401-5, SL900-5
RSA18T600	18	6	0.188	10.32	2 x 4	96	8.75"-10.25"	3.50	0.75	10.5	100	6.7	100	4.6	100	3.1	100	2401-6
RSA20G500	20	5	0.125	9.61	2 x 4	62	7.75"-9.5"	3.25	0.75	1.7	100	0.8	100	-	100	-	100	2401-5, SL900-5
RSA20A500	20	5	0.156	9.61	2 x 4	73	7.75"-9.5"	3.25	0.75	2.8	100	1.5	100	0.9	100	-	100	2401-5, SL900-5
RSA20T500	20	5	0.188	9.61	2 x 4	84	7.75"-9.5"	3.25	0.75	3.8	100	2.2	100	1.4	100	0.9	100	2401-5, SL900-5
RSA20A600	20	6	0.156	10.32	2 x 4	90	8.75"-10.25"	3.50	0.75	6.7	100	4.2	100	2.8	100	1.6	100	2401-6
RSA20T600	20	6	0.188	10.32	2 x 4	104	8.75"-10.25"	3.50	0.75	8.5	100	5.4	100	3.6	100	2.3	100	2401-6
RSA25A600	25	6	0.156	10.32	2 x 4	115	8.75"-10.25"	3.50	0.75	3.6	100	2	100	1.1	100	-	100	2401-6
RSA25T600 *	25	6	0.188	10.32	2 x 4	124	8.75"-10.25"	3.50	0.75	4.9	100	2.9	100	1.8	100	0.8	100	2401-6
RSA30T600 *	30	6	0.188	10.32	2 x 4	151	8.75"-10.25"	3.50	1.0	2.3	100	1.1	100	-	100	-	100	2401-6



CROSS SECTION

RSA

RSA = Round Straight Aluminum

MODEL NUMBER

RSA20G500

RSA10G400	RSA14T500	RSA20A500
RSA12G500	RSA16G400	RSA20T500
RSA12G400	RSA16G500	RSA20A600
RSA12G500	RSA16A500	RSA20T600
RSA12A500	RSA16T500	RSA25A600
RSA12T500	RSA18G500	RSA25T600*
RSA14G400	RSA18A500	RSA30T600*
RSA14G500	RSA18T600	
RSA14A500	RSA20G500	

FIXTURE MOUNTING

D1

Arm Mounting
D1 = 1 Luminaire
D2 = 2 @ 180°
D3 = 3 @ 120°
D4 = 4 @ 90°
D5 = 2 @ 90°
D6 = 3 @ 90°

Tenon Mounting
P2 = 2.38" OD x 4.00"
P3 = 3.00" OD x 3.00"
P4 = 4.00" OD x 6.00"
P5 = 4.50" OD x 3.50"
P6 = 3.50" OD x 3.50"

BASE COVER

2401-5

2401-4
2401-5
2401-6
SL900-4
SL900-5
LU900-4
LU900-5

OPTIONS

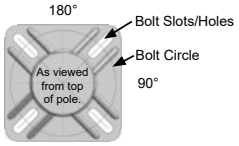
See Accessories at www.sternberglighting.com (Please specify with code)

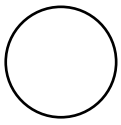
COLOR

TO BE DETERMINED

UGMT - Urban Gun Metal Textured
UGM - Urban Gun Metal Matte
UBT - Urban Bronze Textured
USLT - Urban Silver Textured
UWHT - Urban White Textured
UB - Urban Bronze Matte
USL - Urban Silver Matte
UWH - Urban White Matte
BKT - Black Textured

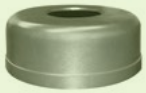
Anchor Base Detail





4", 5" or 6" Dia. Round Profile

OPTIONAL BASE COVERS



Round 2401
15" Dia. x 6" H
Throat Size 4", 5" or 6" Dia.
2401-4
2401-5
2401-6

Round SL900
18.5" Dia. x 6" H
Throat Size 4" or 5" Dia.
SL900-4
SL900-5

Round LU900
19" Dia. x 9" H
Throat Size 4" or 5" Dia.
LU900-4
LU900-5

CLICK FOR FAQ's

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* Factory installed vibration damper.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

TRAFFIC MEMORANDUM

Date: July 14, 2022
July 26, 2022 Rev1

To: City of Portsmouth – Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH

From: Robert Duval, P.E.
Jen Porter, P.E.

Re: Proposed Change of Use – Black Rock Social Club
140 West Road, Portsmouth, NH 03801
TFM Project No. 47107.20

INTRODUCTION

TFMoran has prepared this traffic evaluation to determine the traffic impacts with the proposed change of use at 140 West Road in Portsmouth.

PROPOSAL

Anchor Management Group, Inc is proposing a change of use at the existing building at 140 West Road. The existing building with a 17,500 sf footprint is currently vacant, but previously was used as a trampoline park. This change of use is proposing to update the building to a social club and add a walk in cooler to bring the footprint to 18, 105 sf and add a second floor (12,000 sf+/-) to part of the building. Some of the internal uses will include golf simulators and a putting green, axe throwing, racing/flying simulators, arcade and table games, massage, office space and a bar with kitchen area.

Vehicular access is provided by two driveways along West Road and parking spaces are currently provided on three sides of the building. Minor modifications are proposed to the pavement to remove some mechanical equipment to provide additional angled parking at the rear of the building. New dumpsters and a walk in cooler are proposed at the north end of the building. Drainage improvements are also proposed to capture and treat runoff.

DESCRIPTION OF SITE

The existing site (Map 252 Lot 2-13) is located at West Road in Portsmouth, New Hampshire about a tenth of a mile west of US Route 1. The previous use was a trampoline park which is currently closed. The site has two existing curb cuts onto West Road, one of which is just offset of Wilson Road. The site pavement provides circulation around the building with 102 existing parking spaces distributed around three sides of the building.

DESCRIPTION OF ROADWAYS AND INTERSECTIONS

Roadways

Lafayette Road (US1)

- Classification. Lafayette Road (US1) is a State-maintained north-south arterial roadway. The roadway runs from points south in Hampton thru Portsmouth to points north in Maine.2.
- Lane widths and usage. In the project network, the roadway generally provides 2-lanes of travel in each direction with a TWLTL south of Wilson Road. Paved shoulder widths are about 4' in the project area.
- Pedestrian facilities. There are sidewalks along the east side of Lafayette Road.
- Signage. The speed limit is posted at 35 mph along the roadway. Other traffic signage includes lane use, directional signs, and street name signs. Pavement markings consist of a center TWLTL and shoulder markings in fair to good condition.

Wilson Road

- Classification. Wilson Road is a City-maintained east-west collector roadway. The west end starts at West Road and the east end terminates at Taft Road in a residential area.
- Lane widths and usage. In the project vicinity, the roadway generally provides a single lane in each direction with sloped granite curbing and no striped shoulder.
- Pedestrian facilities. There are no sidewalks along Wilson Road. There is a bus stop Shelter on the south side of Wilson Road (across from the Market Basket Plaza curb cut) between West Road and Lafayette Road.
- Signage. The speed limit is posted at 40 mph.in the vicinity of Cardinal Lane. Other traffic signage includes lane use, directional signs, bus stops, street name signs and stop signs at major driveways. Pavement markings consist of a center TWLTL and shoulder markings in fair to good condition.

West Road)

- Classification. West Road is a City-maintained north-south collector roadway. The north end of West Road starts at Peverly Hill Road and terminates at Campus Drive to the south.
- Lane widths and usage. In the project vicinity, the roadway generally provides a single lane in each direction. Paved shoulder widths vary 4' to 6' in the project area.
- Pedestrian facilities. There are no sidewalks along West Road. Two bus stops are provided on West Road, one at the intersection of Campus Drive and the other at 215 West Road.
- Signage. The speed limit is posted at 30 mph. Other traffic signage includes directional signs, bus stops, street name signs and stop signs at major driveways. Pavement markings consist of a center double yellow and shoulder markings in fair to good condition.

Intersections

Lafayette Road at Wilson Road.

- Traffic Control. This is an existing 4-way signalized intersection, with Lafayette Road forming the northbound and southbound approaches. Wilson Road forms the EB and WB approaches.
- Pedestrian facilities. Pedestrian crosswalks are provided across the northbound approach and the westbound approach.
- Approaches. The NB and SB approaches consists of three 12' lanes, which are marked left only, thru, and thru-right. The EB approach has two 12' lanes that are marked as a left-thru lane and an exclusive right turn lane. The WB approach is a single lane the provides left-thru-right movements.

- Signal Timing. Existing data provided by the State. AM: based on a coordinated Pattern2, PM based on a coordinated Pattern3 and SAT is based on Max2 from controller.

West Road at Driveway/Wilson Road.

- Traffic Control. This is an existing unsignalized intersection with two-way Stop control. West Road forms the NB and SB approaches and flow free. Wilson Road forms the WB approach and is Stop controlled. The EB approach is slightly offset from Wilson Drive to the north and serves a Private Drive with a Stop Sign.
- Pedestrian facilities. No crosswalks or sidewalks are present at the intersection.
- Approaches. Each approach accommodates two way traffic and there are no restricted movements. All approaches provide a minimum of 12' wide single lanes.

BACKGROUND VOLUMES

To quantify existing peak hour traffic volumes within the study area, turning movement counts were taken at the study intersections. These counts are tabulated in the Appendix of this report.

Counts were taken at all study intersections on:

- Thursday June 23, 2022 – 7AM to 9AM, 4PM to 6PM.
- Saturday June 25, 2022 – 11 AM to 1 PM.

Seasonal Adjustment.
To account for seasonal variations, the counts were seasonally adjusted using NHDOT Group 4 factors. The data was adjusted upward by 2% for June. The data is found in the Appendix.

COVID/Stay-at Home Adjustment.
Due to the Covid pandemic, in many places traffic volumes are still below normal levels. To determine an appropriate adjustment factor for current conditions, pre-Covid volume, the NHDOT has developed a methodology to calibrate current traffic volumes to pre-pandemic levels.

The methodology involves comparing traffic volumes at three permanent stations throughout an entire month and developing a pandemic adjustment factor for each peak hour. The process is conducted by using the NHDOT MS2 Transportation Data Management System. The data and calculations are in the Appendix.

The calculations show, that at the three permanent stations, traffic volumes in October 2021 are still below the March 2019 volumes. Therefore, per the calculations, the volumes for the Base conditions are adjusted as follows for for continued covid conditions:

- AM: 5.5%
- PM: 3.3%
- SAT: 6.6%

These adjusted volumes result in the Base condition and the diagrams are in the Appendix.

NO-BUILD VOLUMES

To establish No-Build traffic volumes for this study, the following adjustments were made to the Covid- and seasonally adjusted 2021 volumes:

Growth Factor.
A 1% compound annual growth rate was used to account for general population growth and possible traffic generated by smaller future developments in the area.

Other Developments
The City provided data for a proposed or approved development identified as generating traffic volumes that should be accounted for in the no-build volumes for this traffic study. This gas station development is described below and data and distribution are in the Appendix:

- 2255 Lafayette Road Gas Station:
  This project for a gasoline station/convenience store (with drive-through window) will replace the existing Burger King fast-food restaurant. The development site trips enter this traffic network via Lafayette Road and the trips were distributed prorata per the June 2022 counts through the network.

The total no-build volumes for the opening (2023) and future (2033) years are presented in the Appendix.

TRIP GENERATION

Standard trip generation rates published by the ITE[1] (11th Edition), were used to calculate the vehicle trips for the proposed development. The proposed uses within the social club fit with the description of the Athletic Club use. See calculations in the Appendix.

Table 1: Trip Generation

ITE LUC 493 Athletic Club: 18,105 sf (footprint) [1st floor 18,105 sf, 2nd floor 12,000 sf]	**In**	**Out**	**Total**
Weekday AM Peak Hour Adjacent Street	24	15	39
Weekday PM Peak Hour Adjacent Street	64	40	104
Weekend SAT Peak Hour of Generator	47	49	96

TRIP DISTRIBUTION:

For this use, all trips are expected to be primary trips. Primary trips go directly from origin to generator and return to origin. TFM used pro-rata as the basis of distribution per the existing traffic volume patterns for primary trips. However, based on comment from the City, there would not be many origin trips expected to/from the south on West Road within this roadway network. The trips are more likely to access the site by Route 1 via Wilson Road. Therefore, at the Wilson Road/West Road intersection, a 5% distribution was maintained to/from the south and the remaining southern distribution was transferred to the westbound approach.

[1] *Trip Generation Manual*, Institute of Transportation Engineers (ITE), 11th Edition.

LEVEL OF SERVICE/QUEUE ANALYSIS

Level of Service Analysis:
Level of service (LOS) is a qualitative description of operational conditions within a traffic stream measured in terms of control delay, a function of capacity, degree of saturation, and delay associated with traffic signals and "STOP" signs. Control delay includes initial deceleration, delay approaching a control device, stopped delay, queue move-up time, and acceleration delay from a stopped condition. The relationship between control delay and LOS is shown in the following table.

Level of Service (LOS)	Signalized Control Delay (sec)	Unsignalized Control Delay (sec)
A	≤10.0	≤10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	Over 80.0	Over 50.0

Study Area.
Analyses were performed for the study area intersections previously described, that is:

1. West Road at Driveway/Wilson Road
2. Lafayette Road at Wilson Road

Queue Analysis.
Vehicle queue lengths are determined by the capacity of the movement under study and the volume of traffic processed by the intersection during the analysis period. It is standard practice to report the 95th percentile queue, that is, the queue that will be exceeded no more than 5% of the time during the peak periods.

Methodology.
Trafficware "Synchro" v11 software was used to analyze signalized and unsignalized intersections (based on HCM 2000) within the study area intersections during the weekday AM/PM and Saturday peak hours.

Signal Timing.
Signal timing is based on data provided by the State and attached in the Appendix.

Volume to capacity (v/c) ratios, Level of Service (LOS), delays and queue results are summarized in the following tables:

Table 2 Level of Service Analysis Summary (2022/2023)

Location/ *Peak Hour*	2022 Base				2023 NoBuild				2023 Build			
Movement	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]
3: West Road at Driveway/Wilson Road												
AM Peak OVERALL	**---**	**1.8**	**A**	**---**	**---**	**1.9**	**A**	**---**	**---**	**2.4**	**A**	**---**
EB All	0.00	0.0	A	0	0.00	0.0	A	0	0.04	13.2	B	3
WB All	0.10	10.9	B	8	0.10	11.0	B	8	0.12	11.6	B	11
NB All	0.00	0.0	A	0	0.00	0.0	A	0	0.01	0.1	A	0
SB All	0.02	0.8	A	1	0.02	0.8	A	1	0.02	0.8	A	1
PM Peak OVERALL	**---**	**2.6**	**A**	**---**	**---**	**2.7**	**A**	**---**	**---**	**4.6**	**A**	**---**
EB All	0.01	12.8	B	1	0.01	12.9	B	1	0.11	14.5	B	9
WB All	0.11	10.8	B	9	0.11	10.8	B	9	0.23	13.3	B	23
NB All	0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.1	A	0
SB All	0.04	3.7	A	3	0.05	3.7	A	4	0.05	3.3	A	4
SAT Peak OVERALL	**---**	**5.1**	**A**	**---**	**---**	**5.2**	**A**	**---**	**---**	**6.3**	**A**	**---**
EB All	0.01	10.2	B	0	0.01	10.3	B	0	0.09	11.3	B	7
WB All	0.08	8.9	A	7	0.09	8.9	A	7	0.13	9.7	A	11
NB All	0.00	0.0	A	0	0.00	0.0	A	0	0.00	0.5	A	1
SB All	0.03	3.7	A	2	0.03	3.8	A	2	0.03	3.1	A	2
6: Lafayette Road at Wilson Road												
AM Peak OVERALL	**0.37**	**8.9**	**A**	**---**	**0.38**	**8.9**	**A**	**---**	**0.39**	**9.2**	**A**	**---**
EB L/T	0.24	38.5	D	32	0.24	38.5	D	32	0.26	38.5	D	34
EB R	0.05	37.1	D	24	0.05	37.1	D	26	0.05	36.9	D	26
WB All	0.22	38.3	D	30	0.23	38.4	D	31	0.22	38.2	D	31
NB L	0.43	39.3	D	66	0.44	39.3	D	67	0.45	39.3	D	70
NB TT/R	0.29	3.6	A	111	0.30	3.7	A	117	0.30	3.8	A	119
SB L	0.04	42.5	D	6	0.04	42.5	D	6	0.04	42.5	D	6
SB TT/R	0.37	6.4	A	162	0.39	6.5	A	172	0.40	6.7	A	176
PM Peak OVERALL	**0.40**	**11.9**	**B**	**---**	**0.42**	**12.0**	**B**	**---**	**0.42**	**13.3**	**B**	**---**
EB L/T	0.43	49.7	D	75	0.44	49.6	D	76	0.49	49.6	D	87
EB R	0.10	46.4	D	51	0.11	46.3	D	51	0.12	45.7	D	53
WB All	0.19	47.1	D	34	0.19	47.0	D	34	0.18	46.2	D	34
NB L	0.51	51.7	D	90	0.52	52.3	D	93	0.58	53.8	D	109
NB TT/R	0.34	4.1	A	164	0.35	4.2	A	172	0.35	4.4	A	180
SB L	0.27	60.4	E	18	0.27	60.4	E	18	0.27	60.4	E	18
SB TT/R	0.39	6.8	A	213	0.40	7.0	A	224	0.42	7.9	A	251
SAT Peak OVERALL	**0.52**	**11.1**	**B**	**---**	**0.54**	**11.2**	**B**	**---**	**0.56**	**11.9**	**B**	**---**
EB L/T	0.35	26.4	C	55	0.36	27.4	C	57	0.39	27.7	C	66
EB R	0.09	24.6	C	33	0.10	25.4	C	34	0.11	25.6	C	35
WB All	0.17	25.0	C	39	0.17	25.9	C	41	0.16	25.9	C	41
NB L	0.49	27.8	C	99	0.52	28.9	C	106	0.56	30.4	C	117
NB TT/R	0.42	5.8	A	172	0.43	5.8	A	180	0.43	5.9	A	186
SB L	0.18	34.2	C	13	0.19	35.4	D	13	0.21	37.1	D	14
SB TT/R	0.58	10.7	B	256	0.59	10.7	B	270	0.60	11.3	B	286

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

Table 3 Level of Service Analysis Summary (2033)

Location/ *Peak Hour*	2033 NoBuild				2033 Build			
Movement	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]
3: West Road at Driveway/Wilson Road								
AM Peak OVERALL	**---**	**2.0**	**A**	**---**	**---**	**2.5**	**A**	**---**
EB All	0.00	0.0	A	0	0.04	14.0	B	3
WB All	0.12	11.5	B	10	0.14	12.1	B	13
NB All	0.00	0.0	A	0	0.00	0.1	A	0
SB All	0.02	0.8	A	2	0.02	0.8	A	2
PM Peak OVERALL	**---**	**2.7**	**A**	**---**	**---**	**4.7**	**A**	**---**
EB All	0.01	13.5	B	1	0.12	15.5	C	10
WB All	0.13	11.2	B	11	0.26	14.0	B	26
NB All	0.00	0.0	A	0	0.00	0.1	A	0
SB All	0.05	3.8	A	4	0.05	3.4	A	4
SAT Peak OVERALL	**---**	**5.2**	**A**	**---**	**---**	**6.4**	**A**	**---**
EB All	0.01	10.4	B	0	0.09	11.6	B	8
WB All	0.10	9.0	A	8	0.14	9.8	A	13
NB All	0.00	0.0	A	0	0.00	0.5	A	0
SB All	0.04	3.9	A	3	0.04	3.2	A	3
6: Lafayette Road at Wilson Road								
AM Peak OVERALL	**0.42**	**9.3**	**A**	**---**	**0.43**	**9.6**	**A**	**---**
EB L/T	0.27	38.5	D	35	0.29	38.5	D	37
EB R	0.06	36.8	D	26	0.06	36.7	D	27
WB All	0.24	38.2	D	32	0.24	38.0	D	32
NB L	0.46	39.3	D	72	0.48	39.3	D	75
NB TT/R	0.33	3.9	A	135	0.34	4.0	A	136
SB L	0.04	42.5	D	6	0.04	42.5	D	6
SB TT/R	0.44	7.2	A	202	0.44	7.4	A	207
PM Peak OVERALL	**0.46**	**12.5**	**B**	**---**	**0.49**	**13.9**	**B**	**---**
EB L/T	0.47	49.7	D	82	0.51	49.6	D	93
EB R	0.12	45.9	D	54	0.13	45.3	D	55
WB All	0.21	46.7	D	37	0.20	45.8	D	37
NB L	0.55	52.8	D	100	0.53	49.7	D	116
NB TT/R	0.38	4.5	A	202	0.39	4.8	A	211
SB L	0.32	62.0	E	20	0.32	62.0	E	20
SB TT/R	0.45	7.8	A	267	0.48	9.5	A	297
SAT Peak OVERALL	**0.58**	**12.0**	**B**	**---**	**0.60**	**12.7**	**B**	**---**
EB L/T	0.40	29.6	C	63	0.43	29.8	C	70
EB R	0.11	27.2	C	35	0.12	27.2	C	35
WB All	0.19	27.8	C	44	0.18	27.5	C	44
NB L	0.57	32.5	C	118	0.61	34.3	C	129
NB TT/R	0.47	5.9	A	210	0.47	6.2	A	217
SB L	0.24	39.2	D	15	0.24	39.7	D	16
SB TT/R	0.63	11.4	B	320	0.64	12.1	B	334

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

CONCLUSION

Based on these factors, we find the additional traffic associated with this project will be minimal, and can be safely accommodated on the adjacent roadway without improvements.

Please let me know if you have any questions in regard to these items.

TFMORAN, INC.

Robert E. Duval, P.E.
Chief Engineer

APPENDICES

APPENDIX A **Trip Generation**

APPENDIX B **Distribution**
- Calculations
- Diagrams (Site Trip Assignment & Distribution)

APPENDIX C **Volume Adjustments**
- Covid Factor
- Seasonal Adjustment

APPENDIX D **Other Developments**

APPENDIX E **AM Volumes**
- Calculations
- Diagrams
  - 2022 Base, ProRata
  - 2023/2033 NoBuild
  - 2023/2033 Build

APPENDIX F **PM Volumes**
- Calculations
- Diagrams
  - 2022 Base, ProRata
  - 2023/2033 NoBuild
  - 2023/2033 Build

APPENDIX G **SAT Volumes**
- Calculations
- Diagrams
  - 2022 Base, ProRata
  - 2023/2033 NoBuild
  - 2023/2033 Build

APPENDIX H AM Synchro
- 2022 Base
- 2023/2033 NoBuild
- 2023/2033 Build

APPENDIX I PM Synchro
- 2022 Base
- 2023/2033 NoBuild
- 2023/2033 Build

APPENDIX J SAT Synchro
- 2022 Base
- 2023/2033 NoBuild
- 2023/2033 Build

APPENDIX K Signal Timing

APPENDIX L Turning Movement Counts

APPENDIX A

Based on ITE Trip Generation 11th Edition

Proposed Trip Generation

ITE LUC 493 - Athletic Club: 18,105 sf (footprint) [1st floor 18,105 sf, 2nd floor 12,000 sf]

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	30.1	1.31	Rate	39	61%	39%	24	15
Weekday PM Peak Hour Adjacent Street	30.1	3.45	Rate	104	62%	38%	64	40
Weekend SAT Peak Hour of Generator	30.1	3.19	Rate	96	49%	51%	47	49

Proposed Trip Composition

100% Primary Trips

APPENDIX B

AM Site Trip Distribution

Based on ProRata at counted intersections

Primary: AM Distribution

	In	Out
AM Totals	24	15

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		57%	0	9
EBT		38%	0	6
EBR		5%	0	1
WBL			0	0
WBT	**38%**		9	0
WBR			0	0
NBL	**5%**		1	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	**57%**		14	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		10%	0	2
EBT	1%	0%	0	0
EBR		28%	0	4
WBL			0	0
WBT			0	0
WBR			0	0
NBL	16%		4	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	22%		5	0

PM Site Trip Distribution

Based on ProRata at counted intersections

Primary: PM Distribution

	In	Out
PM Totals	64	40

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		27%	0	11
EBT		68%	0	27
EBR		5%	0	2
WBL			0	0
WBT	**68%**		44	0
WBR			0	0
NBL	**5%**		3	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	**27%**		17	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		14%	0	6
EBT	3%	4%	2	2
EBR		50%	0	20
WBL			0	0
WBT			0	0
WBR			0	0
NBL	27%		17	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	39%		25	0

SAT Site Trip Distribution

Based on ProRata at counted intersections

Primary: SAT Distribution

	In	Out
SAT Totals	47	49

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		44%	0	22
EBT		51%	0	25
EBR		5%	0	2
WBL			0	0
WBT	**51%**		24	0
WBR			0	0
NBL	**5%**		2	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	**44%**		21	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL		14%	0	7
EBT	3%	0%	1	0
EBR		37%	0	18
WBL			0	0
WBT			0	0
WBR			0	0
NBL	22%		10	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0
SBR	26%		12	0

TOTAL Site Trip Distribution

AM Total Site Trips

AM TOTAL: 39

West Road at Driveway/Wilson Road

Movement	TRIPS
EBL	9
EBT	6
EBR	1
WBL	0
WBT	9
WBR	0
NBL	1
NBT	0
NBR	0
SBL	0
SBT	0
SBR	14

Lafayette Road at Wilson Road

Movement	TRIPS
EBL	2
EBT	0
EBR	4
WBL	0
WBT	0
WBR	0
NBL	4
NBT	0
NBR	0
SBL	0
SBT	0
SBR	5

PM Total Site Trips

PM TOTAL: 104

West Road at Driveway/Wilson Road

Movement	TRIPS
EBL	11
EBT	27
EBR	2
WBL	0
WBT	44
WBR	0
NBL	3
NBT	0
NBR	0
SBL	0
SBT	0
SBR	17

Lafayette Road at Wilson Road

Movement	TRIPS
EBL	6
EBT	4
EBR	20
WBL	0
WBT	0
WBR	0
NBL	17
NBT	0
NBR	0
SBL	0
SBT	0
SBR	25

SAT Total Site Trips

SAT TOTAL: 96

West Road at Driveway/Wilson Road

Movement	TRIPS
EBL	22
EBT	25
EBR	2
WBL	0
WBT	24
WBR	0
NBL	2
NBT	0
NBR	0
SBL	0
SBT	0
SBR	21

Lafayette Road at Wilson Road

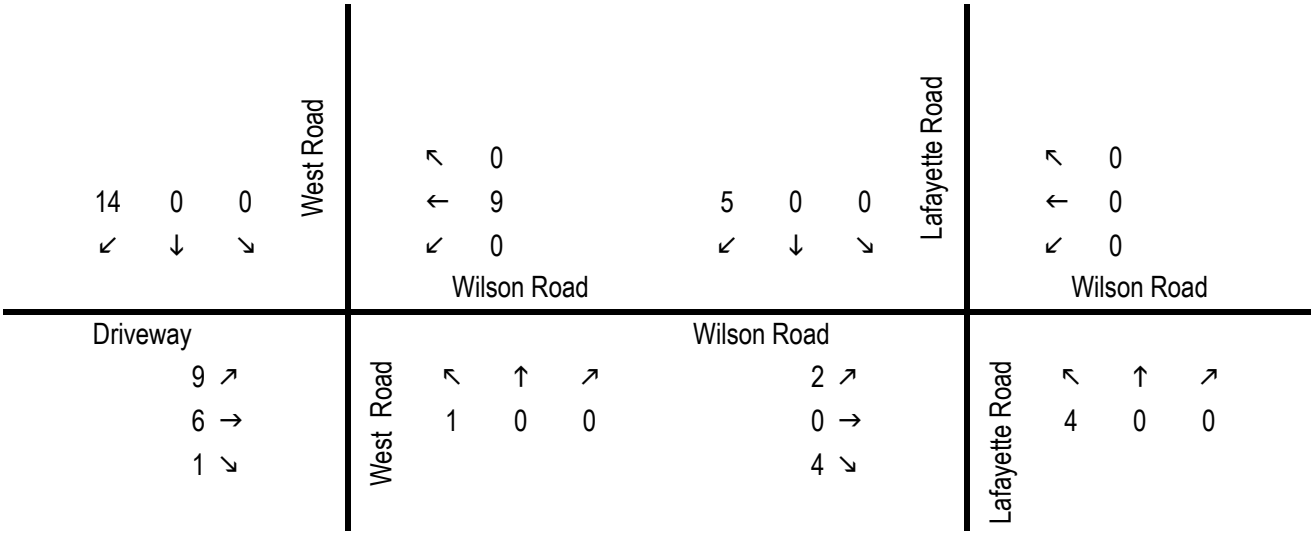
Movement	TRIPS
EBL	7
EBT	1
EBR	18
WBL	0
WBT	0
WBR	0
NBL	10
NBT	0
NBR	0
SBL	0
SBT	0
SBR	12

Site Trip Assignment

AM Peak Hour

Rev1

XX Total Trips

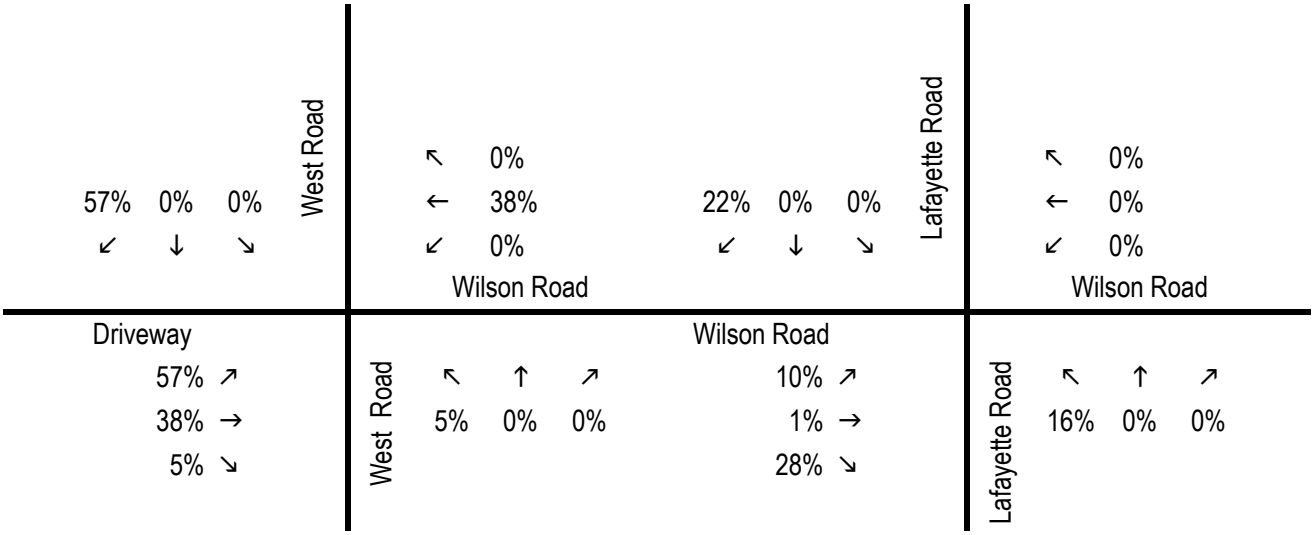


Site Trip Distribution

AM Peak Hour

Rev1

XX Primary

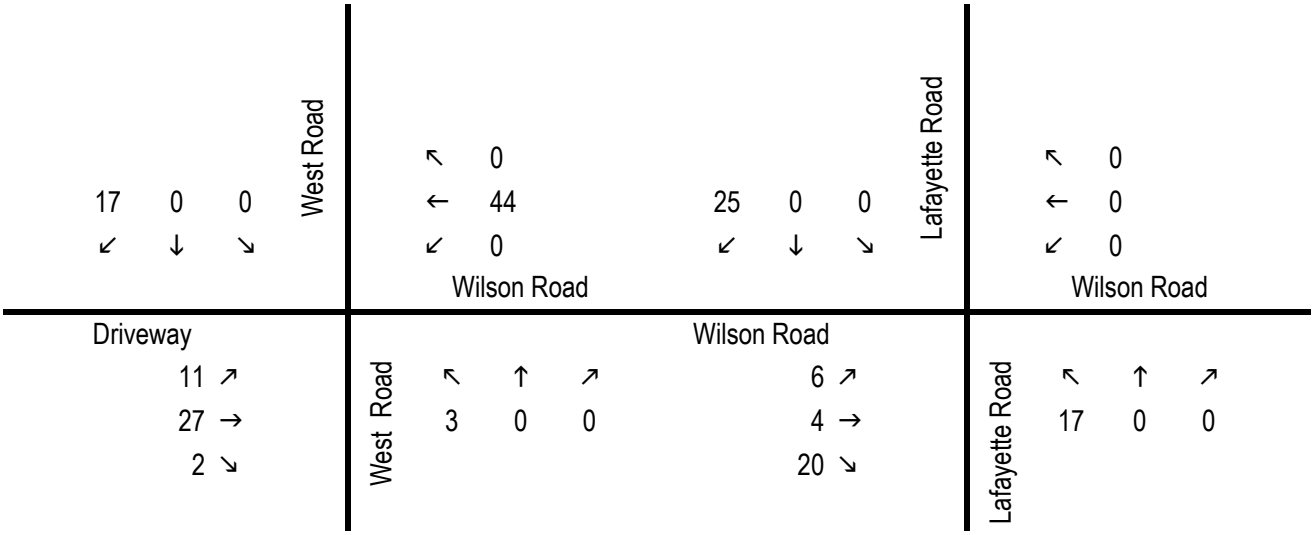


Site Trip Assignment

PM Peak Hour

Rev1

XX Total Trips

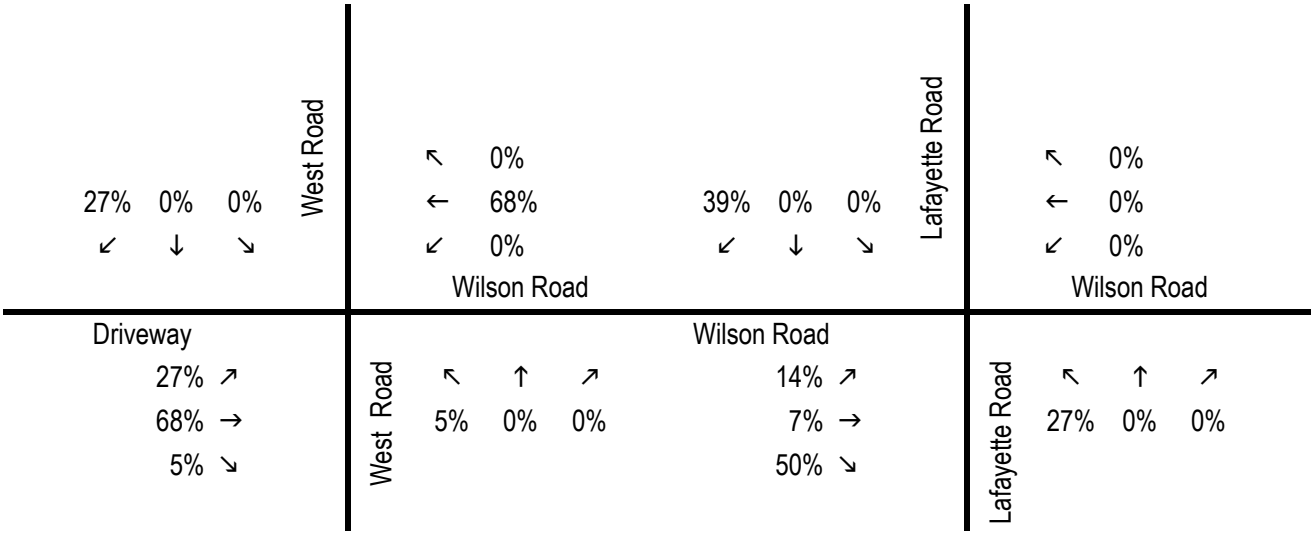


Site Trip Distribution

PM Peak Hour

Rev1

XX Primary

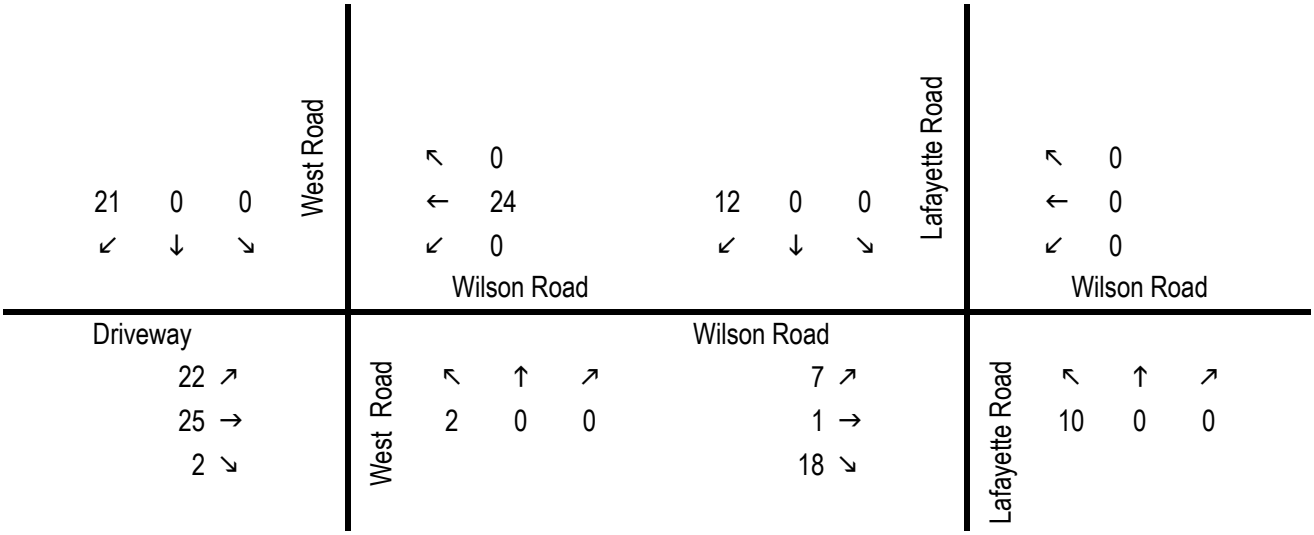


Site Trip Assignment

SAT Peak Hour

Rev1

XX Total Trips

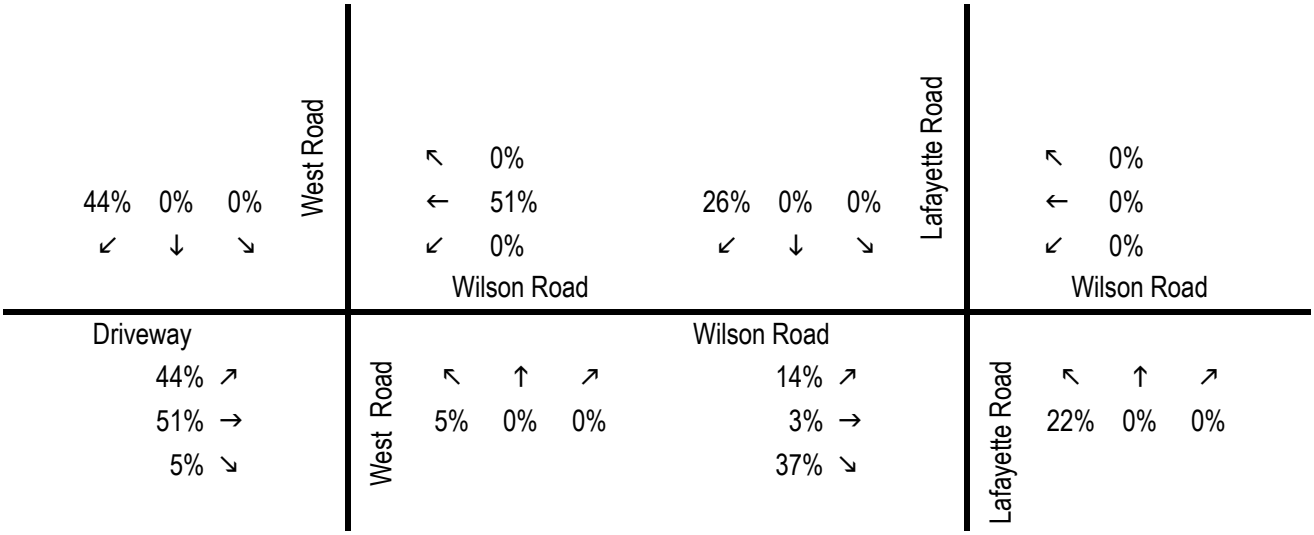


Site Trip Distribution

SAT Peak Hour

Rev1

XX Primary



APPENDIX C

Year 2019 Monthly Data

Group 4 Averages: Urban Highways

Month	ADT	Adjustment to Average	Adjustment to Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22

Average ADT: 12,838
Peak ADT: 14,016

Covid Factor Calculation - NHDOT Methodology

NHDOT currently has a preference on the methodology to be used in determining any required adjustments to traffic counts collected during the pandemic (to compare the month of counts in 2019 and in the pandemic year of the counts). This process is conducted by using the NHDOT MS2 Transportation Data Management System as follows:

1 Select the appropriate permanent count station.
2 Scroll to the "Volume Count" section and select on one of the eyeball icons.
3 A new screen will open and select the "Compare Count" tab at the bottom.
4 A new window will open and scroll to the "Date Range Selection" section and type in or select the Count Date Range. The first day of the month, to the last day of the month should be selected.
5 Since NHDOT prefers that separate pandemic adjustment factors be used for the different time periods, select Monday through Friday for the weekday daily, weekday AM peak hour, and weekday PM peak hour comparisons. A separate analysis would be performed in determining the Saturday daily and Saturday midday peak hour factors.
5 Click the "Add Count" button and the time period and days of the week selected will appear on the graph to the right.
7 For the pre-pandemic volume comparison, go to the "Count Date Range" and select the same month and days but use 2019 as the pre-pandemic base. For this project, the 2019 month (first day to last day) would be used.
8 Click the "Add Count" button and the 2019 data selected will appear on the graph to the right.
9 Go to the top of the screen and select the "Grid" tab.
10 Hourly and daily ("Total") data will then be shown for the time periods selected for comparison. To determine the weekday AM peak hour comparison, review the highest peak hour traffic volumes from the counts between 7-9 AM (weekday PM = 4-6 PM, Saturday midday = 11 AM-1 PM).

