SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

Members of the public also have the option to join the meeting over Zoom
*(See below for more details)**

2:00 PM **July 5, 2022**

AGENDA

I. APPROVAL OF MINUTES

A. Approval of minutes from the June 7, 2022 Site Plan Review Technical Advisory Committee Meeting.

II. OLD BUSINESS

A. The application of **Banfield Realty, LLC, (Owner)**, for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. (LU-20-259)

B. The request of **Port Harbor Land, LLC (Owner and Applicant)** for property located at **2 Russell Street** requesting Lot Line Revision Approval to adjust the boundary lines on three lots to create one lot with 18,237 square feet (0.418 acres) of lot area, one lot with 52,651 square feet (1.209 acres) of lot area, and one lot with 19,141 square feet (0.429 acres) of lot area. Said properties are located on Assessor Map 118 Lot 28, Map 124 Lot 12, and Map 125 Lot 21 and lie within the Character District 5 (CD5), North End Incentive Overlay District, Historic District, and the Downtown Overlay District. (LU-22-111)

C. The request of **Port Harbor Land, LLC (Owner and Applicant)** for property located at **2 Russell Street** requesting Site Plan Approval for the construction of 84 residential units, commercial space, and parking in three buildings with associated community space, paving, utilizes, landscaping, and other site improvements including three proposed land transfers to allow for the realignment of the Russell Street & Deer Street intersection and for the City's future construction of a roundabout at Russell Street and Market Street (Land transfer area 1 is proposed from Map 119 Lot 4 to the City of

Portsmouth. Land transfer areas 2 and 3 are from Map 119 Lot 1-1C to the City of Portsmouth); Conditional Use Permit Approval to provide 343 parking spaces on separate lots where 341 spaces are required as permitted under Section 10.1112.62 of the Zoning Ordinance; and Conditional Use Permit Approval to allow a 40,000 square foot building footprint within the CD5 as permitted under 10.5A43.43 of the Zoning Ordinance. Said properties are located on Assessor Map 118 Lot 28, Map 124 Lot 12, Map 125 Lot 21, Map 119 Lot 4, and Map 119 Lot 1-1C and lie within the Character District 5 (CD5), North End Incentive Overlay District, Historic District, and the Downtown Overlay District. (LU-22-111)

III. NEW BUSINESS

A. The request of **Tuck Realty Corporation (Owner and Applicant)** for properties located at **212, 214, and 216 Woodbury Avenue** requesting Preliminary and Final Subdivision Approval for a Lot Line Relocation to create the following lots: Proposed Lot 1 to be 60,025 square feet of lot area where 26,012 square feet are existing, Proposed Lot 2 to be 12,477 square feet of lot area where 29,571 square feet are existing, and Proposed Lot 3 to be 7,917 square feet of lot area where 24,836 square feet are existing. No changes in street frontage are proposed. Said properties are located on Assessor Map 175 Lots 1, 2, and 3 and lie within the General Residence A (GRA) District. (LU-22-129)

B. The request of **Tuck Realty Corporation (Owner and Applicant)** for properties located at **212 Woodbury Avenue** requesting Site Plan Approval for the construction of an eight-unit condominium development consisting of four (4) single living-unit structures, two (2) two-unit structures, 18 parking spaces where are 13 required, and associated stormwater, utility and site improvements with access to the development from Boyd Street. Said properties are located on Assessor Map 175 Lot 1 and lies within the General Residence A (GRA) District. (LU-22-129)

C. The request of **Randi and Jeff Collins (Owners and Applicants)** for property located at **77 Meredith Way** requesting Preliminary and Final Subdivision Approval to subdivide one (1) existing lot with 22,463 square feet of lot area and 31.7 feet of street frontage into two (2) lots with associated 73.3 foot road extension as follows: Proposed Lot 1 with 11,198 square feet of lot area with 73.79 feet of street frontage, and Proposed Lot 2 with 11,265 square feet of lot area and 31.61 feet of street frontage. Said property is located on Assessor Map 162 Lots 16 and lies within the General Residence A (GRA) District. (LU-22-61)

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 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)

E. 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)

IV. OTHER BUSINESS

V. ADJOURNMENT

https://us06web.zoom.us/webinar/register/WN_1-x9-B25Tzyt_hSU6Yt3Eg

SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

2:00 PM **June 7, 2022**

MINUTES

MEMBERS PRESENT:

Peter Stith, Chairperson, Principle Planner; David Desfosses, Construction Technician Supervisor; Patrick Howe, Deputy Fire Chief; Shanti Wolph, Chief Building Inspector; Peter Britz, Environmental Planner; Zachary Cronin, Assistant City Engineer, Eric Eby, Parking and Transportation Engineer; Nicholas Cracknell, Principal Planner

MEMBERS ABSENT:

ADDITIONAL STAFF PRESENT: Stefanie Casella, Planner 1; Beverly Mesa Zendt; Planning Director

I. APPROVAL OF MINUTES

A. Approval of minutes from the May 3, 2022 Site Plan Review Technical Advisory Committee Meeting.

Mr. Stith attended via Zoom.

Mr. Britz moved to approve the minutes from the May 3, 2022, Site Plan Review Technical Advisory Committee Meeting, seconded by Mr. Desfosses. The motion passed unanimously.

II. OLD BUSINESS

A. The application of **Banfield Realty, LLC, (Owner)**, for property located at **375 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District. (LU-20-259)

SPEAKING TO THE APPLICATION

Joe Coronati, Bill Wilcox and Rob Graham spoke to the application. Mr. Coronati noted that they have been here multiple times and have satisfied all previous outstanding items. They have been working with the State on permits. The offsite work on Banfield Rd. has been completed. Mr. Wilcox is here to speak on any environmental questions.

Mr. Britz commented that the DES letter from April 21, 2022, showed that there were a lot of contaminants that have been found on the site and some of them are at unacceptable levels. It would be good to have an update on that sampling and where they were on that.

Mr. Wilcox responded that they submitted a remedial action plan to DES and the EPA. They worked with DES and separated the upland portion from the lower portion of the site. The upland is where the development will be, and the concerns are lead and PCBs in the soil. The action plan is to remove three PCB hotspots. Then they will move all the impacted soil to either beneath the building, asphalt, or an engineered barrier that has 2 feet of cover. Everything on the inside of the disturbance area of the project will be removed or capped. The remedial action plan does not address the low land wetland area. DES has given them a timeline to develop a work plan for that lower potion. They were asked to monitor the PFAS in the ground water at a spring and fall event. They have performed the spring event and the results are pending. They don't' have feedback from the State on the plan yet. The EPA has 30 days to comment, or it's assumed that it is approved. The DES will review this over the next several weeks.

Mr. Britz clarified that the remedial action plan was only for the development area in the upland. Everything will be removed or capped. Then another remedial action plan for the low land area will be created. Mr. Wilcox confirmed that was correct. They will remove all the topsoil because it's technically not suitable. There is a lot of PCB contamination in the topsoil. There are three hot spot areas that will be removed for disposal. All other contamination will be relocated beneath the building, asphalt, or engineered barrier. The low land will have its own work plan remediation and that will be reviewed by the State separately.

Mr. Britz commented that they still don't know what the State will say in terms of putting a building there. Mr. Wilcox responded that the State conceptually agrees with the strategy, so they are expecting a favorable outcome. Mr. Britz commented that they should have that in writing before moving forward. The lowland part is also part of the site. They need to understand how they are protecting the workers and people who live there. This may need a third-party review. Mr. Britz had a lot of concerns about what has not been resolved yet.

Mr. Graham commented that they were hoping to move on to Planning Board with the DES approval as a condition of approval.

Mr. Britz commented that there were still a lot of outstanding pieces. Mr. Graham responded that they would not be able to work the site until they received approvals from the DES and EPA.

Mr. Wolph commented that no physical site work will be performed until all the approvals are in. They could move this along in the spirit of moving it forward. It is all conceptual at this point until the approvals are in. Mr. Britz commented that he was concerned that there are two areas. One is close to completion and the other is a long way off. The whole site has contaminants on it. The applicants didn't put it there, but it needs to be remediated at some point. It is unclear how that might impact the project design. Mr. Britz noted that he could not vote for it yet. They need the response from DES. Mr. Graham commented that they didn't pollute the site. The development in phase 1 improves the condition of the site and stops continued contamination on the site. The last project they did on Cate St. involved excavating the entire site. This project is a win, win for the community and the development. Getting the project going is what pays the bills to do this type of work. They don't expect to go to the Planning Board until they have DES and EPA approvals. The low land remediation will take several years. That portion doesn't impact the development. The sooner we do the development the better it will be for the entire site. They wanted to come in and give an update. They need some help and need someone to work with them. They are trying to do the right thing.

Mr. Wilcox commented that the upland portion has a car crusher and cars, and the low land has a landfill. The entire area of disturbance for the warehouse project will be remediated to meet State standards, and then it will be deed restricted. The soil in that entire area will be removed and disposed of or encapsulated. All storm water will be captured in retention systems and discharged after treatment. The State felt that they could separate the two portions of the site because the contaminant sources are different. It will also be a net improvement for the property environmentally speaking. Mr. Britz responded that he understood there would be a cap. But they still don't know enough. It would be nice to have a third-party review for the remediation plan. Mr. Graham commented that they reached out to the environmental company the City recommended to review this. DES and the EPA are the governing body to review this. There is a lot of oversight on this already. They need to get moving this. Mr. Britz commented that they need the results first before moving on.

Ms. Zendt questioned what the timeline was for the State review. Mr. Wilcox responded that it should be within the next 30-90 days. The upland portion of the site is pretty straight forward. There is a soil management plan that includes how they will remove and dispose of it. There is a storm water plan. There is a plan for how to remove solid waste material if any is found. It will end with a structured cap. This is a net improvement for the site. The science behind the upland is pretty straight forward.

Mr. Britz questioned if they were committed to cleaning up the lowland portions. Mr. Graham confirmed they were. They own the site and are committed to dealing with it. It requires sophisticated testing and that takes time. They worked with the State to identify how to break up the project to get moving on some of it while they continue to study the rest of it. Mr. Wilcox added that the remedial action plan is consistent with what was discussed with the State. This is what they expected.

Mr. Desfosses questioned what the timeline was for the lowland part of the site. Mr. Wilcox responded that the first phase is to get the work plan in by the end of 2023. That will begin their review process. After that they will begin construction on the low-lying areas.

Mr. Howe questioned if they determined that the work on the upper section will not negatively impact the lower section. Mr. Wilcox confirmed that was correct. The was the finding of the State and it was included in the letter.

Mr. Wolph questioned if it would be a requirement from the State to remediate the lower portion. Mr. Graham confirmed that was correct. This should have been completed 10 years ago, but lack of oversight let it go. They have taken over the site with the understanding that they need to get it into compliance. They own a lot of real estate in the town and have completed these types of projects here in the past. It is a complex issue that takes cooperation from the City to accomplish that. It is reasonable to request a third-party review, and they have done that in the past.

Mr. Cronin commented that the fire service coming in should be an 8-inch line not a 6 inch.

TAC Comments:
1. This project was postponed while awaiting results of groundwater and soil sampling of the site for contamination. Please provide a project summary according to the findings as stated in the letter from NH DES dated April 21, 2022.