Rockingham County - Group 4 Highway Station

02197002	Seabrook	NH 1A (Ocean Boulevard) at Seabrook TL	**JUNE**			
			2022	**2019**	**change**	
		AM	448	466	-3.9%	
		PM	782	854	-8.4%	
		SAT	857	991	-13.5%	
		Weekday	10136	11498	-11.8%	
		Weekend (SAT)	13762	16324	-15.7%	

Rockingham County - Group 4 Highway Station

82197076	Hampton Falls	US 1 (Lafayette Road) south of Road Split to NH 101	**JANUARY**			
			2022	**2019**	**change**	
		AM	1450	1397	3.8%	
		PM	1763	1755	0.5%	
		SAT	1714	1782	-3.8%	
		Weekday	22630	23285	-2.8%	
		Weekend (SAT)	22384	24117	-7.2%	

Strafford County - Group 4 Highway Station

02125001	Dover	Dover Point Road south of Middlebrook Road	**JANUARY**			
			2022	**2019**	**change**	
		AM	698	835	-16.4%	
		PM	1019	1039	-1.9%	
		SAT	854	877	-2.6%	
		Weekday	11641	12691	-8.3%	
		Weekend (SAT)	10416	11186	-6.9%	

	Average	
Covid Adjust	-5.5%	AM
	-3.3%	PM
	-6.6%	SAT
	-7.6%	Weekday
	-9.9%	Weekend (SAT)

Station 02197002: Seabrook

Count 1

N/A For Aggregated Counts X

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	57	3.6
1:00-2:00	-	-	-	-	43	-8.9
2:00-3:00	-	-	-	-	18	-40.0
3:00-4:00	-	-	-	-	27	11.8
4:00-5:00	-	-	-	-	53	-15.7
5:00-6:00	-	-	-	-	155	-3.2
6:00-7:00	-	-	-	-	275	-8.0
7:00-8:00	-	-	-	-	439	-9.8
8:00-9:00	-	-	-	-	448	-7.5
9:00-10:00	-	-	-	-	497	-15.6
10:00-11:00	-	-	-	-	563	-24.3
11:00-12:00	-	-	-	-	630	-20.8
12:00-13:00	-	-	-	-	681	-17.5
13:00-14:00	-	-	-	-	696	-21.2
14:00-15:00	-	-	-	-	741	-25.4
15:00-16:00	-	-	-	-	771	-23.2
16:00-17:00	-	-	-	-	747	-15.3
17:00-18:00	-	-	-	-	782	-22.7
18:00-19:00	-	-	-	-	684	-25.7
19:00-20:00	-	-	-	-	602	-31.1
20:00-21:00	-	-	-	-	504	-27.5
21:00-22:00	-	-	-	-	337	-14.6
22:00-23:00	-	-	-	-	234	-5.0
23:00-24:00	-	-	-	-	152	-35.7
Total			Counts = 11		10136	-20.1

Count Criteria

Local Id	02197002
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 2

N/A For Aggregated Counts X

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	77	33.3
1:00-2:00	-	-	-	-	48	2.1
2:00-3:00	-	-	-	-	22	-20.4
3:00-4:00	-	-	-	-	29	18.9
4:00-5:00	-	-	-	-	67	7.8
5:00-6:00	-	-	-	-	166	3.7
6:00-7:00	-	-	-	-	278	-6.9
7:00-8:00	-	-	-	-	449	-7.5
8:00-9:00	-	-	-	-	466	-3.6
9:00-10:00	-	-	-	-	548	-5.8
10:00-11:00	-	-	-	-	653	-9.6
11:00-12:00	-	-	-	-	719	-7.6
12:00-13:00	-	-	-	-	785	-3.4
13:00-14:00	-	-	-	-	796	-7.8
14:00-15:00	-	-	-	-	832	-14.0
15:00-16:00	-	-	-	-	838	-14.9
16:00-17:00	-	-	-	-	838	-3.9
17:00-18:00	-	-	-	-	854	-13.9
18:00-19:00	-	-	-	-	758	-15.6
19:00-20:00	-	-	-	-	702	-16.0
20:00-21:00	-	-	-	-	601	-10.1
21:00-22:00	-	-	-	-	455	15.4
22:00-23:00	-	-	-	-	330	29.2
23:00-24:00	-	-	-	-	187	-15.3
Total			Counts = 20		11498	-7.6

Count Criteria

Local Id	02197002
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 1

N/A For Aggregated Counts X

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	195	112.0
1:00-2:00	-	-	-	-	136	97.3
2:00-3:00	-	-	-	-	48	56.0
3:00-4:00	-	-	-	-	26	8.0
4:00-5:00	-	-	-	-	48	-25.5
5:00-6:00	-	-	-	-	152	-5.1
6:00-7:00	-	-	-	-	237	-22.8
7:00-8:00	-	-	-	-	381	-23.8
8:00-9:00	-	-	-	-	461	-4.7
9:00-10:00	-	-	-	-	569	-2.1
10:00-11:00	-	-	-	-	724	0.7
11:00-12:00	-	-	-	-	785	1.2
12:00-13:00	-	-	-	-	857	5.4
13:00-14:00	-	-	-	-	874	1.5
14:00-15:00	-	-	-	-	992	3.6
15:00-16:00	-	-	-	-	1057	8.3
16:00-17:00	-	-	-	-	1030	16.7
17:00-18:00	-	-	-	-	994	1.2
18:00-19:00	-	-	-	-	978	9.9
19:00-20:00	-	-	-	-	878	6.3
20:00-21:00	-	-	-	-	781	16.0
21:00-22:00	-	-	-	-	662	51.7
22:00-23:00	-	-	-	-	524	72.2
23:00-24:00	-	-	-	-	373	52.5
Total			Counts = 2		13762	10.4

Count Criteria

Local Id	02197002
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts X

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	280	134.3
1:00-2:00	-	-	-	-	220	129.6
2:00-3:00	-	-	-	-	55	68.3
3:00-4:00	-	-	-	-	32	28.6
4:00-5:00	-	-	-	-	61	-1.6
5:00-6:00	-	-	-	-	145	-9.8
6:00-7:00	-	-	-	-	284	-4.8
7:00-8:00	-	-	-	-	450	-7.3
8:00-9:00	-	-	-	-	615	24.0
9:00-10:00	-	-	-	-	779	29.1
10:00-11:00	-	-	-	-	894	21.7
11:00-12:00	-	-	-	-	968	22.0
12:00-13:00	-	-	-	-	991	19.9
13:00-14:00	-	-	-	-	1011	16.6
14:00-15:00	-	-	-	-	1094	13.4
15:00-16:00	-	-	-	-	1124	14.4
16:00-17:00	-	-	-	-	1112	24.3
17:00-18:00	-	-	-	-	1153	16.0
18:00-19:00	-	-	-	-	1103	21.8
19:00-20:00	-	-	-	-	1022	21.5
20:00-21:00	-	-	-	-	915	31.6
21:00-22:00	-	-	-	-	787	67.5
22:00-23:00	-	-	-	-	717	97.8
23:00-24:00	-	-	-	-	512	80.5
Total			Counts = 5		16324	27.3

Count Criteria

Local Id	02197002
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Station 82197076: Hampton Falls

Count 1

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	78	-8.6
1:00-2:00	-	-	-	-	50	-2.0
2:00-3:00	-	-	-	-	41	5.0
3:00-4:00	-	-	-	-	62	-16.3
4:00-5:00	-	-	-	-	167	-6.9
5:00-6:00	-	-	-	-	531	-10.5
6:00-7:00	-	-	-	-	867	0.8
7:00-8:00	-	-	-	-	1450	-2.7
8:00-9:00	-	-	-	-	1374	-1.0
9:00-10:00	-	-	-	-	1244	-5.7
10:00-11:00	-	-	-	-	1343	-6.1
11:00-12:00	-	-	-	-	1463	-4.5
12:00-13:00	-	-	-	-	1505	-2.4
13:00-14:00	-	-	-	-	1506	-0.2
14:00-15:00	-	-	-	-	1663	5.7
15:00-16:00	-	-	-	-	1702	0.4
16:00-17:00	-	-	-	-	1763	-1.4
17:00-18:00	-	-	-	-	1694	-2.2
18:00-19:00	-	-	-	-	1333	-2.3
19:00-20:00	-	-	-	-	1003	-6.0
20:00-21:00	-	-	-	-	776	0.4
21:00-22:00	-	-	-	-	512	-0.8
22:00-23:00	-	-	-	-	328	-11.5
23:00-24:00	-	-	-	-	175	4.7
Total			Counts = 11		22630	-2.1

Count Criteria

Local Id	82197076
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	104	20.1
1:00-2:00	-	-	-	-	55	7.5
2:00-3:00	-	-	-	-	41	5.0
3:00-4:00	-	-	-	-	59	-21.2
4:00-5:00	-	-	-	-	181	1.1
5:00-6:00	-	-	-	-	572	-3.1
6:00-7:00	-	-	-	-	1001	15.2
7:00-8:00	-	-	-	-	1342	-10.5
8:00-9:00	-	-	-	-	1397	0.6
9:00-10:00	-	-	-	-	1293	-1.8
10:00-11:00	-	-	-	-	1380	-3.3
11:00-12:00	-	-	-	-	1478	-3.5
12:00-13:00	-	-	-	-	1519	-1.4
13:00-14:00	-	-	-	-	1532	1.5
14:00-15:00	-	-	-	-	1616	2.8
15:00-16:00	-	-	-	-	1675	-1.2
16:00-17:00	-	-	-	-	1748	-2.3
17:00-18:00	-	-	-	-	1755	1.3
18:00-19:00	-	-	-	-	1416	3.7
19:00-20:00	-	-	-	-	1085	1.9
20:00-21:00	-	-	-	-	845	8.9
21:00-22:00	-	-	-	-	602	15.4
22:00-23:00	-	-	-	-	376	2.2
23:00-24:00	-	-	-	-	213	24.2
Total			Counts = 20		23285	0.7

Count Criteria

Local Id	82197076
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 1

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	156	58.9
1:00-2:00	-	-	-	-	97	62.2
2:00-3:00	-	-	-	-	45	14.3
3:00-4:00	-	-	-	-	44	-49.6
4:00-5:00	-	-	-	-	102	-54.8
5:00-6:00	-	-	-	-	232	-87.1
6:00-7:00	-	-	-	-	434	-65.8
7:00-8:00	-	-	-	-	774	-63.3
8:00-9:00	-	-	-	-	1116	-21.7
9:00-10:00	-	-	-	-	1377	4.5
10:00-11:00	-	-	-	-	1619	12.6
11:00-12:00	-	-	-	-	1714	11.3
12:00-13:00	-	-	-	-	1695	9.5
13:00-14:00	-	-	-	-	1715	12.8
14:00-15:00	-	-	-	-	1676	6.5
15:00-16:00	-	-	-	-	1652	-2.6
16:00-17:00	-	-	-	-	1609	-10.5
17:00-18:00	-	-	-	-	1513	-13.5
18:00-19:00	-	-	-	-	1321	-3.2
19:00-20:00	-	-	-	-	1105	3.7
20:00-21:00	-	-	-	-	921	17.5
21:00-22:00	-	-	-	-	731	34.5
22:00-23:00	-	-	-	-	482	26.8
23:00-24:00	-	-	-	-	254	41.3
Total			Counts = 2		22384	-3.2

Count Criteria

Local Id	82197076
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	190	76.4
1:00-2:00	-	-	-	-	125	84.1
2:00-3:00	-	-	-	-	74	61.9
3:00-4:00	-	-	-	-	57	-24.6
4:00-5:00	-	-	-	-	90	-66.2
5:00-6:00	-	-	-	-	238	-85.0
6:00-7:00	-	-	-	-	453	-62.0
7:00-8:00	-	-	-	-	785	-62.0
8:00-9:00	-	-	-	-	1159	-18.0
9:00-10:00	-	-	-	-	1488	12.2
10:00-11:00	-	-	-	-	1694	17.1
11:00-12:00	-	-	-	-	1770	14.5
12:00-13:00	-	-	-	-	1782	14.5
13:00-14:00	-	-	-	-	1716	12.8
14:00-15:00	-	-	-	-	1759	11.3
15:00-16:00	-	-	-	-	1752	3.2
16:00-17:00	-	-	-	-	1748	-2.3
17:00-18:00	-	-	-	-	1681	-3.0
18:00-19:00	-	-	-	-	1518	10.7
19:00-20:00	-	-	-	-	1254	16.3
20:00-21:00	-	-	-	-	1043	29.7
21:00-22:00	-	-	-	-	830	46.7
22:00-23:00	-	-	-	-	566	42.4
23:00-24:00	-	-	-	-	345	69.5
Total			Counts = 5		24117	4.2

Count Criteria

Local Id	82197076
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Station 02125001: Dover

Count 1

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	62	-7.8
1:00-2:00	-	-	-	-	34	12.5
2:00-3:00	-	-	-	-	24	-22.2
3:00-4:00	-	-	-	-	34	9.2
4:00-5:00	-	-	-	-	92	2.2
5:00-6:00	-	-	-	-	230	-11.5
6:00-7:00	-	-	-	-	441	0.2
7:00-8:00	-	-	-	-	698	4.2
8:00-9:00	-	-	-	-	688	-2.6
9:00-10:00	-	-	-	-	589	-4.0
10:00-11:00	-	-	-	-	612	-3.4
11:00-12:00	-	-	-	-	671	-0.1
12:00-13:00	-	-	-	-	756	0.3
13:00-14:00	-	-	-	-	750	-3.3
14:00-15:00	-	-	-	-	860	5.5
15:00-16:00	-	-	-	-	986	-1.6
16:00-17:00	-	-	-	-	1019	2.4
17:00-18:00	-	-	-	-	1009	-2.0
18:00-19:00	-	-	-	-	667	-3.1
19:00-20:00	-	-	-	-	491	-5.7
20:00-21:00	-	-	-	-	375	-4.2
21:00-22:00	-	-	-	-	254	-7.6
22:00-23:00	-	-	-	-	179	10.0
23:00-24:00	-	-	-	-	120	0.0
Total			Counts = 11		11641	-1.0

Count Criteria

Local Id	02125001
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	88	27.1
1:00-2:00	-	-	-	-	35	15.4
2:00-3:00	-	-	-	-	24	-22.2
3:00-4:00	-	-	-	-	30	-3.3
4:00-5:00	-	-	-	-	85	-5.7
5:00-6:00	-	-	-	-	241	-6.8
6:00-7:00	-	-	-	-	506	14.0
7:00-8:00	-	-	-	-	835	22.1
8:00-9:00	-	-	-	-	782	10.2
9:00-10:00	-	-	-	-	659	7.2
10:00-11:00	-	-	-	-	678	6.9
11:00-12:00	-	-	-	-	732	8.5
12:00-13:00	-	-	-	-	789	4.5
13:00-14:00	-	-	-	-	792	2.2
14:00-15:00	-	-	-	-	910	11.1
15:00-16:00	-	-	-	-	1017	1.5
16:00-17:00	-	-	-	-	1012	1.7
17:00-18:00	-	-	-	-	1039	1.0
18:00-19:00	-	-	-	-	717	4.1
19:00-20:00	-	-	-	-	584	11.6
20:00-21:00	-	-	-	-	450	14.0
21:00-22:00	-	-	-	-	338	20.9
22:00-23:00	-	-	-	-	210	25.8
23:00-24:00	-	-	-	-	138	14.0
Total			Counts = 20		12691	7.6

Count Criteria

Local Id	02125001
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Monday Tuesday Wednesday Thursday Friday

Count 1

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	89	28.2
1:00-2:00	-	-	-	-	51	51.9
2:00-3:00	-	-	-	-	27	-10.5
3:00-4:00	-	-	-	-	24	-25.5
4:00-5:00	-	-	-	-	41	-74.8
5:00-6:00	-	-	-	-	99	-89.1
6:00-7:00	-	-	-	-	189	-79.8
7:00-8:00	-	-	-	-	302	-75.6
8:00-9:00	-	-	-	-	443	-45.8
9:00-10:00	-	-	-	-	623	1.6
10:00-11:00	-	-	-	-	732	14.5
11:00-12:00	-	-	-	-	780	14.9
12:00-13:00	-	-	-	-	854	12.4
13:00-14:00	-	-	-	-	787	1.5
14:00-15:00	-	-	-	-	867	6.3
15:00-16:00	-	-	-	-	823	-19.6
16:00-17:00	-	-	-	-	755	-27.4
17:00-18:00	-	-	-	-	763	-29.7
18:00-19:00	-	-	-	-	592	-15.0
19:00-20:00	-	-	-	-	512	-1.6
20:00-21:00	-	-	-	-	402	2.8
21:00-22:00	-	-	-	-	325	17.0
22:00-23:00	-	-	-	-	197	19.5
23:00-24:00	-	-	-	-	139	14.7
Total			Counts = 2		10416	-12.1

Count Criteria

Local Id	02125001
Start Date	06/01/2022
End Date	06/30/2022
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

Count 2

N/A For Aggregated Counts

INTERVAL:60-MIN

Time	60-min Interval 1st	2nd	3rd	4th	Hourly Count	% Diff
0:00-1:00	-	-	-	-	135	67.3
1:00-2:00	-	-	-	-	61	68.1
2:00-3:00	-	-	-	-	40	28.6
3:00-4:00	-	-	-	-	30	-3.3
4:00-5:00	-	-	-	-	43	-70.7
5:00-6:00	-	-	-	-	95	-92.4
6:00-7:00	-	-	-	-	205	-72.9
7:00-8:00	-	-	-	-	366	-58.6
8:00-9:00	-	-	-	-	534	-27.7
9:00-10:00	-	-	-	-	676	9.8
10:00-11:00	-	-	-	-	769	19.4
11:00-12:00	-	-	-	-	813	19.0
12:00-13:00	-	-	-	-	877	15.1
13:00-14:00	-	-	-	-	837	7.7
14:00-15:00	-	-	-	-	865	6.1
15:00-16:00	-	-	-	-	849	-16.5
16:00-17:00	-	-	-	-	791	-22.8
17:00-18:00	-	-	-	-	764	-29.6
18:00-19:00	-	-	-	-	647	-6.1
19:00-20:00	-	-	-	-	536	3.0
20:00-21:00	-	-	-	-	448	13.6
21:00-22:00	-	-	-	-	370	29.8
22:00-23:00	-	-	-	-	261	46.8
23:00-24:00	-	-	-	-	174	36.7
Total			Counts = 5		11186	-5.0

Count Criteria

Local Id	02125001
Start Date	06/01/2019
End Date	06/30/2019
Aggregation	AVG
Include Abnormal	False
Selected Days	Saturday

APPENDIX D

AM Site Trip Distribution

Trips Based on Pernaw Report,
Distribution ProRata per Counts

Primary: AM Distribution

	In	Out
AM Totals	27	27

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	3%		1	0
WBT			0	0
WBR	4%		1	0
NBL			0	0
NBT			0	0
NBR		3%	0	1
SBL		4%	0	1
SBT			0	0
SBR			0	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR		**7%**	0	2
WBL		**2%**	0	1
WBT			0	0
WBR			0	0
NBL	**7%**		2	0
NBT	**93%**		25	0
NBR	**0%**		0	0
SBL			0	0
SBT		**91%**	0	25
SBR			0	0

PM Site Trip Distribution

Trips Based on Pernaw Report,
Distribution ProRata per Counts

Primary: PM Distribution

	In	Out
PM Totals	24	23

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	2%		0	0
WBT			0	0
WBR	9%		2	0
NBL			0	0
NBT			0	0
NBR		6%	0	1
SBL		8%	0	2
SBT			0	0
SBR			0	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR		**14%**	0	3
WBL		**1%**	0	0
WBT			0	0
WBR			0	0
NBL	**10%**		2	0
NBT	**89%**		21	0
NBR	**0%**		0	0
SBL			0	0
SBT		**85%**	0	20
SBR			0	0

SAT Site Trip Distribution

Trips Based on Pernaw Report,
Distribution ProRata per Counts

Primary: SAT Distribution

	In	Out
SAT Totals	28	24

West Road at Driveway/Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR			0	0
WBL	1%		0	0
WBT			0	0
WBR	10%		3	0
NBL			0	0
NBT			0	0
NBR		1%	0	0
SBL		11%	0	3
SBT			0	0
SBR			0	0

Lafayette Road at Wilson Road

	PERCENTAGES		TRIPS	
Movement	In	Out	In	Out
EBL			0	0
EBT			0	0
EBR		**12%**	0	3
WBL		**1%**	0	0
WBT			0	0
WBR			0	0
NBL	**10%**		3	0
NBT	**90%**		25	0
NBR	**0%**		0	0
SBL			0	0
SBT		**87%**	0	21
SBR			0	0

TOTAL Site Trip Distribution

AM Total Site Trips

AM TOTAL: 54

West Road at Driveway/Wilson Road

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	1
WBT	0
WBR	1
NBL	0
NBT	0
NBR	1
SBL	1
SBT	0
SBR	0

Lafayette Road at Wilson Road

Movement	TRIPS
EBL	0
EBT	0
EBR	2
WBL	1
WBT	0
WBR	0
NBL	2
NBT	25
NBR	0
SBL	0
SBT	25
SBR	0

PM Total Site Trips

PM TOTAL: 47

West Road at Driveway/Wilson Road

Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	0
WBT	0
WBR	2
NBL	0
NBT	0
NBR	1
SBL	2
SBT	0
SBR	0

Lafayette Road at Wilson Road

Movement	TRIPS
EBL	0
EBT	0
EBR	3
WBL	0
WBT	0
WBR	0
NBL	2
NBT	21
NBR	0
SBL	0
SBT	20
SBR	0

SAT Total Site Trips

SAT TOTAL: 52

West Road at Driveway/Wilson Road

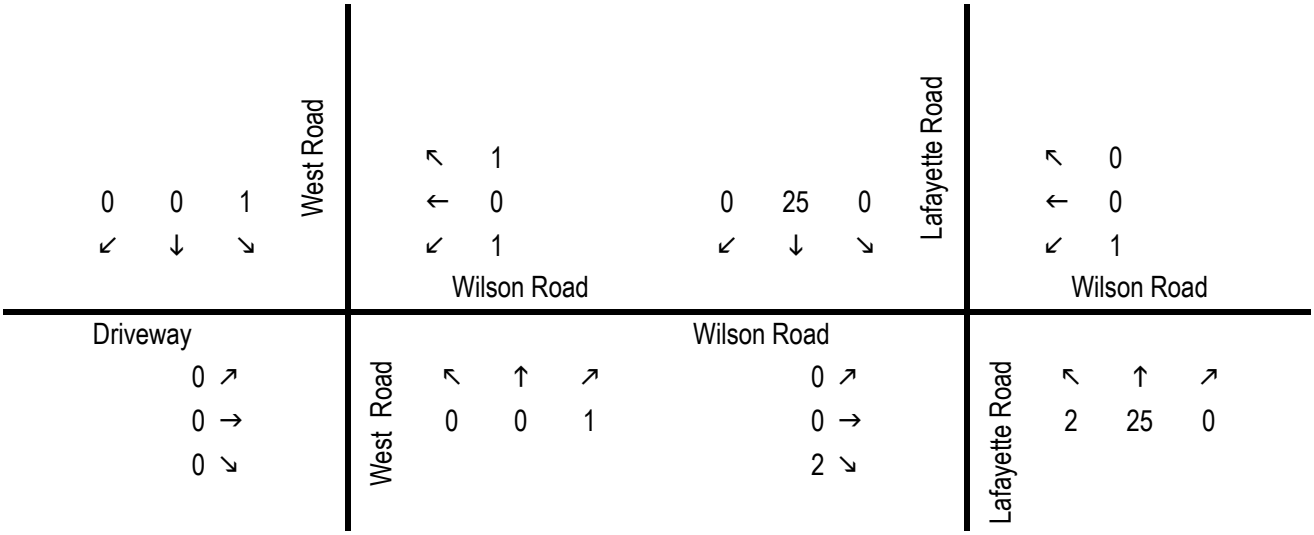
Movement	TRIPS
EBL	0
EBT	0
EBR	0
WBL	0
WBT	0
WBR	3
NBL	0
NBT	0
NBR	0
SBL	3
SBT	0
SBR	0

Lafayette Road at Wilson Road

Movement	TRIPS
EBL	0
EBT	0
EBR	3
WBL	0
WBT	0
WBR	0
NBL	3
NBT	25
NBR	0
SBL	0
SBT	21
SBR	0

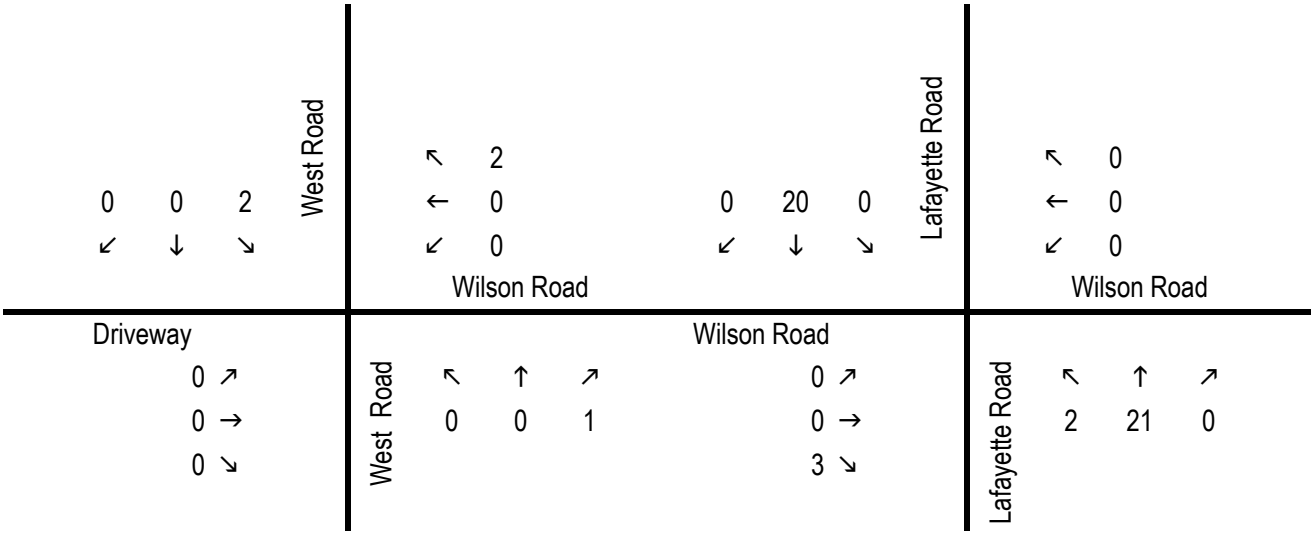
OTHER DEVELOPMENTS
Site Trips
AM Peak Hour

XX Other Development - Gas Station Trips



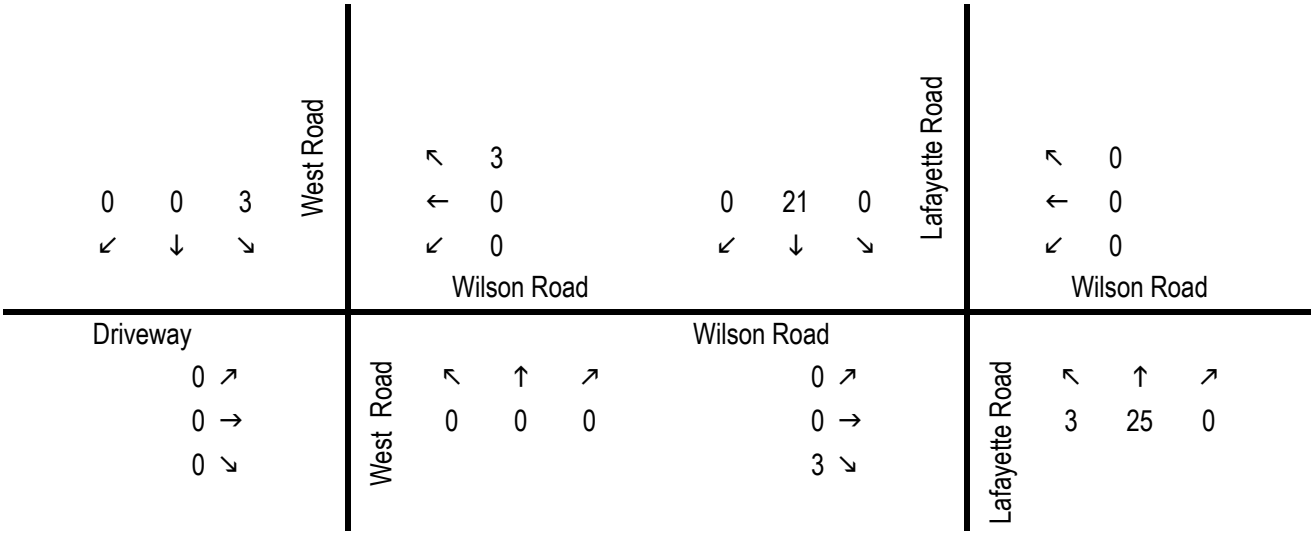
OTHER DEVELOPMENTS
Site Trips
PM Peak Hour

XX Other Development - Gas Station Trips



OTHER DEVELOPMENTS
Site Trips
SAT Peak Hour

XX Other Development - Gas Station Trips



APPENDIX E

Background Traffic Volumes

AM Peak data

Assumed growth rate	**0.01**	
June 2019 Seasonal Adjust	**1.02**	NHDOT monthly adjustment factors - Group 4
Covid/Stay-home factor	**1.055**	

AM Peak Hour	Existing 2022 (Raw data) [06/23/2022]	Existing 2022 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2022 BASE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	AM PHF	% Heavy	Counted Heavy
West Road at Driveway/Wilson Road	**7:45 AM**																	
Movement																		
EBL	0	*0*	1.055	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
EBT	0	*0*	1.055	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	0.00	#DIV/0!	0
EBR	0	*0*	1.055	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
WBL	22	22	1.055	23.21	23.44	23.67	23.91	24.15	24.39	24.63	24.88	25.13	25.38	25.63	25.89		9%	2
WBT	0	*0*	1.055	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	0.88	#DIV/0!	0
WBR	31	32	1.055	33.76	34.10	34.44	34.78	35.13	35.48	35.83	36.19	36.55	36.92	37.29	37.66		6%	2
NBL	0	*0*	1.055	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
NBT	100	102	1.055	107.61	108.69	109.78	110.88	111.99	113.11	114.24	115.38	116.53	117.70	118.88	120.07	0.89	11%	11
NBR	14	14	1.055	14.77	14.92	15.07	15.22	15.37	15.52	15.68	15.84	16.00	16.16	16.32	16.48		21%	3
SBL	19	19	1.055	20.05	20.25	20.45	20.65	20.86	21.07	21.28	21.49	21.70	21.92	22.14	22.36		5%	1
SBT	204	208	1.055	219.44	221.63	223.85	226.09	228.35	230.63	232.94	235.27	237.62	240.00	242.40	244.82	0.77	6%	12
SBR	2	*2*	1.055	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*	*2.11*		0%	0
Lafayette Road at Wilson Road	**8:00 AM**																	
Movement																		
EBL	20	20	1.055	21.10	21.31	21.52	21.74	21.96	22.18	22.40	22.62	22.85	23.08	23.31	23.54		15%	3
EBT	0	0	1.055	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	#DIV/0!	0
EBR	52	53	1.055	55.92	56.48	57.04	57.61	58.19	58.77	59.36	59.95	60.55	61.16	61.77	62.39		6%	3
WBL	12	12	1.055	12.66	12.79	12.92	13.05	13.18	13.31	13.44	13.57	13.71	13.85	13.99	14.13		0%	0
WBT	3	3	1.055	3.17	3.20	3.23	3.26	3.29	3.32	3.35	3.38	3.41	3.44	3.47	3.50	0.70	0%	0
WBR	13	13	1.055	13.72	13.86	14.00	14.14	14.28	14.42	14.56	14.71	14.86	15.01	15.16	15.31		0%	0
NBL	52	53	1.055	55.92	56.48	57.04	57.61	58.19	58.77	59.36	59.95	60.55	61.16	61.77	62.39		12%	6
NBT	647	660	1.055	696.30	703.26	710.29	717.39	724.56	731.81	739.13	746.52	753.99	761.53	769.15	776.84	0.94	6%	38
NBR	1	1	1.055	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17		0%	0
SBL	1	1	1.055	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17		0%	0
SBT	640	653	1.055	688.92	695.81	702.77	709.80	716.90	724.07	731.31	738.62	746.01	753.47	761.00	768.61	0.89	6%	39
SBR	73	74	1.055	78.07	78.85	79.64	80.44	81.24	82.05	82.87	83.70	84.54	85.39	86.24	87.10		4%	3

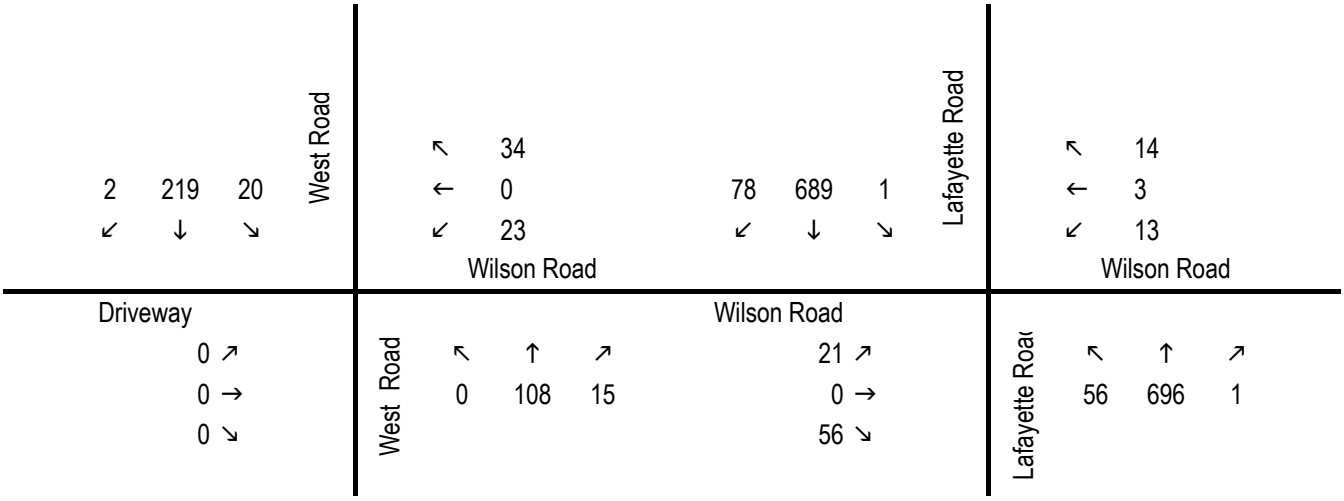
AM Peak Hour	2022 Base	2023	Other Development	2023 No-Build	Site Trip Distribution	2023 Build
West Road at Driveway/Wilson Road						
Movement						
EBL	0	0	0	0	9	9
EBT	0	0	0	0	6	6
EBR	0	0	0	0	1	1
WBL	23	23	1	24	0	24
WBT	0	0	0	0	9	9
WBR	34	34	1	35	0	35
NBL	0	0	0	0	1	1
NBT	108	109	0	109	0	109
NBR	15	15	1	16	0	16
SBL	20	20	1	21	0	21
SBT	219	222	0	222	0	222
SBR	2	2	0	2	14	16
Lafayette Road at Wilson Road						
Movement						
EBL	21	21	0	21	2	23
EBT	0	0	0	0	0	0
EBR	56	56	2	58	4	62
WBL	13	13	1	14	0	14
WBT	3	3	0	3	0	3
WBR	14	14	0	14	0	14
NBL	56	56	2	58	4	62
NBT	696	703	25	728	0	728
NBR	1	1	0	1	0	1
SBL	1	1	0	1	0	1
SBT	689	696	25	721	0	721
SBR	78	79	0	79	5	84

AM Peak Hour	2033	Other Development	2033 No-Build	Site Trip Distribution	2033 Build
West Road at Driveway/Wilson Road					
Movement					
EBL	0	0	0	9	9
EBT	0	0	0	6	6
EBR	0	0	0	1	1
WBL	26	1	27	0	27
WBT	0	0	0	9	9
WBR	38	1	39	0	39
NBL	0	0	0	1	1
NBT	120	0	120	0	120
NBR	16	1	17	0	17
SBL	22	1	23	0	23
SBT	245	0	245	0	245
SBR	2	0	2	14	16
Lafayette Road at Wilson Road					
Movement					
EBL	24	0	24	2	26
EBT	0	0	0	0	0
EBR	62	2	64	4	68
WBL	14	1	15	0	15
WBT	4	0	4	0	4
WBR	15	0	15	0	15
NBL	62	2	64	4	68
NBT	777	25	802	0	802
NBR	1	0	1	0	1
SBL	1	0	1	0	1
SBT	769	25	794	0	794
SBR	87	0	87	5	92

2022 BASE

AM Peak Hour

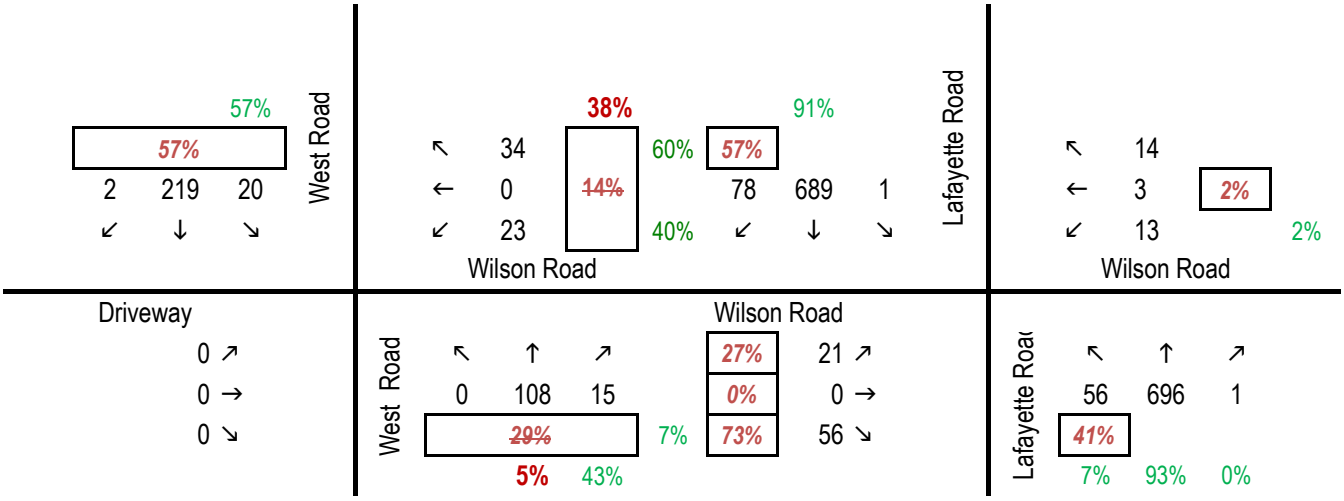
XX VOLUME



2022 BASE PRORATA
AM Peak Hour

Rev1

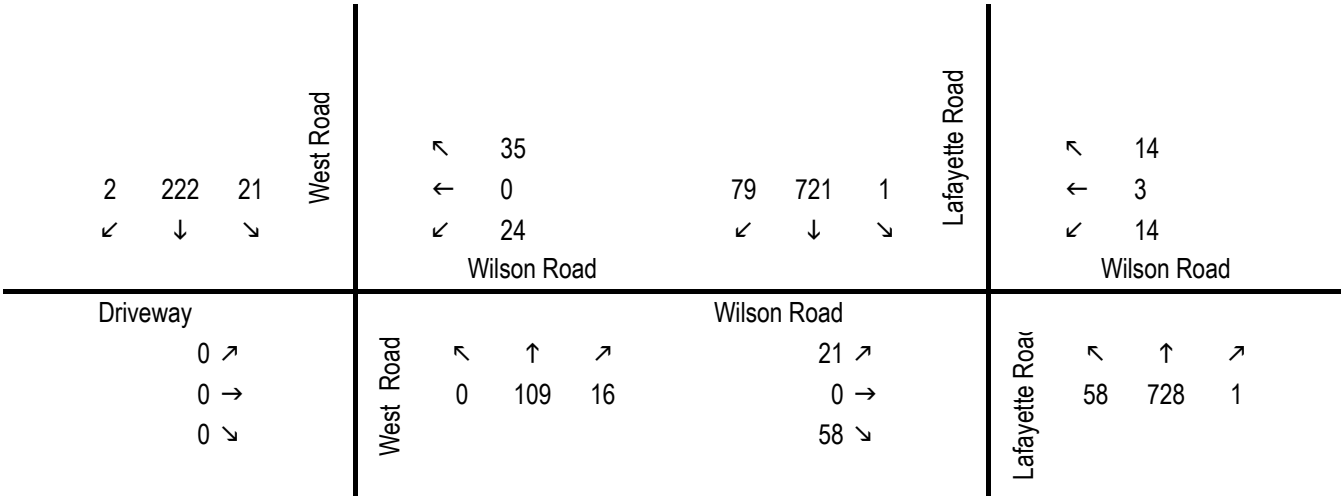
XX VOLUME
XX Site Trips ProRata
XX Other Development ProRata



2023 NoBUILD

AM Peak Hour

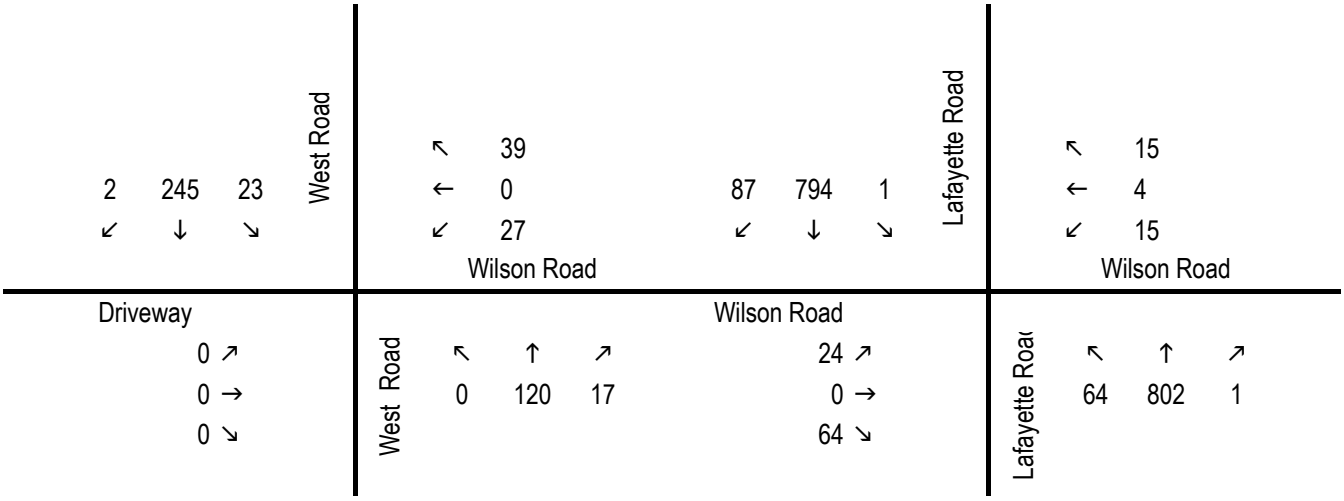
XX VOLUME



2033 NoBUILD

AM Peak Hour

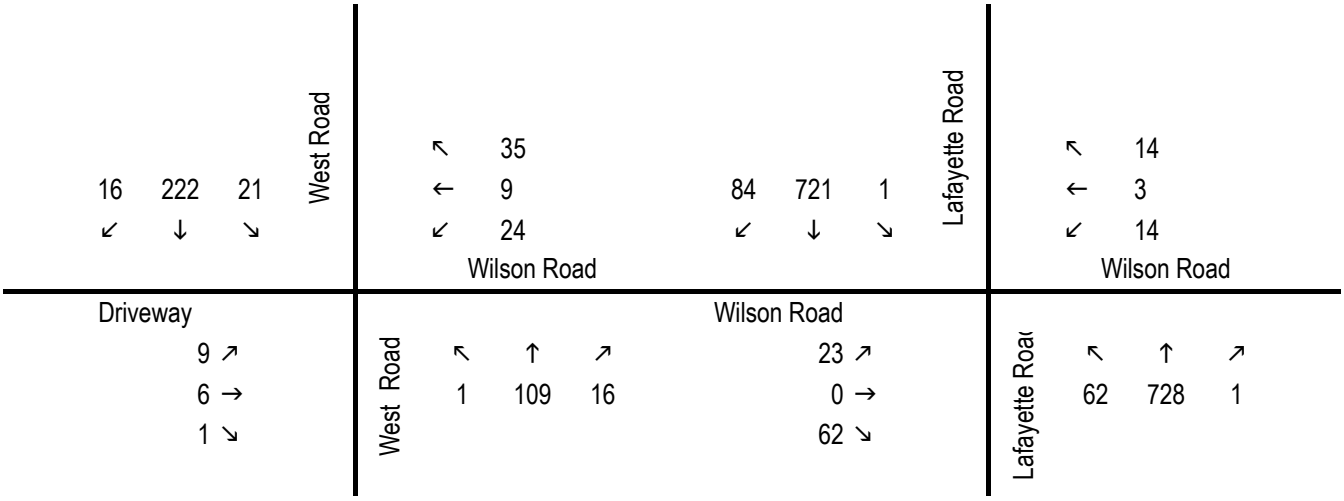
XX VOLUME



2023 BUILD | Rev1

AM Peak Hour

XX VOLUME

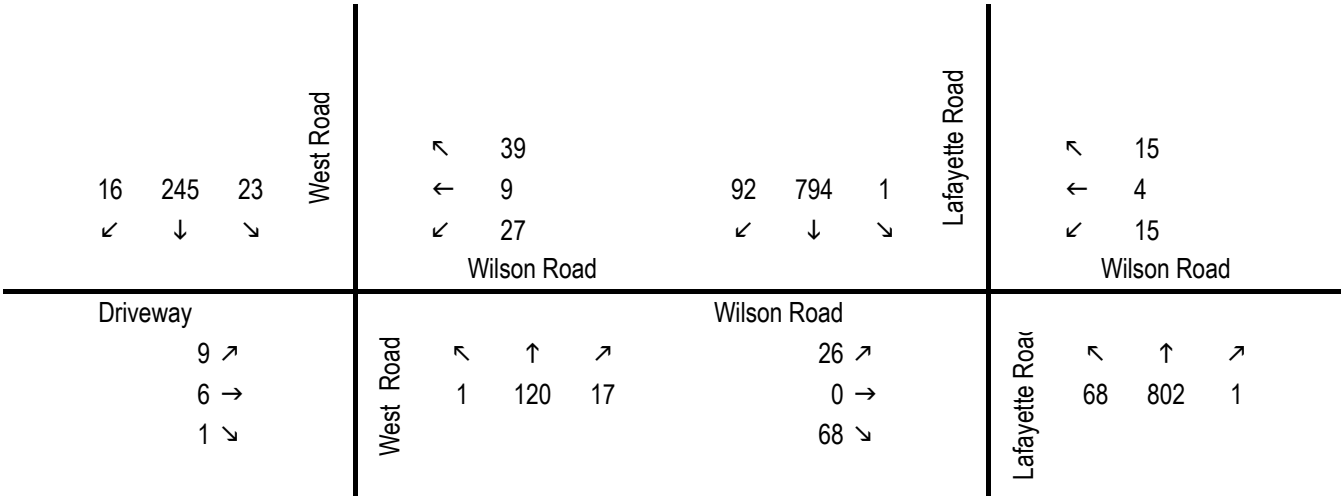


2033 BUILD

AM Peak Hour

Rev1

XX VOLUME



APPENDIX F

Background Traffic Volumes
PM Peak data

Assumed growth rate **0.01**
June 2019 Seasonal Adjust **1.02** NHDOT monthly adjustment factors - Group 4
Covid/Stay-home factor **1.033**

PM Peak Hour	Existing 2022 (Raw data) [06/23/2022]	Existing 2022 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2022 BASE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	PM PHF	% Heavy	Counted Heavy
West Road at Driveway/Wilson Road	**4:30 PM**																	
Movement																		
EBL	0	*0*	1.033	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
EBT	1	*1*	1.033	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	*1.03*	0.25	0%	0
EBR	0	*0*	1.033	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
WBL	9	9	1.033	9.30	9.39	9.48	9.57	9.67	9.77	9.87	9.97	10.07	10.17	10.27	10.37		11%	1
WBT	0	*0*	1.033	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	0.82	#DIV/0!	0
WBR	50	51	1.033	52.68	53.21	53.74	54.28	54.82	55.37	55.92	56.48	57.04	57.61	58.19	58.77		2%	1
NBL	0	*0*	1.033	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
NBT	205	209	1.033	215.90	218.06	220.24	222.44	224.66	226.91	229.18	231.47	233.78	236.12	238.48	240.86	0.83	0%	1
NBR	33	34	1.033	35.12	35.47	35.82	36.18	36.54	36.91	37.28	37.65	38.03	38.41	38.79	39.18		6%	2
SBL	48	49	1.033	50.62	51.13	51.64	52.16	52.68	53.21	53.74	54.28	54.82	55.37	55.92	56.48		4%	2
SBT	64	65	1.033	67.15	67.82	68.50	69.19	69.88	70.58	71.29	72.00	72.72	73.45	74.18	74.92	0.93	8%	5
SBR	0	*0*	1.033	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
Lafayette Road at Wilson Road	**4:45 PM**																	
Movement																		
EBL	37	38	1.033	39.25	39.64	40.04	40.44	40.84	41.25	41.66	42.08	42.50	42.93	43.36	43.79		3%	1
EBT	11	11	1.033	11.36	11.47	11.58	11.70	11.82	11.94	12.06	12.18	12.30	12.42	12.54	12.67	0.85	0%	0
EBR	132	135	1.033	139.46	140.85	142.26	143.68	145.12	146.57	148.04	149.52	151.02	152.53	154.06	155.60		1%	1
WBL	11	11	1.033	11.36	11.47	11.58	11.70	11.82	11.94	12.06	12.18	12.30	12.42	12.54	12.67		0%	0
WBT	6	6	1.033	6.20	6.26	6.32	6.38	6.44	6.50	6.57	6.64	6.71	6.78	6.85	6.92	0.68	0%	0
WBR	10	10	1.033	10.33	10.43	10.53	10.64	10.75	10.86	10.97	11.08	11.19	11.30	11.41	11.52		0%	0
NBL	64	65	1.033	67.15	67.82	68.50	69.19	69.88	70.58	71.29	72.00	72.72	73.45	74.18	74.92		2%	1
NBT	859	876	1.033	904.91	913.96	923.10	932.33	941.65	951.07	960.58	970.19	979.89	989.69	999.59	1009.59	0.97	0%	4
NBR	4	4	1.033	4.13	4.17	4.21	4.25	4.29	4.33	4.37	4.41	4.45	4.49	4.53	4.58		0%	0
SBL	6	6	1.033	6.20	6.26	6.32	6.38	6.44	6.50	6.57	6.64	6.71	6.78	6.85	6.92		0%	0
SBT	781	797	1.033	823.30	831.53	839.85	848.25	856.73	865.30	873.95	882.69	891.52	900.44	909.44	918.53	0.94	1%	7
SBR	92	94	1.033	97.10	98.07	99.05	100.04	101.04	102.05	103.07	104.10	105.14	106.19	107.25	108.32		1%	1

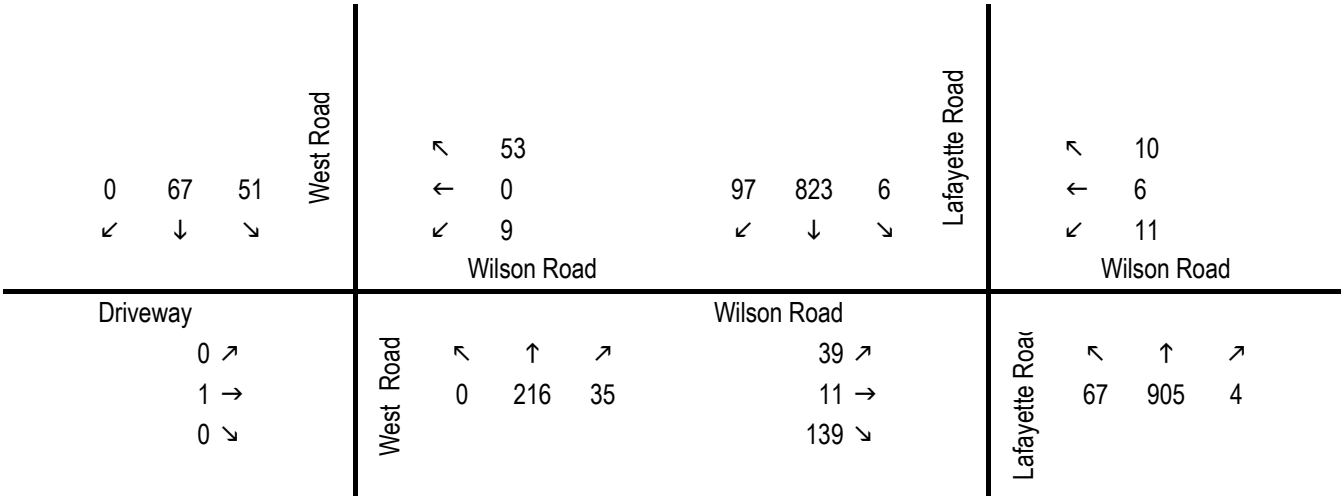
PM Peak Hour	2022 Base	2023	Other Development	2023 No-Build	Site Trip Distribution	2023 Build
West Road at Driveway/Wilson Road						
Movement						
EBL	0	0	0	0	11	11
EBT	1	1	0	1	27	28
EBR	0	0	0	0	2	2
WBL	9	9	0	9	0	9
WBT	0	0	0	0	44	44
WBR	53	53	2	55	0	55
NBL	0	0	0	0	3	3
NBT	216	218	0	218	0	218
NBR	35	35	1	36	0	36
SBL	51	51	2	53	0	53
SBT	67	68	0	68	0	68
SBR	0	0	0	0	17	17
Lafayette Road at Wilson Road						
Movement						
EBL	39	40	0	40	6	46
EBT	11	11	0	11	4	15
EBR	139	141	3	144	20	164
WBL	11	11	0	11	0	11
WBT	6	6	0	6	0	6
WBR	10	10	0	10	0	10
NBL	67	68	2	70	17	87
NBT	905	914	21	935	0	935
NBR	4	4	0	4	0	4
SBL	6	6	0	6	0	6
SBT	823	832	20	852	0	852
SBR	97	98	0	98	25	123

PM Peak Hour	2033	Other Development	2033 No-Build	Site Trip Distribution	2033 Build
West Road at Driveway/Wilson Road					
Movement					
EBL	0	0	0	11	11
EBT	1	0	1	27	28
EBR	0	0	0	2	2
WBL	10	0	10	0	10
WBT	0	0	0	44	44
WBR	59	2	61	0	61
NBL	0	0	0	3	3
NBT	241	0	241	0	241
NBR	39	1	40	0	40
SBL	56	2	58	0	58
SBT	75	0	75	0	75
SBR	0	0	0	17	17
Lafayette Road at Wilson Road					
Movement					
EBL	44	0	44	6	50
EBT	13	0	13	4	17
EBR	156	3	159	20	179
WBL	13	0	13	0	13
WBT	7	0	7	0	7
WBR	12	0	12	0	12
NBL	75	2	77	17	94
NBT	1010	21	1031	0	1031
NBR	5	0	5	0	5
SBL	7	0	7	0	7
SBT	919	20	939	0	939
SBR	108	0	108	25	133

2022 BASE

PM Peak Hour

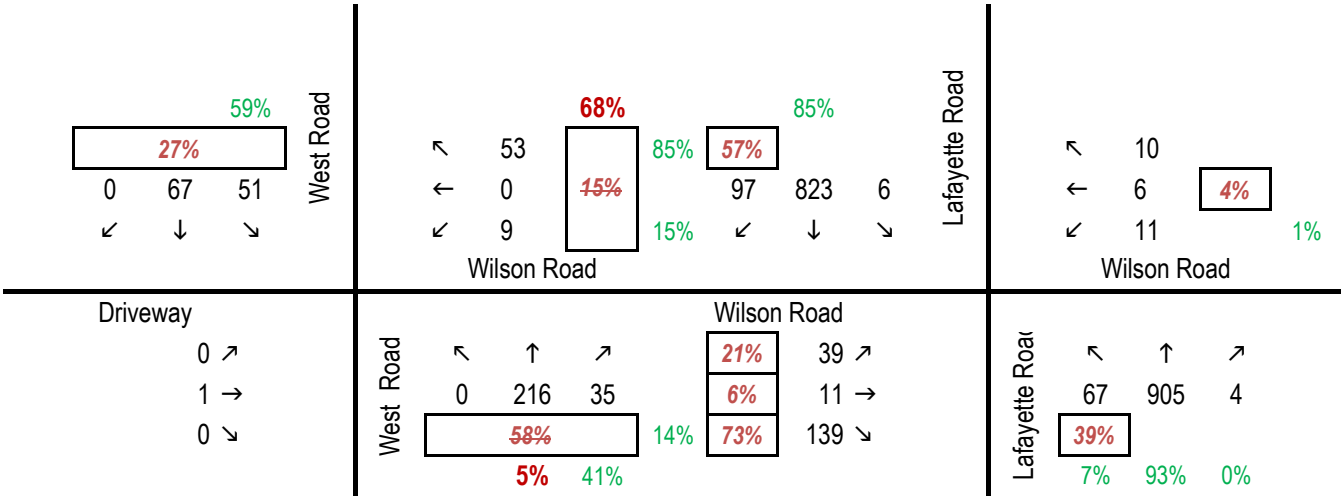
XX VOLUME



2022 BASE PRORATA
PM Peak Hour

Rev1

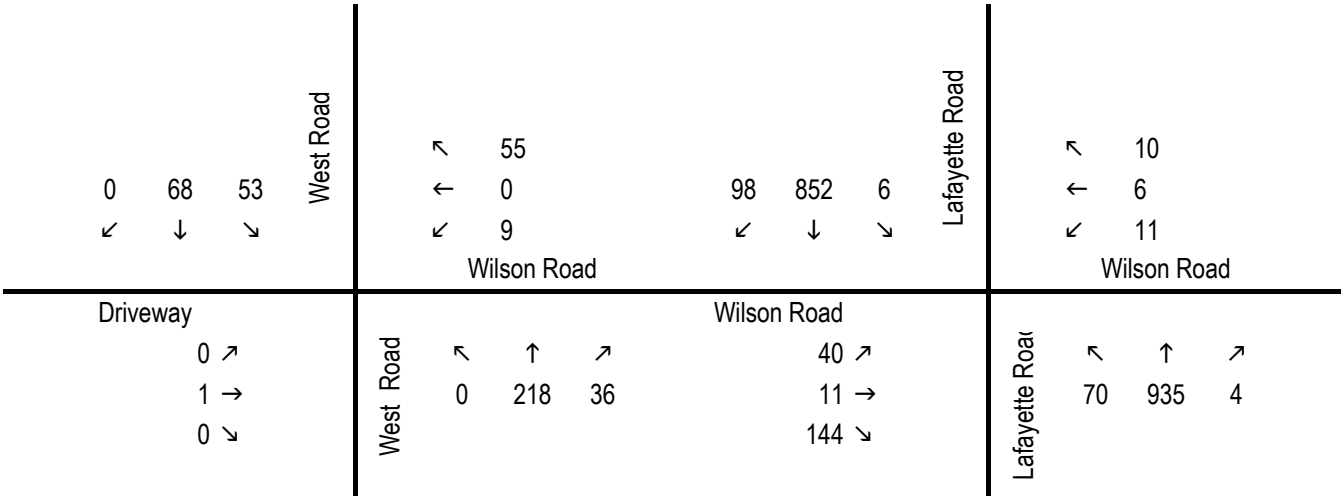
XX VOLUME
XX Site Trips ProRata
XX Other Development ProRata



2023 NoBUILD

PM Peak Hour

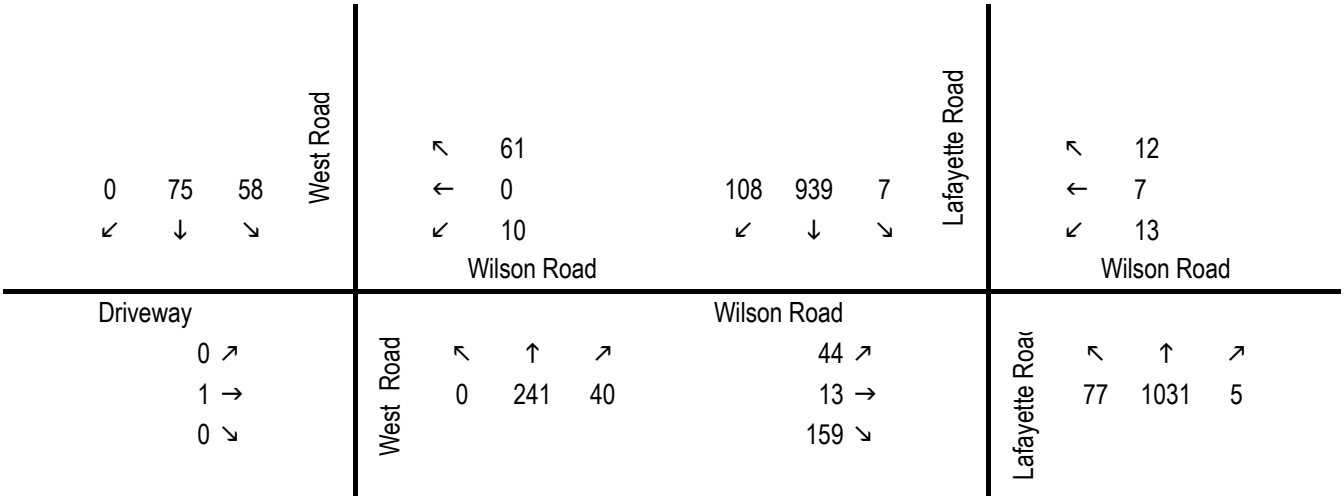
XX VOLUME



2033 NoBUILD

PM Peak Hour

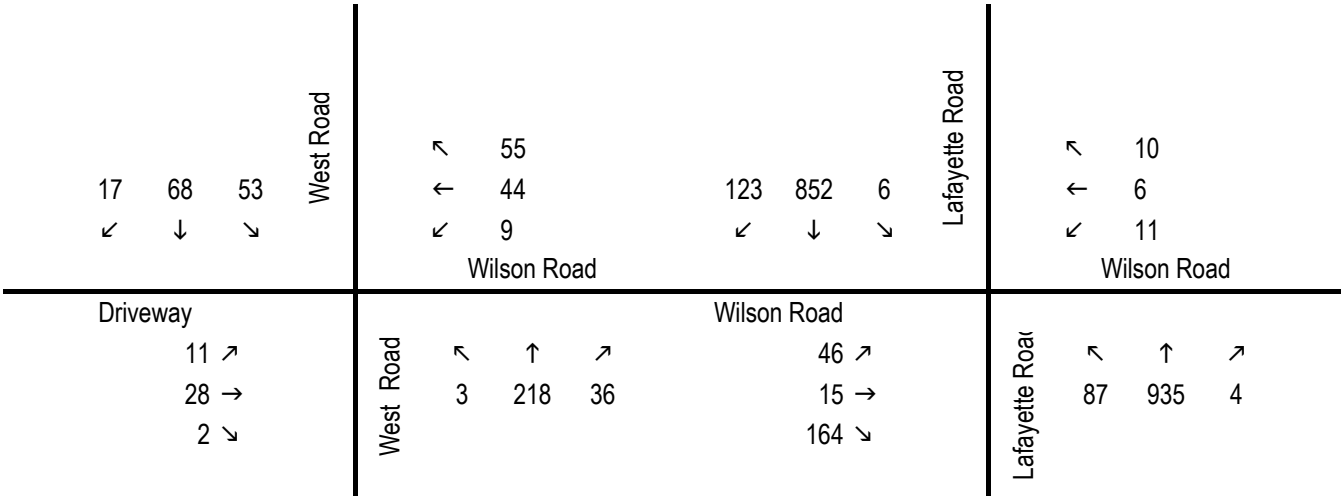
XX VOLUME



2023 BUILD Rev1

PM Peak Hour

XX VOLUME

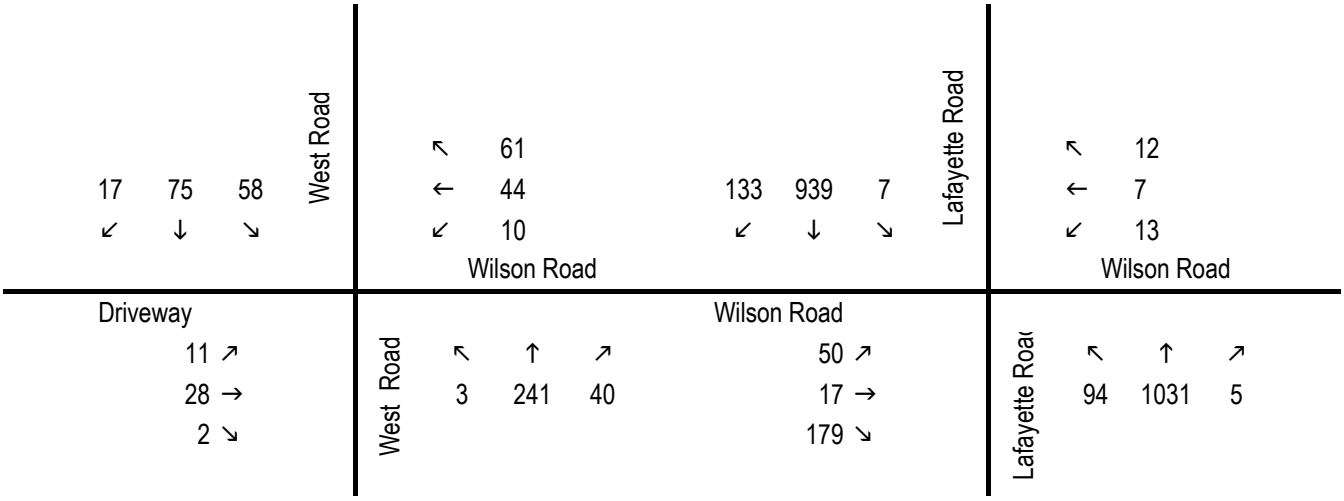


2033 BUILD

PM Peak Hour

Rev1

XX VOLUME



APPENDIX G

Background Traffic Volumes

SAT Peak data

Assumed growth rate	**0.01**	
June 2019 Seasonal Adjust	**1.02**	NHDOT monthly adjustment factors - Group 4
Covid/Stay-home factor	**1.066**	

SAT Peak Hour	Existing 2022 (Raw data) [06/23/2022]	Existing 2022 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2022 BASE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	SAT PHF	% Heavy	Counted Heavy
West Road at Driveway/Wilson Road	**11:14 AM**																	
Movement																		
EBL	0	*0*	1.066	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
EBT	1	*1*	1.066	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	0.25	0%	0
EBR	0	*0*	1.066	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
WBL	3	3	1.066	3.20	3.23	3.26	3.29	3.32	3.35	3.38	3.41	3.44	3.47	3.50	3.54		0%	0
WBT	1	*1*	1.066	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	*1.07*	0.80	0%	0
WBR	57	58	1.066	61.83	62.45	63.07	63.70	64.34	64.98	65.63	66.29	66.95	67.62	68.30	68.98		2%	1
NBL	0	*0*	1.066	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
NBT	25	26	1.066	27.72	28.00	28.28	28.56	28.85	29.14	29.43	29.72	30.02	30.32	30.62	30.93	0.75	16%	4
NBR	2	2	1.066	2.13	2.15	2.17	2.19	2.21	2.23	2.25	2.27	2.29	2.31	2.33	2.35		0%	0
SBL	34	35	1.066	37.31	37.68	38.06	38.44	38.82	39.21	39.60	40.00	40.40	40.80	41.21	41.62		0%	0
SBT	36	37	1.066	39.44	39.83	40.23	40.63	41.04	41.45	41.86	42.28	42.70	43.13	43.56	44.00	0.80	11%	4
SBR	0	*0*	1.066	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*		#DIV/0!	0
Lafayette Road at Wilson Road	**11:00 AM**																	
Movement																		
EBL	42	43	1.066	45.84	46.30	46.76	47.23	47.70	48.18	48.66	49.15	49.64	50.14	50.64	51.15		0%	0
EBT	2	2	1.066	2.13	2.15	2.17	2.19	2.21	2.23	2.25	2.27	2.29	2.31	2.33	2.35	0.78	0%	0
EBR	108	110	1.066	117.26	118.43	119.61	120.81	122.02	123.24	124.47	125.71	126.97	128.24	129.52	130.82		1%	1
WBL	13	13	1.066	13.86	14.00	14.14	14.28	14.42	14.56	14.71	14.86	15.01	15.16	15.31	15.46		0%	0
WBT	12	12	1.066	12.79	12.92	13.05	13.18	13.31	13.44	13.57	13.71	13.85	13.99	14.13	14.27	0.80	0%	0
WBR	10	10	1.066	10.66	10.77	10.88	10.99	11.10	11.21	11.32	11.43	11.54	11.66	11.78	11.90		0%	0
NBL	96	98	1.066	104.47	105.51	106.57	107.64	108.72	109.81	110.91	112.02	113.14	114.27	115.41	116.56		0%	0
NBT	825	842	1.066	897.57	906.55	915.62	924.78	934.03	943.37	952.80	962.33	971.95	981.67	991.49	#####	0.93	1%	7
NBR	4	4	1.066	4.26	4.30	4.34	4.38	4.42	4.46	4.50	4.55	4.60	4.65	4.70	4.75		0%	0
SBL	5	5	1.066	5.33	5.38	5.43	5.48	5.53	5.59	5.65	5.71	5.77	5.83	5.89	5.95		0%	0
SBT	814	830	1.066	884.78	893.63	902.57	911.60	920.72	929.93	939.23	948.62	958.11	967.69	977.37	987.14	0.93	1%	7
SBR	112	114	1.066	121.52	122.74	123.97	125.21	126.46	127.72	129.00	130.29	131.59	132.91	134.24	135.58		1%	1

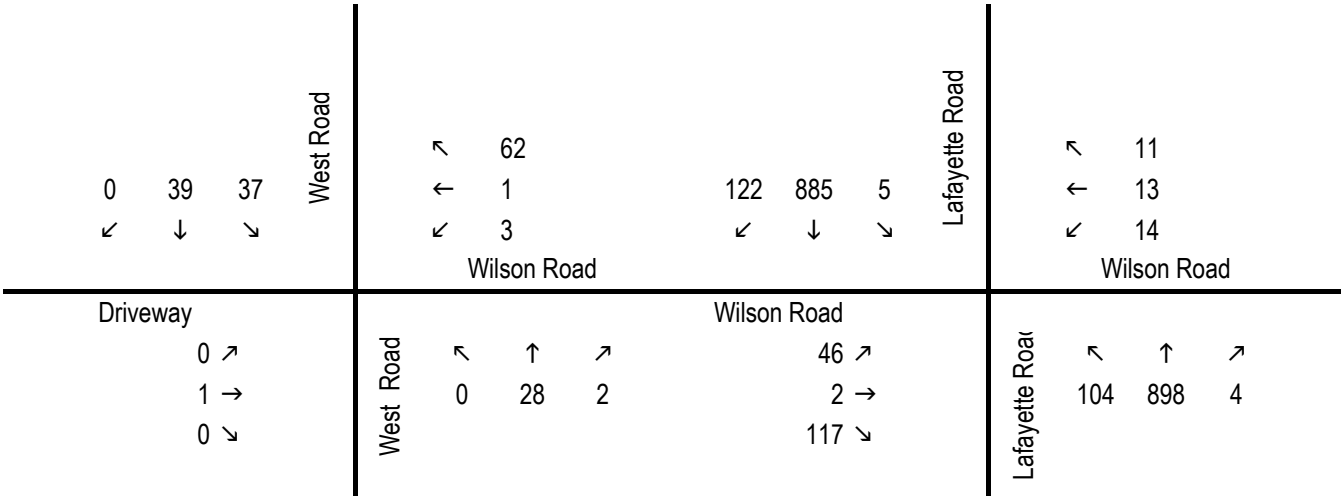
SAT Peak Hour	2022 Base	2023	Other Development	2023 No-Build	Site Trip Distribution	2023 Build
West Road at Driveway/Wilson Road						
Movement						
EBL	0	0	0	0	22	22
EBT	1	1	0	1	25	26
EBR	0	0	0	0	2	2
WBL	3	3	0	3	0	3
WBT	1	1	0	1	24	25
WBR	62	62	3	65	0	65
NBL	0	0	0	0	2	2
NBT	28	28	0	28	0	28
NBR	2	2	0	2	0	2
SBL	37	38	3	41	0	41
SBT	39	40	0	40	0	40
SBR	0	0	0	0	21	21
Lafayette Road at Wilson Road						
Movement						
EBL	46	46	0	46	7	53
EBT	2	2	0	2	1	3
EBR	117	118	3	121	18	139
WBL	14	14	0	14	0	14
WBT	13	13	0	13	0	13
WBR	11	11	0	11	0	11
NBL	104	106	3	109	10	119
NBT	898	907	25	932	0	932
NBR	4	4	0	4	0	4
SBL	5	5	0	5	0	5
SBT	885	894	21	915	0	915
SBR	122	123	0	123	12	135

SAT Peak Hour	2033	Other Development	2033 No-Build	Site Trip Distribution	2033 Build
West Road at Driveway/Wilson Road					
Movement					
EBL	0	0	0	22	22
EBT	1	0	1	25	26
EBR	0	0	0	2	2
WBL	4	0	4	0	4
WBT	1	0	1	24	25
WBR	69	3	72	0	72
NBL	0	0	0	2	2
NBT	31	0	31	0	31
NBR	2	0	2	0	2
SBL	42	3	45	0	45
SBT	44	0	44	0	44
SBR	0	0	0	21	21
Lafayette Road at Wilson Road					
Movement					
EBL	51	0	51	7	58
EBT	2	0	2	1	3
EBR	131	3	134	18	152
WBL	15	0	15	0	15
WBT	14	0	14	0	14
WBR	12	0	12	0	12
NBL	117	3	120	10	130
NBT	1001	25	1026	0	1026
NBR	5	0	5	0	5
SBL	6	0	6	0	6
SBT	987	21	1008	0	1008
SBR	136	0	136	12	148

2022 BASE

SAT Peak Hour

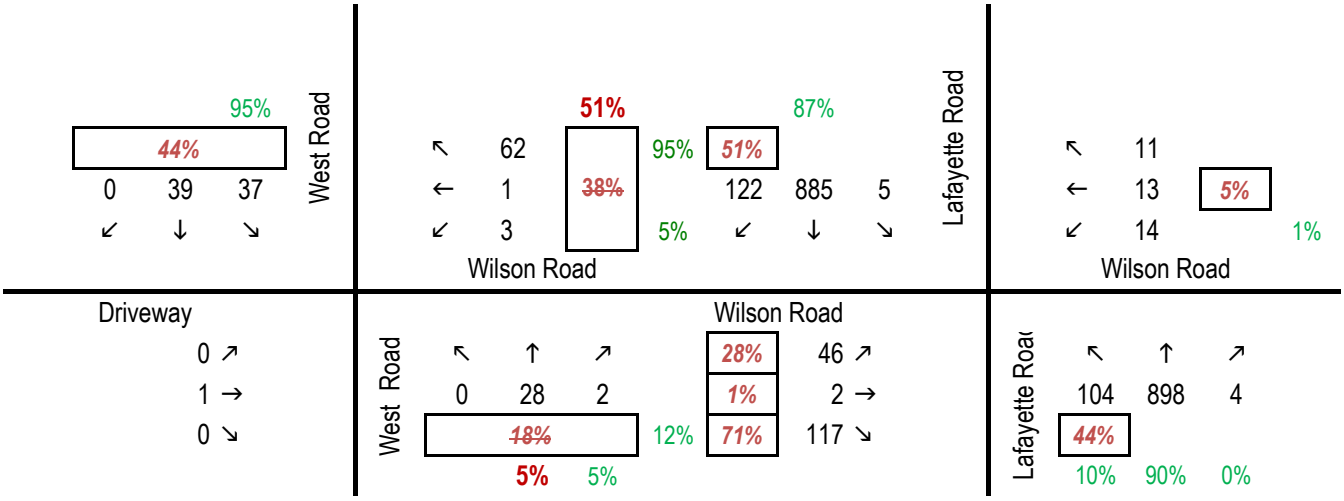
XX VOLUME



2022 BASE PRORATA
SAT Peak Hour

Rev1

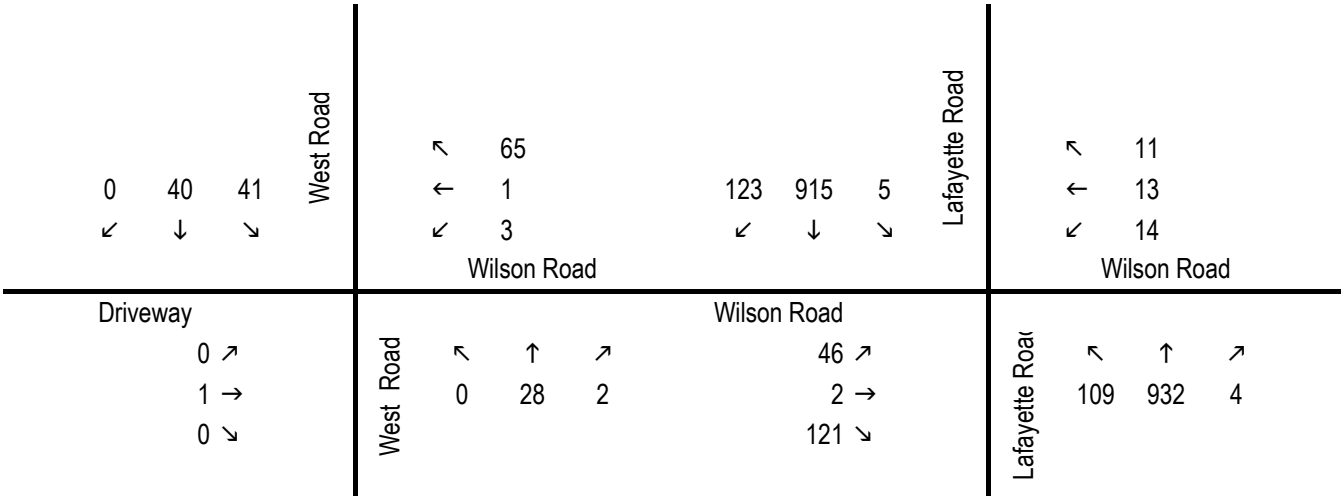
XX VOLUME
XX Site Trips ProRata
XX Other Development ProRata



2023 NoBUILD

SAT Peak Hour

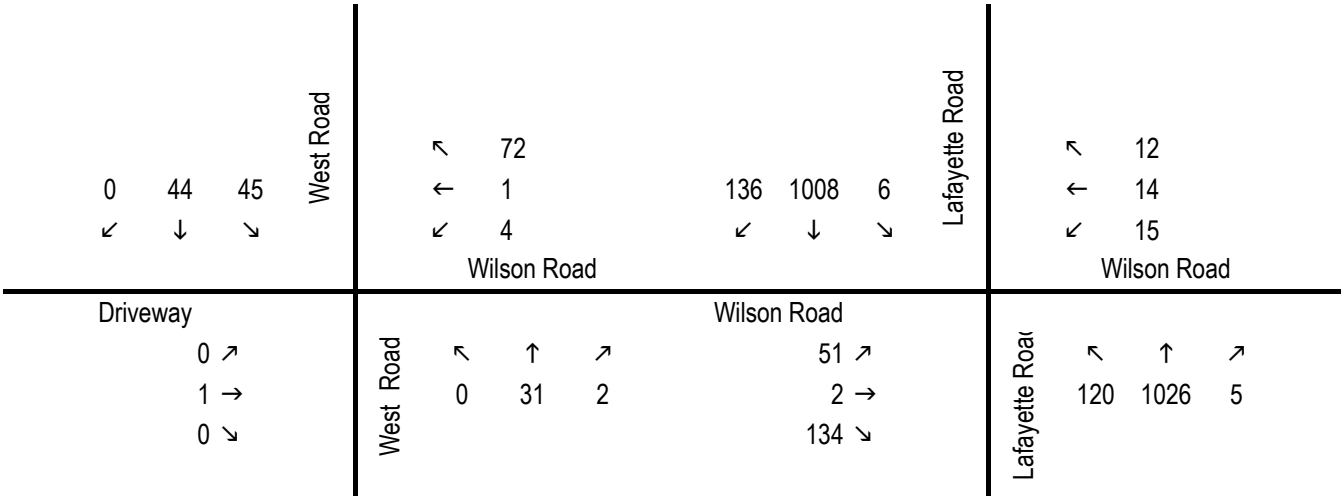
XX VOLUME



2033 NoBUILD

SAT Peak Hour

XX VOLUME

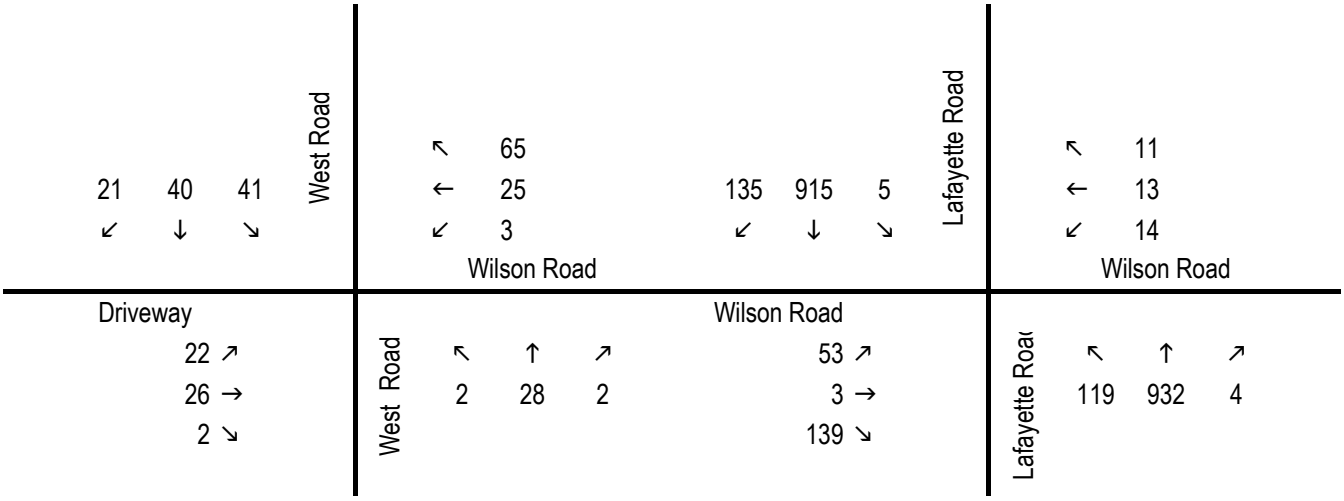


2023 BUILD

SAT Peak Hour

Rev1

XX VOLUME

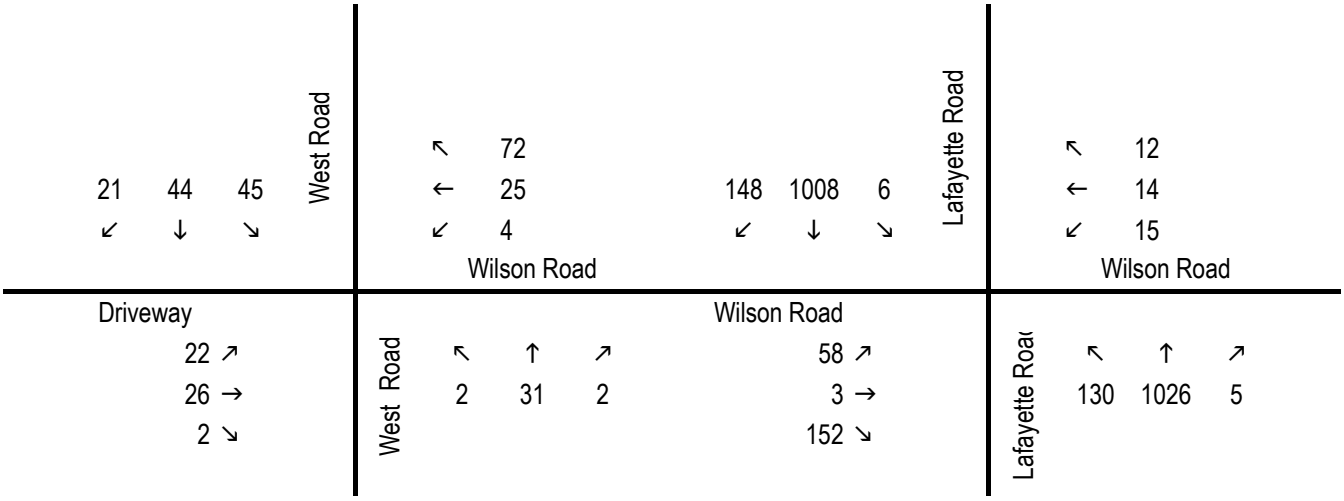


2033 BUILD

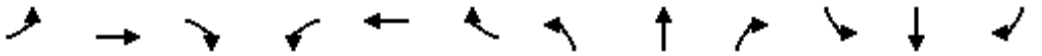
Rev1

SAT Peak Hour

XX VOLUME



APPENDIX H



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	23	0	34	0	108	15	20	219	2
Future Volume (Veh/h)	0	0	0	23	0	34	0	108	15	20	219	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.89	0.89	0.89	0.77	0.77	0.77
Hourly flow rate (vph)	0	0	0	26	0	39	0	121	17	26	284	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	506	476	286	467	468	130	287			138		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	506	476	286	467	468	130	287			138		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	100	100	100	95	100	96	100			98		
cM capacity (veh/h)	453	482	758	488	486	910	1287			1427		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	65	138	313
Volume Left	0	26	0	26
Volume Right	0	39	17	3
cSH	1700	676	1287	1427
Volume to Capacity	0.00	0.10	0.00	0.02
Queue Length 95th (ft)	0	8	0	1
Control Delay (s)	0.0	10.9	0.0	0.8
Lane LOS	A	B		A
Approach Delay (s)	0.0	10.9	0.0	0.8
Approach LOS	A	B		

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	32.7%	ICU Level of Service	A	
Analysis Period (min)	15			