Prior to Construction

2. City to require a third-party environmental firm during construction.

PUBLIC HEARING

David Ecker of 422 Banfield Rd. lives across from the site. Mr. Ecker commented that the City should be responsible for this site, not Mr. Graham. The contamination is on Mr. Ecker's site as well. It's killing animals on his property. Nothing should happen on the property until it is cleaned up. The water in the well on Mr. Ecker's property is unsafe to drink. Mr. Ecker had the water tested on his site and sent the results to the Planning Board, City Council and the City Manager. No one responded. Nothing should be done on this property until they have a plan to clean it up. They need to make sure the water coming through the pipe to his property is clean.

The Chair asked if anyone was else present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Britz commented that they should wait to hear more from DES.

Ms. Zendt questioned what the compliance mechanism was for developing a remediation plan for the low land portion. Mr. Wilcox responded that the State has issued a site number for the project. Now they have a timeline for completing steps in the process. If they are not completed, then the State can issue a penalty. Mr. Graham commented that they were led to believe certain things when they bought the site. After they investigated and found they were out of compliance, they opened that file immediately and began working to get the site in compliance.

Mr. Wilcox noted that he was the environmental consultant on the project. This team has given them the leeway to do whatever steps are needed to get this cleaned up. They have done hundreds of borings and samples to understand the contamination. The State found it appropriate to divide the site because the contaminants are so different between the upland and low land portions. They can create a net improvement by doing the upland first and then they will put forth a schedule to remediate the low land portion. There has been a lot of work done on this site and they have a timeline.

Mr. Britz moved to postpone consideration to the July meeting, seconded by Mr. Howe. The motion passed unanimously.

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 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 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)

SPEAKING TO THE APPLICATION

Joe Coronati and Mike Garrepy spoke to the application. Mr. Coronati commented that they were asked to look at an overflow construction of a culvert on Sagamore Ave. for off-site improvements. They submitted design work and it has been reviewed and signed off on by a third-party consultant. Part of the design work included work in the wetland buffer. They previously submitted a site plan application but could not edit the old application to submit this CUP application. They worked with Staff on how to submit and submitted a cover letter that answered all the CUP questions. They need to meet with the Conservation Commission on this still as well.

Mr. Britz commented that they need to be submit this as a stand-alone CUP application. They can do a separate plan and submit it online and as a hard copy. There is not enough information about the wetland included in the application. Mr. Coronati responded that they were told to put it all in one package. Mr. Britz responded that there should be one package for each application. The site review and CUP should be one packet for the Planning Board. Mr. Coronati responded that they don't have a separate CUP plan set. The cover letter outlines all the information that was requested. Mr. Britz responded that they can work offline on sorting out the application. There is not enough information on the impact and wetland.

Mr. Garrepy questioned if they should schedule a site walk before the Conservation Commission meeting. Mr. Britz confirmed they could set that up. Mr. Garrepy commented that they have satisfied the technical pieces of this plan and were hoping to move on from TAC today. Then they will go through the Conservation Commission and Planning Board.

TAC Comments:

1. Proposed culvert across Sagamore Ave needs a Wetland Conditional Use Permit and City Council approval for work on City property.

PUBLIC HEARING

Bill Bowen President of the Sea Star Cove Condo Association commented that they worked with the developers on the landscaping plan between the two properties. There were a couple little trees that still needed to be included on the plan based on those discussions. The complicated water management system and culvert system under the road is critical. Mr. Bowen questioned how they ensure that the plan is implemented correctly in reality. Mr. Desfosses responded that for complicated designs they usually hire a third-party inspector to review it and ensure it will work the way it is intended. DPW and the Planning Department co-lead that effort. Mr. Britz added that the long-term maintenance plan will be included in the home owner documentation and it would be their responsibility.

Michael Simone of 1167 Sagamore Ave. commented that the catch basin near his mailbox should be closer to the sidewalk of Sea Star Cove. That is where the water flows and they should move it to capture it there. Mr. Desfosses agreed. It should be moved to the other side of the driveway. Mr. Coronati confirmed they would update that. Mr. Simone questioned who would be involved in the 2% grade installation. Mr. Desfosses responded that the developer building the project would implement that. The 2% grade is required by ADA code.

The Chair asked if anyone was else present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Ms. Zendt requested clarification on the catch basin change that was requested. Mr. Desfosses responded that there are currently 3 catch basins in the State right of way. The one furthest to the north should be relocated to the other side of the driveway to be up hill of the driveway.

Mr. Desfosses requested clarification on why the jellyfish filter was located where it was on the plan. Mr. Coronati responded that was where all pipes came together. Mr. Desfosses questioned if that configuration would work. Mr. Coronati confirmed that it would. They have been working with the manufacturer. Mr. Desfosses noted that it would be easier to clean if it was on the other side of the street, but this location was fine. They should include a letter from the manufacturer stating it will work.

Mr. Desfosses noted that there should be a stipulation for a third-party inspector as well.

Mr. Desfosses moved to recommend approval to the Planning Board, seconded by Mr. Eby 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.

The motion passed unanimously.

C. The request of **HCA Realty Inc. (Owner),** and **Portsmouth Regional Hospital (Applicant),** for property located at **0 Borthwick Avenue** requesting Site Plan Review Approval for the construction of a satellite parking lot consisting of 520 spaces and associated sit 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)

SPEAKING TO THE APPLICATION

Patrick Crimmins from Tighe and Bond spoke to the application. Mr. Crimmins commented that this was their third meeting. They have addressed the majority of the comments from last month, and Mr. Crimmins noted that he would address the new comments now.

TAC Comments:
1. Please contact the Assessor and GIS Coordinator to obtain a preliminary street address for this property.
    a. Mr. Crimmins agreed.
2. Please include more details on multi-use path and extend topography and grading on plans to show existing conditions and necessary changes to complete design. It is likely that there will need to be a road diet and that approximately half the path on existing pavement.
    a. Mr. Crimmins responded that they were willing to do this and were hopeful this could be a stipulation of approval. They were happy to work with DPW to finalize the design.
3. Waiting for drainage review from Altus.
    a. Mr. Crimmins agreed. They have addressed all technical aspects except for this. They were hoping this could be a stipulation of approval that the applicant address comments prior to moving forward to the Planning Board. This requires an AOT permit, so they will have another peer review as well.

Prior to Planning Board Approval

4. House-side shields on parking lot lights and needed to prevent light pollution into homes on Coakley Rd. Please update plan details.
    a. Mr. Crimmins responded that they would revise the plans.

Mr. Crimmins commented that they were hoping to get through today and work through outstanding items with the peer reviewer and Staff.

Mr. Britz gave the applicant credit of doing a good job enhancing the buffer in the landscape plan.

PUBLIC HEARING

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

DISCUSSION AND DECISION OF THE BOARD

Ms. Zendt commented that they would like to see the address updated in the packet when they have it. Mr. Crimmins confirmed they would update it when they get it.

Mr. Cronin questioned if they needed to wait for the drainage results before the Planning Board. Mr. Desfosses responded that they should. This can move on from TAC, but they need consensus on the storm water peer review before going to the Planning Board.

Mr. Desfosses moved to recommend **approval** to the Planning Board, seconded by Mr. Cronin 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.

The motion passed unanimously.

D. The request of **North Church of Portsmouth (Owner),** for property located at **355 Spinney Road** requesting Preliminary and Final Subdivision approval to subdivide one existing lot with 146,666 square feet of lot area and 10,429.68 feet of frontage into two lots as follows: Proposed Lot 1 with 17,817 square feet of lot area and 117.6 feet of frontage, and Proposed Lot 2 with 128,849 square feet of lot area and 360.62 feet of lot frontage. Said property is located on Assessor Map 169 Lot 1 and lies within the Single Residence B (SRB) District. (LU-22-49)

SPEAKING TO THE APPLICATION

Doug Woodward and Liz Good spoke to the application. Mr. Woodward commented that they were there last month and have resolved some of the outstanding items. They moved the property line to the stone wall. They moved the property line back so the sewer for the parsonage is on that property until the neighboring property. The last item was question about the sewer connection from the parish house to the manhole. They made an appointment with Doug Sparks and performed that dye test. They included a copy of the results in the packet. It is sufficiently and adequately connected.

TAC Comments:

1. Please confirm that dye test was completed, and the results are satisfactory to the DPW.

PUBLIC HEARING

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

DISCUSSION AND DECISION OF THE BOARD

Mr. Cronin moved to recommend approval to the Planning Board as presented, seconded by Mr. Desfosses. The motion passed unanimously.

III. NEW BUSINESS

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)

SPEAKING TO THE APPLICATION

Patrick Crimmins from Tighe and Bond spoke to the application. They are proposing a 2-story building in the existing rear parking lot. It will be within the entire footprint of the parking lot. They will be removing 5,000 sf of pavement in parking lot from the buffer. It will be a vet office and they have acquired a special exception. It requires a site plan permit and a CUP for wetland impact. They will meet with the Conservation Commission as well. This application is similar to what was presented at the work session. However, they did remove the driveway out to Portsmouth Blvd. That was removed based on feedback. The building will be 12,500 sf and 2 stories. They are providing just above the minimum parking required. They have identified the landscaping and buffer enhancement throughout the plan. Removing 5,000 sf of impervious will be reducing peak runoff rates. Currently the site just sheet flows to the adjacent lot and then to the wetland. They will be providing advanced storm water treatment, which will meet site plan regulation and AOT regulations even though that is not required for this site. They have worked with utility providers and have included some will serve letters for electric and gas. They will have to tie into Commerce Way and the transformer on the front of the property. There is an existing sewer main running through the parcel and the water connection will go out to Portsmouth Blvd. They are adding buffer plantings and seed mix to the site. The trip generation memo shows that it would not be a large impact given the use of the site. In the past they have done a full traffic study of this area which contemplated a full build out of the office park. The square footage of this is captured in that study and that applicant provided improvements with signal upgrades to mitigate the traffic for this development.

TAC Comments:

1. Study and design restoration of disturbed wetland area and wetland channel west of property are needed.
    a. Mr. Crimmins requested clarification on this comment. They did a site walk with the Conservation Commission and understand it was looked at. There was a lot of trash in there. This site is separate from that channel because of a large berm. They will maintain the berm and capture the water. Mr. Desfosses responded that it was more to do with sediment than trash. There are feet of sediment in that channel and they are looking to kick start off a fairly significant project around that. Mr. Crimmins clarified that they were looking for a contribution toward that. Mr. Desfosses confirmed that was correct.
2. New sewer manhole should be cut in and not a dog-house manhole.
    a. Mr. Crimmins agreed and confirmed that they will show it on the plan.

Prior to Planning Board Approval

3. Applicant must agree to contribute to the pedestrian multi-use path construction on Market Street.
    a. Mr. Crimmins responded that this was understood. They were happy to work with Staff.

Prior to Construction

4. Location of existing mains on the property are to be field verified by contractor as we believe there is a water main connection already located in the area off Portsmouth Blvd. Water mains may need to be relocated at developer's expense and/or easements required over water mains.
    a. Mr. Crimmins agreed with that. Mr. Desfosses noted that when they did Commerce Way, they never found the water main. They believe it to be exactly where it is being shown on the plan. They may be able to tap it in the parking lot, but they need to find that line. The sewer line going through the property is a private line with and easement. Mr. Crimmins confirmed that was correct. Mr. Desfosses commented that there was a note for a fence along the back access way,

but it isn't shown on the plan. Mr. Crimmins responded that they need to remove the note. The intent was to not have a fence because of the berm.

Mr. Eby commented that there should be a leader with a no parking sign in the handicap access aisle. Mr. Crimmins confirmed they would update that.

Mr. Britz questioned if there was any salt storage in the parking lot. Mr. Crimmins responded that he was not aware of that. If there is now, then it will not be there when this is built. Mr. Britz noted that if there was, then it needs to be covered.

Mr. Howe commented that they needed to add a note about noncombustible mulch. Mr. Crimmins confirmed that would be updated.

PUBLIC HEARING

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

DISCUSSION AND DECISION OF THE BOARD

Mr. Desfosses moved to recommend approval to the Planning Board, seconded by Mr. Britz with the following stipulations:

Items to be addressed prior to Planning Board approval:
1) Applicant will work with DPW to determine fair share contribution amount that will be dedicated to City sediment removal mitigation project.
2) New sewer man hole will be a cut in manhole and articulated as such on plan.
3) A note will be added to the plan to use non-combustible mulch on site.
4) Applicant will work with DPW to determine fair share contribution amount that will be dedicated to pedestrian multi-use path construction on Market Street.
5) A leader will be added to the plans to call out handicap parking access.

Conditions Subsequent:
6) Location of existing water mains on the property will be field verified by contractor in order to vet the design. If water mains need to be relocated it will be at the developer's expense with plans and necessary easements reviewed and approved by DPW.

The motion passed unanimously.

B. The request of **Port Harbor Land, LLC (Owner and Applicant)** for property located at **2 Russell Street** requesting Lot Line Revision Approval to adjust the boundary lines on three lots to create one lot with 18,237 square feet (0.418 acres) of lot area, one lot with 52,651 square feet (1.209 acres) of lot area, and one lot with 19,141 square feet (0.429 acres) of lot area. Said properties are located on Assessor Map 118 Lot 28, Map 124 Lot 12, and Map 125 Lot 21 and lie within the Character District 5 (CD5), North End Incentive Overlay District, Historic District, and the Downtown Overlay District. (LU-22-111)

SPEAKING TO THE APPLICATION

Mr. Stith read III. New Business Items B and C together, and noted they would be voted on separately.

Neil Hanson and Patrick Crimmins from Tighe and Bond and Bob Ulig spoke to the application. Mr. Hanson commented that they were seeking a site plan approval, lot line adjustment, and two CUPs. The site is on the corner of Russell St. and Deer St. The proposed site plan consists of three separate buildings. Building 1 will be a 4-story office building. The building 2 will be a 5-story mixed use residential building. The ground floor has a 40,000 sf footprint and will contain parking, retail, and commercial space. There will be 60 residential units on the upper floors. Building 3 is another 5-story mixed use residential building. The ground floor will have a retail use and there will be 24 units above. Parking for the project is split from the existing Sheraton parcel and parking on site. They need a CUP for the shared parking. The existing Sheraton site has 154 spaces on site and the balance will be on the proposed site. The existing site has a total of 82 deeded parking spaces for Deer St. and Sheraton condos. That was factored in. The project is providing 38.8% community space. They will be utilizing the North End Overlay incentive for building height. There will be 104 parking spaces in the basement, and they will be a combination of single and tandem. The tandem spaces will be assigned. The ground floor will have 85 spaces. There will be 26 single spaces and the remaining will be in a puzzle lift system that will be primarily used by valet. There will be 22,000 sf of off-site improvements, wide sidewalks on Russell St. and Deer St., and a community park. They are maintaining the existing alignment with pavers on Deer St. The crosswalk detail mirrors the opposite end of Portwalk.

Mr. Ulig commented that they highlighted the open space continuum from The African Burial Ground and Deer St. They are wrapping the site from Maplewood Ave. and Deer St. to have a complimentary street scape with brick pavers and street trees. There will be a community corner park and the intersection. Russell St. will have brick sidewalk, street trees, and Portsmouth's light fixtures. The community space between buildings 1 and 2 is called the muse space. There is a corner community space, and an upper north community park. There will be a shared use area for pedestrians and vehicles at the parking entrance between buildings 2 and 3. The area along the railroad tracks is a shared bike/ped/vehicle area up to Green St. They are changing the curb lines to get open space on corner of Deer St. and Russell St. They were inspired by creating space open to the public and responsive to the grade change. There will be a step down into the plaza area. There will be focal point art piece. The edge of the lower plaza will provide seating opportunities and they are using trees to book end the plaza. They will have ample sidewalks, so people don't have to go into the plaza to traverse the streets. The muse space will be a continuation of open space and a visual pass through to Vaughn St. They will create a place for people to gather. The left side of the building will have seating opportunities and lower planting areas. The right-hand side is more parking, so they are hoping to animate that edge more. There will be overhead lighting to draw people into the space. There will be a shared use area between Green St. and Maplewood Ave. Similar to what is in front of the Music Hall. It will be open and inviting for pedestrians and vehicles. The main entryway is a shared use between pedestrians and vehicles. The pedestrian zone will dominate, and then there will be a drop off area marked by a change in pavement and bollards. There will be improvements to the north community park area. It will be an extension of the path along Market St. There will be a pathway and opportunity for seating with planting enhancements.

Mr. Hanson commented that they are required to provide a certain amount of community space to get the North End incentive. The exhibit shows the community space that is provided and how that totals to achieve the required amount. The first type is the wide sidewalks. There is a land transfer area near buildings 2 and 3 that will allow for wider sidewalks. The second space is the muse area, the pedestrian connection between buildings 2 and 3, and the shared pedestrian/vehicle access at Maplewood Ave. The third area is the park area near the future round about. The existing condition of the site is that it's almost entirely impervious with no treatment. This proposal will capture runoff from the site and pipe it into a detention system that will outlet through a jelly fish filter and finally discharge at the Maplewood Ave. and Deer St. intersection. Additionally, this site requires an AOT permit. The utility connections are outlined on the plan, and they are showing a grease trap for each building for now. That may change depending on tenants. They have been in contact with Eversource. There will be one transformer for each building. Two of them will be behind building 2 and the other one will be on the opposite side of building 2. They included a full traffic study. The conclusion of the study was that the additional traffic will not have significant impact of the traffic on the surrounding roads. Aside from the City fixtures, the rest of the lighting will be building mounted and dark sky compliant.

TAC Comments:

1. 3rd party review for stormwater management and 3rd party review for traffic impacts is required. A full review will be forthcoming after traffic and drainage studies are completed.
    a. Mr. Hanson responded that they understand the review for traffic impacts, but the storm water may not be needed because this project needs an AOT permit as well.
2. Are there any offsite improvements proposed for the City owned land located between the Railroad and Vaughan St?
    a. Mr. Hanson responded that they did not plan for any improvements there. That is not a property they control.
3. Pre-video inspect sewer and drain pipes on Deer Street, Maplewood Ave, and Russell Street.
    a. Mr. Hanson requested clarification on when that would need to be done. Mr. Desfosses responded that it would need to be done prior to construction.
4. Correct the alignment of the "Proposed North Mill Pond Greenway".
    a. Mr. Hanson confirmed that would be updated.
5. Drivable area along the railroad must be signed as pedestrian and bike path. Add pedestrian crossing over railroad between Map 125 Lot 21 and Map 118 Lot 28.
    a. Mr. Hanson responded that they had no issue with signing the pedestrian/bike path. The owner does not want the liability of a railroad crossing on their property. They will put up a sign on the end of the muse space to discourage crossing there and direct people to Maplewood Ave. or Green St.

Prior to Planning Board Approval

6. Applicant must agree to contribute to the Maplewood Ave drainage improvements.

7. Applicant must agree to contribute to the Russell and Market Street intersection traffic improvements.

Mr. Hanson confirmed that they would work with the City on both of those contributions.

Mr. Britz questioned if they planned to remove the ledge in the park on the other side of Russell St. in order to put in the path. Mr. Ulig confirmed that was correct. Mr. Britz questioned if there as a way to work with the ledge. Mr. Ulig responded that it would not allow for much penetration into the site. Mr. Desfosses added that in order to build the roundabout they need to build a temporary roadway through there first.

Ms. Zendt questioned if they were only adjusting the lot line where they were abandoning a certain area to the City. Mr. Hanson responded that there were 3 land transfers. One is at the roundabout, the other two are for the realignment of Russell St. The primary development is 3 separate properties so the need to move internal lot lines as well. That way they won't be going through the buildings. The need a formal lot line review on the plan done by a surveyor. The 3 land transfer areas are conveyed to the City. Ms. Zendt responded that it would be good to have that on a separate plan. Mr. Crimmins confirmed they would develop that when they finalize the location of the buildings. Ms. Zendt commented that they would also need an easement plan with a unique identifier showing what easements were for what. Mr. Hanson confirmed they would.

Mr. Cracknell commented that they should consider meeting offline to discuss the community space and landscaping. The current configuration of the park may not be the best layout. They need details to figure out how the roundabout construction will impact the ledge. It may not need that much attention from a landscape architecture perspective. It would be better to stick with what they do downtown already with the wide pedestrian sidewalks. The street trees should be in the sidewalk with grates, and it would create wider sidewalks as a result. The steps to the lower level needs to be granite. The sidewalks should be brick. Public art at the bottom may not be the best idea. They have an opportunity to do something interesting to celebrate the space. It is worth some thought about what to do with that space. They could put in something more educational. It is a mistake to put landscaping against the building at the muse. They should put it in the center and leave opportunity for future tenants to spill out into the space. The mural against the parking is a success. The Music Hall approach is excellent, and lighting will be key there. People will traverse the back side of the buildings if it is done correctly. They need to look at best way to activate the space.

Mr. Howe commented that they will need an easement for the fire access road and the rear access road needs to be marked in accordance with the ordinance.

Ms. Zendt questioned if there were any offsite easements or if it was just between the parcel and to the benefit of the City. Mr. Hanson was not sure. Ms. Zendt noted that if there were, then they should include a draft easement or a letter of agreement from the other party involved.

Mr. Desfosses commented that the City has been interested in softening the corner on Green St. and this does not propose that. Mr. Desfosses was not sure how to do that in harmony with the building they are proposing, but that is a major goal. They need to make sure everything will work with the site distances. They need to look to make the corner softer.

Mr. Eby questioned if the entrance to the garage was on the shared street. Mr. Hanson responded that there was a separate entrance to the garage level. The ground entrance is off Russell St. between buildings 2 and 3 and the basement has an access in the rear. Mr. Eby questioned who would be using the back entrance. Mr. Hanson responded that it would be the residents. The other one would be for residents and valet for the Sheraton. Mr. Eby clarified that there was no public parking. Mr. Hanson confirmed that was correct. Mr. Eby requested that they show the turning diagrams on there. Mr. Hanson confirmed that they would update that. Mr. Eby commented that the crosswalk to Portwalk Place was tough because it is so close to a signal. It may be enhanced by having a raised island. It would be better to have it at a signalized crossing. Mr. Hanson responded that people cross there now and there is nothing. They can look at signage or a raised island.