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	0	56	13	3	56	696	1	689
Future Volume (vph)	21	0	56	13	3	56	696	1	689
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	26.0	18.0	42.0	18.0	42.0
Total Split (%)	30.2%	30.2%	30.2%	30.2%	30.2%	20.9%	48.8%	20.9%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		7.6	7.6		7.6	8.6	70.2	5.6	61.2
Actuated g/C Ratio		0.09	0.09		0.09	0.10	0.82	0.07	0.71
v/c Ratio		0.20	0.37		0.28	0.37	0.27	0.01	0.36
Control Delay		38.8	14.3		27.6	41.9	3.3	38.0	7.3
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		38.8	14.3		27.6	41.9	3.3	38.0	7.3
LOS		D	B		C	D	A	D	A
Approach Delay		21.0			27.6		6.2		7.3
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 86
Actuated Cycle Length: 86
Offset: 60 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 8.1 Intersection LOS: A
Intersection Capacity Utilization 45.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	75	43	60	741	1	862
v/c Ratio	0.20	0.37	0.28	0.37	0.27	0.01	0.36
Control Delay	38.8	14.3	27.6	41.9	3.3	38.0	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	14.3	27.6	41.9	3.3	38.0	7.3
Queue Length 50th (ft)	14	0	12	31	36	1	97
Queue Length 95th (ft)	32	24	30	66	111	6	162
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	392	438	390	253	2780	283	2395
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.17	0.11	0.24	0.27	0.00	0.36

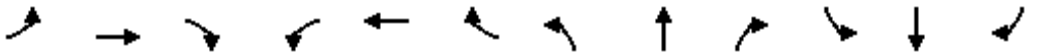
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	56	13	3	14	56	696	1	1	689	78
Future Volume (vph)	21	0	56	13	3	14	56	696	1	1	689	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1570	1524		1742		1612	3405		1805	3360	
Flt Permitted		0.95	1.00		0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1571	1524		1504		1612	3405		1805	3360	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	28	0	75	19	4	20	60	740	1	1	774	88
RTOR Reduction (vph)	0	0	69	0	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	28	6	0	25	0	60	741	0	1	856	0
Heavy Vehicles (%)	15%	0%	6%	0%	0%	0%	12%	6%	0%	0%	6%	4%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		6.5	6.5		6.5		7.5	64.8		1.2	58.5	
Effective Green, g (s)		6.5	6.5		6.5		7.5	64.8		1.2	58.5	
Actuated g/C Ratio		0.08	0.08		0.08		0.09	0.75		0.01	0.68	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		118	115		113		140	2565		25	2285	
v/s Ratio Prot							c0.04	0.22		0.00	c0.25	
v/s Ratio Perm		c0.02	0.00		0.02							
v/c Ratio		0.24	0.05		0.22		0.43	0.29		0.04	0.37	
Uniform Delay, d1		37.4	36.9		37.4		37.2	3.3		41.8	5.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.2		1.0		2.1	0.3		0.7	0.5	
Delay (s)		38.5	37.1		38.3		39.3	3.6		42.5	6.4	
Level of Service		D	D		D		D	A		D	A	
Approach Delay (s)		37.4			38.3			6.3			6.4	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	24	0	35	0	109	16	21	222	2
Future Volume (Veh/h)	0	0	0	24	0	35	0	109	16	21	222	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.89	0.89	0.89	0.77	0.77	0.77
Hourly flow rate (vph)	0	0	0	27	0	40	0	122	18	27	288	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	514	484	290	474	476	131	291			140		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	514	484	290	474	476	131	291			140		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	100	100	100	94	100	96	100			98		
cM capacity (veh/h)	446	477	754	482	481	908	1282			1425		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	67	140	318
Volume Left	0	27	0	27
Volume Right	0	40	18	3
cSH	1700	669	1282	1425
Volume to Capacity	0.00	0.10	0.00	0.02
Queue Length 95th (ft)	0	8	0	1
Control Delay (s)	0.0	11.0	0.0	0.8
Lane LOS	A	B		A
Approach Delay (s)	0.0	11.0	0.0	0.8
Approach LOS	A	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	0	58	14	3	58	728	1	721
Future Volume (vph)	21	0	58	14	3	58	728	1	721
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	26.0	18.0	42.0	18.0	42.0
Total Split (%)	30.2%	30.2%	30.2%	30.2%	30.2%	20.9%	48.8%	20.9%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		7.6	7.6		7.6	8.7	70.2	5.6	61.1
Actuated g/C Ratio		0.09	0.09		0.09	0.10	0.82	0.07	0.71
v/c Ratio		0.20	0.38		0.29	0.38	0.28	0.01	0.38
Control Delay		38.9	14.6		28.1	42.1	3.4	38.0	7.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		38.9	14.6		28.1	42.1	3.4	38.0	7.5
LOS		D	B		C	D	A	D	A
Approach Delay		21.1			28.1		6.3		7.5
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 86
Actuated Cycle Length: 86
Offset: 60 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.38
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 46.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	77	44	62	775	1	899
v/c Ratio	0.20	0.38	0.29	0.38	0.28	0.01	0.38
Control Delay	38.9	14.6	28.1	42.1	3.4	38.0	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	14.6	28.1	42.1	3.4	38.0	7.5
Queue Length 50th (ft)	14	0	12	32	37	1	103
Queue Length 95th (ft)	32	26	31	67	117	6	172
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	389	438	390	253	2780	283	2392
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.18	0.11	0.25	0.28	0.00	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	58	14	3	14	58	728	1	1	721	79
Future Volume (vph)	21	0	58	14	3	14	58	728	1	1	721	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1570	1524		1744		1612	3405		1805	3361	
Flt Permitted		0.94	1.00		0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1556	1524		1499		1612	3405		1805	3361	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	28	0	77	20	4	20	62	774	1	1	810	89
RTOR Reduction (vph)	0	0	71	0	18	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	28	6	0	26	0	62	775	0	1	894	0
Heavy Vehicles (%)	15%	0%	6%	0%	0%	0%	12%	6%	0%	0%	6%	4%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		6.5	6.5		6.5		7.6	64.8		1.2	58.4	
Effective Green, g (s)		6.5	6.5		6.5		7.6	64.8		1.2	58.4	
Actuated g/C Ratio		0.08	0.08		0.08		0.09	0.75		0.01	0.68	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		117	115		113		142	2565		25	2282	
v/s Ratio Prot							c0.04	0.23		0.00	c0.27	
v/s Ratio Perm		c0.02	0.00		0.02							
v/c Ratio		0.24	0.05		0.23		0.44	0.30		0.04	0.39	
Uniform Delay, d1		37.4	36.9		37.4		37.2	3.4		41.8	6.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.2		1.0		2.1	0.3		0.7	0.5	
Delay (s)		38.5	37.1		38.4		39.3	3.7		42.5	6.5	
Level of Service		D	D		D		D	A		D	A	
Approach Delay (s)		37.4			38.4			6.3			6.6	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	27	0	39	0	120	17	23	245	2
Future Volume (Veh/h)	0	0	0	27	0	39	0	120	17	23	245	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.88	0.88	0.88	0.89	0.89	0.89	0.77	0.77	0.77
Hourly flow rate (vph)	0	0	0	31	0	44	0	135	19	30	318	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	568	534	320	524	526	144	321			154		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	568	534	320	524	526	144	321			154		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	100	100	100	93	100	95	100			98		
cM capacity (veh/h)	408	446	726	446	450	892	1250			1408		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	75	154	351
Volume Left	0	31	0	30
Volume Right	0	44	19	3
cSH	1700	631	1250	1408
Volume to Capacity	0.00	0.12	0.00	0.02
Queue Length 95th (ft)	0	10	0	2
Control Delay (s)	0.0	11.5	0.0	0.8
Lane LOS	A	B		A
Approach Delay (s)	0.0	11.5	0.0	0.8
Approach LOS	A	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

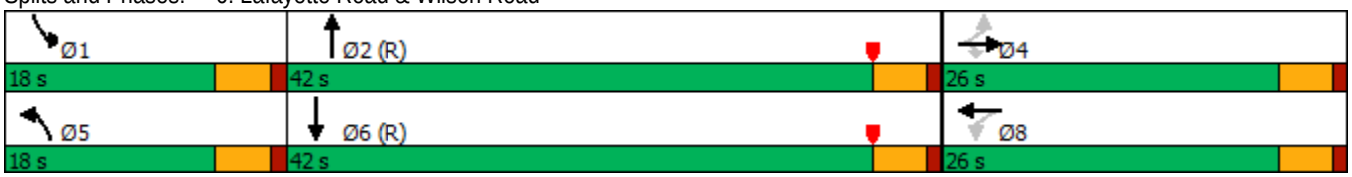
6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	0	64	15	4	64	802	1	794
Future Volume (vph)	24	0	64	15	4	64	802	1	794
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	26.0	18.0	42.0	18.0	42.0
Total Split (%)	30.2%	30.2%	30.2%	30.2%	30.2%	20.9%	48.8%	20.9%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		7.9	7.9		7.9	9.0	69.9	5.6	60.5
Actuated g/C Ratio		0.09	0.09		0.09	0.10	0.81	0.07	0.70
v/c Ratio		0.23	0.39		0.30	0.40	0.31	0.01	0.42
Control Delay		39.3	14.0		28.3	42.3	3.6	38.0	8.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		39.3	14.0		28.3	42.3	3.6	38.0	8.2
LOS		D	B		C	D	A	D	A
Approach Delay		20.9			28.3		6.5		8.2
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 86
Actuated Cycle Length: 86
Offset: 60 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 8.6 Intersection LOS: A
Intersection Capacity Utilization 48.8% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	85	48	68	854	1	990
v/c Ratio	0.23	0.39	0.30	0.40	0.31	0.01	0.42
Control Delay	39.3	14.0	28.3	42.3	3.6	38.0	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	14.0	28.3	42.3	3.6	38.0	8.2
Queue Length 50th (ft)	16	0	14	35	44	1	121
Queue Length 95th (ft)	35	26	32	72	135	6	202
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	375	444	393	253	2768	283	2369
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.19	0.12	0.27	0.31	0.00	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	64	15	4	15	64	802	1	1	794	87
Future Volume (vph)	24	0	64	15	4	15	64	802	1	1	794	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1570	1524		1750		1612	3405		1805	3361	
Flt Permitted		0.91	1.00		0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1504	1524		1509		1612	3405		1805	3361	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	32	0	85	21	6	21	68	853	1	1	892	98
RTOR Reduction (vph)	0	0	78	0	19	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	32	7	0	29	0	68	854	0	1	984	0
Heavy Vehicles (%)	15%	0%	6%	0%	0%	0%	12%	6%	0%	0%	6%	4%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		6.8	6.8		6.8		7.9	64.5		1.2	57.8	
Effective Green, g (s)		6.8	6.8		6.8		7.9	64.5		1.2	57.8	
Actuated g/C Ratio		0.08	0.08		0.08		0.09	0.75		0.01	0.67	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		118	120		119		148	2553		25	2258	
v/s Ratio Prot							c0.04	0.25		0.00	c0.29	
v/s Ratio Perm		c0.02	0.00		0.02							
v/c Ratio		0.27	0.06		0.24		0.46	0.33		0.04	0.44	
Uniform Delay, d1		37.3	36.6		37.2		37.0	3.6		41.8	6.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.2		1.1		2.3	0.4		0.7	0.6	
Delay (s)		38.5	36.8		38.2		39.3	3.9		42.5	7.2	
Level of Service		D	D		D		D	A		D	A	
Approach Delay (s)		37.3			38.2			6.5			7.2	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	6	1	24	9	35	1	109	16	21	222	16
Future Volume (Veh/h)	9	6	1	24	9	35	1	109	16	21	222	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89	0.77	0.77	0.77
Hourly flow rate (vph)	10	7	1	27	10	40	1	122	18	27	288	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	530	494	298	490	496	131	309			140		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	530	494	298	490	496	131	309			140		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	98	99	100	94	98	96	100			98		
cM capacity (veh/h)	428	470	746	464	469	908	1263			1425		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	77	141	336
Volume Left	10	27	1	27
Volume Right	1	40	18	21
cSH	455	623	1263	1425
Volume to Capacity	0.04	0.12	0.00	0.02
Queue Length 95th (ft)	3	11	0	1
Control Delay (s)	13.2	11.6	0.1	0.8
Lane LOS	B	B	A	A
Approach Delay (s)	13.2	11.6	0.1	0.8
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	34.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	23	0	62	14	3	62	728	1	721
Future Volume (vph)	23	0	62	14	3	62	728	1	721
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	26.0	18.0	42.0	18.0	42.0
Total Split (%)	30.2%	30.2%	30.2%	30.2%	30.2%	20.9%	48.8%	20.9%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		7.8	7.8		7.8	8.9	70.0	5.6	60.7
Actuated g/C Ratio		0.09	0.09		0.09	0.10	0.81	0.07	0.71
v/c Ratio		0.22	0.39		0.29	0.40	0.28	0.01	0.38
Control Delay		39.0	14.2		27.7	42.2	3.5	38.0	7.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		39.0	14.2		27.7	42.2	3.5	38.0	7.7
LOS		D	B		C	D	A	D	A
Approach Delay		21.0			27.7		6.5		7.8
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 86
Actuated Cycle Length: 86
Offset: 60 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 8.5
Intersection LOS: A
Intersection Capacity Utilization 46.5%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	83	44	66	775	1	904
v/c Ratio	0.22	0.39	0.29	0.40	0.28	0.01	0.38
Control Delay	39.0	14.2	27.7	42.2	3.5	38.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	14.2	27.7	42.2	3.5	38.0	7.7
Queue Length 50th (ft)	16	0	12	34	38	1	105
Queue Length 95th (ft)	34	26	31	70	119	6	176
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	387	443	389	253	2772	283	2375
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.19	0.11	0.26	0.28	0.00	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	0	62	14	3	14	62	728	1	1	721	84
Future Volume (vph)	23	0	62	14	3	14	62	728	1	1	721	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1570	1524		1744		1612	3405		1805	3359	
Flt Permitted		0.94	1.00		0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1547	1524		1497		1612	3405		1805	3359	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	31	0	83	20	4	20	66	774	1	1	810	94
RTOR Reduction (vph)	0	0	77	0	18	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	31	6	0	26	0	66	775	0	1	898	0
Heavy Vehicles (%)	15%	0%	6%	0%	0%	0%	12%	6%	0%	0%	6%	4%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		6.7	6.7		6.7		7.8	64.6		1.2	58.0	
Effective Green, g (s)		6.7	6.7		6.7		7.8	64.6		1.2	58.0	
Actuated g/C Ratio		0.08	0.08		0.08		0.09	0.75		0.01	0.67	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		120	118		116		146	2557		25	2265	
v/s Ratio Prot							c0.04	0.23		0.00	c0.27	
v/s Ratio Perm		c0.02	0.00		0.02							
v/c Ratio		0.26	0.05		0.22		0.45	0.30		0.04	0.40	
Uniform Delay, d1		37.3	36.7		37.2		37.1	3.4		41.8	6.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.2		1.0		2.2	0.3		0.7	0.5	
Delay (s)		38.5	36.9		38.2		39.3	3.8		42.5	6.7	
Level of Service		D	D		D		D	A		D	A	
Approach Delay (s)		37.3			38.2			6.5			6.8	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	6	1	27	9	39	1	120	17	23	245	16
Future Volume (Veh/h)	9	6	1	27	9	39	1	120	17	23	245	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.88	0.88	0.88	0.89	0.89	0.89	0.77	0.77	0.77
Hourly flow rate (vph)	10	7	1	31	10	44	1	135	19	30	318	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	584	544	328	540	546	144	339			154		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	584	544	328	540	546	144	339			154		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.4	2.2			2.2		
p0 queue free %	97	98	100	93	98	95	100			98		
cM capacity (veh/h)	391	439	718	429	438	892	1231			1408		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	85	155	369
Volume Left	10	31	1	30
Volume Right	1	44	19	21
cSH	420	589	1231	1408
Volume to Capacity	0.04	0.14	0.00	0.02
Queue Length 95th (ft)	3	13	0	2
Control Delay (s)	14.0	12.1	0.1	0.8
Lane LOS	B	B	A	A
Approach Delay (s)	14.0	12.1	0.1	0.8
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	37.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	26	0	68	15	4	68	802	1	794
Future Volume (vph)	26	0	68	15	4	68	802	1	794
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	26.0	18.0	42.0	18.0	42.0
Total Split (%)	30.2%	30.2%	30.2%	30.2%	30.2%	20.9%	48.8%	20.9%	48.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		8.1	8.1		8.1	9.2	69.7	5.6	60.1
Actuated g/C Ratio		0.09	0.09		0.09	0.11	0.81	0.07	0.70
v/c Ratio		0.25	0.40		0.30	0.42	0.31	0.01	0.42
Control Delay		39.5	13.7		27.9	42.4	3.7	38.0	8.5
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		39.5	13.7		27.9	42.4	3.7	38.0	8.5
LOS		D	B		C	D	A	D	A
Approach Delay		20.9			27.9		6.7		8.5
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 86
Actuated Cycle Length: 86
Offset: 60 (70%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 8.9
Intersection LOS: A
Intersection Capacity Utilization 48.9%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	35	91	48	72	854	1	995
v/c Ratio	0.25	0.40	0.30	0.42	0.31	0.01	0.42
Control Delay	39.5	13.7	27.9	42.4	3.7	38.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	13.7	27.9	42.4	3.7	38.0	8.5
Queue Length 50th (ft)	18	0	14	37	45	1	124
Queue Length 95th (ft)	37	27	32	75	136	6	207
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	374	449	392	253	2761	283	2352
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.12	0.28	0.31	0.00	0.42

Intersection Summary

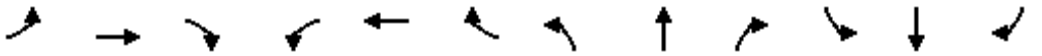
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	0	68	15	4	15	68	802	1	1	794	92
Future Volume (vph)	26	0	68	15	4	15	68	802	1	1	794	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.94		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1570	1524		1750		1612	3405		1805	3359	
Flt Permitted		0.91	1.00		0.84		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1497	1524		1506		1612	3405		1805	3359	
Peak-hour factor, PHF	0.75	0.75	0.75	0.70	0.70	0.70	0.94	0.94	0.94	0.89	0.89	0.89
Adj. Flow (vph)	35	0	91	21	6	21	72	853	1	1	892	103
RTOR Reduction (vph)	0	0	84	0	19	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	35	7	0	29	0	72	854	0	1	989	0
Heavy Vehicles (%)	15%	0%	6%	0%	0%	0%	12%	6%	0%	0%	6%	4%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		7.0	7.0		7.0		8.1	64.3		1.2	57.4	
Effective Green, g (s)		7.0	7.0		7.0		8.1	64.3		1.2	57.4	
Actuated g/C Ratio		0.08	0.08		0.08		0.09	0.75		0.01	0.67	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		121	124		122		151	2545		25	2241	
v/s Ratio Prot							c0.04	0.25		0.00	c0.29	
v/s Ratio Perm		c0.02	0.00		0.02							
v/c Ratio		0.29	0.06		0.24		0.48	0.34		0.04	0.44	
Uniform Delay, d1		37.2	36.5		37.0		36.9	3.7		41.8	6.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3	0.2		1.0		2.4	0.4		0.7	0.6	
Delay (s)		38.5	36.7		38.0		39.3	4.0		42.5	7.4	
Level of Service		D	D		D		D	A		D	A	
Approach Delay (s)		37.2			38.0			6.8			7.4	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	86.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX I



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	9	0	53	0	216	35	51	67	0
Future Volume (Veh/h)	0	1	0	9	0	53	0	216	35	51	67	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.82	0.82	0.82	0.83	0.83	0.83	0.93	0.93	0.93
Hourly flow rate (vph)	0	4	0	11	0	65	0	260	42	55	72	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	528	484	72	465	463	281	72			302		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528	484	72	465	463	281	72			302		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	98	100	91	100			96		
cM capacity (veh/h)	410	464	996	473	477	758	1541			1248		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	76	302	127
Volume Left	0	11	0	55
Volume Right	0	65	42	0
cSH	464	697	1541	1248
Volume to Capacity	0.01	0.11	0.00	0.04
Queue Length 95th (ft)	1	9	0	3
Control Delay (s)	12.8	10.8	0.0	3.7
Lane LOS	B	B		A
Approach Delay (s)	12.8	10.8	0.0	3.7
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	40.3%	ICU Level of Service	A	
Analysis Period (min)	15			

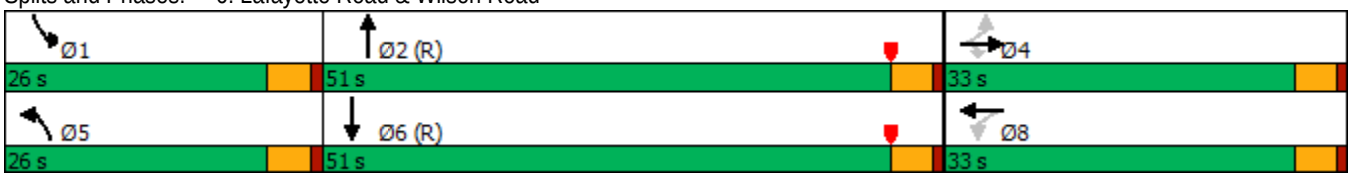
6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	39	11	139	11	6	67	905	6	823
Future Volume (vph)	39	11	139	11	6	67	905	6	823
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	26.0	51.0	26.0	51.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	23.6%	46.4%	23.6%	46.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		9.8	9.8		9.8	9.6	88.9	6.0	79.1
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.81	0.05	0.72
v/c Ratio		0.43	0.56		0.26	0.45	0.32	0.06	0.39
Control Delay		56.3	14.9		36.1	55.9	3.8	50.3	7.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		56.3	14.9		36.1	55.9	3.8	50.3	7.6
LOS		E	B		D	E	A	D	A
Approach Delay		25.8			36.1		7.3		7.8
Approach LOS		C			D		A		A

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 9.5 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 49.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	164	40	69	937	6	979
v/c Ratio	0.43	0.56	0.26	0.45	0.32	0.06	0.39
Control Delay	56.3	14.9	36.1	55.9	3.8	50.3	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	14.9	36.1	55.9	3.8	50.3	7.6
Queue Length 50th (ft)	40	0	17	47	59	4	131
Queue Length 95th (ft)	75	51	34	90	164	18	213
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	397	535	413	345	2914	352	2534
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.31	0.10	0.20	0.32	0.02	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	11	139	11	6	10	67	905	4	6	823	97
Future Volume (vph)	39	11	139	11	6	10	67	905	4	6	823	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1599		1768		1770	3608		1805	3518	
Flt Permitted		0.83	1.00		0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1533	1599		1555		1770	3608		1805	3518	
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.97	0.97	0.97	0.94	0.94	0.94
Adj. Flow (vph)	46	13	164	16	9	15	69	933	4	6	876	103
RTOR Reduction (vph)	0	0	149	0	14	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	59	15	0	26	0	69	937	0	6	975	0
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		9.8	9.8		9.8		8.5	85.3		1.4	78.2	
Effective Green, g (s)		9.8	9.8		9.8		8.5	85.3		1.4	78.2	
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.78		0.01	0.71	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		136	142		138		136	2797		22	2500	
v/s Ratio Prot							c0.04	0.26		0.00	c0.28	
v/s Ratio Perm		c0.04	0.01		0.02							
v/c Ratio		0.43	0.10		0.19		0.51	0.34		0.27	0.39	
Uniform Delay, d1		47.5	46.1		46.4		48.7	3.7		53.8	6.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2	0.3		0.7		3.0	0.3		6.6	0.5	
Delay (s)		49.7	46.4		47.1		51.7	4.1		60.4	6.8	
Level of Service		D	D		D		D	A		E	A	
Approach Delay (s)		47.3			47.1			7.3			7.1	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	1	0	9	0	55	0	218	36	53	68	0
Future Volume (Veh/h)	0	1	0	9	0	55	0	218	36	53	68	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.82	0.82	0.82	0.83	0.83	0.83	0.93	0.93	0.93
Hourly flow rate (vph)	0	4	0	11	0	67	0	263	43	57	73	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	538	493	73	474	472	284	73			306		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	538	493	73	474	472	284	73			306		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	98	100	91	100			95		
cM capacity (veh/h)	402	458	995	466	471	754	1540			1243		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	78	306	130
Volume Left	0	11	0	57
Volume Right	0	67	43	0
cSH	458	694	1540	1243
Volume to Capacity	0.01	0.11	0.00	0.05
Queue Length 95th (ft)	1	9	0	4
Control Delay (s)	12.9	10.8	0.0	3.7
Lane LOS	B	B		A
Approach Delay (s)	12.9	10.8	0.0	3.7
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

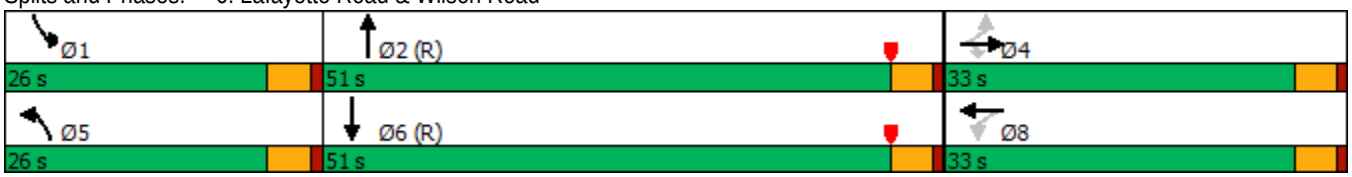
6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	40	11	144	11	6	70	935	6	852
Future Volume (vph)	40	11	144	11	6	70	935	6	852
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	26.0	51.0	26.0	51.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	23.6%	46.4%	23.6%	46.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		9.9	9.9		9.9	9.8	88.8	6.0	78.9
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.81	0.05	0.72
v/c Ratio		0.44	0.57		0.26	0.46	0.33	0.06	0.40
Control Delay		56.2	14.8		35.9	56.0	3.9	50.3	7.8
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		56.2	14.8		35.9	56.0	3.9	50.3	7.8
LOS		E	B		D	E	A	D	A
Approach Delay		25.7			35.9		7.5		8.1
Approach LOS		C			D		A		A

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 9.5 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 10.0 Intersection LOS: B
Intersection Capacity Utilization 51.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	169	40	72	968	6	1010
v/c Ratio	0.44	0.57	0.26	0.46	0.33	0.06	0.40
Control Delay	56.2	14.8	35.9	56.0	3.9	50.3	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	14.8	35.9	56.0	3.9	50.3	7.8
Queue Length 50th (ft)	41	0	17	49	62	4	138
Queue Length 95th (ft)	76	51	34	93	172	18	224
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	396	539	413	345	2911	352	2528
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.31	0.10	0.21	0.33	0.02	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	11	144	11	6	10	70	935	4	6	852	98
Future Volume (vph)	40	11	144	11	6	10	70	935	4	6	852	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786	1599		1768		1770	3608		1805	3519	
Flt Permitted		0.82	1.00		0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1531	1599		1555		1770	3608		1805	3519	
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.97	0.97	0.97	0.94	0.94	0.94
Adj. Flow (vph)	47	13	169	16	9	15	72	964	4	6	906	104
RTOR Reduction (vph)	0	0	154	0	14	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	60	15	0	26	0	72	968	0	6	1006	0
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		9.9	9.9		9.9		8.6	85.2		1.4	78.0	
Effective Green, g (s)		9.9	9.9		9.9		8.6	85.2		1.4	78.0	
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.77		0.01	0.71	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		137	143		139		138	2794		22	2495	
v/s Ratio Prot							c0.04	0.27		0.00	c0.29	
v/s Ratio Perm		c0.04	0.01		0.02							
v/c Ratio		0.44	0.11		0.19		0.52	0.35		0.27	0.40	
Uniform Delay, d1		47.4	46.0		46.3		48.7	3.8		53.8	6.5	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2	0.3		0.7		3.5	0.3		6.6	0.5	
Delay (s)		49.6	46.3		47.0		52.3	4.2		60.4	7.0	
Level of Service		D	D		D		D	A		E	A	
Approach Delay (s)		47.2			47.0			7.5			7.3	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	1	0	10	0	61	0	241	40	58	75	0
Future Volume (Veh/h)	0	1	0	10	0	61	0	241	40	58	75	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.82	0.82	0.82	0.83	0.83	0.83	0.93	0.93	0.93
Hourly flow rate (vph)	0	4	0	12	0	74	0	290	48	62	81	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	593	543	81	521	519	314	81			338		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	593	543	81	521	519	314	81			338		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	97	100	90	100			95		
cM capacity (veh/h)	363	427	985	431	440	726	1529			1210		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	86	338	143
Volume Left	0	12	0	62
Volume Right	0	74	48	0
cSH	427	663	1529	1210
Volume to Capacity	0.01	0.13	0.00	0.05
Queue Length 95th (ft)	1	11	0	4
Control Delay (s)	13.5	11.2	0.0	3.8
Lane LOS	B	B		A
Approach Delay (s)	13.5	11.2	0.0	3.8
Approach LOS	B	B		

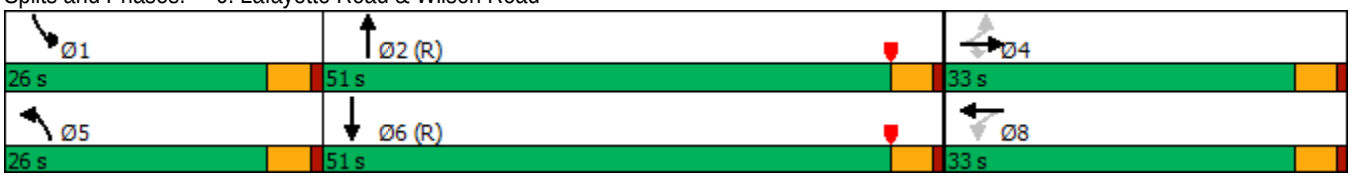
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	44	13	159	13	7	77	1031	7	939
Future Volume (vph)	44	13	159	13	7	77	1031	7	939
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	26.0	51.0	26.0	51.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	23.6%	46.4%	23.6%	46.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		10.4	10.4		10.4	10.3	88.3	6.0	78.0
Actuated g/C Ratio		0.09	0.09		0.09	0.09	0.80	0.05	0.71
v/c Ratio		0.47	0.58		0.29	0.48	0.37	0.07	0.45
Control Delay		56.9	14.2		35.4	56.2	4.2	50.4	8.7
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		56.9	14.2		35.4	56.2	4.2	50.4	8.7
LOS		E	B		D	E	A	D	A
Approach Delay		25.5			35.4		7.8		9.0
Approach LOS		C			D		A		A

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 9.5 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 10.6
Intersection LOS: B
Intersection Capacity Utilization 54.7%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	67	187	47	79	1068	7	1114
v/c Ratio	0.47	0.58	0.29	0.48	0.37	0.07	0.45
Control Delay	56.9	14.2	35.4	56.2	4.2	50.4	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	14.2	35.4	56.2	4.2	50.4	8.7
Queue Length 50th (ft)	46	0	19	54	74	5	165
Queue Length 95th (ft)	82	54	37	100	202	20	267
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	389	552	412	345	2893	352	2499
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.34	0.11	0.23	0.37	0.02	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	13	159	13	7	12	77	1031	5	7	939	108
Future Volume (vph)	44	13	159	13	7	12	77	1031	5	7	939	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787	1599		1766		1770	3607		1805	3519	
Flt Permitted		0.81	1.00		0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1505	1599		1542		1770	3607		1805	3519	
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.97	0.97	0.97	0.94	0.94	0.94
Adj. Flow (vph)	52	15	187	19	10	18	79	1063	5	7	999	115
RTOR Reduction (vph)	0	0	169	0	16	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	67	18	0	31	0	79	1068	0	7	1110	0
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		10.4	10.4		10.4		9.0	84.7		1.4	77.1	
Effective Green, g (s)		10.4	10.4		10.4		9.0	84.7		1.4	77.1	
Actuated g/C Ratio		0.09	0.09		0.09		0.08	0.77		0.01	0.70	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		142	151		145		144	2777		22	2466	
v/s Ratio Prot							c0.04	0.30		0.00	c0.32	
v/s Ratio Perm		c0.04	0.01		0.02							
v/c Ratio		0.47	0.12		0.21		0.55	0.38		0.32	0.45	
Uniform Delay, d1		47.2	45.6		46.0		48.5	4.1		53.8	7.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.5	0.3		0.7		4.2	0.4		8.2	0.6	
Delay (s)		49.7	45.9		46.7		52.8	4.5		62.0	7.8	
Level of Service		D	D		D		D	A		E	A	
Approach Delay (s)		46.9			46.7			7.9			8.1	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	28	2	9	44	55	3	218	36	53	68	17
Future Volume (Veh/h)	11	28	2	9	44	55	3	218	36	53	68	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.82	0.82	0.82	0.83	0.83	0.83	0.93	0.93	0.93
Hourly flow rate (vph)	12	31	2	11	54	67	4	263	43	57	73	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	582	510	82	506	498	284	91			306		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	582	510	82	506	498	284	91			306		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	96	93	100	97	88	91	100			95		
cM capacity (veh/h)	341	447	983	421	454	754	1517			1243		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	45	132	310	148
Volume Left	12	11	4	57
Volume Right	2	67	43	18
cSH	422	564	1517	1243
Volume to Capacity	0.11	0.23	0.00	0.05
Queue Length 95th (ft)	9	23	0	4
Control Delay (s)	14.5	13.3	0.1	3.3
Lane LOS	B	B	A	A
Approach Delay (s)	14.5	13.3	0.1	3.3
Approach LOS	B	B		

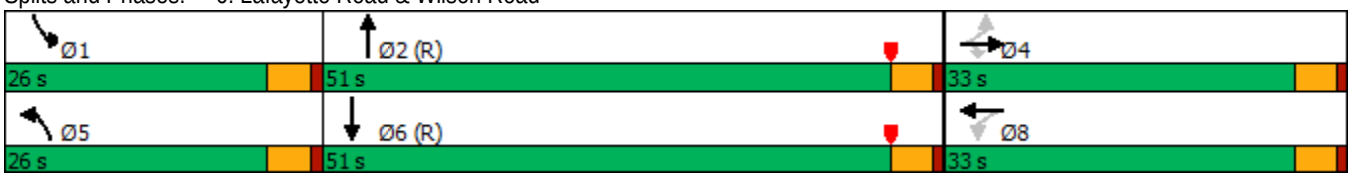
Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	46	15	164	11	6	87	935	6	852
Future Volume (vph)	46	15	164	11	6	87	935	6	852
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	26.0	51.0	26.0	51.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	23.6%	46.4%	23.6%	46.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		10.7	10.7		10.7	10.9	88.0	6.0	77.1
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.80	0.05	0.70
v/c Ratio		0.48	0.58		0.24	0.51	0.34	0.06	0.42
Control Delay		57.0	14.0		34.6	56.6	4.1	50.3	8.9
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		57.0	14.0		34.6	56.6	4.1	50.3	8.9
LOS		E	B		C	E	A	D	A
Approach Delay		25.7			34.6		8.6		9.1
Approach LOS		C			C		A		A

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 9.5 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 11.1
Intersection LOS: B
Intersection Capacity Utilization 53.0%
ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	193	40	90	968	6	1037
v/c Ratio	0.48	0.58	0.24	0.51	0.34	0.06	0.42
Control Delay	57.0	14.0	34.6	56.6	4.1	50.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	14.0	34.6	56.6	4.1	50.3	8.9
Queue Length 50th (ft)	49	0	16	61	66	4	153
Queue Length 95th (ft)	87	53	34	109	180	18	251
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	395	557	414	345	2884	352	2462
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.35	0.10	0.26	0.34	0.02	0.42

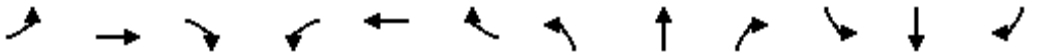
Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	15	164	11	6	10	87	935	4	6	852	123
Future Volume (vph)	46	15	164	11	6	10	87	935	4	6	852	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1791	1599		1768		1770	3608		1805	3507	
Flt Permitted		0.82	1.00		0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1527	1599		1557		1770	3608		1805	3507	
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.97	0.97	0.97	0.94	0.94	0.94
Adj. Flow (vph)	54	18	193	16	9	15	90	964	4	6	906	131
RTOR Reduction (vph)	0	0	174	0	14	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	72	19	0	26	0	90	968	0	6	1031	0
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		10.7	10.7		10.7		9.6	84.4		1.4	76.2	
Effective Green, g (s)		10.7	10.7		10.7		9.6	84.4		1.4	76.2	
Actuated g/C Ratio		0.10	0.10		0.10		0.09	0.77		0.01	0.69	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		148	155		151		154	2768		22	2429	
v/s Ratio Prot							c0.05	0.27		0.00	c0.29	
v/s Ratio Perm		c0.05	0.01		0.02							
v/c Ratio		0.49	0.12		0.18		0.58	0.35		0.27	0.42	
Uniform Delay, d1		47.0	45.4		45.6		48.3	4.1		53.8	7.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.5	0.4		0.6		5.6	0.3		6.6	0.5	
Delay (s)		49.6	45.7		46.2		53.8	4.4		60.4	7.9	
Level of Service		D	D		D		D	A		E	A	
Approach Delay (s)		46.8			46.2			8.6			8.2	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	28	2	10	44	61	3	241	40	58	75	17
Future Volume (Veh/h)	11	28	2	10	44	61	3	241	40	58	75	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.82	0.82	0.82	0.83	0.83	0.83	0.93	0.93	0.93
Hourly flow rate (vph)	12	31	2	12	54	74	4	290	48	62	81	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	637	560	90	554	545	314	99			338		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	637	560	90	554	545	314	99			338		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	96	93	100	97	87	90	100			95		
cM capacity (veh/h)	306	416	973	388	424	726	1507			1210		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	45	140	342	161
Volume Left	12	12	4	62
Volume Right	2	74	48	18
cSH	389	538	1507	1210
Volume to Capacity	0.12	0.26	0.00	0.05
Queue Length 95th (ft)	10	26	0	4
Control Delay (s)	15.5	14.0	0.1	3.4
Lane LOS	C	B	A	A
Approach Delay (s)	15.5	14.0	0.1	3.4
Approach LOS	C	B		

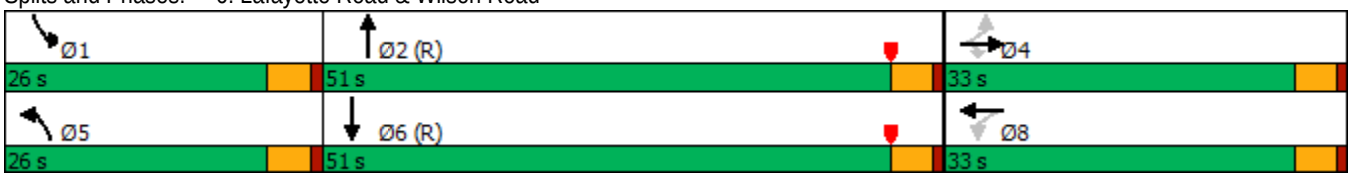
Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	40.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	50	17	179	13	7	94	1031	7	939
Future Volume (vph)	50	17	179	13	7	94	1031	7	939
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	26.0	51.0	26.0	51.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	23.6%	46.4%	23.6%	46.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		11.3	11.3		11.3	11.4	87.4	6.0	73.8
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.79	0.05	0.67
v/c Ratio		0.51	0.60		0.27	0.53	0.37	0.07	0.48
Control Delay		57.3	13.5		34.0	56.7	4.6	50.4	10.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		57.3	13.5		34.0	56.7	4.6	50.4	10.4
LOS		E	B		C	E	A	D	B
Approach Delay		25.4			34.0		8.9		10.7
Approach LOS		C			C		A		B

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 9.5 (9%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 11.9
Intersection LOS: B
Intersection Capacity Utilization 56.7%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road



6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	211	47	97	1068	7	1140
v/c Ratio	0.51	0.60	0.27	0.53	0.37	0.07	0.48
Control Delay	57.3	13.5	34.0	56.7	4.6	50.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.3	13.5	34.0	56.7	4.6	50.4	10.4
Queue Length 50th (ft)	54	0	19	66	79	5	183
Queue Length 95th (ft)	93	55	37	116	211	20	297
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	390	570	413	345	2864	352	2358
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.37	0.11	0.28	0.37	0.02	0.48

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	17	179	13	7	12	94	1031	5	7	939	133
Future Volume (vph)	50	17	179	13	7	12	94	1031	5	7	939	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.95		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1791	1599		1766		1770	3607		1805	3508	
Flt Permitted		0.81	1.00		0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1507	1599		1544		1770	3607		1805	3508	
Peak-hour factor, PHF	0.85	0.85	0.85	0.68	0.68	0.68	0.97	0.97	0.97	0.94	0.94	0.94
Adj. Flow (vph)	59	20	211	19	10	18	97	1063	5	7	999	141
RTOR Reduction (vph)	0	0	189	0	16	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	79	22	0	31	0	97	1068	0	7	1134	0
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%	2%	0%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		11.3	11.3		11.3		11.4	83.8		1.4	73.8	
Effective Green, g (s)		11.3	11.3		11.3		11.4	83.8		1.4	73.8	
Actuated g/C Ratio		0.10	0.10		0.10		0.10	0.76		0.01	0.67	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		154	164		158		183	2747		22	2353	
v/s Ratio Prot							c0.05	0.30		0.00	c0.32	
v/s Ratio Perm		c0.05	0.01		0.02							
v/c Ratio		0.51	0.13		0.20		0.53	0.39		0.32	0.48	
Uniform Delay, d1		46.7	44.9		45.2		46.8	4.4		53.8	8.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.9	0.4		0.6		2.9	0.4		8.2	0.7	
Delay (s)		49.6	45.3		45.8		49.7	4.8		62.0	9.5	
Level of Service		D	D		D		D	A		E	A	
Approach Delay (s)		46.4			45.8			8.6			9.8	
Approach LOS		D			D			A			A	

Intersection Summary

HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX J

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	3	1	62	0	28	2	37	39	0
Future Volume (Veh/h)	0	1	0	3	1	62	0	28	2	37	39	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.80	0.80	0.80	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	0	4	0	4	1	78	0	37	3	46	49	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	258	181	49	182	180	38	49			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	258	181	49	182	180	38	49			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	100	92	100			97		
cM capacity (veh/h)	631	696	1025	764	697	1033	1571			1583		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	83	40	95
Volume Left	0	4	0	46
Volume Right	0	78	3	0
cSH	696	1010	1571	1583
Volume to Capacity	0.01	0.08	0.00	0.03
Queue Length 95th (ft)	0	7	0	2
Control Delay (s)	10.2	8.9	0.0	3.7
Lane LOS	B	A		A
Approach Delay (s)	10.2	8.9	0.0	3.7
Approach LOS	B	A		

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	24.1%	ICU Level of Service	A	
Analysis Period (min)	15			