Mr. Cronin questioned what the size of the domestic fire service was. Mr. Hanson responded that it was not sized yet.

PUBLIC HEARING

Elizabeth Bratter of 159 McDonough St. noted that she submitted a letter. It was her understanding that there will be third party drainage review. They should think about the amount of water going into the North Mill Pond collectively. The plan includes detention, but it could still be problematic with storm surging and high tides. The bike and pedestrian area should flip flop so that when they come out of the back of the building they can right on that sidewalk. Ms. Bratter could not find a trash plan for building 1 or. 3. The balcony on the second floor was originally proposed as a living green roof, but that wasn't shown in the plans today. Ms. Bratter questioned if that was still happening. The seasonal adjustment for the traffic report is low. The corner of Deer St. and Maplewood Ave. is starting as an F grade level and looks like it is ending as an F grade level. That corner sidewalk should be smaller, and the lanes should be wider to help traffic move through there more smoothly.

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one else rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Britz questioned when they would have the easement plans. Mr. Hanson responded that they can do it before the Planning Board.

Mr. Cracknell commented that he would prefer to continue one meeting to take another cut on the landscape plan. Ms. Zendt requested that they clarify how the City accepts or dedicates the easements. Mr. Crimmins responded that there was a precedent with the AC hotel. Ms. Zendt noted that it would be good to see lot line and easement plans.

Mr. Cracknell moved to postpone consideration to the July meeting, seconded by Mr. Britz. The motion passed unanimously.

C. The request of **Port Harbor Land, LLC (Owner and Applicant)** for property located at **2 Russell Street** requesting Site Plan Approval for the construction of 84 residential units, commercial space, and parking in three buildings with associated community space, paving, utilizes, landscaping, and other site improvements including three proposed land transfers to allow for the realignment of the Russell Street & Deer Street intersection and for the City's future construction of a roundabout at Russell Street and Market Street (Land transfer area 1 is proposed from Map 119 Lot 4 to the City of Portsmouth. Land transfer areas 2 and 3 are from Map 119 Lot 1-1C to the City of Portsmouth); Conditional Use Permit Approval to provide 343 parking spaces on separate lots where 341 spaces are required as permitted under Section 10.1112.62 of the Zoning Ordinance; and Conditional Use Permit Approval to allow a 40,000 square foot building footprint within the CD5 as permitted under 10.5A43.43 of the Zoning Ordinance. Said properties are located on Assessor Map 118 Lot 28, Map 124 Lot 12, Map 125 Lot 21, Map 119 Lot 4, and Map 119 Lot 1-1C and lie within the Character District 5 (CD5), North End Incentive Overlay District, Historic District, and the Downtown Overlay District. (LU-22-111)

DISCUSSION AND DECISION OF THE BOARD

Mr. Cracknell moved to postpone consideration to the July meeting, seconded by Mr. Britz. The motion passed unanimously.

D. 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)

SPEAKING TO THE APPLICATION

Patrick Crimmins from Tighe and Bond, Matthew Gamby, and architect Chris Dumond spoke to the application. Mr. Gamby commented that the proposal was for the addition of an 8,700-sf radiation and oncology treatment center. It will be good for the community to expand their healthcare options. There are buffer and setback encroachments. They have been granted setback approval from the BOA and received a recommendation for approval from the Conservation Commission. The plan is on Borthwick Ave. The building will be extended, and the patient drop off will be reworked. The new accessible parking spaces will also be reworked.

There will be a mobile MRI hot pad that will allow for MRI imaging during construction. There is encroachment in the wetlands. To offset that they will expand the wetlands and regrade a portion of the site. They will detain storm water volume in the pond. A storm pipe will be added to tie into the roof drains. There will be a new manhole added to the drain line. They will rework the existing fire service line from the public way to the hospital. It will go around the foundation and brought back into the same room it is today. There will be a retaining wall for the MRI hot pad. There will be some temporary and some permanent impact to the wetlands. They will fully restore the wetlands and add plantings in the buffer. They will also replace some trees. Runoff will go into the pond. The hydro flow model shows the peak discharge is reduced with the pond expansion.

Mr. Desfosses questioned what year storm they used for storage analysis. Mr. Gamby responded that they looked are years 2-10. Mr. Desfosses questioned what the results for the 2-year storm was. Mr. Gamby responded that for the pre it was 9.1 and the post was 8.8.

TAC Comments:

1. Address grading at handicapped ramp at main entrance to stop drainage issue on handicapped ramp.
    a. Mr. Gamby questioned if they were talking about the main entryway and the existing handicap spaces. Mr. Desfosses responded that landscapers have blocked the main entrance to the handicap ramp. Mr. Crimmins responded that the retention pond was backing up the entire system, but it was reconstructed last year. There is no longer any flooding in that area. Mr. Desfosses responded that he was talking about the City sidewalk at the main entrance. Mr. Gamby confirmed they would address it.
2. Re-establish drainage swale from the propane tank behind hospital to Borthwick Ave near emergency room driveway.
    a. Mr. Gamby responded that the pond was reconstructed and that alleviated some previous parking lot concerns. Mr. Desfosses commented that this has been a long-standing issue that's been going on since they built the building. There are feet of sediment in the channel that needs to be removed for it to function properly. Behind the heli-pad is the worst spot. It all needs to be dredged for long term repair. Mr. Britz questioned if they should design it as a restoration plan. Mr. Desfosses commented that he understood there would be a timeline and permitting involved, but it should be a condition of approval.
3. Study and design is needed for the restoration of disturbed wetland area and wetland channel from propane area to the east to Route 1 to ensure proper drainage flow.
    a. Mr. Gamby commented that this was the same comment. Mr. Desfosses responded that it was further downstream. They need to dredge the area near the hospital and then contribute to dredging the rest of the system.

4. Location of water lines are not accurate, please correct on plans.

Mr. Gamby requested clarification. Mr. Desfosses responded that there was a 4-inch line going up the emergency entrance driveway, but they have no record of that line. Mr. Gamby responded that was a dry FDC fire connection line. When they were permitted 2-3 years ago, they needed to add an FDC closer to the hydrant, so that was added. Mr. Desfosses commented that they should relabel it on the plan so it's clear it is not a feed. Mr. Gamby confirmed it would be updated.

6. New sewer manhole may not be a dog-house manhole. Clarify sewer detail on sheet C6.
    a. Mr. Gamby confirmed they could put in a manhole but would prefer a doghouse. Mr. Desfosses commented that it needed to be a manhole. Mr. Gamby confirmed they would revise it.
7. Confirm drainage study uses Cornel extreme precipitation values.
    a. Mr. Gamby confirmed they could revise the storm data and rerun the model. There should not be much of a change.

Mr. Eby questioned if they did a trip generation for the addition. Mr. Gamby responded that they did not because they are not adding new beds. It is just support space. Mr. Eby noted that there will be some additional traffic and they should put a memo together. Mr. Crimmins confirmed they would add it.

Mr. Howe commented that it looked like there was an exit passageway for the egress from stair one. Mr. Dumond responded that it's an internal stair with an extended egress to the entrance doors and exit sliders. It will have 2-hour wall and ceiling. Mr. Howe commented that he was not a fan of that approach. It is allowed because it's an exit passageway. Mr. Dumond commented that they have to do it that way because the code only allows 50% of the stairs to go to the lobby. This stair goes up to the fifth floor. They could not have this stair egress through the lobby. Mr. Howe noted that the exit passage was allowed but not the best idea in this occupancy. There cannot be anything like planters or benches etc. in the passageway. Mr. Dumond agreed. They are designing this by creating a 2-hour tunnel and the utilities will go above the tunnel. Mr. Howe commented that it will be challenging to evacuate that area. Mr. Dumond responded that they made the width 8 feet and recessed the door going in so it would not reduce the width of the corridor. Mr. Howe confirmed that it did comply, but sometimes it is still not a good idea. Mr. Dumond responded that they would look at it.

PUBLIC HEARING

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one else rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Desfosses moved to recommend approval to the Planning Board, seconded by Mr. Cracknell with the following stipulations:

Items to be addressed prior to Planning Board approval:
1) A trip generation memo will be submitted to DPW for review and approval.

2) Fire department connection line will be labeled as such.
3) New sewer manhole will be a cut in manhole.
4) Borthwick Ave handicap access ramp flooding will be addressed and approved by DPW.

Conditions Subsequent:
5) 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.
6) 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.

The motion passed unanimously.

IV. ADJOURNMENT

Mr. Wolph moved to adjourn the meeting at 4:48 p.m., seconded by Mr. Desfosses. The motion passed unanimously.

Respectfully submitted,

Becky Frey
Secretary for the Technical Advisory Committee

GENERAL INFORMATION

OWNER/APPLICANT
RANDI & JEFF COLLINS
77 MEREDITH WAY
PORTSMOUTH, NH 03801
RCRD BK.#6274 PG.#1666

RESOURCE LIST
PLANNING/ZONING DEPARTMENT
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
(603)-610-7216
JULIET WALKER, PLANNING DIRECTOR

ATTORNEY
CHRISTOPHER P. MULLIGAN, ESQUIRE
BOSEN & ASSOCIATES
266 MIDDLE STREET
PORTSMOUTH, NH 03801
(603)-427-5500

LU-22-61

ZONING RELIEF PLANS

TWO LOT SUBDIVISION

RANDI & JEFF COLLINS

77 MEREDITH WAY
PORTSMOUTH, NH 03801

JUNE 1, 2022

INDEX OF SHEETS

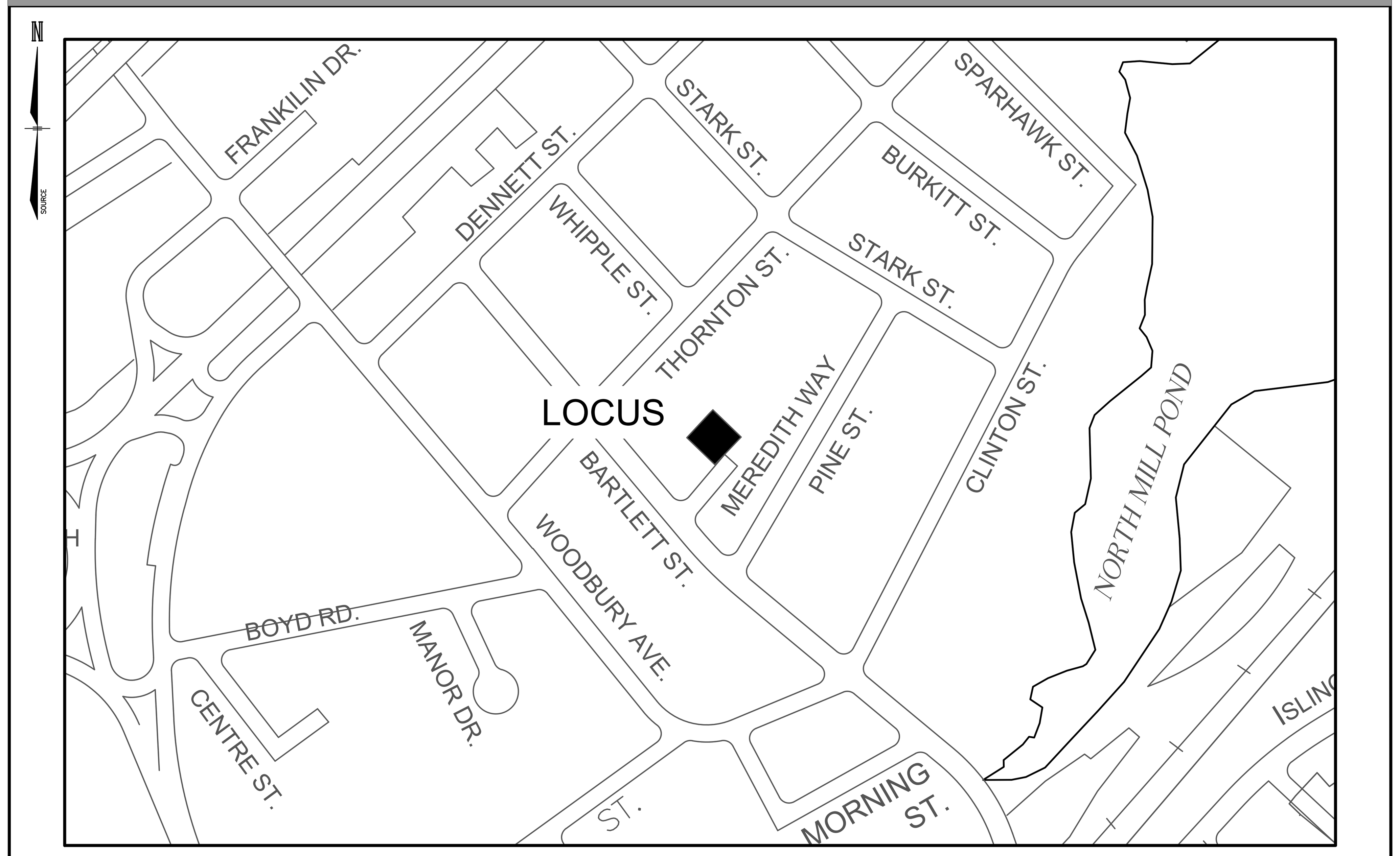
SHEET	SHEET TITLE
S-0	COVER SHEET
S-1	EXISTING CONDITIONS
S-2	PROPOSED CONDITIONS

VARIANCES REQUESTED

RELIEF IS REQUESTED FROM THE FOLLOWING SECTIONS OF THE CITY OF PORTSMOUTH ZONING ORDINANCE:

ARTICLE 5 SECTION 10.521 – MINIMUM CONTINUOUS LOT FRONTAGE:
TO ALLOW THE CONTINUOUS STREET FRONTAGE TO BE 73.99' FOR PROPOSED LOT A & 31.61' FOR PROPOSED LOT B, WHERE 100' IS REQUIRED AND 31.7' EXISTS.

VICINITY PLAN



TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 COMMERCE WAY, SUITE 102
PORTSMOUTH, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

TAX MAP 162 LOT 16
ZONING RELIEF PLANS
COVER SHEET
77 MEREDITH WAY
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
RANDI & JEFF COLLINS

JUNE1, 2022

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	FB	
47442-00	CK	CADFILE	S-0

Jun 01, 2022 - 2:09pm
F:\MSC Projects\47442 - 77 Meredith Way - Portsmouth\47442-00 -Collins - 77 Meredith Way\Carlson Survey\Dwgs\47442-00 Survey.dwg

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 JUNE 2021. 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 LICENSED LAND SURVEYOR
No. 01037
BRENDA M. KOLBOW
Brenda Kolbow
SIGNATURE

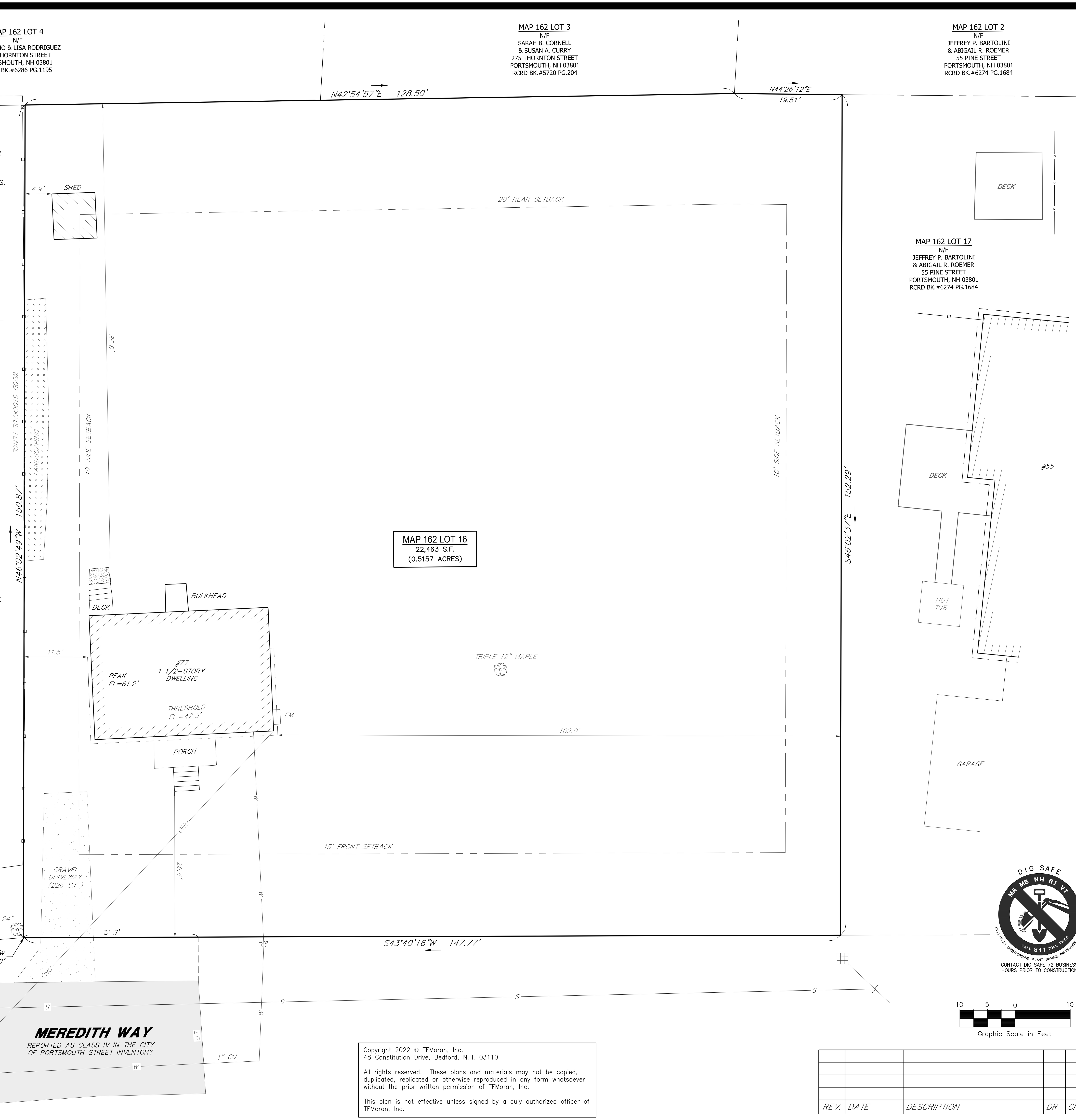
LICENSED LAND SURVEYOR

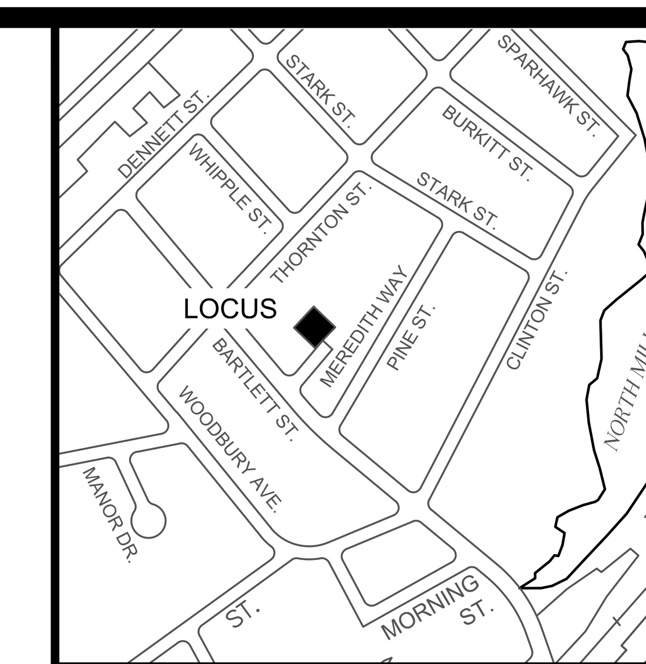
2022-06-01
DATE

LEGEND:

MAP 137 LOT 11	ASSESSORS MAP AND LOT NUMBER
BK. PG.	BOOK / PAGE
CU	COPPER
EL.	ELEVATION
EM	ELECTRIC METER
EP	EDGE OF PAVEMENT
N/F	NOW OR FORMERLY
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
S.F.	SQUARE FEET
W/	WITH
	GUY WIRE
	UTILITY POLE
	DECIDUOUS TREE
	WATER SHUT OFF
OHU	OVERHEAD WIRE
	STOCKADE FENCE
	BOUNDARY LINE
	SETBACK LINE
S	SEWER LINE
W	WATER LINE
	CONCRETE
	PAVEMENT
	GRAVEL

MAP 162 LOT 15
N/F
DAVID J. & JENNIFER M. CHAPNICK
97 MEREDITH WAY
PORTSMOUTH, NH 03801
RCRD BK.#5267 PG.413





LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE GENERAL RESIDENCE A (GRA) ZONING DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 162 AS LOT 16.
3. THE PARCEL IS LOCATED IN ZONE X AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 259 OF 681, MAP NUMBER 33015C0259F, MAP REVISED JANUARY 29, 2021.
4.

MINIMUM LOT DIMENSIONS:	REQUIRED:	EXISTING:
LOT AREA:	7,500 S.F.	22,463 S.F.
LOT AREA PER DWELLING UNIT:	7,500 S.F.	22,463 S.F.
CONTINUOUS STREET FRONTAGE:	100'	31.7'
DEPTH	70'	151.6'
MINIMUM YARD DIMENSIONS:		
FRONT	15'	26.4'
SIDE	10'	11.5'/4.9' SHED
REAR	20'	86.8'
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT:		<35'
SLOPED ROOF:	35'	
FLAT ROOF:	30'	
ROOF APPURTENANCE HEIGHT:	8'	
BUILDING COVERAGE:	25%	3.5%
MINIMUM OPEN SPACE:	30%	85.3%

5. OWNER OF RECORD:
   MAP 162 LOT 16:
   RANDI & JEFF COLLINS
   77 MEREDITH WAY
   PORTSMOUTH, NH 03801
   RCRD BK.#6274 PG.#1666
6. PARCEL AREA:
   MAP 162 LOT 16:
   22,463 S.F.
   (0.5157 ACRES)
7. 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 THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY LINES, TOPOGRAPHY AND CURRENT SITE FEATURES OF MAP 162 LOT 16.
9. FIELD SURVEY COMPLETED BY TCE JUNE 2021 USING A TOPCON DS103 AND A TOPCON FC-5000 DATA COLLECTOR.
10. HORIZONTAL DATUM IS NAD83 (2011) PER STATIC GPS OBSERVATIONS. THE VERTICAL DATUM IS NAVD88 PER STATIC GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 2 FEET.
11. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
12. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.
13. THE EXISTING USE OF THIS PARCEL IS SINGLE-FAMILY RESIDENTIAL.