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	46	2	117	14	13	104	898	5	885
Future Volume (vph)	46	2	117	14	13	104	898	5	885
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	28.0	28.0	28.0	28.0	28.0	20.0	50.0	20.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%	20.4%	51.0%	20.4%	51.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		8.6	8.6		8.6	9.7	41.1	6.0	31.2
Actuated g/C Ratio		0.14	0.14		0.14	0.16	0.68	0.10	0.51
v/c Ratio		0.33	0.42		0.20	0.39	0.40	0.03	0.60
Control Delay		31.9	9.9		23.0	29.9	5.7	31.8	13.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		31.9	9.9		23.0	29.9	5.7	31.8	13.4
LOS		C	A		C	C	A	C	B
Approach Delay		16.4			23.0		8.2		13.5
Approach LOS		B			C		A		B

Intersection Summary

Cycle Length: 98
Actuated Cycle Length: 60.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 54.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	150	48	112	970	5	1083
v/c Ratio	0.33	0.42	0.20	0.39	0.40	0.03	0.60
Control Delay	31.9	9.9	23.0	29.9	5.7	31.8	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	9.9	23.0	29.9	5.7	31.8	13.4
Queue Length 50th (ft)	20	0	10	35	55	2	141
Queue Length 95th (ft)	55	33	39	99	172	13	256
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	537	734	649	480	2850	480	2746
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.20	0.07	0.23	0.34	0.01	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	2	117	14	13	11	104	898	4	5	885	122
Future Volume (vph)	46	2	117	14	13	11	104	898	4	5	885	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814	1599		1792		1805	3572		1805	3509	
Flt Permitted		0.70	1.00		0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1332	1599		1588		1805	3572		1805	3509	
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	59	3	150	18	16	14	112	966	4	5	952	131
RTOR Reduction (vph)	0	0	130	0	12	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	62	20	0	36	0	112	970	0	5	1074	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		8.6	8.6		8.6		8.1	41.1		1.0	34.0	
Effective Green, g (s)		8.6	8.6		8.6		8.1	41.1		1.0	34.0	
Actuated g/C Ratio		0.13	0.13		0.13		0.13	0.64		0.02	0.53	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		178	214		212		227	2286		28	1858	
v/s Ratio Prot							c0.06	0.27		0.00	c0.31	
v/s Ratio Perm		c0.05	0.01		0.02							
v/c Ratio		0.35	0.09		0.17		0.49	0.42		0.18	0.58	
Uniform Delay, d1		25.3	24.4		24.6		26.1	5.7		31.2	10.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.2		0.4		1.7	0.1		3.0	0.4	
Delay (s)		26.4	24.6		25.0		27.8	5.8		34.2	10.7	
Level of Service		C	C		C		C	A		C	B	
Approach Delay (s)		25.1			25.0			8.1			10.8	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	3	1	65	0	28	2	41	40	0
Future Volume (Veh/h)	0	1	0	3	1	65	0	28	2	41	40	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.80	0.80	0.80	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	0	4	0	4	1	81	0	37	3	51	50	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	272	192	50	192	190	38	50			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	272	192	50	192	190	38	50			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	100	92	100			97		
cM capacity (veh/h)	615	684	1024	749	685	1033	1570			1583		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	86	40	101
Volume Left	0	4	0	51
Volume Right	0	81	3	0
cSH	684	1010	1570	1583
Volume to Capacity	0.01	0.09	0.00	0.03
Queue Length 95th (ft)	0	7	0	2
Control Delay (s)	10.3	8.9	0.0	3.8
Lane LOS	B	A		A
Approach Delay (s)	10.3	8.9	0.0	3.8
Approach LOS	B	A		

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	46	2	121	14	13	109	932	5	915
Future Volume (vph)	46	2	121	14	13	109	932	5	915
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	28.0	28.0	28.0	28.0	28.0	20.0	50.0	20.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%	20.4%	51.0%	20.4%	51.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		8.6	8.6		8.6	10.0	42.8	6.0	32.6
Actuated g/C Ratio		0.14	0.14		0.14	0.16	0.69	0.10	0.52
v/c Ratio		0.34	0.44		0.21	0.41	0.41	0.03	0.61
Control Delay		33.2	10.2		23.9	31.0	5.6	33.0	13.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		33.2	10.2		23.9	31.0	5.6	33.0	13.4
LOS		C	B		C	C	A	C	B
Approach Delay		16.8			23.9		8.3		13.5
Approach LOS		B			C		A		B

Intersection Summary

Cycle Length: 98
Actuated Cycle Length: 62.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 11.6 Intersection LOS: B
Intersection Capacity Utilization 55.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	155	48	117	1006	5	1116
v/c Ratio	0.34	0.44	0.21	0.41	0.41	0.03	0.61
Control Delay	33.2	10.2	23.9	31.0	5.6	33.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	10.2	23.9	31.0	5.6	33.0	13.4
Queue Length 50th (ft)	21	0	11	38	58	2	149
Queue Length 95th (ft)	57	34	41	106	180	13	270
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	523	722	633	467	2813	467	2676
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.21	0.08	0.25	0.36	0.01	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	2	121	14	13	11	109	932	4	5	915	123
Future Volume (vph)	46	2	121	14	13	11	109	932	4	5	915	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814	1599		1792		1805	3572		1805	3511	
Flt Permitted		0.70	1.00		0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1332	1599		1587		1805	3572		1805	3511	
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	59	3	155	18	16	14	117	1002	4	5	984	132
RTOR Reduction (vph)	0	0	135	0	12	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	62	20	0	36	0	117	1006	0	5	1107	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		8.6	8.6		8.6		8.3	42.8		1.0	35.5	
Effective Green, g (s)		8.6	8.6		8.6		8.3	42.8		1.0	35.5	
Actuated g/C Ratio		0.13	0.13		0.13		0.13	0.65		0.02	0.54	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		173	208		207		227	2319		27	1891	
v/s Ratio Prot							c0.06	0.28		0.00	c0.32	
v/s Ratio Perm		c0.05	0.01		0.02							
v/c Ratio		0.36	0.10		0.17		0.52	0.43		0.19	0.59	
Uniform Delay, d1		26.1	25.2		25.5		26.9	5.6		32.0	10.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3	0.2		0.4		2.0	0.1		3.3	0.5	
Delay (s)		27.4	25.4		25.9		28.9	5.8		35.4	10.7	
Level of Service		C	C		C		C	A		D	B	
Approach Delay (s)		26.0			25.9			8.2			10.8	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	13.5
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	0	4	1	72	0	31	2	45	44	0
Future Volume (Veh/h)	0	1	0	4	1	72	0	31	2	45	44	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.25	0.25	0.80	0.80	0.80	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	0	4	0	5	1	90	0	41	3	56	55	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	300	211	55	212	210	42	55			44		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	300	211	55	212	210	42	55			44		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	100	99	100	91	100			96		
cM capacity (veh/h)	582	665	1018	726	667	1028	1563			1577		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	4	96	44	111
Volume Left	0	5	0	56
Volume Right	0	90	3	0
cSH	665	1001	1563	1577
Volume to Capacity	0.01	0.10	0.00	0.04
Queue Length 95th (ft)	0	8	0	3
Control Delay (s)	10.4	9.0	0.0	3.9
Lane LOS	B	A		A
Approach Delay (s)	10.4	9.0	0.0	3.9
Approach LOS	B	A		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	51	2	134	15	14	120	1026	6	1008
Future Volume (vph)	51	2	134	15	14	120	1026	6	1008
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	28.0	28.0	28.0	28.0	28.0	20.0	50.0	20.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%	20.4%	51.0%	20.4%	51.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		9.2	9.2		9.2	10.7	46.7	6.1	36.1
Actuated g/C Ratio		0.14	0.14		0.14	0.16	0.70	0.09	0.54
v/c Ratio		0.38	0.47		0.23	0.45	0.44	0.04	0.65
Control Delay		36.4	10.4		25.6	34.0	5.8	35.5	14.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		36.4	10.4		25.6	34.0	5.8	35.5	14.4
LOS		D	B		C	C	A	D	B
Approach Delay		17.8			25.6		8.8		14.5
Approach LOS		B			C		A		B

Intersection Summary

Cycle Length: 98
Actuated Cycle Length: 67
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	172	52	129	1108	6	1230
v/c Ratio	0.38	0.47	0.23	0.45	0.44	0.04	0.65
Control Delay	36.4	10.4	25.6	34.0	5.8	35.5	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	10.4	25.6	34.0	5.8	35.5	14.4
Queue Length 50th (ft)	25	0	13	47	70	2	183
Queue Length 95th (ft)	63	35	44	118	210	15	320
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	486	696	593	437	2740	437	2504
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.25	0.09	0.30	0.40	0.01	0.49

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	2	134	15	14	12	120	1026	5	6	1008	136
Future Volume (vph)	51	2	134	15	14	12	120	1026	5	6	1008	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1813	1599		1793		1805	3572		1805	3511	
Flt Permitted		0.70	1.00		0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1325	1599		1591		1805	3572		1805	3511	
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	3	172	19	18	15	129	1103	5	6	1084	146
RTOR Reduction (vph)	0	0	150	0	13	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	68	22	0	39	0	129	1108	0	6	1221	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		9.1	9.1		9.1		8.8	46.7		1.0	38.9	
Effective Green, g (s)		9.1	9.1		9.1		8.8	46.7		1.0	38.9	
Actuated g/C Ratio		0.13	0.13		0.13		0.13	0.66		0.01	0.55	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		171	206		205		225	2372		25	1942	
v/s Ratio Prot							c0.07	0.31		0.00	c0.35	
v/s Ratio Perm		c0.05	0.01		0.02							
v/c Ratio		0.40	0.11		0.19		0.57	0.47		0.24	0.63	
Uniform Delay, d1		28.1	27.0		27.3		29.0	5.7		34.3	10.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5	0.2		0.5		3.5	0.1		4.9	0.6	
Delay (s)		29.6	27.2		27.8		32.5	5.9		39.2	11.4	
Level of Service		C	C		C		C	A		D	B	
Approach Delay (s)		27.9			27.8			8.7			11.5	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	26	2	3	25	65	2	28	2	41	40	21
Future Volume (Veh/h)	22	26	2	3	25	65	2	28	2	41	40	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.80	0.80	0.80	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	24	29	2	4	31	81	3	37	3	51	50	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	306	211	63	226	222	38	76			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	306	211	63	226	222	38	76			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	96	100	99	95	92	100			97		
cM capacity (veh/h)	563	666	1007	690	657	1033	1536			1583		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	55	116	43	127
Volume Left	24	4	3	51
Volume Right	2	81	3	26
cSH	624	883	1536	1583
Volume to Capacity	0.09	0.13	0.00	0.03
Queue Length 95th (ft)	7	11	0	2
Control Delay (s)	11.3	9.7	0.5	3.1
Lane LOS	B	A	A	A
Approach Delay (s)	11.3	9.7	0.5	3.1
Approach LOS	B	A		

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	28.4%	ICU Level of Service	A	
Analysis Period (min)	15			

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	53	3	139	14	13	119	932	5	915
Future Volume (vph)	53	3	139	14	13	119	932	5	915
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	28.0	28.0	28.0	28.0	28.0	20.0	50.0	20.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%	20.4%	51.0%	20.4%	51.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		9.3	9.3		9.3	10.5	43.5	6.1	33.0
Actuated g/C Ratio		0.15	0.15		0.15	0.16	0.68	0.10	0.52
v/c Ratio		0.37	0.46		0.20	0.43	0.41	0.03	0.62
Control Delay		34.4	9.9		24.1	32.3	5.8	34.4	14.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		34.4	9.9		24.1	32.3	5.8	34.4	14.2
LOS		C	A		C	C	A	C	B
Approach Delay		17.0			24.1		8.8		14.2
Approach LOS		B			C		A		B

Intersection Summary

Cycle Length: 98
Actuated Cycle Length: 63.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 56.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	178	48	128	1006	5	1129
v/c Ratio	0.37	0.46	0.20	0.43	0.41	0.03	0.62
Control Delay	34.4	9.9	24.1	32.3	5.8	34.4	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	9.9	24.1	32.3	5.8	34.4	14.2
Queue Length 50th (ft)	25	0	11	44	61	2	158
Queue Length 95th (ft)	66	35	41	117	186	14	286
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	519	730	626	462	2800	462	2630
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.24	0.08	0.28	0.36	0.01	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	3	139	14	13	11	119	932	4	5	915	135
Future Volume (vph)	53	3	139	14	13	11	119	932	4	5	915	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814	1599		1792		1805	3572		1805	3505	
Flt Permitted		0.70	1.00		0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1335	1599		1590		1805	3572		1805	3505	
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	68	4	178	18	16	14	128	1002	4	5	984	145
RTOR Reduction (vph)	0	0	153	0	12	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	72	25	0	36	0	128	1006	0	5	1119	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		9.3	9.3		9.3		8.6	43.5		0.9	35.8	
Effective Green, g (s)		9.3	9.3		9.3		8.6	43.5		0.9	35.8	
Actuated g/C Ratio		0.14	0.14		0.14		0.13	0.65		0.01	0.53	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		184	221		220		230	2312		24	1867	
v/s Ratio Prot							c0.07	0.28		0.00	c0.32	
v/s Ratio Perm		c0.05	0.02		0.02							
v/c Ratio		0.39	0.11		0.16		0.56	0.43		0.21	0.60	
Uniform Delay, d1		26.4	25.3		25.5		27.5	5.8		32.8	10.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4	0.2		0.4		2.9	0.1		4.3	0.5	
Delay (s)		27.7	25.6		25.9		30.4	5.9		37.1	11.3	
Level of Service		C	C		C		C	A		D	B	
Approach Delay (s)		26.2			25.9			8.7			11.4	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	26	2	4	25	72	2	31	2	45	44	21
Future Volume (Veh/h)	22	26	2	4	25	72	2	31	2	45	44	21
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.80	0.80	0.80	0.75	0.75	0.75	0.80	0.80	0.80
Hourly flow rate (vph)	24	29	2	5	31	90	3	41	3	56	55	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	334	230	68	245	242	42	81			44		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	334	230	68	245	242	42	81			44		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	96	100	99	95	91	100			96		
cM capacity (veh/h)	532	648	1001	668	639	1028	1529			1577		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	55	126	47	137
Volume Left	24	5	3	56
Volume Right	2	90	3	26
cSH	599	878	1529	1577
Volume to Capacity	0.09	0.14	0.00	0.04
Queue Length 95th (ft)	8	13	0	3
Control Delay (s)	11.6	9.8	0.5	3.2
Lane LOS	B	A	A	A
Approach Delay (s)	11.6	9.8	0.5	3.2
Approach LOS	B	A		

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			

6: Lafayette Road & Wilson Road

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	58	3	152	15	14	130	1026	6	1008
Future Volume (vph)	58	3	152	15	14	130	1026	6	1008
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	28.0	28.0	28.0	28.0	28.0	20.0	50.0	20.0	50.0
Total Split (%)	28.6%	28.6%	28.6%	28.6%	28.6%	20.4%	51.0%	20.4%	51.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		9.8	9.8		9.8	11.2	46.9	6.2	36.2
Actuated g/C Ratio		0.14	0.14		0.14	0.16	0.69	0.09	0.53
v/c Ratio		0.41	0.49		0.21	0.47	0.45	0.04	0.66
Control Delay		37.2	10.1		25.5	35.3	6.1	36.5	15.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		37.2	10.1		25.5	35.3	6.1	36.5	15.1
LOS		D	B		C	D	A	D	B
Approach Delay		17.8			25.5		9.4		15.2
Approach LOS		B			C		A		B

Intersection Summary

Cycle Length: 98
Actuated Cycle Length: 68
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 60.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 6: Lafayette Road & Wilson Road

6: Lafayette Road & Wilson Road

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	195	52	140	1108	6	1243
v/c Ratio	0.41	0.49	0.21	0.47	0.45	0.04	0.66
Control Delay	37.2	10.1	25.5	35.3	6.1	36.5	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	10.1	25.5	35.3	6.1	36.5	15.1
Queue Length 50th (ft)	31	0	14	54	75	2	197
Queue Length 95th (ft)	70	35	44	129	217	16	334
Internal Link Dist (ft)	460		320		245		320
Turn Bay Length (ft)		100				225	
Base Capacity (vph)	487	710	594	437	2754	437	2476
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.27	0.09	0.32	0.40	0.01	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	3	152	15	14	12	130	1026	5	6	1008	148
Future Volume (vph)	58	3	152	15	14	12	130	1026	5	6	1008	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814	1599		1793		1805	3572		1805	3506	
Flt Permitted		0.70	1.00		0.87		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1328	1599		1594		1805	3572		1805	3506	
Peak-hour factor, PHF	0.78	0.78	0.78	0.80	0.80	0.80	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	74	4	195	19	18	15	140	1103	5	6	1084	159
RTOR Reduction (vph)	0	0	168	0	13	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	78	27	0	39	0	140	1108	0	6	1233	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		9.8	9.8		9.8		9.0	46.9		1.0	38.9	
Effective Green, g (s)		9.8	9.8		9.8		9.0	46.9		1.0	38.9	
Actuated g/C Ratio		0.14	0.14		0.14		0.13	0.66		0.01	0.55	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		182	220		219		228	2352		25	1915	
v/s Ratio Prot							c0.08	0.31		0.00	c0.35	
v/s Ratio Perm		c0.06	0.02		0.02							
v/c Ratio		0.43	0.12		0.18		0.61	0.47		0.24	0.64	
Uniform Delay, d1		28.1	26.9		27.1		29.5	6.0		34.7	11.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.6	0.2		0.4		4.8	0.1		4.9	0.8	
Delay (s)		29.8	27.2		27.5		34.3	6.2		39.7	12.1	
Level of Service		C	C		C		C	A		D	B	
Approach Delay (s)		27.9			27.5			9.3			12.2	
Approach LOS		C			C			A			B	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	71.2	Sum of lost time (s)	13.5
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX K

NH DOT - SEQUENCE AND TIMING CHART

7/11/2022 10:22:05 AM

CITY/TOWN: PORTSMOUTH **SIGNAL ID#:** S-379-16

LOCATION: US 1

INTERSECT: WILSON AVENUE/INDUSTRIAL PARK ENTRA

CABINET TYPE: P TYPE-1 **METER NUMBER and MFR:** 74-398-049 ES

CONTROLLER INFO

INSTALL DATE: 6 /27/1995 **FIRE PREEMPT** TOMAR

*****CONTROLLER TIMINGS*****

	PH 1	PH 2	PH 4	PH 5	PH 6	PH 8
INITIAL	5	10	7	5	10	7
PASSAGE	4	5	4	4	5	4
YELLOW	4	4	4	4	4	4
ALL RED	2	2	2	2	2	4
MAXIMUM 1	16	32	24	16	32	24
MAXIMUM 2	20	50	28	20	50	28
MAXIMUM 3						
MAXIMUM EXT						
RECALL	NL	MIN	NL	NL	MIN	NL
WALK		4				4
DON'T WALK		8				16
FL YEL ARROW						
MOVEMENT	SLT	1N	EAST	NLT	1S	WEST
TIME TO REDUCE						
REDUCE BY						
MIN GAP						
DYN MAX LIMI						
DYN MAX STEP						

NOTES:

SYS 906
PAT 2 CYCLE = 86s OFF = 60s
SPLIT = 18, 42, 26, 18, 42, 26 cord 2

PAT 3 CYCLE = 110s OFF = 73s
SPLIT = 26, 51, 33, 26, 51, 33 cord 2
DP1 0000 54, 0700 2, 1000 3, 1900 54, 2000 1(254) M-F

APPENDIX L

Location Map: 228713 Portsmouth, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
TFMoran	J. Porter	47107.02	Thurs 6/23 and Sat 6/25/2022	228713	Portsmouth, NH

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	27	5	0	32	3	0	3	0	6	1	18	0	0	19	0	0	0	0	0	57
7:15 AM	0	24	4	0	28	3	0	1	0	4	0	10	0	0	10	0	0	0	0	0	42
7:30 AM	0	35	4	0	39	4	0	0	0	4	4	24	0	0	28	0	0	0	0	0	71
7:45 AM	2	61	2	0	65	7	0	7	0	14	4	22	0	0	26	0	0	0	0	0	105
Total	2	147	15	0	164	17	0	11	0	28	9	74	0	0	83	0	0	0	0	0	275
8:00 AM	0	65	8	0	73	7	0	3	0	10	1	25	0	0	26	0	0	0	0	0	109
8:15 AM	0	46	4	0	50	8	0	7	0	15	6	24	0	0	30	0	0	0	0	0	95
8:30 AM	0	32	5	0	37	9	0	5	0	14	3	29	0	0	32	0	0	0	0	0	83
8:45 AM	0	39	7	0	46	5	0	1	0	6	5	26	0	0	31	0	0	0	0	0	83
Total	0	182	24	0	206	29	0	16	0	45	15	104	0	0	119	0	0	0	0	0	370
Grand Total	2	329	39	0	370	46	0	27	0	73	24	178	0	0	202	0	0	0	0	0	645
Approach %	0.5	88.9	10.5	0.0		63.0	0.0	37.0	0.0		11.9	88.1	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.3	51.0	6.0	0.0	57.4	7.1	0.0	4.2	0.0	11.3	3.7	27.6	0.0	0.0	31.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					224					63					356					2	645
Cars	2	309	37	0	348	43	0	22	0	65	18	153	0	0	171	0	0	0	0	0	584
% Cars	100.0	93.9	94.9	0.0	94.1	93.5	0.0	81.5	0.0	89.0	75.0	86.0	0.0	0.0	84.7	0.0	0.0	0.0	0.0	0.0	90.5
Exiting Leg Total					196					55					331					2	584
Heavy Vehicles	0	20	2	0	22	3	0	5	0	8	6	25	0	0	31	0	0	0	0	0	61
% Heavy Vehicles	0.0	6.1	5.1	0.0	5.9	6.5	0.0	18.5	0.0	11.0	25.0	14.0	0.0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	9.5
Exiting Leg Total					28					8					25					0	61

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	2	61	2	0	65	7	0	7	0	14	4	22	0	0	26	0	0	0	0	0	105
8:00 AM	0	65	8	0	73	7	0	3	0	10	1	25	0	0	26	0	0	0	0	0	109
8:15 AM	0	46	4	0	50	8	0	7	0	15	6	24	0	0	30	0	0	0	0	0	95
8:30 AM	0	32	5	0	37	9	0	5	0	14	3	29	0	0	32	0	0	0	0	0	83
Total Volume	2	204	19	0	225	31	0	22	0	53	14	100	0	0	114	0	0	0	0	0	392
% Approach Total	0.9	90.7	8.4	0.0		58.5	0.0	41.5	0.0		12.3	87.7	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.250	0.785	0.594	0.000	0.771	0.861	0.000	0.786	0.000	0.883	0.583	0.862	0.000	0.000	0.891	0.000	0.000	0.000	0.000	0.000	0.899
Cars	2	192	18	0	212	29	0	20	0	49	11	89	0	0	100	0	0	0	0	0	361
Cars %	100.0	94.1	94.7	0.0	94.2	93.5	0.0	90.9	0.0	92.5	78.6	89.0	0.0	0.0	87.7	0.0	0.0	0.0	0.0	0.0	92.1
Heavy Vehicles	0	12	1	0	13	2	0	2	0	4	3	11	0	0	14	0	0	0	0	0	31
Heavy Vehicles %	0.0	5.9	5.3	0.0	5.8	6.5	0.0	9.1	0.0	7.5	21.4	11.0	0.0	0.0	12.3	0.0	0.0	0.0	0.0	0.0	7.9
Cars Enter Leg	2	192	18	0	212	29	0	20	0	49	11	89	0	0	100	0	0	0	0	0	361
Heavy Enter Leg	0	12	1	0	13	2	0	2	0	4	3	11	0	0	14	0	0	0	0	0	31
Total Entering Leg	2	204	19	0	225	31	0	22	0	53	14	100	0	0	114	0	0	0	0	0	392
Cars Exiting Leg					118					29					212					2	361
Heavy Exiting Leg					13					4					14					0	31
Total Exiting Leg					131					33					226					2	392

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Cars

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	24	5	0	29	3	0	1	0	4	0	15	0	0	15	0	0	0	0	0	48
7:15 AM	0	23	4	0	27	3	0	1	0	4	0	8	0	0	8	0	0	0	0	0	39
7:30 AM	0	33	3	0	36	4	0	0	0	4	2	20	0	0	22	0	0	0	0	0	62
7:45 AM	2	60	2	0	64	6	0	7	0	13	3	20	0	0	23	0	0	0	0	0	100
Total	2	140	14	0	156	16	0	9	0	25	5	63	0	0	68	0	0	0	0	0	249
8:00 AM	0	60	7	0	67	7	0	1	0	8	0	23	0	0	23	0	0	0	0	0	98
8:15 AM	0	41	4	0	45	8	0	7	0	15	6	22	0	0	28	0	0	0	0	0	88
8:30 AM	0	31	5	0	36	8	0	5	0	13	2	24	0	0	26	0	0	0	0	0	75
8:45 AM	0	37	7	0	44	4	0	0	0	4	5	21	0	0	26	0	0	0	0	0	74
Total	0	169	23	0	192	27	0	13	0	40	13	90	0	0	103	0	0	0	0	0	335
Grand Total	2	309	37	0	348	43	0	22	0	65	18	153	0	0	171	0	0	0	0	0	584
Approach %	0.6	88.8	10.6	0.0		66.2	0.0	33.8	0.0		10.5	89.5	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.3	52.9	6.3	0.0	59.6	7.4	0.0	3.8	0.0	11.1	3.1	26.2	0.0	0.0	29.3	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					196					55					331					2	584

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	2	60	2	0	64	6	0	7	0	13	3	20	0	0	23	0	0	0	0	0	100
8:00 AM	0	60	7	0	67	7	0	1	0	8	0	23	0	0	23	0	0	0	0	0	98
8:15 AM	0	41	4	0	45	8	0	7	0	15	6	22	0	0	28	0	0	0	0	0	88
8:30 AM	0	31	5	0	36	8	0	5	0	13	2	24	0	0	26	0	0	0	0	0	75
Total Volume	2	192	18	0	212	29	0	20	0	49	11	89	0	0	100	0	0	0	0	0	361
% Approach Total	0.9	90.6	8.5	0.0		59.2	0.0	40.8	0.0		11.0	89.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.250	0.800	0.643	0.000	0.791	0.906	0.000	0.714	0.000	0.817	0.458	0.927	0.000	0.000	0.893	0.000	0.000	0.000	0.000	0.000	0.903
Entering Leg	2	192	18	0	212	29	0	20	0	49	11	89	0	0	100	0	0	0	0	0	361
Exiting Leg					118					29					212					2	361
Total					330					78					312					2	722

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	0	0	3	0	0	2	0	2	1	3	0	0	4	0	0	0	0	0	9
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
7:30 AM	0	2	1	0	3	0	0	0	0	0	2	4	0	0	6	0	0	0	0	0	9
7:45 AM	0	1	0	0	1	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	5
Total	0	7	1	0	8	1	0	2	0	3	4	11	0	0	15	0	0	0	0	0	26
8:00 AM	0	5	1	0	6	0	0	2	0	2	1	2	0	0	3	0	0	0	0	0	11
8:15 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
8:30 AM	0	1	0	0	1	1	0	0	0	1	1	5	0	0	6	0	0	0	0	0	8
8:45 AM	0	2	0	0	2	1	0	1	0	2	0	5	0	0	5	0	0	0	0	0	9
Total	0	13	1	0	14	2	0	3	0	5	2	14	0	0	16	0	0	0	0	0	35
Grand Total	0	20	2	0	22	3	0	5	0	8	6	25	0	0	31	0	0	0	0	0	61
Approach %	0.0	90.9	9.1	0.0		37.5	0.0	62.5	0.0		19.4	80.6	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	32.8	3.3	0.0	36.1	4.9	0.0	8.2	0.0	13.1	9.8	41.0	0.0	0.0	50.8	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					28					8					25					0	61
Buses	0	1	0	0	1	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	6
% Buses	0.0	5.0	0.0	0.0	4.5	0.0	0.0	40.0	0.0	25.0	33.3	4.0	0.0	0.0	9.7	0.0	0.0	0.0	0.0	0.0	9.8
Exiting Leg Total					1					2					3					0	6
Single-Unit Trucks	0	17	2	0	19	2	0	3	0	5	3	22	0	0	25	0	0	0	0	0	49
% Single-Unit	0.0	85.0	100.0	0.0	86.4	66.7	0.0	60.0	0.0	62.5	50.0	88.0	0.0	0.0	80.6	0.0	0.0	0.0	0.0	0.0	80.3
Exiting Leg Total					24					5					20					0	49
Articulated Trucks	0	2	0	0	2	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	6
% Articulated	0.0	10.0	0.0	0.0	9.1	33.3	0.0	0.0	0.0	12.5	16.7	8.0	0.0	0.0	9.7	0.0	0.0	0.0	0.0	0.0	9.8
Exiting Leg Total					3					1					2					0	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	5	1	0	6	0	0	2	0	2	1	2	0	0	3	0	0	0	0	0	11
8:15 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
8:30 AM	0	1	0	0	1	1	0	0	0	1	1	5	0	0	6	0	0	0	0	0	8
8:45 AM	0	2	0	0	2	1	0	1	0	2	0	5	0	0	5	0	0	0	0	0	9
Total Volume	0	13	1	0	14	2	0	3	0	5	2	14	0	0	16	0	0	0	0	0	35
% Approach Total	0.0	92.9	7.1	0.0		40.0	0.0	60.0	0.0		12.5	87.5	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.650	0.250	0.000	0.583	0.500	0.000	0.375	0.000	0.625	0.500	0.700	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.795
Buses	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	20.0	50.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	5.7
Single-Unit Trucks	0	11	1	0	12	1	0	2	0	3	1	12	0	0	13	0	0	0	0	0	28
Single-Unit %	0.0	84.6	100.0	0.0	85.7	50.0	0.0	66.7	0.0	60.0	50.0	85.7	0.0	0.0	81.3	0.0	0.0	0.0	0.0	0.0	80.0
Articulated Trucks	0	2	0	0	2	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	5
Articulated %	0.0	15.4	0.0	0.0	14.3	50.0	0.0	0.0	0.0	20.0	0.0	14.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	14.3
Buses	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Single-Unit Trucks	0	11	1	0	12	1	0	2	0	3	1	12	0	0	13	0	0	0	0	0	28
Articulated Trucks	0	2	0	0	2	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	5
Total Entering Leg	0	13	1	0	14	2	0	3	0	5	2	14	0	0	16	0	0	0	0	0	35
Buses					0					1					1					0	2
Single-Unit Trucks					13					2					13					0	28
Articulated Trucks					3					0					2					0	5
Total Exiting Leg					16					3					16					0	35

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Buses

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
8:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Grand Total	0	1	0	0	1	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	6
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		66.7	33.3	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	16.7	0.0	0.0	16.7	0.0	0.0	33.3	0.0	33.3	33.3	16.7	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					2					3					0	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.333
Entering Leg	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	4
Exiting Leg					1					1					2					0	4
Total					2					2					4					0	8

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Single-Unit Trucks**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	3	0	0	3	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	8
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
7:30 AM	0	1	1	0	2	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	6
7:45 AM	0	1	0	0	1	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	4
Total	0	6	1	0	7	1	0	1	0	2	2	10	0	0	12	0	0	0	0	0	21
8:00 AM	0	3	1	0	4	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	8
8:15 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
8:30 AM	0	1	0	0	1	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	6
8:45 AM	0	2	0	0	2	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	8
Total	0	11	1	0	12	1	0	2	0	3	1	12	0	0	13	0	0	0	0	0	28
Grand Total	0	17	2	0	19	2	0	3	0	5	3	22	0	0	25	0	0	0	0	0	49
Approach %	0.0	89.5	10.5	0.0		40.0	0.0	60.0	0.0		12.0	88.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	34.7	4.1	0.0	38.8	4.1	0.0	6.1	0.0	10.2	6.1	44.9	0.0	0.0	51.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					24					5					20					0	49

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	3	1	0	4	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	8
8:15 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
8:30 AM	0	1	0	0	1	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	6
8:45 AM	0	2	0	0	2	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	8
Total Volume	0	11	1	0	12	1	0	2	0	3	1	12	0	0	13	0	0	0	0	0	28
% Approach Total	0.0	91.7	8.3	0.0		33.3	0.0	66.7	0.0		7.7	92.3	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.550	0.250	0.000	0.600	0.250	0.000	0.500	0.000	0.750	0.250	0.600	0.000	0.000	0.650	0.000	0.000	0.000	0.000	0.000	0.875
Entering Leg	0	11	1	0	12	1	0	2	0	3	1	12	0	0	13	0	0	0	0	0	28
Exiting Leg					13					2					13					0	28
Total					25					5					26					0	56

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Articulated Trucks

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	5
Grand Total	0	2	0	0	2	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	6
Approach %	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		33.3	66.7	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	33.3	0.0	0.0	33.3	16.7	0.0	0.0	0.0	16.7	16.7	33.3	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					3					1					2					0	6

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	2	0	0	2	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	5
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		33.3	66.7	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.500	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.625
Entering Leg	0	2	0	0	2	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	5
Exiting Leg					2					1					2					0	5
Total					4					1					5					0	10

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Bicycles (on Roadway and Crosswalks)

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							0							0							0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg							0							0							0							0	0
Total							0							0							0							0	0

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Pedestrians**

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0	0	0	0	0	0		0	0	0	0	0	100		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							1							0							0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							0							1							0							0	1
Total							0							2							0							0	2

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	24	5	0	29	15	0	3	0	18	11	52	0	0	63	0	0	0	0	0	110
4:15 PM	0	17	6	0	23	11	1	2	0	14	7	34	0	0	41	0	0	1	0	1	79
4:30 PM	0	18	11	0	29	9	0	1	0	10	17	55	0	0	72	0	0	0	0	0	111
4:45 PM	0	16	10	0	26	12	0	3	0	15	6	46	0	0	52	0	0	0	0	0	93
Total	0	75	32	0	107	47	1	9	0	57	41	187	0	0	228	0	0	1	0	1	393
5:00 PM	0	17	10	0	27	14	0	4	0	18	6	64	0	0	70	0	1	0	0	1	116
5:15 PM	0	13	17	0	30	15	0	1	0	16	4	40	0	0	44	0	0	0	0	0	90
5:30 PM	0	12	13	0	25	14	0	1	0	15	4	27	0	0	31	1	0	0	0	1	72
5:45 PM	0	3	9	0	12	7	0	0	0	7	2	24	0	0	26	0	0	0	0	0	45
Total	0	45	49	0	94	50	0	6	0	56	16	155	0	0	171	1	1	0	0	2	323
Grand Total	0	120	81	0	201	97	1	15	0	113	57	342	0	0	399	1	1	1	0	3	716
Approach %	0.0	59.7	40.3	0.0		85.8	0.9	13.3	0.0		14.3	85.7	0.0	0.0		33.3	33.3	33.3	0.0		
Total %	0.0	16.8	11.3	0.0	28.1	13.5	0.1	2.1	0.0	15.8	8.0	47.8	0.0	0.0	55.7	0.1	0.1	0.1	0.0	0.4	
Exiting Leg Total					440					139					136					1	716
Cars	0	113	79	0	192	95	1	12	0	108	53	334	0	0	387	1	1	1	0	3	690
% Cars	0.0	94.2	97.5	0.0	95.5	97.9	100.0	80.0	0.0	95.6	93.0	97.7	0.0	0.0	97.0	100.0	100.0	100.0	0.0	100.0	96.4
Exiting Leg Total					430					133					126					1	690
Heavy Vehicles	0	7	2	0	9	2	0	3	0	5	4	8	0	0	12	0	0	0	0	0	26
% Heavy Vehicles	0.0	5.8	2.5	0.0	4.5	2.1	0.0	20.0	0.0	4.4	7.0	2.3	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.6
Exiting Leg Total					10					6					10					0	26

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	18	11	0	29	9	0	1	0	10	17	55	0	0	72	0	0	0	0	0	111
4:45 PM	0	16	10	0	26	12	0	3	0	15	6	46	0	0	52	0	0	0	0	0	93
5:00 PM	0	17	10	0	27	14	0	4	0	18	6	64	0	0	70	0	1	0	0	1	116
5:15 PM	0	13	17	0	30	15	0	1	0	16	4	40	0	0	44	0	0	0	0	0	90
Total Volume	0	64	48	0	112	50	0	9	0	59	33	205	0	0	238	0	1	0	0	1	410
% Approach Total	0.0	57.1	42.9	0.0		84.7	0.0	15.3	0.0		13.9	86.1	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.889	0.706	0.000	0.933	0.833	0.000	0.563	0.000	0.819	0.485	0.801	0.000	0.000	0.826	0.000	0.250	0.000	0.000	0.250	0.884
Cars	0	59	46	0	105	49	0	8	0	57	31	204	0	0	235	0	1	0	0	1	398
Cars %	0.0	92.2	95.8	0.0	93.8	98.0	0.0	88.9	0.0	96.6	93.9	99.5	0.0	0.0	98.7	0.0	100.0	0.0	0.0	100.0	97.1
Heavy Vehicles	0	5	2	0	7	1	0	1	0	2	2	1	0	0	3	0	0	0	0	0	12
Heavy Vehicles %	0.0	7.8	4.2	0.0	6.3	2.0	0.0	11.1	0.0	3.4	6.1	0.5	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	2.9
Cars Enter Leg	0	59	46	0	105	49	0	8	0	57	31	204	0	0	235	0	1	0	0	1	398
Heavy Enter Leg	0	5	2	0	7	1	0	1	0	2	2	1	0	0	3	0	0	0	0	0	12
Total Entering Leg	0	64	48	0	112	50	0	9	0	59	33	205	0	0	238	0	1	0	0	1	410
Cars Exiting Leg					253					78					67					0	398
Heavy Exiting Leg					2					4					6					0	12
Total Exiting Leg					255					82					73					0	410

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Cars**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	24	5	0	29	14	0	2	0	16	11	50	0	0	61	0	0	0	0	0	106
4:15 PM	0	15	6	0	21	11	1	1	0	13	6	31	0	0	37	0	0	1	0	1	72
4:30 PM	0	17	10	0	27	9	0	1	0	10	16	55	0	0	71	0	0	0	0	0	108
4:45 PM	0	16	10	0	26	12	0	3	0	15	5	46	0	0	51	0	0	0	0	0	92
Total	0	72	31	0	103	46	1	7	0	54	38	182	0	0	220	0	0	1	0	1	378
5:00 PM	0	15	9	0	24	13	0	4	0	17	6	63	0	0	69	0	1	0	0	1	111
5:15 PM	0	11	17	0	28	15	0	0	0	15	4	40	0	0	44	0	0	0	0	0	87
5:30 PM	0	12	13	0	25	14	0	1	0	15	3	27	0	0	30	1	0	0	0	1	71
5:45 PM	0	3	9	0	12	7	0	0	0	7	2	22	0	0	24	0	0	0	0	0	43
Total	0	41	48	0	89	49	0	5	0	54	15	152	0	0	167	1	1	0	0	2	312
Grand Total	0	113	79	0	192	95	1	12	0	108	53	334	0	0	387	1	1	1	0	3	690
Approach %	0.0	58.9	41.1	0.0		88.0	0.9	11.1	0.0		13.7	86.3	0.0	0.0		33.3	33.3	33.3	0.0		
Total %	0.0	16.4	11.4	0.0	27.8	13.8	0.1	1.7	0.0	15.7	7.7	48.4	0.0	0.0	56.1	0.1	0.1	0.1	0.0	0.4	
Exiting Leg Total					430					133					126					1	690

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	17	10	0	27	9	0	1	0	10	16	55	0	0	71	0	0	0	0	0	108
4:45 PM	0	16	10	0	26	12	0	3	0	15	5	46	0	0	51	0	0	0	0	0	92
5:00 PM	0	15	9	0	24	13	0	4	0	17	6	63	0	0	69	0	1	0	0	1	111
5:15 PM	0	11	17	0	28	15	0	0	0	15	4	40	0	0	44	0	0	0	0	0	87
Total Volume	0	59	46	0	105	49	0	8	0	57	31	204	0	0	235	0	1	0	0	1	398
% Approach Total	0.0	56.2	43.8	0.0		86.0	0.0	14.0	0.0		13.2	86.8	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.868	0.676	0.000	0.938	0.817	0.000	0.500	0.000	0.838	0.484	0.810	0.000	0.000	0.827	0.000	0.250	0.000	0.000	0.250	0.896
Entering Leg	0	59	46	0	105	49	0	8	0	57	31	204	0	0	235	0	1	0	0	1	398
Exiting Leg					253					78					67					0	398
Total					358					135					302					1	796

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	2	0	0	0	0	0	4
4:15 PM	0	2	0	0	2	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	7
4:30 PM	0	1	1	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total	0	3	1	0	4	1	0	2	0	3	3	5	0	0	8	0	0	0	0	0	15
5:00 PM	0	2	1	0	3	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	5
5:15 PM	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total	0	4	1	0	5	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	11
Grand Total	0	7	2	0	9	2	0	3	0	5	4	8	0	0	12	0	0	0	0	0	26
Approach %	0.0	77.8	22.2	0.0		40.0	0.0	60.0	0.0		33.3	66.7	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	26.9	7.7	0.0	34.6	7.7	0.0	11.5	0.0	19.2	15.4	30.8	0.0	0.0	46.2	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					10					6					10					0	26
Buses	0	0	0	0	0	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	5
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	40.0	50.0	12.5	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	19.2
Exiting Leg Total					1					2					2					0	5
Single-Unit Trucks	0	7	2	0	9	2	0	1	0	3	1	6	0	0	7	0	0	0	0	0	19
% Single-Unit	0.0	100.0	100.0	0.0	100.0	100.0	0.0	33.3	0.0	60.0	25.0	75.0	0.0	0.0	58.3	0.0	0.0	0.0	0.0	0.0	73.1
Exiting Leg Total					8					3					8					0	19
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	12.5	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	7.7
Exiting Leg Total					1					1					0					0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	2	0	0	2	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	7
4:30 PM	0	1	1	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:00 PM	0	2	1	0	3	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	5
Total Volume	0	5	2	0	7	1	0	1	0	2	3	4	0	0	7	0	0	0	0	0	16
% Approach Total	0.0	71.4	28.6	0.0		50.0	0.0	50.0	0.0		42.9	57.1	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.625	0.500	0.000	0.583	0.250	0.000	0.250	0.000	0.500	0.750	0.333	0.000	0.000	0.438	0.000	0.000	0.000	0.000	0.000	0.571
Buses	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	25.0	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	12.5
Single-Unit Trucks	0	5	2	0	7	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	13
Single-Unit %	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0	0.0	100.0	33.3	75.0	0.0	0.0	57.1	0.0	0.0	0.0	0.0	0.0	81.3
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	6.3
Buses	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
Single-Unit Trucks	0	5	2	0	7	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	13
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total Entering Leg	0	5	2	0	7	1	0	1	0	2	3	4	0	0	7	0	0	0	0	0	16
Buses					1					1					0					0	2
Single-Unit Trucks					4					3					6					0	13
Articulated Trucks					0					1					0					0	1
Total Exiting Leg					5					5					6					0	16

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Buses

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	2	0	2	2	1	0	0	3	0	0	0	0	0	5
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		66.7	33.3	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0	40.0	20.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					2					2					0	5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3
Exiting Leg					1					1					1					0	3
Total					1					2					3					0	6