PLAN REFERENCES:

1. "PLAN OF ELM PLACE, SITUATED IN PORTSMOUTH, N.H." DATED 1856. RCRD PLAN #008.
2. "LOT LINE REVISION, PINE STREET, PORTSMOUTH, NEW HAMPSHIRE, FOR JOYCE M. MAYO & CITY OF PORTSMOUTH" PREPARED BY DURGIN, VERRA AND ASSOCIATES, INC., DATED 6/9/93 WITH REVISION 1 DATED 10/4/93. RCRD PLAN #D-22643.

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

10 5 0 10
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP 162 LOT 16
EXISTING CONDITIONS PLAN
TWO LOT SUBDIVISION
77 MEREDITH WAY
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
RANDI & JEFF COLLINS

SCALE: 1" = 10' (22x34)
1" = 20' (11x17)
JUNE 1, 2022

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	47442-00	DR	FB	S-1
		CK	CADFILE	

Jun 01, 2022 - 9:43am
F:\MSC Projects\47442 - 77 Meredith Way - Portsmouth\47442-00 -Collins - 77 Meredith Way\Carlson Survey\Dwgs\47442-00 Survey.dwg

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 JUNE 2021. 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 LICENSED LAND SURVEYOR No. 01037 BRENDA M. KOLBOW

SIGNATURE

2022-06-01

LICENSED LAND SURVEYOR — DATE

LEGEND:

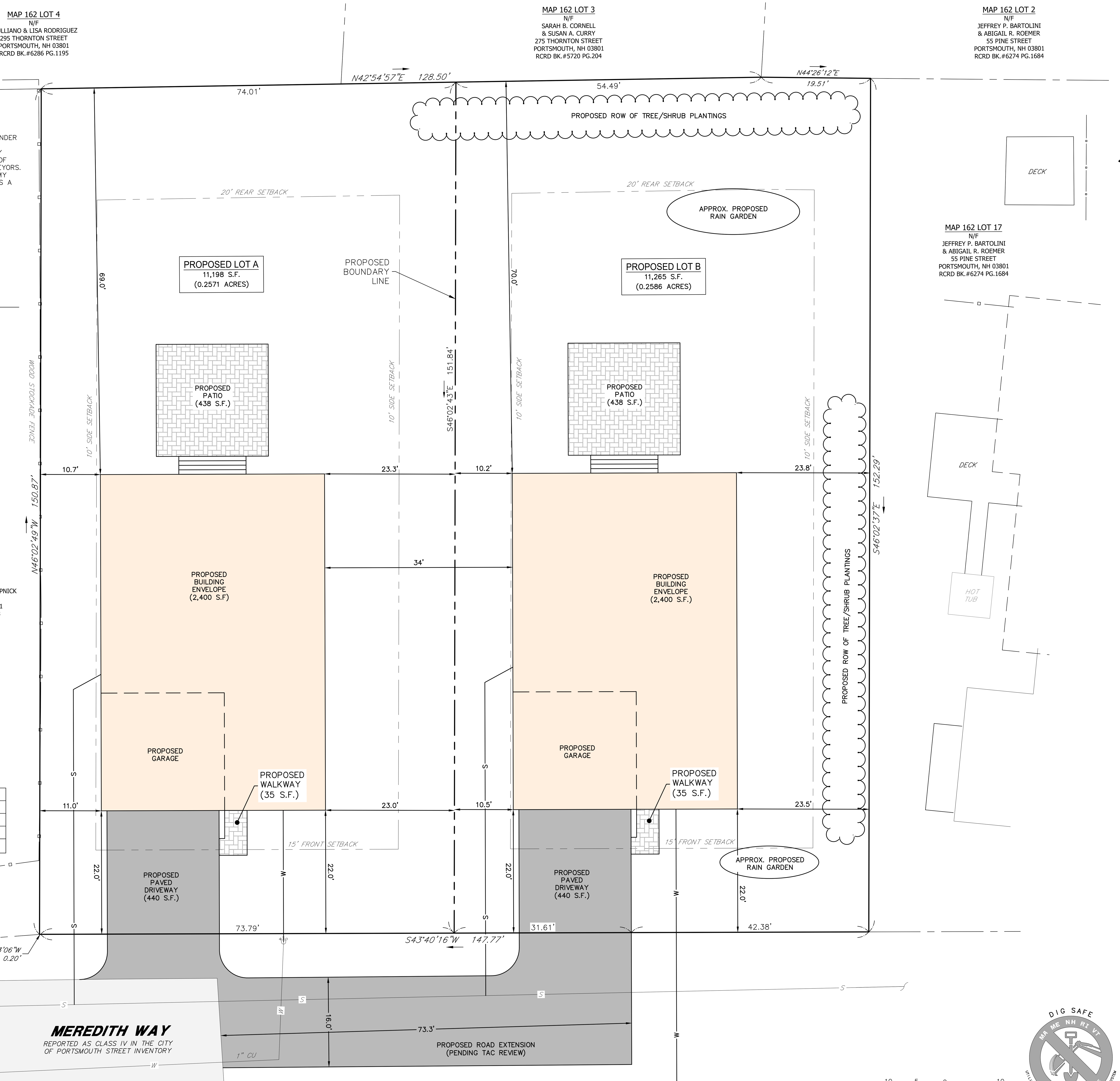
- MAP 137 LOT 11 — ASSESSORS MAP AND LOT NUMBER
- BK. PG. — BOOK / PAGE
- CU — COPPER
- EL. — ELEVATION
- EM — ELECTRIC METER
- EP — EDGE OF PAVEMENT
- N/F — NOW OR FORMERLY
- RCRD — ROCKINGHAM COUNTY REGISTRY OF DEEDS
- S.F. — SQUARE FEET
- W/ — WITH
- GUY WIRE
- UTILITY POLE
- WATER SHUT OFF
- OHU — OVERHEAD WIRE
- STOCKADE FENCE
- BOUNDARY LINE
- SETBACK LINE
- S — SEWER LINE
- W — WATER LINE
- S — PROPOSED SEWER LINE
- W — PROPOSED WATER LINE
- PROPOSED PLANTINGS
- PAVEMENT
- PROPOSED PAVEMENT
- PROPOSED PAVERS
- PROPOSED BUILDING ENVELOPE

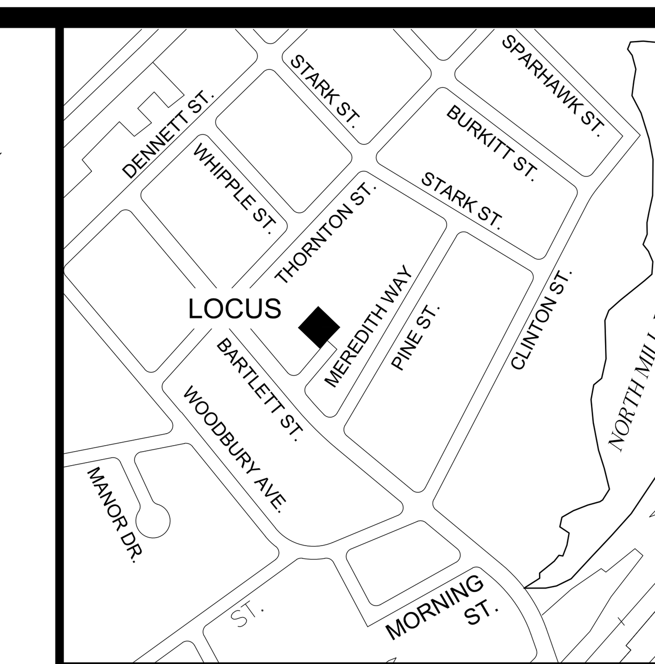
REV.	DATE	DESCRIPTION	DR	CK

VARIANCES REQUESTED:

RELIEF IS REQUESTED FROM THE FOLLOWING SECTIONS OF THE CITY OF PORTSMOUTH ZONING ORDINANCE:

ARTICLE 5 SECTION 10.521 – MINIMUM CONTINUOUS LOT FRONTAGE: TO ALLOW THE CONTINUOUS STREET FRONTAGE TO BE 73.99' FOR PROPOSED LOT A & 31.61' FOR PROPOSED LOT B, WHERE 100' IS REQUIRED AND 31.7' EXISTS.





LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE GENERAL RESIDENCE A (GRA) ZONING DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 162 AS LOT 16.
3. THE PARCEL IS LOCATED IN ZONE X AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 259 OF 681, MAP NUMBER 33015C0259F, MAP REVISED JANUARY 29, 2021.
4. MINIMUM LOT DIMENSIONS:

	REQUIRED:	PROPOSED: LOT A/LOT B
LOT AREA:	7,500 S.F.	11,198 S.F./11,265 S.F.
LOT AREA PER DWELLING UNIT:	7,500 S.F.	11,198 S.F./11,265 S.F.
CONTINUOUS STREET FRONTAGE:	100'	73.99'/31.61'
DEPTH	70'	151.4'/152.1'
MINIMUM YARD DIMENSIONS:		
FRONT	15'	22.0'/22.0'
SIDE	10'	10.7'/10.2'
REAR	20'	69.0'/70.0'
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT:		<35'/<35'
SLOPED ROOF:	35'	
FLAT ROOF:	30'	
ROOF APPURTENANCE HEIGHT:	8'	
BUILDING COVERAGE:	25%	21.4%/21.3%
MINIMUM OPEN SPACE:	30%	70.4%/70.6%

5. OWNER OF RECORD:
   MAP 162 LOT 16:
   RANDI & JEFF COLLINS
   77 MEREDITH WAY
   PORTSMOUTH, NH 03801
   RCRD BK.#6274 PG.#1666
6. PARCEL AREA:

MAP 162 LOT 16:	PROPOSED LOT A:	PROPOSED LOT B:
22,463 S.F.	11,198 S.F.	11,265 S.F.
(0.5157 ACRES)	(0.2571 ACRES)	(0.2586 ACRES)

7. 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 THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY LINES AND PROPOSED SITE FEATURES OF MAP 162 LOT 16 TO ACCOMPANY A VARIANCE APPLICATION TO THE CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT.
9. FIELD SURVEY COMPLETED BY TCE JUNE 2021 USING A TOPCON DS103 AND A TOPCON FC-5000 DATA COLLECTOR.
10. HORIZONTAL DATUM IS NAD83 (2011) PER STATIC GPS OBSERVATIONS. THE VERTICAL DATUM IS NAVD88 PER STATIC GPS OBSERVATIONS.
11. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
12. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.
13. THE PROPOSED USE OF THESE PARCELS ARE SINGLE-FAMILY RESIDENTIAL.