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Single-Unit Trucks**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	2	0	0	2	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	6
4:30 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	1	0	4	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	10
5:00 PM	0	2	1	0	3	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	5
5:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
Total	0	4	1	0	5	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	9
Grand Total	0	7	2	0	9	2	0	1	0	3	1	6	0	0	7	0	0	0	0	0	19
Approach %	0.0	77.8	22.2	0.0		66.7	0.0	33.3	0.0		14.3	85.7	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	36.8	10.5	0.0	47.4	10.5	0.0	5.3	0.0	15.8	5.3	31.6	0.0	0.0	36.8	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					8					3					8					0	19

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:15 PM	0	2	0	0	2	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	6
4:30 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	1	0	3	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	5
Total Volume	0	5	2	0	7	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	13
% Approach Total	0.0	71.4	28.6	0.0		50.0	0.0	50.0	0.0		25.0	75.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.625	0.500	0.000	0.583	0.250	0.000	0.250	0.000	0.500	0.250	0.375	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.542
Entering Leg	0	5	2	0	7	1	0	1	0	2	1	3	0	0	4	0	0	0	0	0	13
Exiting Leg					4					3					6					0	13
Total					11					5					10					0	26

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Articulated Trucks

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					1					1					0					0	2

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
Exiting Leg					1					1					0					0	2
Total					1					1					2					0	4

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Bicycles (on Roadway and Crosswalks)

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							0							0							0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg							0							0							0							0	0
Total							0							0							0							0	0

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Pedestrians

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							0							0							0							0	0

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg							0							0							0							0	0
Total							0							0							0							0	0

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	8	12	0	20	7	0	1	0	8	3	8	0	0	11	0	0	0	0	0	39
11:15 AM	0	12	10	0	22	8	0	0	0	8	0	6	0	0	6	0	0	0	0	0	36
11:30 AM	0	9	8	0	17	15	1	2	0	18	1	8	0	0	9	0	1	0	0	1	45
11:45 AM	0	7	6	0	13	16	0	0	0	16	1	7	0	0	8	0	0	0	0	0	37
Total	0	36	36	0	72	46	1	3	0	50	5	29	0	0	34	0	1	0	0	1	157
12:00 PM	0	8	10	0	18	18	0	1	0	19	0	4	0	0	4	0	0	0	0	0	41
12:15 PM	0	6	6	0	12	15	0	1	0	16	1	6	0	0	7	0	0	0	0	0	35
12:30 PM	0	8	5	0	13	10	0	1	0	11	1	4	0	0	5	0	0	0	0	0	29
12:45 PM	0	5	4	0	9	9	0	2	0	11	3	8	0	0	11	0	0	0	0	0	31
Total	0	27	25	0	52	52	0	5	0	57	5	22	0	0	27	0	0	0	0	0	136
1:00 PM	0	11	6	0	17	10	0	1	0	11	2	9	1	0	12	1	0	0	0	1	41
1:15 PM	0	3	4	0	7	8	0	0	0	8	0	7	0	0	7	0	0	0	0	0	22
1:30 PM	0	5	5	0	10	7	0	3	0	10	3	4	0	0	7	0	0	0	0	0	27
1:45 PM	0	4	4	0	8	11	0	3	0	14	3	8	0	0	11	0	0	0	0	0	33
Total	0	23	19	0	42	36	0	7	0	43	8	28	1	0	37	1	0	0	0	1	123
Grand Total	0	86	80	0	166	134	1	15	0	150	18	79	1	0	98	1	1	0	0	2	416
Approach %	0.0	51.8	48.2	0.0		89.3	0.7	10.0	0.0		18.4	80.6	1.0	0.0		50.0	50.0	0.0	0.0		
Total %	0.0	20.7	19.2	0.0	39.9	32.2	0.2	3.6	0.0	36.1	4.3	19.0	0.2	0.0	23.6	0.2	0.2	0.0	0.0	0.5	
Exiting Leg Total					213					99					102					2	416
Cars	0	78	78	0	156	133	1	15	0	149	18	72	1	0	91	1	1	0	0	2	398
% Cars	0.0	90.7	97.5	0.0	94.0	99.3	100.0	100.0	0.0	99.3	100.0	91.1	100.0	0.0	92.9	100.0	100.0	0.0	0.0	100.0	95.7
Exiting Leg Total					205					97					94					2	398
Heavy Vehicles	0	8	2	0	10	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	18
% Heavy Vehicles	0.0	9.3	2.5	0.0	6.0	0.7	0.0	0.0	0.0	0.7	0.0	8.9	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	4.3
Exiting Leg Total					8					2					8					0	18

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:15 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:15 AM	0	12	10	0	22	8	0	0	0	8	0	6	0	0	6	0	0	0	0	0	36
11:30 AM	0	9	8	0	17	15	1	2	0	18	1	8	0	0	9	0	1	0	0	1	45
11:45 AM	0	7	6	0	13	16	0	0	0	16	1	7	0	0	8	0	0	0	0	0	37
12:00 PM	0	8	10	0	18	18	0	1	0	19	0	4	0	0	4	0	0	0	0	0	41
Total Volume	0	36	34	0	70	57	1	3	0	61	2	25	0	0	27	0	1	0	0	1	159
% Approach Total	0.0	51.4	48.6	0.0		93.4	1.6	4.9	0.0		7.4	92.6	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.750	0.850	0.000	0.795	0.792	0.250	0.375	0.000	0.803	0.500	0.781	0.000	0.000	0.750	0.000	0.250	0.000	0.000	0.250	0.883
Cars	0	32	34	0	66	56	1	3	0	60	2	21	0	0	23	0	1	0	0	1	150
Cars %	0.0	88.9	100.0	0.0	94.3	98.2	100.0	100.0	0.0	98.4	100.0	84.0	0.0	0.0	85.2	0.0	100.0	0.0	0.0	100.0	94.3
Heavy Vehicles	0	4	0	0	4	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	9
Heavy Vehicles %	0.0	11.1	0.0	0.0	5.7	1.8	0.0	0.0	0.0	1.6	0.0	16.0	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	5.7
Cars Enter Leg	0	32	34	0	66	56	1	3	0	60	2	21	0	0	23	0	1	0	0	1	150
Heavy Enter Leg	0	4	0	0	4	1	0	0	0	1	0	4	0	0	4	0	0	0	0	0	9
Total Entering Leg	0	36	34	0	70	57	1	3	0	61	2	25	0	0	27	0	1	0	0	1	159
Cars Exiting Leg					77					37					35					1	150
Heavy Exiting Leg					5					0					4					0	9
Total Exiting Leg					82					37					39					1	159

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	7	11	0	18	7	0	1	0	8	3	8	0	0	11	0	0	0	0	0	37
11:15 AM	0	9	10	0	19	8	0	0	0	8	0	4	0	0	4	0	0	0	0	0	31
11:30 AM	0	8	8	0	16	15	1	2	0	18	1	8	0	0	9	0	1	0	0	1	44
11:45 AM	0	7	6	0	13	15	0	0	0	15	1	6	0	0	7	0	0	0	0	0	35
Total	0	31	35	0	66	45	1	3	0	49	5	26	0	0	31	0	1	0	0	1	147
12:00 PM	0	8	10	0	18	18	0	1	0	19	0	3	0	0	3	0	0	0	0	0	40
12:15 PM	0	6	5	0	11	15	0	1	0	16	1	5	0	0	6	0	0	0	0	0	33
12:30 PM	0	7	5	0	12	10	0	1	0	11	1	4	0	0	5	0	0	0	0	0	28
12:45 PM	0	4	4	0	8	9	0	2	0	11	3	8	0	0	11	0	0	0	0	0	30
Total	0	25	24	0	49	52	0	5	0	57	5	20	0	0	25	0	0	0	0	0	131
1:00 PM	0	10	6	0	16	10	0	1	0	11	2	8	1	0	11	1	0	0	0	1	39
1:15 PM	0	3	4	0	7	8	0	0	0	8	0	6	0	0	6	0	0	0	0	0	21
1:30 PM	0	5	5	0	10	7	0	3	0	10	3	4	0	0	7	0	0	0	0	0	27
1:45 PM	0	4	4	0	8	11	0	3	0	14	3	8	0	0	11	0	0	0	0	0	33
Total	0	22	19	0	41	36	0	7	0	43	8	26	1	0	35	1	0	0	0	1	120
Grand Total	0	78	78	0	156	133	1	15	0	149	18	72	1	0	91	1	1	0	0	2	398
Approach %	0.0	50.0	50.0	0.0		89.3	0.7	10.1	0.0		19.8	79.1	1.1	0.0		50.0	50.0	0.0	0.0		
Total %	0.0	19.6	19.6	0.0	39.2	33.4	0.3	3.8	0.0	37.4	4.5	18.1	0.3	0.0	22.9	0.3	0.3	0.0	0.0	0.5	
Exiting Leg Total					205					97					94					2	398

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:30 AM	0	8	8	0	16	15	1	2	0	18	1	8	0	0	9	0	1	0	0	1	44
11:45 AM	0	7	6	0	13	15	0	0	0	15	1	6	0	0	7	0	0	0	0	0	35
12:00 PM	0	8	10	0	18	18	0	1	0	19	0	3	0	0	3	0	0	0	0	0	40
12:15 PM	0	6	5	0	11	15	0	1	0	16	1	5	0	0	6	0	0	0	0	0	33
Total Volume	0	29	29	0	58	63	1	4	0	68	3	22	0	0	25	0	1	0	0	1	152
% Approach Total	0.0	50.0	50.0	0.0		92.6	1.5	5.9	0.0		12.0	88.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.906	0.725	0.000	0.806	0.875	0.250	0.500	0.000	0.895	0.750	0.688	0.000	0.000	0.694	0.000	0.250	0.000	0.000	0.250	0.864
Entering Leg	0	29	29	0	58	63	1	4	0	68	3	22	0	0	25	0	1	0	0	1	152
Exiting Leg					85					33					33					1	152
Total					143					101					58					2	304

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
11:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:15 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Grand Total	0	8	2	0	10	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	18
Approach %	0.0	80.0	20.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	44.4	11.1	0.0	55.6	5.6	0.0	0.0	0.0	5.6	0.0	38.9	0.0	0.0	38.9	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					8					2					8					0	18
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	0	8	2	0	10	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	18
% Single-Unit	0.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Exiting Leg Total					8					2					8					0	18
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
11:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
% Approach Total	0.0	83.3	16.7	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.417	0.250	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.500
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
Single-Unit %	0.0	100.0	100.0	0.0	100.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Entering Leg	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
Buses					0					0					0					0	0
Single-Unit Trucks					4					1					5					0	10
Articulated Trucks					0					0					0					0	0
Total Exiting Leg					4					1					5					0	10

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Buses**

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Single-Unit Trucks

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
11:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:15 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Grand Total	0	8	2	0	10	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	18
Approach %	0.0	80.0	20.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	44.4	11.1	0.0	55.6	5.6	0.0	0.0	0.0	5.6	0.0	38.9	0.0	0.0	38.9	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					8					2					8					0	18

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:15 AM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
11:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
% Approach Total	0.0	83.3	16.7	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.417	0.250	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	5	1	0	6	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	10
Exiting Leg					4					1					5					0	10
Total					10					2					8					0	20

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Articulated Trucks

	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North					Wilson Road from East					West Road from South					Driveway from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Bicycles (on Roadway and Crosswalks)

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							2							0							0	2

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Exiting Leg							0							1							0							0	1
Total							0							1							1							0	2

PDI File #: **228713 A**
Location: **N: West Road S: West Road**
Location: **E: Wilson Road W: Driveway**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Pedestrians

	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Approach %	0	0	0	0	0	100		0	0	0	0	0	100		0	0	0	0	0	0		0	0	0	0	0	100		
Total %	0	0	0	0	0	33.3	33.3	0	0	0	0	0	33.3	33.3	0	0	0	0	0	0	0	0	0	0	0	0	33.3	33.3	
Exiting Leg Total							1							1							0							1	3

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	West Road from North							Wilson Road from East							West Road from South							Driveway from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Approach Total	0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Exiting Leg							1							1							0							0	2
Total							2							2							0							0	4

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	10	102	0	0	112	4	1	0	0	5	0	118	11	0	129	4	1	2	0	7	253
7:15 AM	12	116	0	0	128	2	1	0	0	3	0	131	12	0	143	8	1	4	0	13	287
7:30 AM	12	104	1	0	117	2	1	1	0	4	0	180	13	0	193	12	1	5	0	18	332
7:45 AM	12	128	5	0	145	5	3	3	0	11	2	177	16	0	195	9	0	8	0	17	368
Total	46	450	6	0	502	13	6	4	0	23	2	606	52	0	660	33	3	19	0	55	1240
8:00 AM	17	148	1	0	166	3	1	4	0	8	0	179	8	0	187	12	0	1	0	13	374
8:15 AM	16	168	0	0	184	3	1	2	0	6	0	161	11	0	172	13	0	5	0	18	380
8:30 AM	7	157	0	0	164	1	0	3	0	4	0	162	19	0	181	12	0	5	0	17	366
8:45 AM	33	167	0	0	200	6	1	3	0	10	1	145	14	0	160	15	0	9	0	24	394
Total	73	640	1	0	714	13	3	12	0	28	1	647	52	0	700	52	0	20	0	72	1514
Grand Total	119	1090	7	0	1216	26	9	16	0	51	3	1253	104	0	1360	85	3	39	0	127	2754
Approach %	9.8	89.6	0.6	0.0		51.0	17.6	31.4	0.0		0.2	92.1	7.6	0.0		66.9	2.4	30.7	0.0		
Total %	4.3	39.6	0.3	0.0	44.2	0.9	0.3	0.6	0.0	1.9	0.1	45.5	3.8	0.0	49.4	3.1	0.1	1.4	0.0	4.6	
Exiting Leg Total					1318					13					1191					232	2754
Cars	113	1031	5	0	1149	26	9	16	0	51	3	1166	92	0	1261	78	3	29	0	110	2571
% Cars	95.0	94.6	71.4	0.0	94.5	100.0	100.0	100.0	0.0	100.0	100.0	93.1	88.5	0.0	92.7	91.8	100.0	74.4	0.0	86.6	93.4
Exiting Leg Total					1221					11					1125					214	2571
Heavy Vehicles	6	59	2	0	67	0	0	0	0	0	0	87	12	0	99	7	0	10	0	17	183
% Heavy Vehicles	5.0	5.4	28.6	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	6.9	11.5	0.0	7.3	8.2	0.0	25.6	0.0	13.4	6.6
Exiting Leg Total					97					2					66					18	183

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	17	148	1	0	166	3	1	4	0	8	0	179	8	0	187	12	0	1	0	13	374
8:15 AM	16	168	0	0	184	3	1	2	0	6	0	161	11	0	172	13	0	5	0	18	380
8:30 AM	7	157	0	0	164	1	0	3	0	4	0	162	19	0	181	12	0	5	0	17	366
8:45 AM	33	167	0	0	200	6	1	3	0	10	1	145	14	0	160	15	0	9	0	24	394
Total Volume	73	640	1	0	714	13	3	12	0	28	1	647	52	0	700	52	0	20	0	72	1514
% Approach Total	10.2	89.6	0.1	0.0		46.4	10.7	42.9	0.0		0.1	92.4	7.4	0.0		72.2	0.0	27.8	0.0		
PHF	0.553	0.952	0.250	0.000	0.893	0.542	0.750	0.750	0.000	0.700	0.250	0.904	0.684	0.000	0.936	0.867	0.000	0.556	0.000	0.750	0.961
Cars	70	601	1	0	672	13	3	12	0	28	1	609	46	0	656	49	0	17	0	66	1422
Cars %	95.9	93.9	100.0	0.0	94.1	100.0	100.0	100.0	0.0	100.0	100.0	94.1	88.5	0.0	93.7	94.2	0.0	85.0	0.0	91.7	93.9
Heavy Vehicles	3	39	0	0	42	0	0	0	0	0	0	38	6	0	44	3	0	3	0	6	92
Heavy Vehicles %	4.1	6.1	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	5.9	11.5	0.0	6.3	5.8	0.0	15.0	0.0	8.3	6.1
Cars Enter Leg	70	601	1	0	672	13	3	12	0	28	1	609	46	0	656	49	0	17	0	66	1422
Heavy Enter Leg	3	39	0	0	42	0	0	0	0	0	0	38	6	0	44	3	0	3	0	6	92
Total Entering Leg	73	640	1	0	714	13	3	12	0	28	1	647	52	0	700	52	0	20	0	72	1514
Cars Exiting Leg					639					2					662					119	1422
Heavy Exiting Leg					41					0					42					9	92
Total Exiting Leg					680					2					704					128	1514

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Cars**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	8	101	0	0	109	4	1	0	0	5	0	110	8	0	118	3	1	1	0	5	237
7:15 AM	11	105	0	0	116	2	1	0	0	3	0	112	11	0	123	7	1	4	0	12	254
7:30 AM	12	100	1	0	113	2	1	1	0	4	0	166	12	0	178	11	1	3	0	15	310
7:45 AM	12	124	3	0	139	5	3	3	0	11	2	169	15	0	186	8	0	4	0	12	348
Total	43	430	4	0	477	13	6	4	0	23	2	557	46	0	605	29	3	12	0	44	1149
8:00 AM	14	137	1	0	152	3	1	4	0	8	0	170	8	0	178	10	0	0	0	10	348
8:15 AM	16	162	0	0	178	3	1	2	0	6	0	147	11	0	158	13	0	4	0	17	359
8:30 AM	7	147	0	0	154	1	0	3	0	4	0	155	15	0	170	11	0	4	0	15	343
8:45 AM	33	155	0	0	188	6	1	3	0	10	1	137	12	0	150	15	0	9	0	24	372
Total	70	601	1	0	672	13	3	12	0	28	1	609	46	0	656	49	0	17	0	66	1422
Grand Total	113	1031	5	0	1149	26	9	16	0	51	3	1166	92	0	1261	78	3	29	0	110	2571
Approach %	9.8	89.7	0.4	0.0		51.0	17.6	31.4	0.0		0.2	92.5	7.3	0.0		70.9	2.7	26.4	0.0		
Total %	4.4	40.1	0.2	0.0	44.7	1.0	0.4	0.6	0.0	2.0	0.1	45.4	3.6	0.0	49.0	3.0	0.1	1.1	0.0	4.3	
Exiting Leg Total					1221					11					1125					214	2571

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	14	137	1	0	152	3	1	4	0	8	0	170	8	0	178	10	0	0	0	10	348
8:15 AM	16	162	0	0	178	3	1	2	0	6	0	147	11	0	158	13	0	4	0	17	359
8:30 AM	7	147	0	0	154	1	0	3	0	4	0	155	15	0	170	11	0	4	0	15	343
8:45 AM	33	155	0	0	188	6	1	3	0	10	1	137	12	0	150	15	0	9	0	24	372
Total Volume	70	601	1	0	672	13	3	12	0	28	1	609	46	0	656	49	0	17	0	66	1422
% Approach Total	10.4	89.4	0.1	0.0		46.4	10.7	42.9	0.0		0.2	92.8	7.0	0.0		74.2	0.0	25.8	0.0		
PHF	0.530	0.927	0.250	0.000	0.894	0.542	0.750	0.750	0.000	0.700	0.250	0.896	0.767	0.000	0.921	0.817	0.000	0.472	0.000	0.688	0.956
Entering Leg	70	601	1	0	672	13	3	12	0	28	1	609	46	0	656	49	0	17	0	66	1422
Exiting Leg					639					2					662					119	1422
Total					1311					30					1318					185	2844

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	2	1	0	0	3	0	0	0	0	0	0	8	3	0	11	1	0	1	0	2	16
7:15 AM	1	11	0	0	12	0	0	0	0	0	0	19	1	0	20	1	0	0	0	1	33
7:30 AM	0	4	0	0	4	0	0	0	0	0	0	14	1	0	15	1	0	2	0	3	22
7:45 AM	0	4	2	0	6	0	0	0	0	0	0	8	1	0	9	1	0	4	0	5	20
Total	3	20	2	0	25	0	0	0	0	0	0	49	6	0	55	4	0	7	0	11	91
8:00 AM	3	11	0	0	14	0	0	0	0	0	0	9	0	0	9	2	0	1	0	3	26
8:15 AM	0	6	0	0	6	0	0	0	0	0	0	14	0	0	14	0	0	1	0	1	21
8:30 AM	0	10	0	0	10	0	0	0	0	0	0	7	4	0	11	1	0	1	0	2	23
8:45 AM	0	12	0	0	12	0	0	0	0	0	0	8	2	0	10	0	0	0	0	0	22
Total	3	39	0	0	42	0	0	0	0	0	0	38	6	0	44	3	0	3	0	6	92
Grand Total	6	59	2	0	67	0	0	0	0	0	0	87	12	0	99	7	0	10	0	17	183
Approach %	9.0	88.1	3.0	0.0		0.0	0.0	0.0	0.0		0.0	87.9	12.1	0.0		41.2	0.0	58.8	0.0		
Total %	3.3	32.2	1.1	0.0	36.6	0.0	0.0	0.0	0.0	0.0	0.0	47.5	6.6	0.0	54.1	3.8	0.0	5.5	0.0	9.3	
Exiting Leg Total					97					2					66					18	183
Buses	3	1	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	3	0	3	9
% Buses	50.0	1.7	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	2.0	0.0	0.0	30.0	0.0	17.6	4.9
Exiting Leg Total					5					0					1					3	9
Single-Unit Trucks	3	48	1	0	52	0	0	0	0	0	0	70	11	0	81	7	0	6	0	13	146
% Single-Unit	50.0	81.4	50.0	0.0	77.6	0.0	0.0	0.0	0.0	0.0	0.0	80.5	91.7	0.0	81.8	100.0	0.0	60.0	0.0	76.5	79.8
Exiting Leg Total					76					1					55					14	146
Articulated Trucks	0	10	1	0	11	0	0	0	0	0	0	15	1	0	16	0	0	1	0	1	28
% Articulated	0.0	16.9	50.0	0.0	16.4	0.0	0.0	0.0	0.0	0.0	0.0	17.2	8.3	0.0	16.2	0.0	0.0	10.0	0.0	5.9	15.3
Exiting Leg Total					16					1					10					1	28

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	1	11	0	0	12	0	0	0	0	0	0	19	1	0	20	1	0	0	0	1	33
7:30 AM	0	4	0	0	4	0	0	0	0	0	0	14	1	0	15	1	0	2	0	3	22
7:45 AM	0	4	2	0	6	0	0	0	0	0	0	8	1	0	9	1	0	4	0	5	20
8:00 AM	3	11	0	0	14	0	0	0	0	0	0	9	0	0	9	2	0	1	0	3	26
Total Volume	4	30	2	0	36	0	0	0	0	0	0	50	3	0	53	5	0	7	0	12	101
% Approach Total	11.1	83.3	5.6	0.0		0.0	0.0	0.0	0.0		0.0	94.3	5.7	0.0		41.7	0.0	58.3	0.0		
PHF	0.333	0.682	0.250	0.000	0.643	0.000	0.000	0.000	0.000	0.000	0.000	0.658	0.750	0.000	0.663	0.625	0.000	0.438	0.000	0.600	0.765
Buses	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
Buses %	50.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	1.9	0.0	0.0	14.3	0.0	8.3	4.0
Single-Unit Trucks	2	23	1	0	26	0	0	0	0	0	0	43	3	0	46	5	0	5	0	10	82
Single-Unit %	50.0	76.7	50.0	0.0	72.2	0.0	0.0	0.0	0.0	0.0	0.0	86.0	100.0	0.0	86.8	100.0	0.0	71.4	0.0	83.3	81.2
Articulated Trucks	0	7	1	0	8	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	15
Articulated %	0.0	23.3	50.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	11.3	0.0	0.0	14.3	0.0	8.3	14.9
Buses	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
Single-Unit Trucks	2	23	1	0	26	0	0	0	0	0	0	43	3	0	46	5	0	5	0	10	82
Articulated Trucks	0	7	1	0	8	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	15
Total Entering Leg	4	30	2	0	36	0	0	0	0	0	0	50	3	0	53	5	0	7	0	12	101
Buses					2					0					0					2	4
Single-Unit Trucks					48					1					28					5	82
Articulated Trucks					7					1					7					0	15
Total Exiting Leg					57					2					35					7	101

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Buses**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	6
Grand Total	3	1	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	3	0	3	9
Approach %	75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	33.3	11.1	0.0	0.0	44.4	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	0.0	22.2	0.0	0.0	33.3	0.0	33.3	
Exiting Leg Total					5					0					1					3	9

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	6
% Approach Total	66.7	33.3	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.250	0.250	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.500	0.000	0.500	0.750
Entering Leg	2	1	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	6
Exiting Leg					3					0					1					2	6
Total					6					0					2					4	12

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Single-Unit Trucks**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	1	1	0	0	2	0	0	0	0	0	0	7	3	0	10	1	0	1	0	2	14
7:15 AM	1	10	0	0	11	0	0	0	0	0	0	16	1	0	17	1	0	0	0	1	29
7:30 AM	0	3	0	0	3	0	0	0	0	0	0	12	1	0	13	1	0	1	0	2	18
7:45 AM	0	4	1	0	5	0	0	0	0	0	0	6	1	0	7	1	0	3	0	4	16
Total	2	18	1	0	21	0	0	0	0	0	0	41	6	0	47	4	0	5	0	9	77
8:00 AM	1	6	0	0	7	0	0	0	0	0	0	9	0	0	9	2	0	1	0	3	19
8:15 AM	0	6	0	0	6	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	16
8:30 AM	0	8	0	0	8	0	0	0	0	0	0	6	4	0	10	1	0	0	0	1	19
8:45 AM	0	10	0	0	10	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	15
Total	1	30	0	0	31	0	0	0	0	0	0	29	5	0	34	3	0	1	0	4	69
Grand Total	3	48	1	0	52	0	0	0	0	0	0	70	11	0	81	7	0	6	0	13	146
Approach %	5.8	92.3	1.9	0.0		0.0	0.0	0.0	0.0		0.0	86.4	13.6	0.0		53.8	0.0	46.2	0.0		
Total %	2.1	32.9	0.7	0.0	35.6	0.0	0.0	0.0	0.0	0.0	0.0	47.9	7.5	0.0	55.5	4.8	0.0	4.1	0.0	8.9	
Exiting Leg Total					76					1					55					14	146

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:15 AM	1	10	0	0	11	0	0	0	0	0	0	16	1	0	17	1	0	0	0	1	29
7:30 AM	0	3	0	0	3	0	0	0	0	0	0	12	1	0	13	1	0	1	0	2	18
7:45 AM	0	4	1	0	5	0	0	0	0	0	0	6	1	0	7	1	0	3	0	4	16
8:00 AM	1	6	0	0	7	0	0	0	0	0	0	9	0	0	9	2	0	1	0	3	19
Total Volume	2	23	1	0	26	0	0	0	0	0	0	43	3	0	46	5	0	5	0	10	82
% Approach Total	7.7	88.5	3.8	0.0		0.0	0.0	0.0	0.0		0.0	93.5	6.5	0.0		50.0	0.0	50.0	0.0		
PHF	0.500	0.575	0.250	0.000	0.591	0.000	0.000	0.000	0.000	0.000	0.000	0.672	0.750	0.000	0.676	0.625	0.000	0.417	0.000	0.625	0.707
Entering Leg	2	23	1	0	26	0	0	0	0	0	0	43	3	0	46	5	0	5	0	10	82
Exiting Leg					48					1					28					5	82
Total					74					1					74					15	164

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Articulated Trucks

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
7:45 AM	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
Total	0	2	1	0	3	0	0	0	0	0	0	7	0	0	7	0	0	1	0	1	11
8:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
8:45 AM	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	6
Total	0	8	0	0	8	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	17
Grand Total	0	10	1	0	11	0	0	0	0	0	0	15	1	0	16	0	0	1	0	1	28
Approach %	0.0	90.9	9.1	0.0		0.0	0.0	0.0	0.0		0.0	93.8	6.3	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	35.7	3.6	0.0	39.3	0.0	0.0	0.0	0.0	0.0	0.0	53.6	3.6	0.0	57.1	0.0	0.0	3.6	0.0	3.6	
Exiting Leg Total					16					1					10					1	28

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
8:45 AM	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	6
Total Volume	0	8	0	0	8	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	17
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	88.9	11.1	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.400	0.000	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.563	0.000	0.000	0.000	0.000	0.000	0.708
Entering Leg	0	8	0	0	8	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	17
Exiting Leg					8					0					8					1	17
Total					16					0					17					1	34

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Bicycles (on Roadway and Crosswalks)

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total							0							1							0							0	1

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							0							1							0							0	1
Total							0							2							0							0	2

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Pedestrians

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Approach %	0	0	0	0	0	0		0	0	0	0	50	50		0	0	0	0	0	0		0	0	0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	40	40	80	0	0	0	0	0	0	0	0	0	0	0	20	0	20	
Exiting Leg Total							0							4							0							1	5

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.625
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
Exiting Leg							0							4							0							1	5
Total							0							8							0							2	10

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	21	202	2	0	225	1	1	2	0	4	2	209	13	0	224	31	2	11	0	44	497
4:15 PM	23	203	5	0	231	4	1	1	0	6	3	187	20	0	210	31	1	9	0	41	488
4:30 PM	26	203	2	0	231	4	0	2	0	6	2	180	24	0	206	27	4	12	0	43	486
4:45 PM	25	193	1	0	219	3	1	3	0	7	2	171	22	0	195	13	1	10	0	24	445
Total	95	801	10	0	906	12	3	8	0	23	9	747	79	0	835	102	8	42	0	152	1916
5:00 PM	27	205	0	0	232	3	4	3	0	10	1	213	18	0	232	35	4	14	0	53	527
5:15 PM	20	201	2	1	224	3	0	2	0	5	1	212	22	0	235	29	4	9	0	42	506
5:30 PM	28	204	2	0	234	0	1	4	0	5	2	209	11	0	222	39	1	10	0	50	511
5:45 PM	17	171	2	0	190	4	1	2	0	7	0	225	13	0	238	29	2	4	0	35	470
Total	92	781	6	1	880	10	6	11	0	27	4	859	64	0	927	132	11	37	0	180	2014
Grand Total	187	1582	16	1	1786	22	9	19	0	50	13	1606	143	0	1762	234	19	79	0	332	3930
Approach %	10.5	88.6	0.9	0.1		44.0	18.0	38.0	0.0		0.7	91.1	8.1	0.0		70.5	5.7	23.8	0.0		
Total %	4.8	40.3	0.4	0.0	45.4	0.6	0.2	0.5	0.0	1.3	0.3	40.9	3.6	0.0	44.8	6.0	0.5	2.0	0.0	8.4	
Exiting Leg Total					1708					48					1835					339	3930
Cars	184	1563	16	1	1764	22	9	18	0	49	13	1590	141	0	1744	231	19	75	0	325	3882
% Cars	98.4	98.8	100.0	100.0	98.8	100.0	100.0	94.7	0.0	98.0	100.0	99.0	98.6	0.0	99.0	98.7	100.0	94.9	0.0	97.9	98.8
Exiting Leg Total					1688					48					1812					334	3882
Heavy Vehicles	3	19	0	0	22	0	0	1	0	1	0	16	2	0	18	3	0	4	0	7	48
% Heavy Vehicles	1.6	1.2	0.0	0.0	1.2	0.0	0.0	5.3	0.0	2.0	0.0	1.0	1.4	0.0	1.0	1.3	0.0	5.1	0.0	2.1	1.2
Exiting Leg Total					20					0					23					5	48

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	27	205	0	0	232	3	4	3	0	10	1	213	18	0	232	35	4	14	0	53	527
5:15 PM	20	201	2	1	224	3	0	2	0	5	1	212	22	0	235	29	4	9	0	42	506
5:30 PM	28	204	2	0	234	0	1	4	0	5	2	209	11	0	222	39	1	10	0	50	511
5:45 PM	17	171	2	0	190	4	1	2	0	7	0	225	13	0	238	29	2	4	0	35	470
Total Volume	92	781	6	1	880	10	6	11	0	27	4	859	64	0	927	132	11	37	0	180	2014
% Approach Total	10.5	88.8	0.7	0.1		37.0	22.2	40.7	0.0		0.4	92.7	6.9	0.0		73.3	6.1	20.6	0.0		
PHF	0.821	0.952	0.750	0.250	0.940	0.625	0.375	0.688	0.000	0.675	0.500	0.954	0.727	0.000	0.974	0.846	0.688	0.661	0.000	0.849	0.955
Cars	91	774	6	1	872	10	6	11	0	27	4	855	63	0	922	131	11	36	0	178	1999
Cars %	98.9	99.1	100.0	100.0	99.1	100.0	100.0	100.0	0.0	100.0	100.0	99.5	98.4	0.0	99.5	99.2	100.0	97.3	0.0	98.9	99.3
Heavy Vehicles	1	7	0	0	8	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	15
Heavy Vehicles %	1.1	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.6	0.0	0.5	0.8	0.0	2.7	0.0	1.1	0.7
Cars Enter Leg	91	774	6	1	872	10	6	11	0	27	4	855	63	0	922	131	11	36	0	178	1999
Heavy Enter Leg	1	7	0	0	8	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	15
Total Entering Leg	92	781	6	1	880	10	6	11	0	27	4	859	64	0	927	132	11	37	0	180	2014
Cars Exiting Leg					902					21					916					160	1999
Heavy Exiting Leg					5					0					8					2	15
Total Exiting Leg					907					21					924					162	2014

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Cars**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	20	198	2	0	220	1	1	2	0	4	2	204	12	0	218	30	2	11	0	43	485
4:15 PM	23	198	5	0	226	4	1	1	0	6	3	185	20	0	208	31	1	9	0	41	481
4:30 PM	25	200	2	0	227	4	0	2	0	6	2	178	24	0	204	26	4	11	0	41	478
4:45 PM	25	193	1	0	219	3	1	2	0	6	2	168	22	0	192	13	1	8	0	22	439
Total	93	789	10	0	892	12	3	7	0	22	9	735	78	0	822	100	8	39	0	147	1883
5:00 PM	27	204	0	0	231	3	4	3	0	10	1	212	17	0	230	35	4	14	0	53	524
5:15 PM	19	197	2	1	219	3	0	2	0	5	1	211	22	0	234	28	4	9	0	41	499
5:30 PM	28	203	2	0	233	0	1	4	0	5	2	208	11	0	221	39	1	9	0	49	508
5:45 PM	17	170	2	0	189	4	1	2	0	7	0	224	13	0	237	29	2	4	0	35	468
Total	91	774	6	1	872	10	6	11	0	27	4	855	63	0	922	131	11	36	0	178	1999
Grand Total	184	1563	16	1	1764	22	9	18	0	49	13	1590	141	0	1744	231	19	75	0	325	3882
Approach %	10.4	88.6	0.9	0.1		44.9	18.4	36.7	0.0		0.7	91.2	8.1	0.0		71.1	5.8	23.1	0.0		
Total %	4.7	40.3	0.4	0.0	45.4	0.6	0.2	0.5	0.0	1.3	0.3	41.0	3.6	0.0	44.9	6.0	0.5	1.9	0.0	8.4	
Exiting Leg Total					1688					48					1812					334	3882

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
5:00 PM	27	204	0	0	231	3	4	3	0	10	1	212	17	0	230	35	4	14	0	53	524
5:15 PM	19	197	2	1	219	3	0	2	0	5	1	211	22	0	234	28	4	9	0	41	499
5:30 PM	28	203	2	0	233	0	1	4	0	5	2	208	11	0	221	39	1	9	0	49	508
5:45 PM	17	170	2	0	189	4	1	2	0	7	0	224	13	0	237	29	2	4	0	35	468
Total Volume	91	774	6	1	872	10	6	11	0	27	4	855	63	0	922	131	11	36	0	178	1999
% Approach Total	10.4	88.8	0.7	0.1		37.0	22.2	40.7	0.0		0.4	92.7	6.8	0.0		73.6	6.2	20.2	0.0		
PHF	0.813	0.949	0.750	0.250	0.936	0.625	0.375	0.688	0.000	0.675	0.500	0.954	0.716	0.000	0.973	0.840	0.688	0.643	0.000	0.840	0.954
Entering Leg	91	774	6	1	872	10	6	11	0	27	4	855	63	0	922	131	11	36	0	178	1999
Exiting Leg					902					21					916					160	1999
Total					1774					48					1838					338	3998

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	4	0	0	5	0	0	0	0	0	0	5	1	0	6	1	0	0	0	1	12
4:15 PM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
4:30 PM	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	1	0	1	0	2	8
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	0	2	0	2	6
Total	2	12	0	0	14	0	0	1	0	1	0	12	1	0	13	2	0	3	0	5	33
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3
5:15 PM	1	4	0	0	5	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	7
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	3
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	1	7	0	0	8	0	0	0	0	0	0	4	1	0	5	1	0	1	0	2	15
Grand Total	3	19	0	0	22	0	0	1	0	1	0	16	2	0	18	3	0	4	0	7	48
Approach %	13.6	86.4	0.0	0.0		0.0	0.0	100.0	0.0		0.0	88.9	11.1	0.0		42.9	0.0	57.1	0.0		
Total %	6.3	39.6	0.0	0.0	45.8	0.0	0.0	2.1	0.0	2.1	0.0	33.3	4.2	0.0	37.5	6.3	0.0	8.3	0.0	14.6	
Exiting Leg Total					20					0					23					5	48
Buses	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	6
% Buses	0.0	10.5	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	11.1	0.0	0.0	50.0	0.0	28.6	12.5
Exiting Leg Total					4					0					2					0	6
Single-Unit Trucks	3	15	0	0	18	0	0	1	0	1	0	11	2	0	13	3	0	1	0	4	36
% Single-Unit	100.0	78.9	0.0	0.0	81.8	0.0	0.0	100.0	0.0	100.0	0.0	68.8	100.0	0.0	72.2	100.0	0.0	25.0	0.0	57.1	75.0
Exiting Leg Total					12					0					19					5	36
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	6
% Articulated	0.0	10.5	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	16.7	0.0	0.0	25.0	0.0	14.3	12.5
Exiting Leg Total					4					0					2					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	4	0	0	5	0	0	0	0	0	0	5	1	0	6	1	0	0	0	1	12
4:15 PM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
4:30 PM	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	1	0	1	0	2	8
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	0	0	2	0	2	6
Total Volume	2	12	0	0	14	0	0	1	0	1	0	12	1	0	13	2	0	3	0	5	33
% Approach Total	14.3	85.7	0.0	0.0		0.0	0.0	100.0	0.0		0.0	92.3	7.7	0.0		40.0	0.0	60.0	0.0		
PHF	0.500	0.600	0.000	0.000	0.700	0.000	0.000	0.250	0.000	0.250	0.000	0.600	0.250	0.000	0.542	0.500	0.000	0.375	0.000	0.625	0.688
Buses	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Buses %	0.0	16.7	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	20.0	9.1
Single-Unit Trucks	2	9	0	0	11	0	0	1	0	1	0	10	1	0	11	2	0	1	0	3	26
Single-Unit %	100.0	75.0	0.0	0.0	78.6	0.0	0.0	100.0	0.0	100.0	0.0	83.3	100.0	0.0	84.6	100.0	0.0	33.3	0.0	60.0	78.8
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
Articulated %	0.0	8.3	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	15.4	0.0	0.0	33.3	0.0	20.0	12.1
Buses	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Single-Unit Trucks	2	9	0	0	11	0	0	1	0	1	0	10	1	0	11	2	0	1	0	3	26
Articulated Trucks	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
Total Entering Leg	2	12	0	0	14	0	0	1	0	1	0	12	1	0	13	2	0	3	0	5	33
Buses					1					0					2					0	3
Single-Unit Trucks					11					0					12					3	26
Articulated Trucks					3					0					1					0	4
Total Exiting Leg					15					0					15					3	33

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Buses**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	3
Grand Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	6
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	33.3	0.0	33.3	
Exiting Leg Total					4					0					2					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.375
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Exiting Leg					1					0					2					0	3
Total					3					0					2					1	6

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Single-Unit Trucks

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	3	0	0	4	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	10
4:15 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:30 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	1	0	1	4
Total	2	9	0	0	11	0	0	1	0	1	0	10	1	0	11	2	0	1	0	3	26
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
5:15 PM	1	4	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	6
5:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	1	6	0	0	7	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	10
Grand Total	3	15	0	0	18	0	0	1	0	1	0	11	2	0	13	3	0	1	0	4	36
Approach %	16.7	83.3	0.0	0.0		0.0	0.0	100.0	0.0		0.0	84.6	15.4	0.0		75.0	0.0	25.0	0.0		
Total %	8.3	41.7	0.0	0.0	50.0	0.0	0.0	2.8	0.0	2.8	0.0	30.6	5.6	0.0	36.1	8.3	0.0	2.8	0.0	11.1	
Exiting Leg Total					12					0					19					5	36

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	1	3	0	0	4	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	10
4:15 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
4:30 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	6
4:45 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	0	1	0	1	4
Total Volume	2	9	0	0	11	0	0	1	0	1	0	10	1	0	11	2	0	1	0	3	26
% Approach Total	18.2	81.8	0.0	0.0		0.0	0.0	100.0	0.0		0.0	90.9	9.1	0.0		66.7	0.0	33.3	0.0		
PHF	0.500	0.563	0.000	0.000	0.688	0.000	0.000	0.250	0.000	0.250	0.000	0.625	0.250	0.000	0.550	0.500	0.000	0.250	0.000	0.750	0.650
Entering Leg	2	9	0	0	11	0	0	1	0	1	0	10	1	0	11	2	0	1	0	3	26
Exiting Leg					11					0					12					3	26
Total					22					1					23					6	52

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Articulated Trucks

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
Total	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Grand Total	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	6
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0	16.7	0.0	16.7	
Exiting Leg Total					4					0					2					0	6

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
Total Volume	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.250	0.500
Entering Leg	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
Exiting Leg					3					0					1					0	4
Total					4					0					3					1	8

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Bicycles (on Roadway and Crosswalks)

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	0	0	0	3	5	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
5:45 PM	0	0	0	0	3	0	3	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Total	2	0	0	0	3	3	8	0	0	0	0	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Grand Total	2	0	0	0	5	3	10	0	0	0	0	3	4	7	0	0	1	0	0	0	1	0	0	0	0	1	0	1	19
Approach %	20.0	0.0	0.0	0.0	50.0	30.0		0.0	0.0	0.0	0.0	42.9	57.1		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		
Total %	10.5	0.0	0.0	0.0	26.3	15.8	52.6	0.0	0.0	0.0	0.0	15.8	21.1	36.8	0.0	0.0	5.3	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	5.3	0.0	5.3	
Exiting Leg Total							8							7							0							4	19

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	0	0	0	3	5	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
5:45 PM	0	0	0	0	3	0	3	0	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Total Volume	2	0	0	0	3	3	8	0	0	0	0	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
% Approach Total	25.0	0.0	0.0	0.0	37.5	37.5		0.0	0.0	0.0	0.0	42.9	57.1		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.250	0.400	0.000	0.000	0.000	0.000	0.250	0.333	0.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.469
Entering Leg	2	0	0	0	3	3	8	0	0	0	0	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Exiting Leg							6							7							0							2	15
Total							14							14							0							2	30

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Thursday, June 23, 2022**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Pedestrians

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0	0	0	0	100	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							1							0							0							0	1

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg							1							0							0							0	1
Total							2							0							0							0	2