PLAN REFERENCES:

1. "PLAN OF ELM PLACE, SITUATED IN PORTSMOUTH, N.H." DATED 1856. RCRD PLAN #008.
2. "LOT LINE REVISION, PINE STREET, PORTSMOUTH, NEW HAMPSHIRE, FOR JOYCE M. MAYO & CITY OF PORTSMOUTH" PREPARED BY DURGIN, VERRA AND ASSOCIATES, INC., DATED 6/9/93 WITH REVISION 1 DATED 10/4/93. RCRD PLAN #D-22643.

TAX MAP 162 LOT 16

PROPOSED CONDITIONS PLAN

TWO LOT SUBDIVISION

77 MEREDITH WAY

PORTSMOUTH, NEW HAMPSHIRE

COUNTY OF ROCKINGHAM

OWNED BY

RANDI & JEFF COLLINS

SCALE: 1" = 10' (22x34)
1" = 20' (11x17)

JUNE 1, 2022

10 5 0 10

Graphic Scale in Feet

DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	FB	
47442-00	CK	CADFILE	S-2

Jun 01, 2022 - 2:10pm
F:\MSC Projects\47442 - 77 Meredith Way - Portsmouth\47442-00 -Collins - 77 Meredith Way\Carlson Survey\Dwgs\47442-00 Survey.dwg

Tighe&Bond

L-0700-023
June 21, 2022

Ms. Beverly Zendt, Planning Director
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit Application**
Lonza Biologics – Proposed Café Expansion

Dear Beverly:

On behalf of Lonza Biologics, we are pleased to submit 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 a proposed café expansion at Lonza's existing facility that is located at 101 International Drive:

- One (1) copy of the PDA Application for Site Review, dated June 21, 2021;
- One (1) copy of the Owner Authorization, dated June 1, 2022;
- One (1) full-size & one (1) half-size copy of the Site Plan Set, dated June 21, 2022;
- One (1) copy of the Drainage Memo, dated June 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;
- One (1) application fee calculation form;

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 tap 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.

Under separate cover, a Site Plan Review application fee in the amount of $2,660.00 has been mailed to the Planning Department by the applicant.

On May 17, 2022, the PDA Board granted conceptual approval for these improvements. We respectfully request to be placed on the Technical Advisory Committee (TAC) meeting agenda for July 5, 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\20220621 TAC Submission\L-0700-023 TAC Cover Letter.docx

Pease Development Authority

55 International Drive, Portsmouth, NH 03801, (603) 433-6088

PEASE INTERNATIONAL TRADEPORT PORTSMOUTH, NH

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

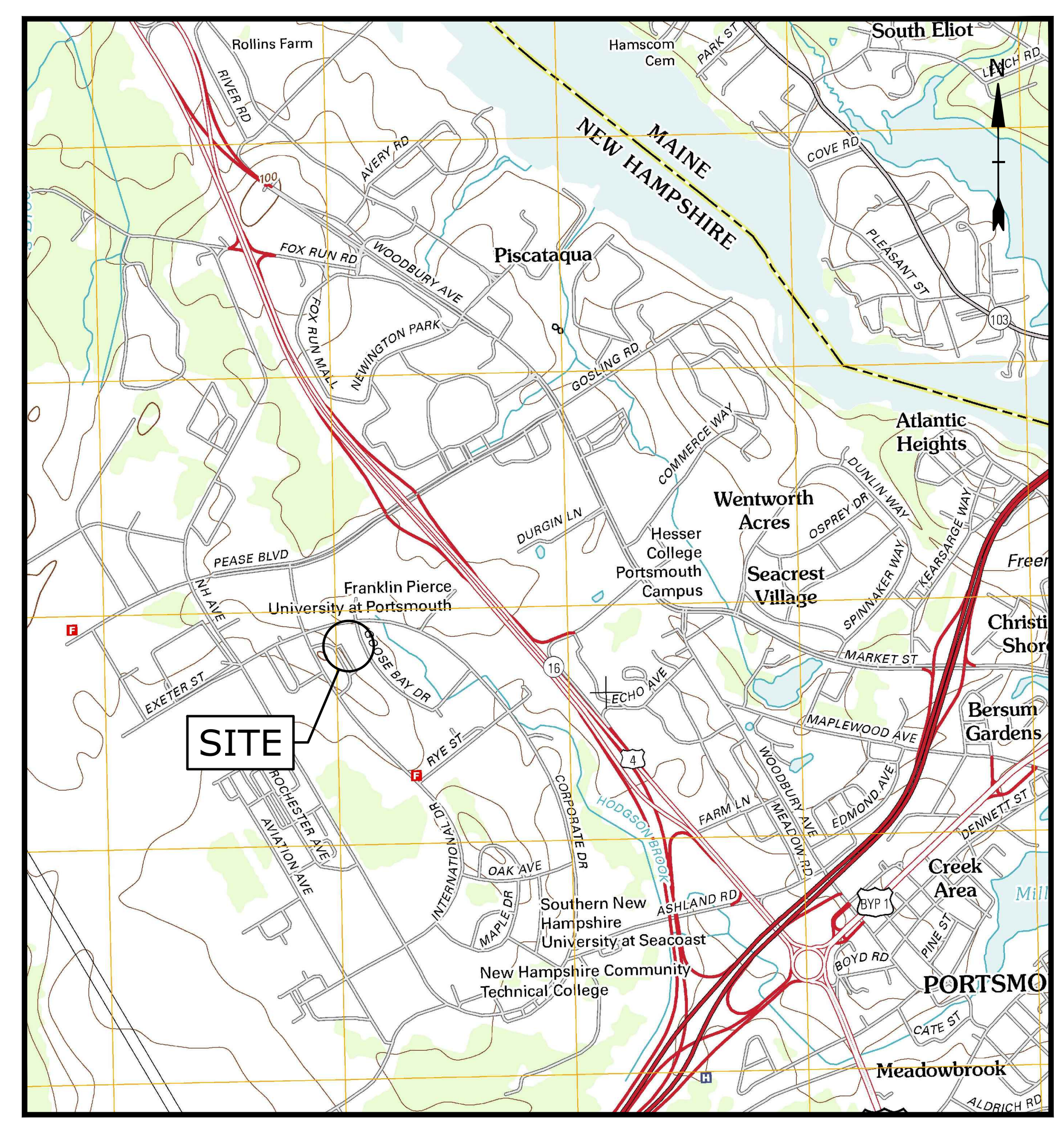
N:\Engineer\ ApplicationforSiteReview.xlsx

CAFE EXPANSION

LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE
JUNE 21, 2022

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	6/21/2022
1 of 1	EXISTING DOUCET PLAN	5/26/2022
C-101	OVERALL EXISTING CONDITIONS PLAN	6/21/2022
C-101.1	DEMOLITION PLAN	6/21/2022
C-102	OVERALL SITE PLAN	6/21/2022
C-102.1	SITE PLAN	6/21/2022
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	6/21/2022
C-104	UTILITIES PLAN	6/21/2022
C-105	LANDSCAPE PLAN	6/21/2022
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	6/21/2022
C-502	DETAILS SHEET	6/21/2022
C-503	DETAILS SHEET	6/21/2022
C-504	DETAILS SHEET	6/21/2022
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

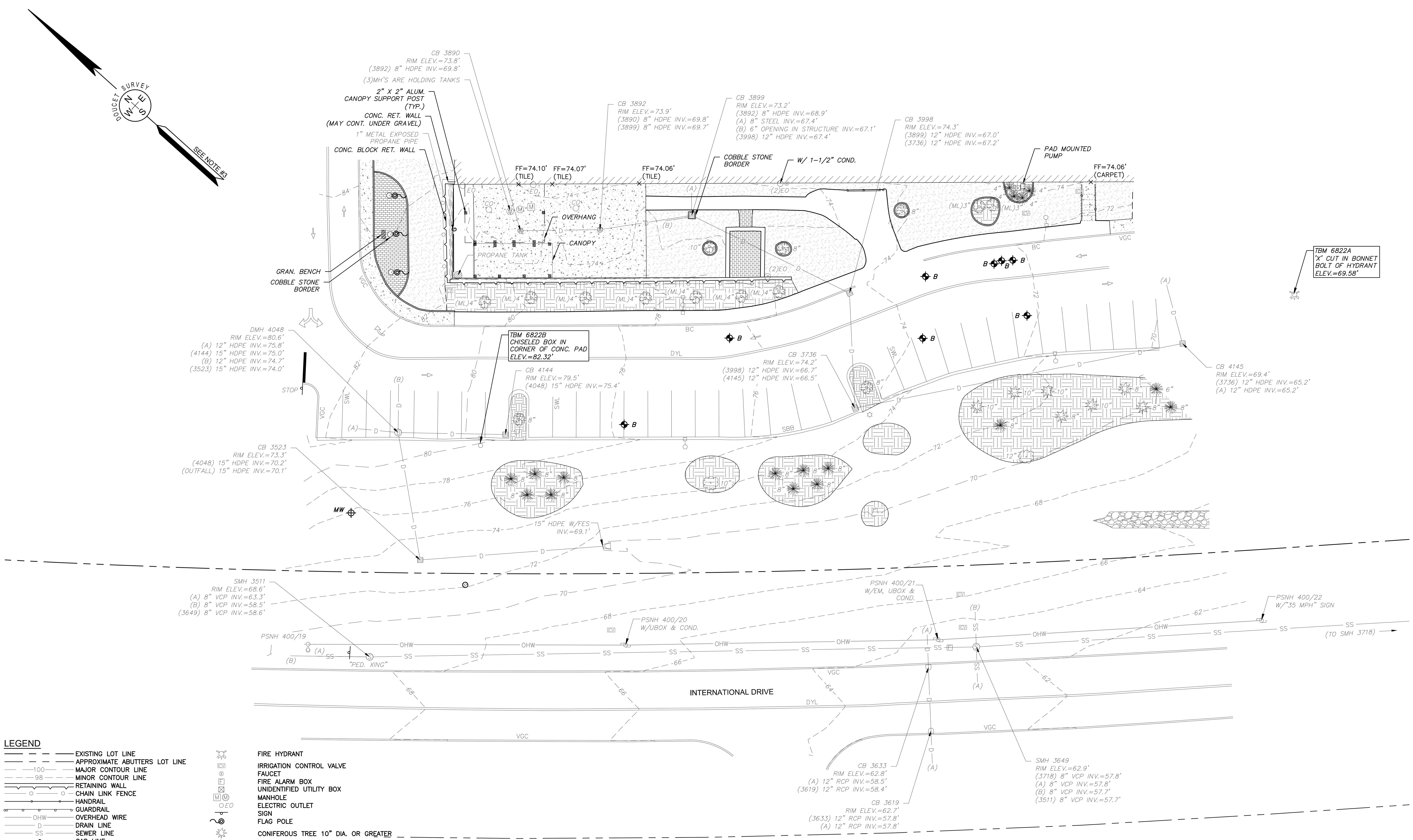
STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
6/21/22