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Cars and Heavy Vehicles (Combined)

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	23	199	2	0	224	4	3	3	0	10	1	218	29	0	248	22	0	14	0	36	518
11:15 AM	24	194	1	1	220	2	1	3	0	6	3	193	26	0	222	28	0	9	0	37	485
11:30 AM	32	216	2	0	250	2	4	2	0	8	0	201	24	0	225	37	1	11	0	49	532
11:45 AM	33	205	0	1	239	2	4	5	0	11	0	213	17	0	230	21	1	8	0	30	510
Total	112	814	5	2	933	10	12	13	0	35	4	825	96	0	925	108	2	42	0	152	2045
12:00 PM	28	206	0	0	234	3	1	2	0	6	0	200	21	0	221	30	2	11	0	43	504
12:15 PM	22	193	2	0	217	4	2	4	0	10	1	204	22	0	227	26	1	11	0	38	492
12:30 PM	24	189	0	0	213	1	0	5	0	6	0	176	25	0	201	32	1	5	0	38	458
12:45 PM	29	195	4	0	228	4	0	1	0	5	1	207	25	0	233	25	1	10	0	36	502
Total	103	783	6	0	892	12	3	12	0	27	2	787	93	0	882	113	5	37	0	155	1956
1:00 PM	26	203	1	0	230	4	1	2	0	7	1	223	13	0	237	21	1	4	0	26	500
1:15 PM	23	187	0	0	210	0	1	5	0	6	0	231	16	0	247	30	2	11	0	43	506
1:30 PM	26	190	1	0	217	6	1	2	0	9	1	195	12	0	208	22	0	12	0	34	468
1:45 PM	31	202	1	0	234	6	1	4	0	11	0	187	19	0	206	15	3	10	0	28	479
Total	106	782	3	0	891	16	4	13	0	33	2	836	60	0	898	88	6	37	0	131	1953
Grand Total	321	2379	14	2	2716	38	19	38	0	95	8	2448	249	0	2705	309	13	116	0	438	5954
Approach %	11.8	87.6	0.5	0.1		40.0	20.0	40.0	0.0		0.3	90.5	9.2	0.0		70.5	3.0	26.5	0.0		
Total %	5.4	40.0	0.2	0.0	45.6	0.6	0.3	0.6	0.0	1.6	0.1	41.1	4.2	0.0	45.4	5.2	0.2	1.9	0.0	7.4	
Exiting Leg Total					2604					35					2726					589	5954
Cars	320	2355	14	2	2691	38	19	38	0	95	8	2424	249	0	2681	308	13	116	0	437	5904
% Cars	99.7	99.0	100.0	100.0	99.1	100.0	100.0	100.0	0.0	100.0	100.0	99.0	100.0	0.0	99.1	99.7	100.0	100.0	0.0	99.8	99.2
Exiting Leg Total					2580					35					2701					588	5904
Heavy Vehicles	1	24	0	0	25	0	0	0	0	0	0	24	0	0	24	1	0	0	0	1	50
% Heavy Vehicles	0.3	1.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.9	0.3	0.0	0.0	0.0	0.2	0.8
Exiting Leg Total					24					0					25					1	50

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	23	199	2	0	224	4	3	3	0	10	1	218	29	0	248	22	0	14	0	36	518
11:15 AM	24	194	1	1	220	2	1	3	0	6	3	193	26	0	222	28	0	9	0	37	485
11:30 AM	32	216	2	0	250	2	4	2	0	8	0	201	24	0	225	37	1	11	0	49	532
11:45 AM	33	205	0	1	239	2	4	5	0	11	0	213	17	0	230	21	1	8	0	30	510
Total Volume	112	814	5	2	933	10	12	13	0	35	4	825	96	0	925	108	2	42	0	152	2045
% Approach Total	12.0	87.2	0.5	0.2		28.6	34.3	37.1	0.0		0.4	89.2	10.4	0.0		71.1	1.3	27.6	0.0		
PHF	0.848	0.942	0.625	0.500	0.933	0.625	0.750	0.650	0.000	0.795	0.333	0.946	0.828	0.000	0.932	0.730	0.500	0.750	0.000	0.776	0.961
Cars	111	807	5	2	925	10	12	13	0	35	4	818	96	0	918	107	2	42	0	151	2029
Cars %	99.1	99.1	100.0	100.0	99.1	100.0	100.0	100.0	0.0	100.0	100.0	99.2	100.0	0.0	99.2	99.1	100.0	100.0	0.0	99.3	99.2
Heavy Vehicles	1	7	0	0	8	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	16
Heavy Vehicles %	0.9	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.9	0.0	0.0	0.0	0.7	0.8
Cars Enter Leg	111	807	5	2	925	10	12	13	0	35	4	818	96	0	918	107	2	42	0	151	2029
Heavy Enter Leg	1	7	0	0	8	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	16
Total Entering Leg	112	814	5	2	933	10	12	13	0	35	4	825	96	0	925	108	2	42	0	152	2045
Cars Exiting Leg					872					11					927					219	2029
Heavy Exiting Leg					7					0					8					1	16
Total Exiting Leg					879					11					935					220	2045

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Cars

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	23	197	2	0	222	4	3	3	0	10	1	215	29	0	245	21	0	14	0	35	512
11:15 AM	24	192	1	1	218	2	1	3	0	6	3	192	26	0	221	28	0	9	0	37	482
11:30 AM	32	214	2	0	248	2	4	2	0	8	0	199	24	0	223	37	1	11	0	49	528
11:45 AM	32	204	0	1	237	2	4	5	0	11	0	212	17	0	229	21	1	8	0	30	507
Total	111	807	5	2	925	10	12	13	0	35	4	818	96	0	918	107	2	42	0	151	2029
12:00 PM	28	204	0	0	232	3	1	2	0	6	0	197	21	0	218	30	2	11	0	43	499
12:15 PM	22	188	2	0	212	4	2	4	0	10	1	202	22	0	225	26	1	11	0	38	485
12:30 PM	24	186	0	0	210	1	0	5	0	6	0	175	25	0	200	32	1	5	0	38	454
12:45 PM	29	193	4	0	226	4	0	1	0	5	1	204	25	0	230	25	1	10	0	36	497
Total	103	771	6	0	880	12	3	12	0	27	2	778	93	0	873	113	5	37	0	155	1935
1:00 PM	26	202	1	0	229	4	1	2	0	7	1	218	13	0	232	21	1	4	0	26	494
1:15 PM	23	186	0	0	209	0	1	5	0	6	0	229	16	0	245	30	2	11	0	43	503
1:30 PM	26	188	1	0	215	6	1	2	0	9	1	195	12	0	208	22	0	12	0	34	466
1:45 PM	31	201	1	0	233	6	1	4	0	11	0	186	19	0	205	15	3	10	0	28	477
Total	106	777	3	0	886	16	4	13	0	33	2	828	60	0	890	88	6	37	0	131	1940
Grand Total	320	2355	14	2	2691	38	19	38	0	95	8	2424	249	0	2681	308	13	116	0	437	5904
Approach %	11.9	87.5	0.5	0.1		40.0	20.0	40.0	0.0		0.3	90.4	9.3	0.0		70.5	3.0	26.5	0.0		
Total %	5.4	39.9	0.2	0.0	45.6	0.6	0.3	0.6	0.0	1.6	0.1	41.1	4.2	0.0	45.4	5.2	0.2	2.0	0.0	7.4	
Exiting Leg Total					2580					35					2701					588	5904

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	23	197	2	0	222	4	3	3	0	10	1	215	29	0	245	21	0	14	0	35	512
11:15 AM	24	192	1	1	218	2	1	3	0	6	3	192	26	0	221	28	0	9	0	37	482
11:30 AM	32	214	2	0	248	2	4	2	0	8	0	199	24	0	223	37	1	11	0	49	528
11:45 AM	32	204	0	1	237	2	4	5	0	11	0	212	17	0	229	21	1	8	0	30	507
Total Volume	111	807	5	2	925	10	12	13	0	35	4	818	96	0	918	107	2	42	0	151	2029
% Approach Total	12.0	87.2	0.5	0.2		28.6	34.3	37.1	0.0		0.4	89.1	10.5	0.0		70.9	1.3	27.8	0.0		
PHF	0.867	0.943	0.625	0.500	0.932	0.625	0.750	0.650	0.000	0.795	0.333	0.951	0.828	0.000	0.937	0.723	0.500	0.750	0.000	0.770	0.961
Entering Leg	111	807	5	2	925	10	12	13	0	35	4	818	96	0	918	107	2	42	0	151	2029
Exiting Leg					872					11					927					219	2029
Total					1797					46					1845					370	4058

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	6
11:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
11:30 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
11:45 AM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	1	7	0	0	8	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	16
12:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
12:15 PM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
12:30 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
12:45 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Total	0	12	0	0	12	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	21
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6
1:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	5	0	0	5	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	13
Grand Total	1	24	0	0	25	0	0	0	0	0	0	24	0	0	24	1	0	0	0	1	50
Approach %	4.0	96.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	2.0	48.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0	0.0	0.0	48.0	2.0	0.0	0.0	0.0	2.0	
Exiting Leg Total					24					0					25					1	50
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total					0					0					0					0	0
Single-Unit Trucks	1	22	0	0	23	0	0	0	0	0	0	21	0	0	21	1	0	0	0	1	45
% Single-Unit	100.0	91.7	0.0	0.0	92.0	0.0	0.0	0.0	0.0	0.0	0.0	87.5	0.0	0.0	87.5	100.0	0.0	0.0	0.0	100.0	90.0
Exiting Leg Total					21					0					23					1	45
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
% Articulated	0.0	8.3	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	10.0
Exiting Leg Total					3					0					2					0	5

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

12:15 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
12:15 PM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7
12:30 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
12:45 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6
Total Volume	0	11	0	0	11	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	22
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.550	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.000	0.550	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.786
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	19
Single-Unit %	0.0	81.8	0.0	0.0	81.8	0.0	0.0	0.0	0.0	0.0	0.0	90.9	0.0	0.0	90.9	0.0	0.0	0.0	0.0	0.0	86.4
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Articulated %	0.0	18.2	0.0	0.0	18.2	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	13.6
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	19
Articulated Trucks	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total Entering Leg	0	11	0	0	11	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	22
Buses					0					0					0					0	0
Single-Unit Trucks					10					0					9					0	19
Articulated Trucks					1					0					2					0	3
Total Exiting Leg					11					0					11					0	22

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class: **Buses**

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					0					0					0					0	0

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg					0					0					0					0	0
Total					0					0					0					0	0

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Single-Unit Trucks

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	6
11:15 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
11:30 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
11:45 AM	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	1	7	0	0	8	0	0	0	0	0	0	6	0	0	6	1	0	0	0	1	15
12:00 PM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
12:15 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
12:30 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
12:45 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
Total	0	10	0	0	10	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	18
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6
1:15 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
1:30 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	5	0	0	5	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	12
Grand Total	1	22	0	0	23	0	0	0	0	0	0	21	0	0	21	1	0	0	0	1	45
Approach %	4.3	95.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		
Total %	2.2	48.9	0.0	0.0	51.1	0.0	0.0	0.0	0.0	0.0	0.0	46.7	0.0	0.0	46.7	2.2	0.0	0.0	0.0	2.2	
Exiting Leg Total					21					0					23					1	45

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

12:15 PM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
12:15 PM	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
12:30 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
12:45 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
1:00 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6
Total Volume	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	19
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.792
Entering Leg	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	19
Exiting Leg					10					0					9					0	19
Total					19					0					19					0	38

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Class:

Articulated Trucks

	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
Approach %	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					3					0					2					0	5

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:30 AM	Lafayette Road (Route 1) from North					Wilson Road from East					Lafayette Road (Route 1) from South					Wilson Road from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% Approach Total	0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Exiting Leg					1					0					2					0	3
Total					3					0					3					0	6

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Bicycles (on Roadway and Crosswalks)

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	5	0	0	0	0	5	0	0	0	0	0	0	0	6
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	5	0	0	0	0	5	0	0	0	0	0	1	1	8
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	2	0	0	0	0	2	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	6
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	2
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	0	0	2	1	0	1	0	3	0	5	0	0	0	0	0	0	0	1	1	0	0	0	1	3	10
Grand Total	0	2	0	0	0	1	3	1	0	1	0	5	1	8	0	5	0	0	0	0	5	1	1	0	0	0	2	4	20
Approach %	0.0	66.7	0.0	0.0	0.0	33.3		12.5	0.0	12.5	0.0	62.5	12.5		0.0	100.0	0.0	0.0	0.0	0.0		25.0	25.0	0.0	0.0	0.0	50.0		
Total %	0.0	10.0	0.0	0.0	0.0	5.0	15.0	5.0	0.0	5.0	0.0	25.0	5.0	40.0	0.0	25.0	0.0	0.0	0.0	0.0	25.0	5.0	5.0	0.0	0.0	0.0	10.0	20.0	
Exiting Leg Total							7							7							4							2	20

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

1:00 PM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
1:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	2	0	0	0	0	2	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	6
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	2
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	2	0	0	0	0	2	1	0	1	0	3	0	5	0	0	0	0	0	0	0	1	1	0	0	0	1	3	10
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		20.0	0.0	20.0	0.0	60.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		33.3	33.3	0.0	0.0	0.0	33.3		
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.250	0.000	0.250	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.375	0.417
Entering Leg	0	2	0	0	0	0	2	1	0	1	0	3	0	5	0	0	0	0	0	0	0	1	1	0	0	0	1	3	10
Exiting Leg							1							4							4							1	10
Total							3							9							4							4	20

PDI File #: **228713 B**
Location: **N: Lafayette Road (Route 1) S: Lafayette Road (Route 1)**
Location: **E: Wilson Road W: Wilson Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/J. Porter**
Site Code: **47107.02**
Count Date: **Saturday, June 25, 2022**
Start Time: **11:00 AM**
End Time: **2:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Pedestrians

	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	1	5	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	5	6	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
12:00 PM	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	6	0	6	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	7	5	12	0	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Approach %	0	0	0	0	58.3	41.7		0	0	0	0	50	50		0	0	0	0	0	0		0	0	0	0	0	0		
Total %	0	0	0	0	43.8	31.3	75	0	0	0	0	12.5	12.5	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total							12							4							0							0	16

Peak Hour Analysis from 11:00 AM to 02:00 PM begins at:

11:00 AM	Lafayette Road (Route 1) from North							Wilson Road from East							Lafayette Road (Route 1) from South							Wilson Road from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
11:00 AM	0	0	0	0	1	5	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	5	6	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
% Approach Total	0.0	0.0	0.0	0.0	16.7	83.3		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.286
Entering Leg	0	0	0	0	1	5	6	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Exiting Leg							6							2							0							0	8
Total							12							4							0							0	16

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

TECHNICAL ADVISORY COMMITTEE

August 3, 2022

One Hundred Forty West Road Condos
140 West Road
Portsmouth, New Hampshire 03801

RE: Amended Site Plan Approval for property located at 140 West Road (LU-22-99)

Dear Property Owner:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, August 2, 2022, considered your application for Amended Site Plan Approval to improve and install stormwater infrastructure, relocated dumpsters, install landscaping, and increase parking spaces from 102 spaces to 122 spaces where 119 are required. Said property is shown on Assessor Map 252 Lot 2-13 and lies within the Industrial (I) District. As a result of said consideration, the Committee voted to to recommend **approval** to the Planning Board with the following **stipulations**:

1.1) Plans will be updated to include treatment swale details and calculations. DPW to review and approve prior to Planning Board consideration.
1.2) Catch Basin A will be changed to a manhole.
1.3) Sewer manhole detail, in accordance with State standard, will be added to the plans.
1.4) Landscape plans will be updated to include additional plantings and loam planting beds within the three landscape islands.
1.5) Cistern operation and maintenance details will be added to the plans. DPW to review and approve prior to Planning Board consideration.
1.6) All State and Federal permits as required for this project will be listed on the plans.
1.7) Plans will be updated to show granite curbing around entire parking lot in the vicinity of Catch Basin B for drainage.
1.8) Grading Plan will be adjusted to correct reduction in grade behind building. DPW to review and approve prior to Planning Board consideration.
1.9) Light poles will be shown on plans at least 10 feet from the overhead power lines with details that will show light temperature, cutoff shields, and mounting height. DPW to review and approve prior to Planning Board consideration.
1.10) Outfall structure will be added to the plans.
1.11) Catch Basin B will be moved to the curb and a note will be added regarding jellyfish filter.
1.12) A letter will be provided to the Planning Department with the updated submission stating where resolved conditions can be found on within the submission and how outstanding conditions will be resolved subsequent to Planning Board approval.
Conditions precedent to Building Permit:
1.13) Drainage easements will be dedicated and accepted by the City.
1.14) Plantings in the public Right of Way receive approval from the Trees and Greenery Committee.

1.15) A full set of documents including all plans, studies, and the aforementioned letter will be submitted for staff review and Planning Board consideration.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, August 18, 2022**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Monday, August 8, 2022**.

Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*
- *Traffic Studies*
- *Etc.*

All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Beverly Mesa-Zendt,
Planning Director

cc:

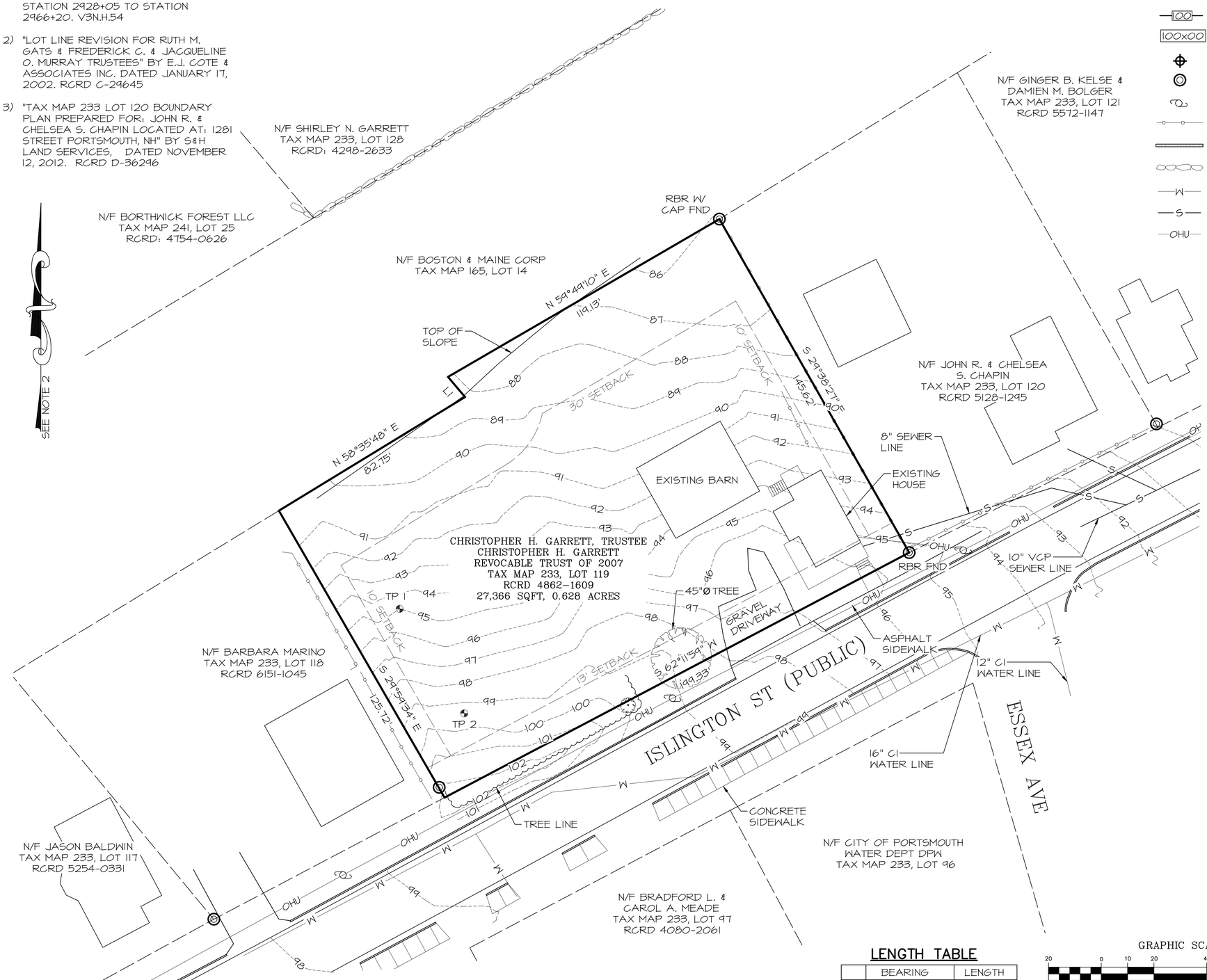
Christopher Mulligan, Bosen & Associates
Alex Ross, Ross Engineering
Mark Gianniny, McHenry Architecture

REFERENCE PLANS

1) "RIGHT-OF-WAY AND TRACK MAP - BOSTON AND MAINE RAILROAD STATION 2928+05 TO STATION 2966+20. V3N.H.54

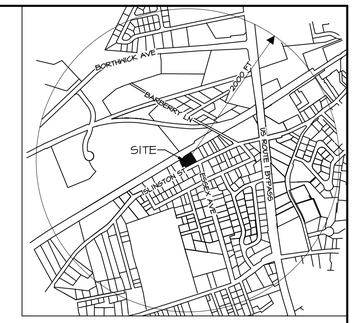
2) "LOT LINE REVISION FOR RUTH M. GATS & FREDERICK C. & JACQUELINE O. MURRAY TRUSTEES" BY E.J. COTE & ASSOCIATES INC. DATED JANUARY 17, 2002. RCRD C-29645

3) "TAX MAP 233 LOT 120 BOUNDARY PLAN PREPARED FOR: JOHN R. & CHELSEA S. CHAPIN LOCATED AT: 1281 STREET PORTSMOUTH, NH" BY S&H LAND SERVICES, DATED NOVEMBER 12, 2012. RCRD D-36296



LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- SPOT ELEVATION
- MONUMENT TO BE SET
- MONUMENT FOUND
- UTILITY POLE
- FENCE
- VERTICAL GRANITE CURB
- STONE WALL
- WATER LINE
- SEWER LINE
- OVERHEAD UTILITY LINE



LOCUS PLAN
SCALE 1"=1000'

NOTES

1) OWNER OF RECORD:
CHRISTOPHER H. GARRETT, TRUSTEE
CHRISTOPHER H. GARRETT REV. TRUST OF 2007
TAX MAP 233, LOT 119
11 BARBERRY LN
PORTSMOUTH, NH 03801
RCRD: 4862-1609
AREA: 27,366 SF, 0.63 ACRES

2) BASIS OF BEARING HELD FROM PLAN REFERENCE #3.

3) PARCEL IS IN SINGLE RESIDENCE ZONE B (SRB):

MINIMUM LOT AREA	15,000 SF
MIN. LOT AREA PER DWELLING UNIT	15,000 SF
MINIMUM FRONTAGE	100 FT
MINIMUM DEPTH	100FT
SETBACKS:	
FRONT*	30 FT
SIDE	10 FT
REAR	30 FT
MAXIMUM BUILDING HEIGHT:	
SLOPED ROOF	35 FT
FLAT ROOF	30 FT
MAXIMUM BUILDING COVERAGE	20%
MINIMUM OPEN SPACE	40%

*AS PER PORTSMOUTH ZONING ORDINANCE, 10.516.10 WHEN EXISTING PRINCIPAL BUILDINGS ON THE SAME SIDE OF THE STREET WITHIN 200 FEET OF A LOT ARE LOCATED CLOSER TO THE STREET THAN THE MINIMUM REQUIRED FRONT YARD, THEN THE REQUIRED FRONT YARD SHALL BE THE AVERAGE OF THE EXISTING ALIGNMENTS OF ALL PRINCIPAL BUILDINGS.

LOT 117 - BUILDING 10.6' FROM ROAD
LOT 118 - BUILDING 12.0' FROM ROAD
LOT 120 - BUILDING 16.1' FROM ROAD
LOT 121 - BUILDING 13.4 FROM ROAD

10.6 + 12.0 + 16.1 + 13.4 = 52.1' / 4 = 13.0'
LOT 119 FRONT SETBACK = 13'

4) THE PARCEL IS NOT WITHIN A FEMA FLOOD ZONE, AS PER FLOOD INSURANCE RATE MAP #33015C0259F, PANEL 259 OF 681, DATED JANUARY 29, 2021. VERTICAL DATUM IS NAVD 1988.

LENGTH TABLE

	BEARING	LENGTH
L1	N 40°14'51" W	10.00'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
SCALE: 1" = 20'

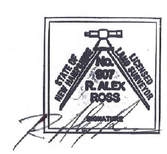
ISS.	DATE	DESCRIPTION OF ISSUE	
5	8/8/2022	PB SUBMITTAL	
4	7/19/2022	TAC SUBMITTAL	
3	7/5/2022	TAC SUBMITTAL	
2	2/21/2022	ZBA SUBMITTAL	
1	1/3/2022	ZBA SUBMITTAL	

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
LESLIE & CHRIS GARRETT
1299 ISLINGTON ST
PORTSMOUTH, NH 03801

TITLE
EXISTING CONDITIONS PLAN
for
CHRISTOPHER H. GARRETT, TRUSTEE
OF THE
CHRISTOPHER H. GARRETT REVOCABLE TRUST OF 2007
1299 ISLINGTON ST
Portsmouth, NH 03801
Tax Map 233, Lot 119



JOB NUMBER	DWG. NO.	ISSUE
22-070	1 OF 4	5

LEGEND

- 100 — EXISTING CONTOUR
- MONUMENT TO BE SET
- MONUMENT FOUND
- UTILITY POLE
- FENCE
- VERTICAL GRANITE CURB
- STONE WALL
- W — WATER LINE
- S — SEWER LINE
- OHU — OVERHEAD UTILITY LINE

REFERENCE PLANS

1) "RIGHT-OF-WAY AND TRACK MAP - BOSTON AND MAINE RAILROAD STATION 2928+05 TO STATION 2966+20. V3N.H.54

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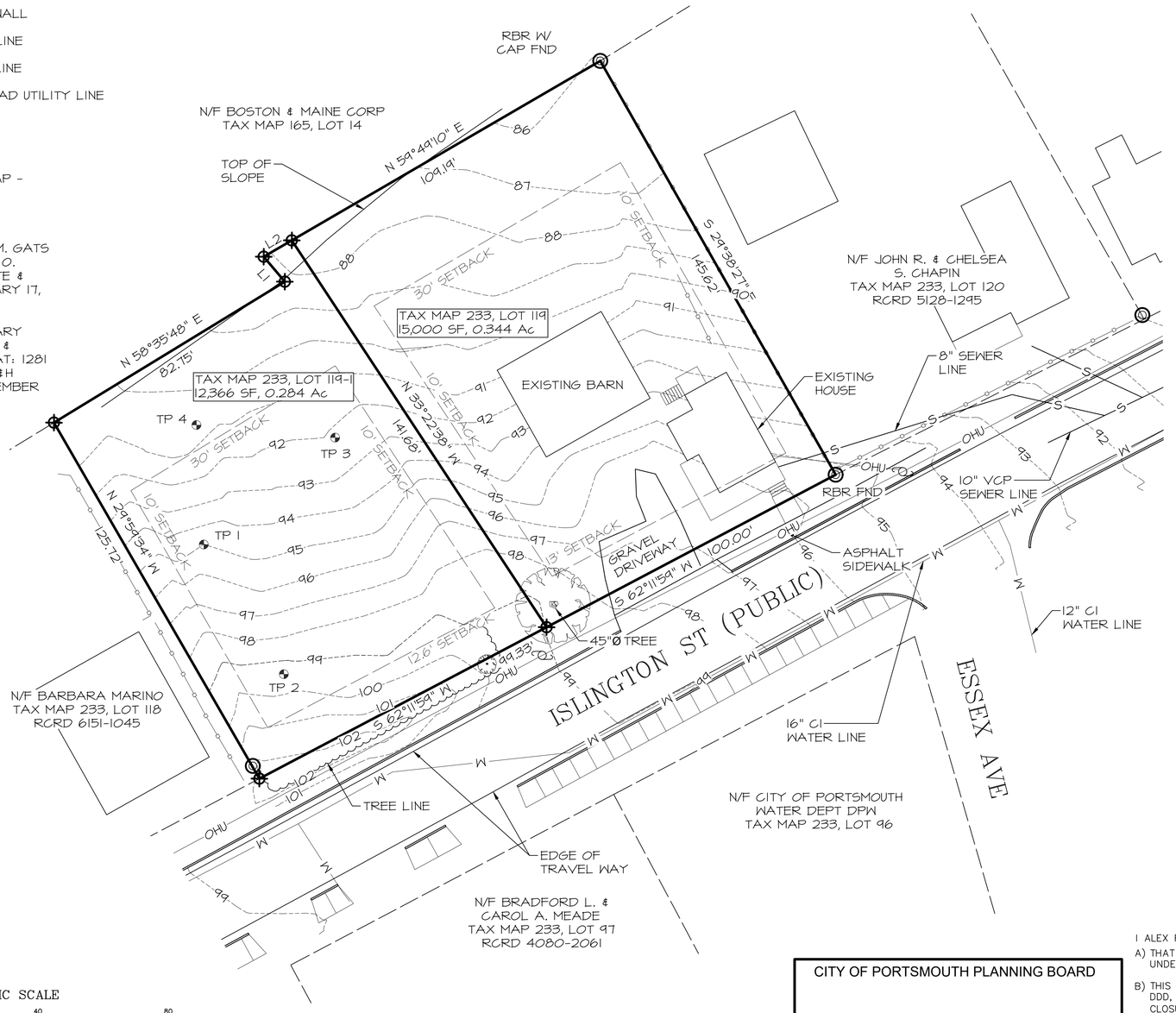
3) "TAX MAP 233 LOT 120 BOUNDARY PLAN PREPARED FOR: JOHN R. & CHELSEA S. CHAPIN LOCATED AT: 1281 STREET PORTSMOUTH, NH" BY S&H LAND SERVICES, DATED NOVEMBER 12, 2012. RCRD D-36296

LENGTH TABLE

	BEARING	LENGTH
L1	N 40°14'51" W	10.00'
L2	N 54°49'10" E	9.95'



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

NOTES

1) THE INTENT OF THIS PLAN IS TO SUBDIVIDE TAX MAP 233, LOT 119 INTO TWO RESIDENTIAL LOTS.

2) TAX MAP 233, LOT 119 IS SERVED BY EXISTING CITY WATER AND CITY SEWER.

3) TAX MAP 233, LOT 119-1 WILL BE SERVED BY CITY WATER AND A STATE APPROVED SEPTIC SYSTEM OR SEWER SERVICE FROM THE CITY. APPROVAL AND WAIVER FROM NHDES FOR A SEPTIC SYSTEM WILL BE OBTAINED OR THE CITY SEWER SERVICE WILL BE EXTENDED TO LOT 119-1. IF CITY SEWER SERVICE IS REQUIRED, CONTRACTOR TO COORDINATE WITH DPW. A STATE SUBDIVISION APPROVAL FOR LOT 119-1 IS REQUIRED.

4) PARCEL IS IN SINGLE RESIDENCE ZONE B (SRB):
- MINIMUM LOT AREA.....15,000 SF
- MIN. LOT AREA PER DWELLING UNIT.....15,000 SF
- MINIMUM FRONTAGE.....100 FT
- MINIMUM DEPTH.....100FT
- SETBACKS:
  - FRONT*.....30 FT
  - SIDE.....10 FT
  - REAR.....30 FT
- MAXIMUM BUILDING HEIGHT:
  - SLOPED ROOF.....35 FT
  - FLAT ROOF.....30 FT
- MAXIMUM BUILDING COVERAGE.....20%
- MINIMUM OPEN SPACE.....40%

*AS PER PORTSMOUTH ZONING ORDINANCE, 10.516.10 WHEN EXISTING PRINCIPAL BUILDINGS ON THE SAME SIDE OF THE STREET WITHIN 200 FEET OF A LOT ARE LOCATED CLOSER TO THE STREET THAN THE MINIMUM REQUIRED FRONT YARD, THEN THE REQUIRED FRONT YARD SHALL BE THE AVERAGE OF THE EXISTING ALIGNMENTS OF ALL PRINCIPAL BUILDINGS.

LOT 117 - BUILDING 10.6' FROM ROAD
LOT 118 - BUILDING 12.0' FROM ROAD
LOT 119 - BUILDING 11.7' FROM ROAD
LOT 120 - BUILDING 16.1' FROM ROAD

10.6 + 12.0 + 11.7 + 16.1 = 50.4' / 4 = 12.6'
LOT 119-1 FRONT SETBACK = 12.6'

5) THE PARCEL IS NOT WITHIN A FEMA FLOOD ZONE, AS PER FLOOD INSURANCE RATE MAP #33015C0259F, PANEL 259 OF 681, DATED JANUARY 29, 2021. VERTICAL DATUM IS NAVD 1988.

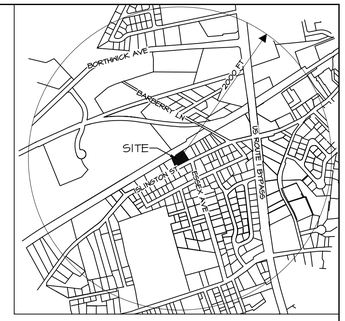
6) THE PORTSMOUTH ZONING BOARD OF ADJUSTMENT APPROVED THE FOLLOWING VARIANCES FROM SECTION 10.521 OF THE PORTSMOUTH ZONING ORDINANCE ON MARCH 15, 2022.

A) TO ALLOW A LOT AREA PER DWELLING UNIT OF 12,366 SF WHERE 15,000 SF IS REQUIRED

B) TO ALLOW A CONTINUOUS STREET FRONTAGE OF 99' WHERE 100' IS REQUIRED.

7) ALL NECESSARY STATE AND CITY PERMITS MUST BE OBTAINED, INCLUDING BUT NOT LIMITED TO STATE SEPTIC PERMIT, BUILDING PERMIT, AND DRIVEWAY PERMIT.

8) ANY USE OF BLASTING OR HOE RAMMING NEEDED FOR ROCK REMOVAL WILL REQUIRE VIBRATION MONITORING TO ENSURE THERE IS NO DAMAGE TO THE SURROUNDING PROPERTIES.



LOCUS PLAN
SCALE 1"=1000'

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON DATE

I ALEX ROSS, HEREBY CERTIFY:

A) THAT THIS SURVEY PLAT WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION.

B) THIS PLAN IS A RESULT OF FIELD SURVEY PERFORMED BY DDD, & ICA DURING MAY OF 2021. THE ERROR OF CLOSURE IS BETTER THAN 1/15,000. SURVEY PER NHLSA STANDARDS; CATEGORY 1, CONDITION 1.

R. ALEX ROSS DATE

ISS.	DATE	DESCRIPTION OF ISSUE	
5	8/8/2022	PB SUBMITTAL	
4	7/19/2022	TAC SUBMITTAL	
3	7/5/2022	TAC SUBMITTAL	
2	2/21/2022	ZBA SUBMITTAL	
1	1/3/2022	ZBA SUBMITTAL	

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

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Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
LESLIE & CHRIS GARRETT
1299 ISLINGTON ST
PORTSMOUTH, NH 03801

TITLE
SUBDIVISION PLAN
for
CHRISTOPHER H. GARRETT, TRUSTEE
OF THE
CHRISTOPHER H. GARRETT REVOCABLE TRUST OF 2007
1299 ISLINGTON ST
Portsmouth, NH 03801
Tax Map 233, Lot 119

JOB NUMBER	DWG. NO.	ISSUE
22-070	2 OF 4	5

TEST PIT 1 (of 4)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+1	FOREST DUFF			
0	10 YR 3/2 VERY DARK GRAYISH BROWN	GRAVELLY FINE SANDY LOAM	WEAK FINE GRANULAR	MOIST FRIABLE
16	10 YR 5/6 YELLOWISH BROWN	STONY FINE SANDY LOAM	MASSIVE	MOIST FRIABLE
36	10 YR 5/2 GRAYISH BROWN, 10% 7.5 YR 5/6 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	STONY FINE SANDY LOAM	MASSIVE	MOIST FIRM

ESHWT	56 INCHES	ROOTS	COMMON TO 56"	MINERAL RESTRICTIVE LAYERS	POSSIBLE @ 56"
OBSERVED H_2O	NONE	REFUSAL (INCHES),	NONE TO 84"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A

TEST PIT 2 (of 4)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+1	FOREST DUFF			
0	10 YR 3/2 VERY DARK GRAYISH BROWN	GRAVELLY FINE SANDY LOAM	WEAK FINE GRANULAR	MOIST FRIABLE
13	10 YR 5/6 YELLOWISH BROWN	STONY FINE SANDY LOAM	MASSIVE	MOIST FRIABLE

ESHWT	36 INCHES	ROOTS	MANY TO 30"	MINERAL RESTRICTIVE LAYERS	N/A
OBSERVED H_2O	NONE	REFUSAL (INCHES),	PROBABLE BEDROCK @ 36"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A

TEST PIT 3 (of 4)

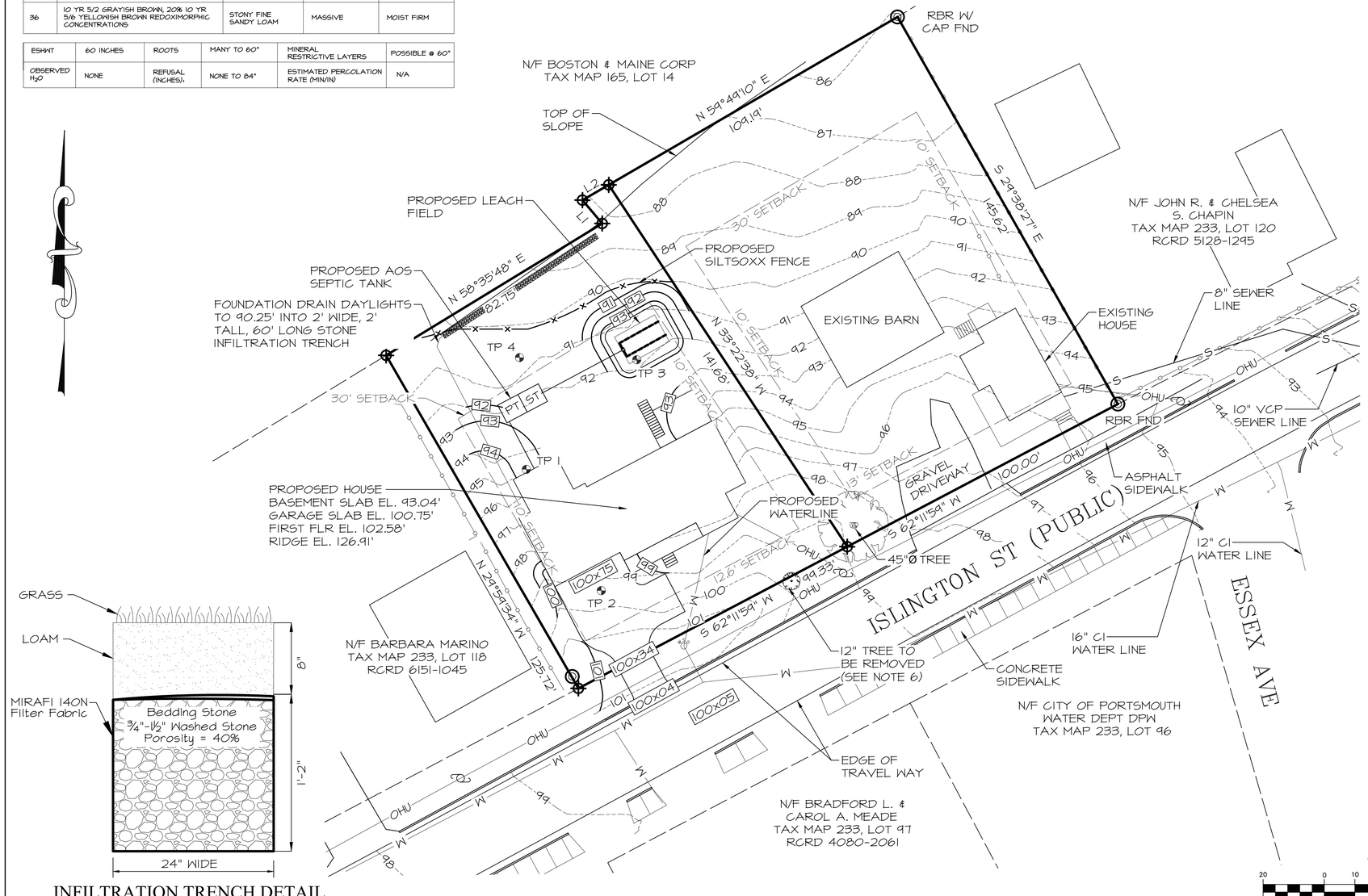
DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+0.5	FOREST DUFF			
0	10 YR 3/2 VERY DARK GRAYISH BROWN	GRAVELLY FINE SANDY LOAM	WEAK FINE GRANULAR	MOIST FRIABLE
14	10 YR 5/6 YELLOWISH BROWN	VERY STONY FINE SANDY LOAM	MASSIVE	DRY FRIABLE
54	10 YR 5/2 GRAYISH BROWN, 10% 7.5 YR 5/6 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	STONY FINE SANDY LOAM	MASSIVE	MOIST FIRM

ESHWT	54 INCHES	ROOTS	COMMON TO 56"	MINERAL RESTRICTIVE LAYERS	POSSIBLE @ 54"
OBSERVED H_2O	NONE	REFUSAL (INCHES),	NONE TO 84"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A

TEST PIT 4 (of 4)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+0.5	FOREST DUFF			
0	10 YR 3/2 VERY DARK GRAYISH BROWN	GRAVELLY FINE SANDY LOAM	WEAK FINE GRANULAR	MOIST FRIABLE
16	10 YR 5/6 YELLOWISH BROWN	VERY STONY FINE SANDY LOAM	MASSIVE	DRY FRIABLE
36	10 YR 5/2 GRAYISH BROWN, 20% 10 YR 5/6 YELLOWISH BROWN REDOXIMORPHIC CONCENTRATIONS	STONY FINE SANDY LOAM	MASSIVE	MOIST FIRM

ESHWT	60 INCHES	ROOTS	MANY TO 60"	MINERAL RESTRICTIVE LAYERS	POSSIBLE @ 60"
OBSERVED H_2O	NONE	REFUSAL (INCHES),	NONE TO 84"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A



INFILTRATION TRENCH DETAIL

N.T.S.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
SCALE: 1" = 20'

NOTES

1) PARCEL IS IN SINGLE RESIDENCE B DISTRICT:
   - MINIMUM LOT AREA.....15,000 SF
   - MIN. LOT AREA PER DWELLING UNIT.....15,000 SF
   - MINIMUM FRONTAGE.....100 FT
   - MINIMUM DEPTH.....100 FT
   - SETBACKS:
     - FRONT.....30 FT
     - SIDE.....10 FT
     - REAR.....30 FT
   - MAXIMUM BUILDING HEIGHT:
     - SLOPED ROOF.....35 FT
   - MAXIMUM BUILDING COVERAGE.....20%
   - MINIMUM OPEN SPACE.....40%

2) ONE POSSIBLE CONFIGURATION OF THE HOUSE, SEPTIC SYSTEM AND DRIVEWAY HAS BEEN SHOWN. ACTUAL LAYOUT MAY DIFFER.

3) COVERAGES - LOT 119-1 (LOT SIZE = 12,366 SF)
   BUILDING COVERAGE
   EXISTING COVERAGE = 0 SF

   PROPOSED COVERAGE

HOUSE	2,105 SF
STAIRS > 18"	44 SF
PORCH & DECK	330 SF
PROPOSED STRUCTURE	2479 SF = 20.0%

   LOT COVERAGE
   EXISTING COVERAGE = 0 SF

   PROPOSED COVERAGE

HOUSE	2,105 SF
STAIRS > 18"	57 SF
PORCH & DECK	330 SF
ASPHALT	920 SF
TOTAL LOT COVERAGE	3,412 SF
PROPOSED OPEN SPACE	8,954 SF
PROPOSED OPEN SPACE	72.4%

4) GRADE PLANE IS DEFINED AS THE REFERENCE PLANE OF THE AVERAGE GROUND LEVELS ADJOINING THE BUILDING AT THE EXTERIOR WALLS, OR THE AVERAGE GROUND LEVEL AT A POINT 6' AWAY FROM THE BUILDING WHEN THE GROUND LEVEL SLOPES AWAY FROM THE EXTERIOR WALLS. THE GRADE PLANE WAS DETERMINED TO BE 96.00'.

5) BUILDING HEIGHT IS DEFINED AS THE VERTICAL MEASUREMENT BETWEEN TWO REFERENCE POINTS. THE FIRST BEING DEFINED AS THE GRADE PLANE ABOVE. THE SECOND BEING THE MIDWAY POINT BETWEEN THE EAVES AND THE RIDGE ON A PITCHED ROOF.

   GRADE PLANE EL. = 96.00'
   EAVES EL. = 110.75'
   RIDGE EL. = 126.91'
   ROOF MIDWAY EL. = 110.75 + 126.91 / 2 = 118.83'
   BUILDING HEIGHT = 118.83' - 96.00 = 22.83' < 35'

6) EXISTING 12" TREE TO BE REMOVED IN R.O.W FOR CLEAR SIGHTLINES. ADDITIONAL BRANCHES AND VEGETATION TO BE REMOVED IN R.O.W AS NECESSARY FOR CONSTRUCTION OF DRIVEWAY AND CLEAR SIGHTLINES. ALL TREE AND VEGETATION REMOVAL TO BE APPROVED BY THE TREES AND GREENERY COMMITTEE PRIOR TO STARTING THE WORK, AND PRIOR OF THE BUILDING PERMIT.

LENGTH TABLE

	BEARING	LENGTH
L1	N 40°14'51" W	10.00'
L2	N 59°49'10" E	9.95'

LEGEND

- 100 — EXISTING CONTOUR
- 100 — PROPOSED CONTOUR
- 100x00 — SPOT ELEVATION
- MONUMENT TO BE SET
- MONUMENT FOUND
- UTILITY POLE
- FENCE
- VERTICAL GRANITE CURB
- STONE WALL
- W — WATER LINE
- S — SEWER LINE
- OHU — OVERHEAD UTILITY LINE
- WATER SHUT-OFF

ISS.	DATE	DESCRIPTION OF ISSUE
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TITLE
SITE PLAN

for
CHRISTOPHER H. GARRETT, TRUSTEE
OF THE
CHRISTOPHER H. GARRETT REVOCABLE TRUST OF 2007
1299 ISLINGTON ST
Portsmouth, NH 03801
Tax Map 233, Lot 119

STATE OF NEW HAMPSHIRE · R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

JOB NUMBER	DWG. NO.	ISSUE
22-070	3 OF 4	5

EROSION AND SEDIMENTATION CONTROL CONSTRICTION PHASING AND SEQUENCING

1. SEE "EROSION AND SEDIMENTATION CONTROL GENERAL NOTES" WHICH ARE TO BE AN INTEGRAL PART OF THIS PROCESS.
2. INSTALL SILTSOXX FENCING AS PER DETAILS AND AT SEDIMENT MIGRATION.
3. CONSTRUCT TREATMENT SWALES , LEVEL SPREADERS AND DETENTION STRUCTURES AS DEPICTED ON DRAWINGS.
4. STRIP AND STOCKPILE TOPSOIL. STABILIZE PILES OF SOIL CONSTRUCTION MATERIAL & COVER WHERE PRACTICABLE.
5. MINIMIZE DUST THROUGH APPROPRIATE APPLICATION OF WATER OR OTHER DUST SUPPRESSION TECHNIQUES ON SITE.
6. ROUGH GRADE SITE. INSTALL CULVERTS AND ROAD DITCHES.
7. FINISH GRADE AND COMPACT SITE.
8. RE-SPREAD AND ADD TOPSOIL TO ALL ROADSIDE SLOPES. TOTAL TOPSOIL THICKNESS TO BE A MINIMUM OF FOUR TO SIX INCHES.
9. STABILIZE ALL AREAS OF BARE SOIL WITH MULCH AND SEEDING.
10. RE-SEED PER EROSION AND SEDIMENTATION CONTROL GENERAL NOTES.
11. SILT SOXX FENCING TO REMAIN AND BE MAINTAINED FOR TWENTY FOUR MONTHS AFTER CONSTRUCTION TO ENSURE ESTABLISHMENT OF ADEQUATE SOIL STABILIZATION AND VEGETATIVE COVER. ALL SILT SOXX FENCING ARE THEN TO BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
12. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
13. ALL TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC. MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
14. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE - BEFORE ROUGH GRADING THE SITE.
15. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM
16. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
18. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
19. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
20. LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

PLANTING NOTES:

1. ALL PLANT MATERIALS SHALL BE FIRST QUALITY NURSERY GROWN STOCK.
2. ALL PLANTS SHALL BE PLANTED IN ACCORDANCE WITH NEW HAMPSHIRE LANDSCAPE ASSOCIATION STANDARDS AND GUARANTEED FOR ONE YEAR BY THE LANDSCAPE CONTRACTOR.
3. ALL TREES AND SHRUBS SHALL HAVE WATER SAUCERS BUILT AROUND THEIR BASES AND THESE SHALL BE MULCHED WITH 4" OF DARK BROWN AGED BARK MULCH. MULCH MUST BE KEPT 2" AWAY FROM THEIR TRUNKS.
4. ALL TREES AND SHRUBS SHALL BE PLANTED AND MULCHED BEFORE LAWN IS SEEDED.

MAINTENANCE REQUIREMENTS:

1. ALL TREES, SHRUBS, AND PERENNIALS WILL NEED TO BE WATERED THROUGH THANKSGIVING DURING THE FIRST SEASON IN WHICH THEY ARE INSTALLED.
2. AN UNDERGROUND DRIP IRRIGATION SYSTEM IS RECOMMENDED. IF AN UNDERGROUND DRIP IRRIGATION SYSTEM IS NOT INSTALLED, SOAKER HOSES WOUND THROUGHOUT PLANTING BEDS ARE ACCEPTABLE. ALTHOUGH OVERHEAD SPRINKLERS ARE RECOMMENDED FOR LAWN AREAS, THEY ARE NOT ACCEPTABLE FOR IRRIGATING TREES AND SHRUBS.

SEEDING AND STABILIZATION FOR LOAMED SITE:

FOR TEMPORARY & LONG TERM SEEDINGS USE AGWAY'S SOIL CONSERVATION GRASS SEED OR EQUAL
COMPONENTS: ANNUAL RYE GRASS, PERENNIAL RYE GRASS, WHITE CLOVER, 2 FESCUES, SEED AT A RATE OF 100 POUNDS PER ACRE,
FERTILIZER & LIME:
NITROGEN (N) 50 LBS/ACRE, PHOSPHATE (P205) 100 LBS/ACRE, POTASH (K20) 100 LBS/ACRE, LIME 2000 LBS/ACRE
MULCH:
HAY OR STRAW 1.5-2 TONS/ACRE

A) GRADING AND SHAPING
1) SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.

B) SEED BED PREPARATION
1) SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
2) STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

1. CONDUCT ALL CONSTRUCTION IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE PHYSICAL ENVIRONMENT, BUT IN NO CASE SHALL EXCEED 2 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
3. ALL DITCHES, SWALES AND PONDS MUST BE STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
4. ALL GROUND AREAS OPENED UP FOR CONSTRUCTION WILL BE STABILIZED WITHIN 24 HOURS OF EARTH-DISTURBING ACTIVITIES BEING CEASED, AND WILL BE FULLY STABILIZED NO LONGER THAN 14 DAYS AFTER INITIATION. (SEE NOTE 11 FOR DEFINITION OF STABLE). ALL SOILS FINISH GRADED MUST BE STABILIZED WITHIN SEVENTY TWO HOURS OF DISTURBANCE. ALL TEMPORARY OR LONG TERM SEEDING MUST BE APPLIED TO COMPLY WITH "WINTER CONSTRUCTION NOTES" (SEE WINTER CONSTRUCTION NOTES). EMPLOY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS DETAILED ON THIS PLAN AS NECESSARY UNTIL ADEQUATE STABILIZATION HAS BEEN ASSURED (SEE NOTE 11 FOR DEFINITION OF STABLE)
5. TEMPORARY & LONG TERM SEEDING: USE SEED MIXTURES, FERTILIZER, LIME AND MULCHING AS RECOMMENDED (SEE SEEDING AND STABILIZATION NOTES).
6. SILTSOXX FENCING TO BE SECURELY EMBEDDED AND STAKED AS DETAILED. WHEREVER POSSIBLE A VEGETATED STRIP OF AT LEAST TWENTY FIVE FEET IS TO BE KEPT BETWEEN SILTSOXX AND ANY EDGE OF WET AREA.
7. SEEDED AREAS WILL BE FERTILIZED AND RE-SEEDED AS NECESSARY TO ENSURE VEGETATIVE ESTABLISHMENT.
8. SEDIMENT BASIN(S), IF REQUIRED, TO BE CHECKED AFTER EACH SIGNIFICANT RAINFALL AND CLEANED AS NEEDED TO RETAIN DESIGN CAPACITY.
9. SILTSOXX FENCING WILL BE CHECKED REGULARLY AND AFTER EACH SIGNIFICANT RAINFALL. NECESSARY REPAIRS WILL BE MADE TO CORRECT UNDERMINING OR DETERIORATION OF THE BARRIER AS WELL AS CLEANING, REMOVAL AND PROPER DISPOSAL OF TRAPPED SEDIMENT.
10. TREATMENT SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATIVE COVER HAS BEEN ESTABLISHED.
11. AN AREA SHALL BE CONSIDERED FULLY STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED
    - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED.
    - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

11. ALL EROSION AND SEDIMENTATION CONTROL MEASURES IN THE PLAN SHALL MEET THE DESIGN BASED ON STANDARDS AND SPECIFICATIONS SET FORTH IN THE STORM WATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE (DECEMBER 2008 OR LATEST) PREPARED BY ROCKINGHAM COUNTY CONSERVATION DISTRICT, N.H. DES AND NRCS.

WINTER CONSTRUCTION NOTES

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPETED IN ADVANCE OF THAW OR SPRING MELT EVENT.;
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

LONG TERM SEEDING

*WELL TO MODERATELY WELL DRAINED SOILS

FOR CUT AND FILL AREA AND FOR WATERWAYS AND CHANNELS

SEEDING MIXTURE C

	lb/ACRE	lb/1000SF
TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED CLOVER (ALSIKE)	20	0.45
TOTAL	48	1.35

LIME: AT 2 TONS PER ACRE OR 100 LBS PER 1,000 S.F.
FERTILIZER: 10 20 20 (NITROGEN, PHOSPHATE, POTASH AT 500# PER ACRE.
MULCH: HAY OR CLEAN STRAW; 2 TONS/ACRE OR 2 BALES/1000 S.F.

GRADING AND SHAPING:
SLOPES SHALL NOT BE STEEPER THAN 2 TO 1. 3 TO 1 OR FLATTER SLOPES ARE PREFERRED.
SEEDBED PREPARATION:
SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
STONES LARGER THAN FOUR INCHES AND TRASH SHOULD BE REMOVED.
SOD SHOULD BE TILLED TO A DEPTH OF FOUR INCHES TO PREPARE SEEDBED. FERTILIZER & LIME SHOULD BE MIXED INTO THE SOIL.
THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

* FROM: STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE, DECEMBER 2008.

SHORT TERM SEEDING

*WELL TO MODERATELY WELL DRAINED SOILS

FOR CUT AND FILL AREA AND FOR WATERWAYS AND CHANNELS

SEEDING MIXTURE C

	#/ACRE	#/1000SF
FOR APRIL 1 - AUGUST 15		
ANNUAL RYE GRASS	40	1
FOR FALL SEEDING		
WINTER RYE	112	2.5

LIME: AT 1 TON PER ACRE OR 100 LBS PER 1,000 S.F.
FERTILIZER: 10 10 10 (NITROGEN, PHOSPHATE, POTASH AT 500# PER ACRE.
MULCH: HAY OR CLEAN STRAW; 2 TONS/ACRE OR 2 BALES/1000 S.F.

GRADING AND SHAPING:
SLOPES SHALL NOT BE STEEPER THAN 2 TO 1. 3 TO 1 OR FLATTER SLOPES ARE PREFERRED.
SEEDBED PREPARATION:
SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
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THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

* FROM: STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE, DECEMBER 2008.

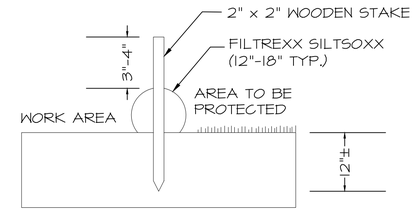
WHEN PROPOSED FOR ALTERATION DURING CONSTRUCTION AS BEING INFESTED WITH INVASIVE SPECIES SHALL BE MANAGED APPROPRIATELY USING THE DISPOSAL PRACTICES IDENTIFIED IN "NHDOT - BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS -2008" AND "METHODS FOR DISPOSING NON-NATIVE INVASIVE PLANTS - UNH COOPERATIVE EXTENSION - 2010"

SEED MIXES SHALL NOT CONTAIN ANY SPECIES IDENTIFIED BY THE NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST.

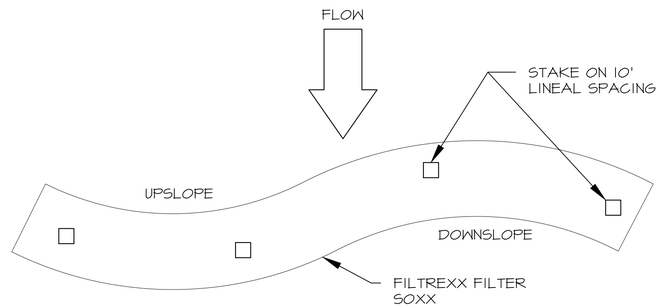
FILTREXX SILTSOXX NOTES

1) ALL MAERTIAL TO MEET FILTREXX SPECIFICATIONS

2) SILTSOXX COMPOST, SOIL, ROCK, SEED FILL TO MEET APPLICATION REQUIREMENTS



Filtrexx SiltSoxx Section
N.T.S.



Filtrexx SiltSoxx Plan View
N.T.S.

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TITLE
EROSION CONTROL PLAN

for
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OF THE
CHRISTOPHER H. GARRETT REVOCABLE TRUST OF 2007
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Tax Map 233, Lot 119

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22-070	4 OF 4	5

Ross Engineering
Civil/Structural Engineering & Surveying

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

August 8, 2022

Beverly Mesa-Zendt - Planning Director
City of Portsmouth, Planning Department 1 Junkins Ave
Portsmouth, NH 03801

RE: Subdivision Approval for property located at 1299 Islington St, Tax Map 233, Lot 119 (LU-22-33)

Dear Ms. Beverly,

I am writing in response to your letter dated August 3rd, 2022. Your concerns are italicized with our comments below in bold.

Prior to Planning Board approval:

1. *Plans will be updated to include infiltration trench downslope from leach field and appropriate foundation drains to address runoff in accordance with NHDES Subsurface rules. DPW to review and approve prior to Planning Board consideration.*

   Drawing 3 "Site Plan" has been updated to include an infiltration trench downslope from the leach field. The foundation drain will convey water to the infiltration trench.

2. *The existing sewer line will be scoped to confirm location on plan set. DPW to review, evaluate if easement is needed, and approve prior to Planning Board consideration.*

   The existing sewer line will be scoped to confirm location on plan set. When the sewer line has been located, the location will be shown to DPW.

3. *Note 3 on the Subdivision plan will be updated to change "Lot 2" reference to the appropriate Map and Lot Number*

   Note 3 on drawing 2 "Subdivision Plan" has been updated to change "Lot 2" to "Tax Map 233, Lot 119-1".

4. *Any proposed tree removal in the public right of way should be added to the plans.*

   A 12" tree in the public right of way has been shown on drawing 3 "Site Plan". Note 6 on drawing 3 has been expanded to note that the 12" tree will be removed, as well as vegetation and branches as necessary for driveway construction and sight lines. All work in the right of way shall be approved by the Trees and Greenery Committee prior to removal.

Ross Engineering
Civil/Structural Engineering & Surveying
909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

5. *A letter will be provided to the Planning Department with the updated submission stating where resolved conditions can be found on within the submission and how outstanding conditions will be resolved subsequent to Planning Board approval.*

   This letter is provided with the updated submission stating the resolved conditions and where they can be found within the submission.

6. *A full set of documents including all plans, studies, and the aforementioned letter will be submitted for staff review and Planning Board consideration.*

   A full set of documents including plans, studies, and letter has been submitted as part of the updated Planning Board submission.

Conditions precedent to Building Permit:

7. *Any proposed tree removal in the public Right of Way will receive approval from the Trees and Greenery Committee.*

   Proposed tree removal in the public Right of Way will receive approval from Trees and Greenery Committee. See note 6 on drawing 3.

8. *Any use of blasting or hoe ramming needed for rock removal will require vibration monitoring to ensure there is no damage to the surrounding properties.*

   Vibration monitoring will occur for any use of blasting or hoe ramming needed for rock removal, as outlined in note 8 on drawing 2.

9. *Applicant will receive approval and waiver from NHDES for septic system or extend city sewer service to newly created lot. If city sewer is needed to serve lot, applicant will coordinate with DPW.*

   Note 3 on drawing 2 has been expanded to include this requirement.

Sincerely,

Alex Ross, P.E.

Ross Engineering, LLC
Civil / Structural Engineering

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

1299 Islington St
Project Description

August 8, 2022

This subdivision application is for a proposed subdivision to an existing residential site. Lot 119 will be subdivided into two residential lots. The eastern portion of the existing lot contains a house and barn that will remain as lot one. The western portion of the existing lot is undeveloped and will become lot two.

Variances from the Portsmouth Zoning Ordinance section 10.521, to allow a lot size of 12,366 sf where 15,000 sf is required, and to allow a continuous street frontage of 99' where 100' is required were granted by the Portsmouth Zoning Board of Adjustment at its regularly scheduled meeting on March 15, 2022. All direct abutters recommended approval at the ZBA meeting.

We have addressed all the minor comments from our TAC meeting.

Sincerely,

Alex Ross, P.E.

Ross Engineering
Civil / Structural Engineering

909 Islington Street
Portsmouth, NH 03801

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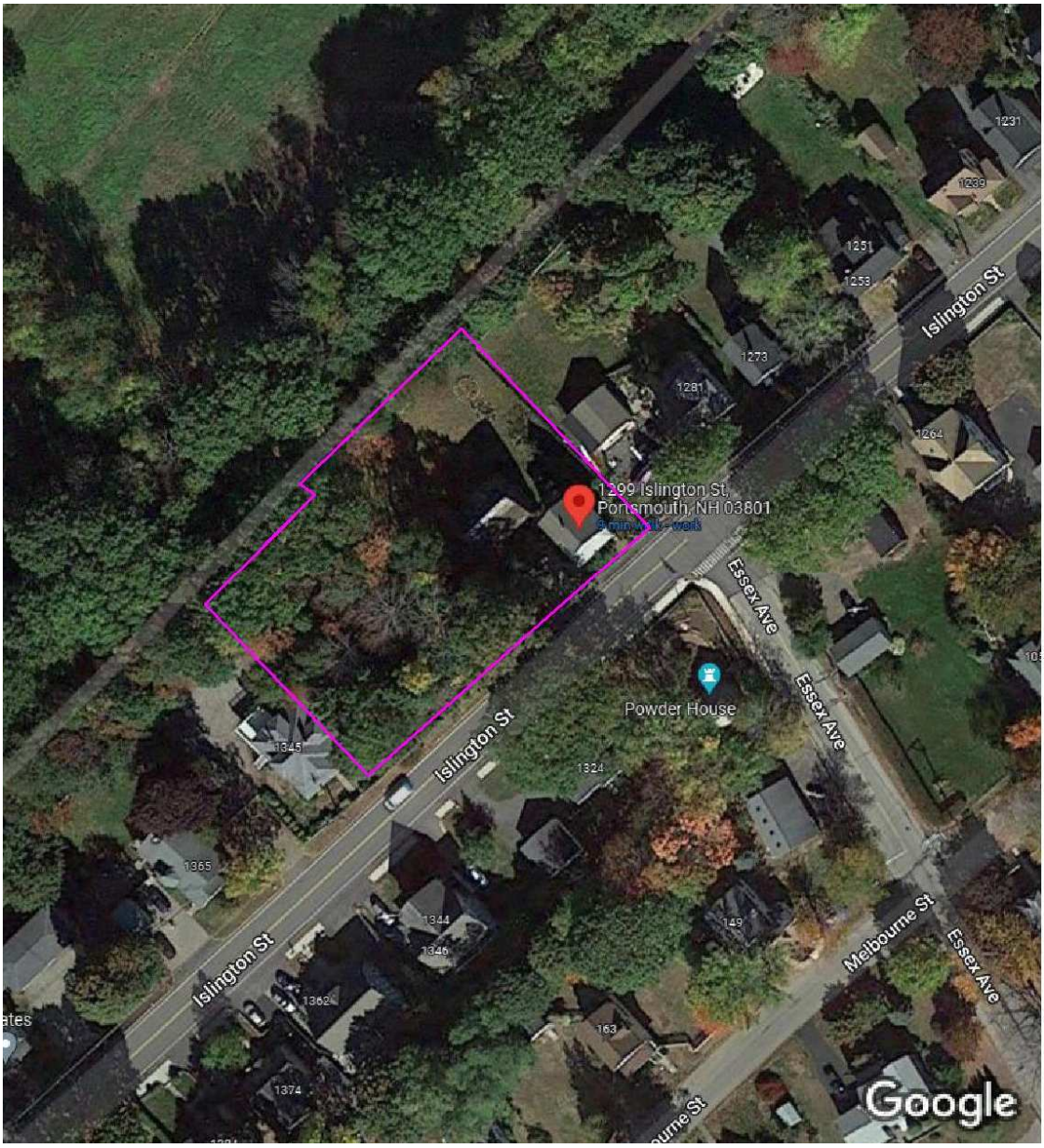
alexross@comcast.net



Aerial view of site

Ross Engineering
Civil / Structural Engineering

909 Islington Street
Portsmouth, NH 03801

603-433-7560
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Image capture: Oct 2018 © 2022 Google

View of Islington St looking to the west

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View of undeveloped portion of the lot looking to the west

View of undeveloped portion of the lot looking to the west

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603-433-7560
alexross@comcast.net

View of barn looking to the north

View of barn and house looking to the south

Ross Engineering
Civil / Structural Engineering

909 Islington Street
Portsmouth, NH 03801

603-433-7560
alexross@comcast.net

View of house looking to the north

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

ZONING BOARD OF ADJUSTMENT

March 17, 2022

Christopher H. Garrett Revocable Trust of 2007
11 Barberry Ln
Portsmouth, NH 03801

RE: **Board of Adjustment request for property located at 1299 Islington Street (LU-22-33)**

Dear Owners:

The Zoning Board of Adjustment, at its regularly scheduled meeting of **Tuesday, March 15, 2022**, considered your application for the subdivision of one lot into two lots which requires the following: 1) Variances from Section 10.521 to allow a) a lot area and lot area per dwelling unit of 12,366 square feet where 15,000 is required for each; and b) 99' of continuous street frontage where 100' is required. Said property is shown on Assessor Map 233 Lot 119 and lies within the Single Residence B (SRB) District. As a result of said consideration, the Board voted to **grant** the request as presented and advertised.

The Board's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Board's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Approvals may also be required from other City Commissions or Boards. Once all required approvals have been received, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work.

This approval shall expire unless a building permit is issued within a period of two (2) years from the date granted unless an extension is granted in accordance with Section 10.236 of the Zoning Ordinance.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

AE Parrott

Arthur Parrott, Chairman of the Zoning Board of Adjustment

cc: Shanti Wolph, Chief Building Inspector

Rosann Maurice-Lentz, City Assessor

Monica Keiser, Esq., Hoefle, Phoenix, Gormley & Roberts, PPLC

Ross Engineering
Civil / Structural Engineering

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

Dated 7-19-2022
To: City of Portsmouth Planning Department

Applicant & Land Owner's Name:
Christopher H. Garrett Revocable Trust
1299 Islington St
Tax Map 233, Lot 119

Location of Land:
1299 Islington St
Portsmouth, NH 03801
Tax Map 233, Lot 119

List of Abutters

Boston & Maine Corporation
Iron Horse PK High St
North Billerica, MA 01862
Tax Map 165, Lot 14

City of Portsmouth
Water Department DPW
PO Box 628
Portsmouth, NH 03802
Tax Map 233, Lot 96

Bradford L. & Carol A. Meade
1324 Islington St
Portsmouth, NH 03801
Tax Map 233, Lot 97

Barbara Marino
1345 Islington St
Portsmouth, NH 03801
Tax Map 233, Lot 118

John R. & Chelsea S. Chapin
1281 Islington St
Portsmouth, NH 03801
Tax Map 233, Lot 120

Civil Engineer & Surveyor
Alex Ross
Ross Engineering
Certified Professional Engineer
Licensed Land Surveyor
909 Islington Street
Portsmouth, NH 03801

City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision review requirements. Please refer to the Subdivision review regulations for full details.

Applicant Responsibilities (Section III.C): Applicable fees are due upon application submittal along with required number of copies of the Preliminary or final plat and supporting documents and studies. Please consult with Planning staff for submittal requirements.

Owner: Christopher H. Garret Revocable Trust Date Submitted: 7/19/2022

Applicant: Christopher H. Garrett

Phone Number: 603-767-9489 E-mail: leslieg729@yahoo.com

Site Address 1: 1299 Islington St Map: 233 Lot: 119

Site Address 2: _____ Map: 233 Lot: 119

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
✔	Completed Application form. **(III.C.2-3)**	Viewpoint Cloud	N/A
✔	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(III.C.4)**	Attached with Submittal	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✔	Name and address of record owner, any option holders, descriptive name of subdivision, engineer and/or surveyor or name of person who prepared the plat. **(Section IV.1/V.1)**	Subdivision Plan - Sheet 2	☑ Preliminary Plat ☑ Final Plat	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✔	**Preliminary Plat** Names and addresses of all adjoining property owners. **(Section IV.2)** **Final Plat** Names and addresses of all abutting property owners, locations of buildings within one hundred (100) feet of the parcel, and any new house numbers within the subdivision. **(Section V.2)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	N/A
✔	North point, date, and bar scale. **(Section IV.3/V3)**	Required on all Plan Sheets	☑ Preliminary Plat ☑ Final Plat	N/A
✔	Zoning classification and minimum yard dimensions required. **(Section IV.4/V.4)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	N/A
✔	**Preliminary Plat** Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). **(Section IV.5)** **Final Plat** Scale (not to be smaller than 1"=100'), Location map (at a scale of 1"=1,000') showing the property being subdivided and its relation to the surrounding area within a radius of 2,000 feet. Said location map shall delineate all streets and other major physical features that my either affect or be affected by the proposed development. **(Section V.5)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	N/A
✔	Location and approximate dimensions of all existing and proposed property lines including the entire area proposed to be subdivided, the areas of proposed lots, and any adjacent parcels in the same ownership. **(Section IV.6)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	
✔	Dimensions and areas of all lots and any and all property to be dedicated or reserved for schools, parks, playgrounds, or other public purpose. Dimensions shall include radii and length of all arcs and calculated bearing for all straight lines. **(Section V.6/ IV.7)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	N/A
✔	Location, names, and present widths of all adjacent streets, with a designation as to whether public or private and approximate location of existing utilities to be used. Curbs and sidewalks shall be shown. **(Section IV.8/V.7)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✔	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	
✔	**Preliminary Plat** Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	N/A, No Proposed Streets	☑ Preliminary Plat ☑ Final Plat	
✔	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	N/A, No Proposed Streets	☑ Preliminary Plat ☑ Final Plat	
✔	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	
✔	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	Sheet 1 "Existing Conditions"	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✔	Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law. **(Section V.10)**	Sheet 2 "Subdivision Plan", Note 7	☐ Preliminary Plat ☑ Final Plat	
✔	For subdivisions involving greater than five (5) acres or fifty (50) lots, the final plat shall show hazard zones and shall include elevation data for flood hazard zones. **(Section V.11)**	N/A, <5 Acres, <50 lots	☐ Preliminary Plat ☑ Final Plat	
✔	Location of all permanent monuments. **(Section V.12)**	Sheet 1 "Existing Conditions"	☐ Preliminary Plat ☑ Final Plat	

General Requirements[1]			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	**1. Basic Requirements: (VI.1)** a. Conformity to Official Plan or Map b. Hazards c. Relation to Topography d. Planned Unit Development	Sheet 2 "Subdivision Plan"	
✔	**2. Lots: (VI.2)** a. Lot Arrangement b. Lot sizes c. Commercial and Industrial Lots	Sheet 2 "Subdivision Plan"	
✔	**3. Streets: (VI.3)** a. Relation to adjoining Street System b. Street Rights-of-Way c. Access d. Parallel Service Roads e. Street Intersection Angles f. Merging Streets g. Street Deflections and Vertical Alignment h. Marginal Access Streets i. Cul-de-Sacs j. Rounding Street Corners k. Street Name Signs l. Street Names m. Block Lengths n. Block Widths o. Grade of Streets p. Grass Strips	N/A, No Proposed Streets	
✔	**4. Curbing: (VI.4)**	N/A, No Proposed Streets	
✔	**5. Driveways: (VI.5)**	Driveway Permit Required	
✔	**6. Drainage Improvements: (VI.6)**	N/A	
✔	**7. Municipal Water Service: (VI.7)**	Sheet 3 "Site Plan"	
✔	**8. Municipal Sewer Service: (VI.8)**	N/A	
✔	**9. Installation of Utilities: (VI.9)** a. All Districts b. Indicator Tape	Sheet 2 "Subdivision Plan", Note 7	
✔	**10. On-Site Water Supply: (VI.10)**	N/A	
✔	**11. On-Site Sewage Disposal Systems: (VI.11)**	Sheet 3 "Site Plan"	
✔	**12. Open Space: (VI.12)** a. Natural Features b. Buffer Strips c. Parks d. Tree Planting	N/A	
✔	**13. Flood Hazard Areas: (VI.13)** a. Permits b. Minimization of Flood Damage c. Elevation and Flood-Proofing Records d. Alteration of Watercourses	Sheet 1 "Existing Conditions", Note 4	
✔	**14. Erosion and Sedimentation Control (VI.14)**	Sheet 4 "Erosion Control Plan"	

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
✔ ✔ ✔	**15. Easements (VI.15)** a. Utilities b. Drainage	N/A	
✔	**16. Monuments: (VI.16)**	Sheet 2 "Subdivision"	
✔	**17. Benchmarks: (VI.17)**	N/A No Proposed Streets	
✔	**18. House Numbers (VI.18)**	TBD by Board	

Design Standards			
	Required Items for Submittal	**Indicate compliance and/or provide explanation as to alternative design**	**Waiver Requested**
✔	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	N/A, No Proposed Streets	
✔	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Sheet 3 "Site Plan"	
✔	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	N/A	
✔	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Sheet 2 "Subdivision Plan", Note 7	

Applicant's/Representative's Signature:_____ **Date:** 7/19/2022

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

Ross Engineering, LLC

909 Islington Street
Portsmouth, NH 03801

603-433-7560
alexross@comcast.net

June 29, 2022

Planning Department
City of Portsmouth
Portsmouth, NH 03801

RE: 1299 Islington St
Tax Map 233, Lot 119
Portsmouth, NH 03801

Owner: Christopher H. Garrett, Trustee
Christopher H. Garrett Rev. Trust of 2007
11 Barberry Lane
Portsmouth, NH 03801

Please be advised that Alex Ross of Ross Engineering is authorized to be my agent for the above application process. Should you have any questions, please contact me.

Sincerely,

Christopher H. Garrett, Trustee
Christopher H. Garrett Rev. Trust 2007
11 Barberry Lane
Portsmouth, NH 03801

THE CAPITAL IMPROVEMENT PLAN (CIP)

- What is a CIP?
- FY2024-FY2029 CIP Timeline
- Public Input Opportunities

What is the CIP?

The CIP is a PLAN

The CIP is a six-year plan for identifying and prioritizing major capital projects such as roadway paving or building improvements.

The CIP is a Budgeting Tool

The CIP does not spend or commit any money but instead, identifies and prioritizes projects for various upcoming years and its planned funding source.

The CIP is an Informational Tool

The Public can utilize the CIP to learn more about upcoming capital projects, the timeline in which they are proposed, project details, evaluation criteria, costs, and links to relevant documents associated with the project.

The CIP is a Citizen Input Opportunity

Citizens have numerous public input avenues throughout the process from the ability to request a project to speaking at public hearings.

NEW HAMPSHIRE STATE RSA

RSA 674.5: Capital Improvement Program

"674:5 Authorization. – In a municipality where the planning board has adopted a master plan, the local legislative body may authorize the planning board to prepare and amend a recommended program of municipal capital improvement projects projected over a period of at least 6 years.

The capital improvements program may encompass major projects being currently undertaken or future projects to be undertaken with federal, state, county and other public funds. The sole purpose and effect of the capital improvements program shall be to aid the mayor or selectmen and the budget committee in their consideration of the annual budget."

CITY CHARTER

City Charter Section 7.6 - Capital Program: "The Manager shall prepare and submit to the Council a six (6) year capital program at least three (3) months prior to the final date for submission of the budget."

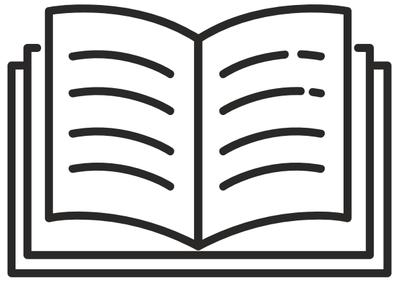
The program shall include:

1. A general summary of its contents;
2. A list of all capital improvements proposed during the next six (6) fiscal years;
3. Cost estimates, method of financing, recommended time schedules for each improvement; and
4. Estimated annual operating and maintenance costs.

WHAT QUALIFIES AS A CAPITAL IMPROVEMENT PROJECT?

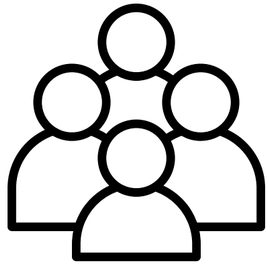
- Land aquisition
- Construction or expansion of a public facility, street, utility or public infrastructure
- Rehabilitation of a public facility or public infrastructure, provided the cost is $50,000 or more
- Design work or planning study related to a capital project or implementation of the Master Plan
- Any item or piece of equipment, non-vehicular in nature, that costs more than $50,000 and has a life expectancy of 5 or more years; or
- Replacement and purchase of vehicles which have a life expectancy of more than 5 years or cost more than $50,000

Where do CIP projects originate?



FY23-28 CIP

- CIP Projects Slated for FY24-28 are reviewed and updated by staff and entered into the CIP.
- Projects that no longer meet requirements or are deemed unnecessary are removed from the plan.



Residents

- Citizens are welcomed to submit capital projects.
- City Staff review the submissions under the CIP guidelines and place applicable projects in the document.
- If a project does not qualify it is redirected to the appropriate process for review and consideration.

City Staff

- City Staff submit new Capital Projects based on the CIP project guidelines.

How are projects *evaluated* and *prioritized*?

Responds to a Federal or State Requirement

Address Public Health or Safety Need

Alleviates Substandard Conditions or Deficiencies

Eligible for Matching Funds with Limited Availability

Timing or Location Coordinate with Synergistic Project

Identified in a Planning Document or Study

Improves Quality of or Provides Added Capacity to Existing Services

Reduces Long-Term Operating Costs

Provides Incentive to Economic Development

Responds to a Citywide Goal or Submitted Resident Request

Funding Sources

General Fund

Funded by Capital Outlay Funds (Pay as you go funding)

Federal/State

Federal or State Funded Sources

Bond/Lease/SRF

Bond/Lease/State Revolving Fund Loan Program (Borrowing)

Other

Other Non-Operating Budget Funding such as Rolling Stock or Information Technology Non-Operating Funds

Revenues

Revenues from Special Revenue Funds or Enterprise Funds (Special Revenue Funds - Parking/Prescott Park/Stormwater/Community Campus/Indoor Pool) (Enterprise Funds - Water/ Sewer)

PPP (Public Private Partnership)

Partnership funding through a private entity or donations

THE CIP PROCESS HAS NO FINANCIAL COMMITMENT

1. **Project Proposed**
   Funding Proposed
   (Estimated Cost & Proposed Funding Source)
   No financial commitment.

2. **CIP Reviewed & Adopted by Planning Board**
   No financial commitment.

3. **CIP Reviewed & Adopted by City Council**
   No financial commitment.

4. **Projects for the Next Fiscal Year Move to the <u>Proposed Annual Budget</u>.**
   No financial commitment.

Adoption of the CIP by the Planning Board or the City Council DOES NOT commit the City to any project or appropriation.

5. **<u>The Budget is Adopted.</u>**
   Limited Financial Committment

Project Funding
(Upon the Adoption of the Annual Budget)

Capital Outlay

Pay-as-you-go Funding ("Cash")

City Goal is to allocate up to 2% of the City's Prior Year General Fund Budget for Capital Outlay.

Appropriated upon the start of the new fiscal year (and the adoption of the budget)

Bond Issuance

Funding through Borrowing

Bonded projects require a separate public hearing and vote of the City Council (AFTER the CIP and Budget are Adopted)

The City's Net Debt Service as a Percentage of the General Fund Budget Target is 10%

PUBLIC INPUT OPPORTUNITIES

Project Submission

Have a project that meets the CIP Project criteria? Submit it to the City Online or in the Planning Department at City Hall

DEADLINE: September 30th

Planning Board CIP Public Hearing

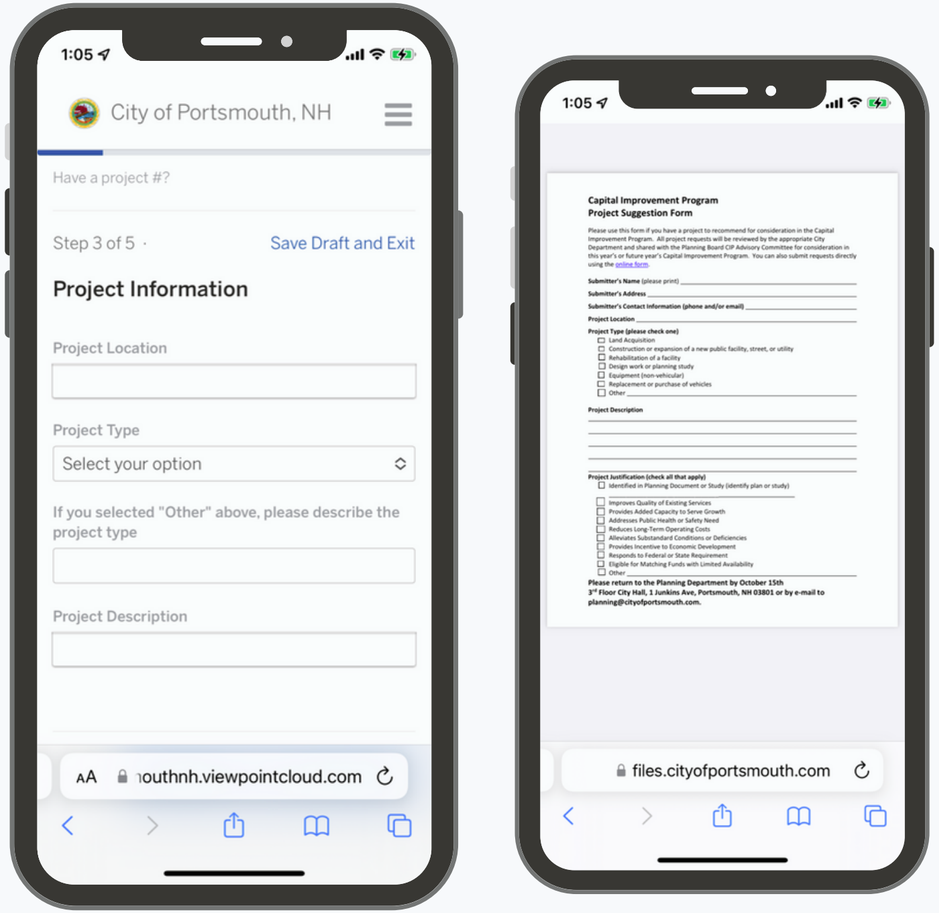
The Planning Board holds a public hearing following the CIP Presentation in December.

City Council CIP Public Hearing

The City Council holds a Public Hearing on the Capital Improvement Plan in February

City Council Budget Public Hearing

The City Council Holds at least one Public Hearing on the City's Budget which will include relevant projects from the CIP.



How to Submit a Project

CityofPortsmouth.com/planportsmouth/capital-improvement-plan

1) Review that one or more of the CIP Project Qualifications are met

2) Submit your project idea through one of the following methods:
   a. **ViewPoint** online Portal (https://portsmouthnh.viewpointcloud.com/categories/1076/record-types/6449)
   b. Utilize the **application form** (a fillable PDF) located online
   c. Come into the City's **Planning Department** and fill out a form in person.

What is the next step?

- Projects are reviewed
- Projects are then either moved forward as its own unique project, combined with an existing project, placed in a year outside of the CIP or deemed unqualified as a CIP project.
- All Citizen requests are listed (including City Staff Review Comments) in the CIP in Appendix I.

CIP PROCESS TIMELINE

HOW THE CIP GOES FROM PROJECTS TO THE BUDGET....

August/September

- Process kickoff
- Citizen Request forms accepted (DUE September 30th)

October

- Citizen Requests are reviewed
- City Departments submit project requests
- The CIP financials are prepared and the document is assembled

January/February/March

- City Council reviews, holds a public hearing, and adopts the CIP

April/May/June

- Capital Projects for the upcoming Fiscal Year are incorporated in the Proposed Annual Budget

November/December

- Planning Board reviews, holds a public hearing, and votes to recommend the adoption of the CIP by the City Council