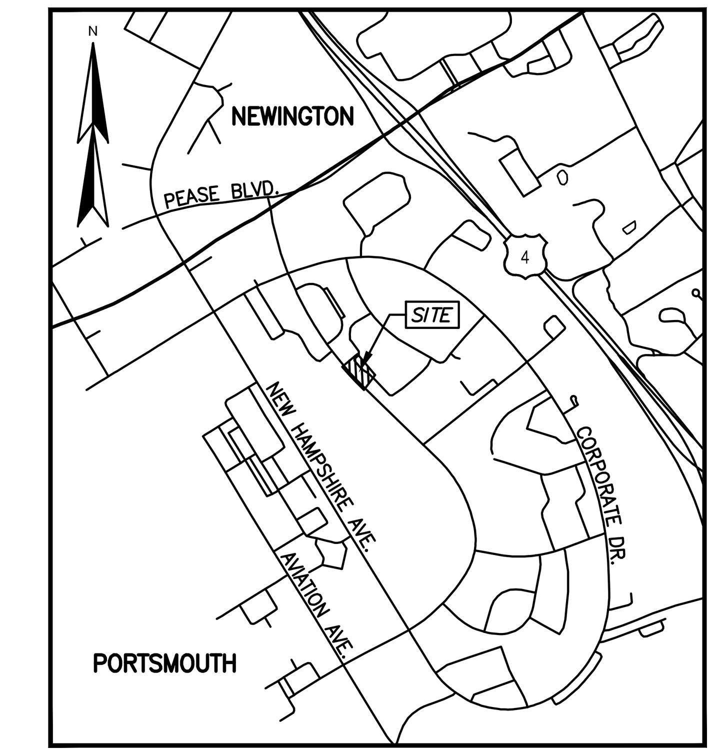
STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
6/21/22

TAC SUBMISSION PLAN SET
COMPLETE SET 16 SHEETS

T&B PROJECT NO: L-0700-023

Last Save Date: June 20, 2022 11:16 AM By: CKRZCUIK
Plot Date: Monday, June 20, 2022 Plotted By: Colter Krzcuik
T&B File Location: J:\L\L0700 Lonza Biologics Expansion was 1576F\023_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.

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
- IRRIGATION CONTROL VALVE
- FAUCET
- FIRE ALARM BOX
- UNIDENTIFIED UTILITY BOX
- MANHOLE
- EO 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

TOPOGRAPHIC PLAN

FOR

TIGHE & BOND

OF A PORTION OF

LONZA BIOLOGICS

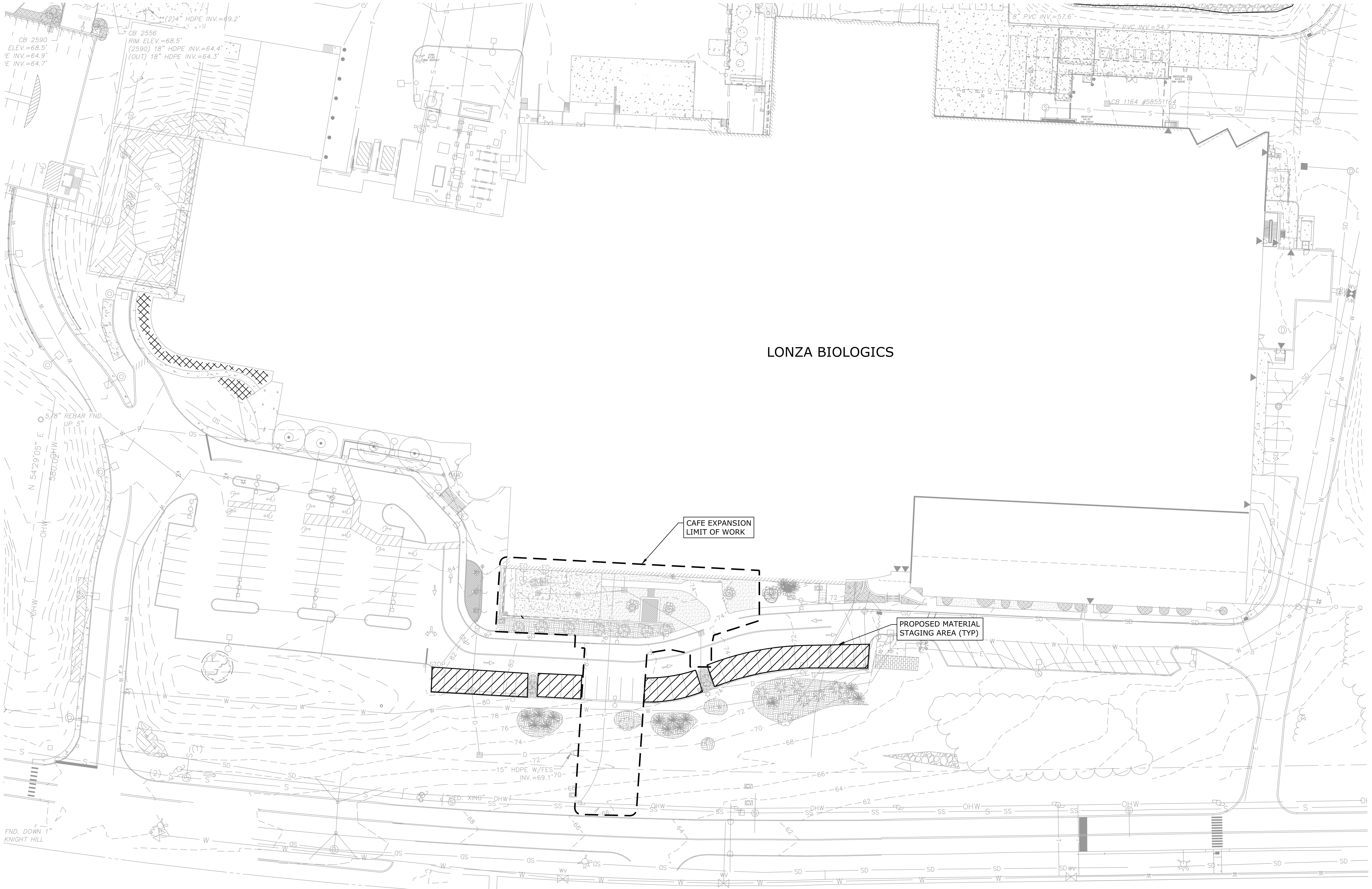
101 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE

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



Tighe&Bond

STATE OF NEW HAMPSHIRE
PATRICK
CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6/21/22

STATE OF NEW HAMPSHIRE
NEIL
A.
HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
6/21/22

0 40' 80'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

OVERALL EXISTING
CONDITIONS

SCALE: AS SHOWN

C-101

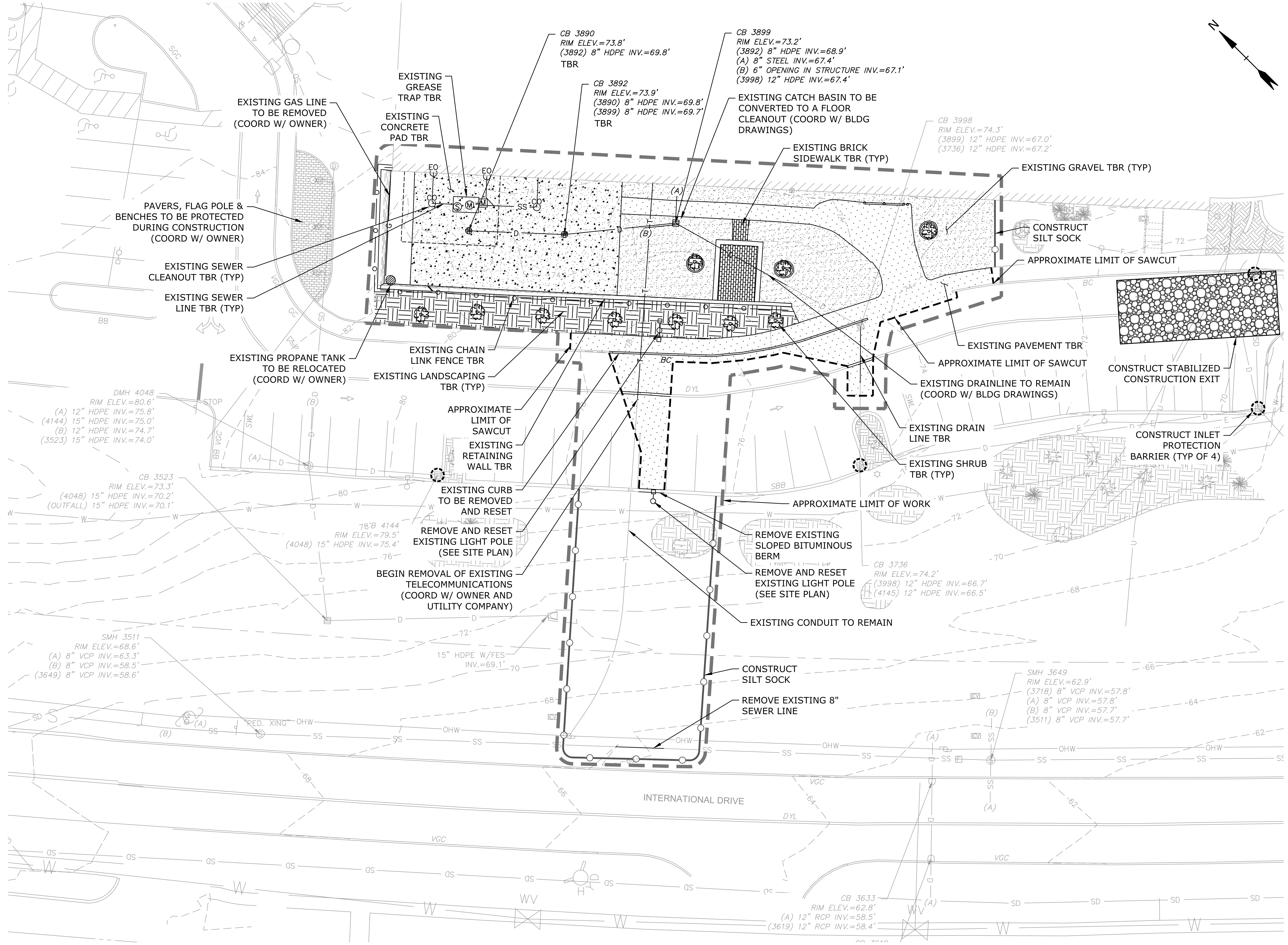
Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:06pm By: CKrzcuik
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

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 "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

(dashed line)	APPROXIMATE LIMIT OF PROPOSED SAW CUT
(long dashed line)	LIMIT OF WORK
(line with circles)	PROPOSED SILT SOCK
(stippled box)	APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
(dashed circle)	INLET PROTECTION SILT SACK
TBR	TO BE REMOVED
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
DMH	DRAIN MANHOLE
CB	CATCH BASIN
(tree symbols)	EXISTING TREES/SHRUBS
(shrub symbol)	EXISTING SHRUBS TBR

Tighe&Bond

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 6/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE: AS SHOWN

C-101.1

Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-4:15pm By: CKrzcuik
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576\P023_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

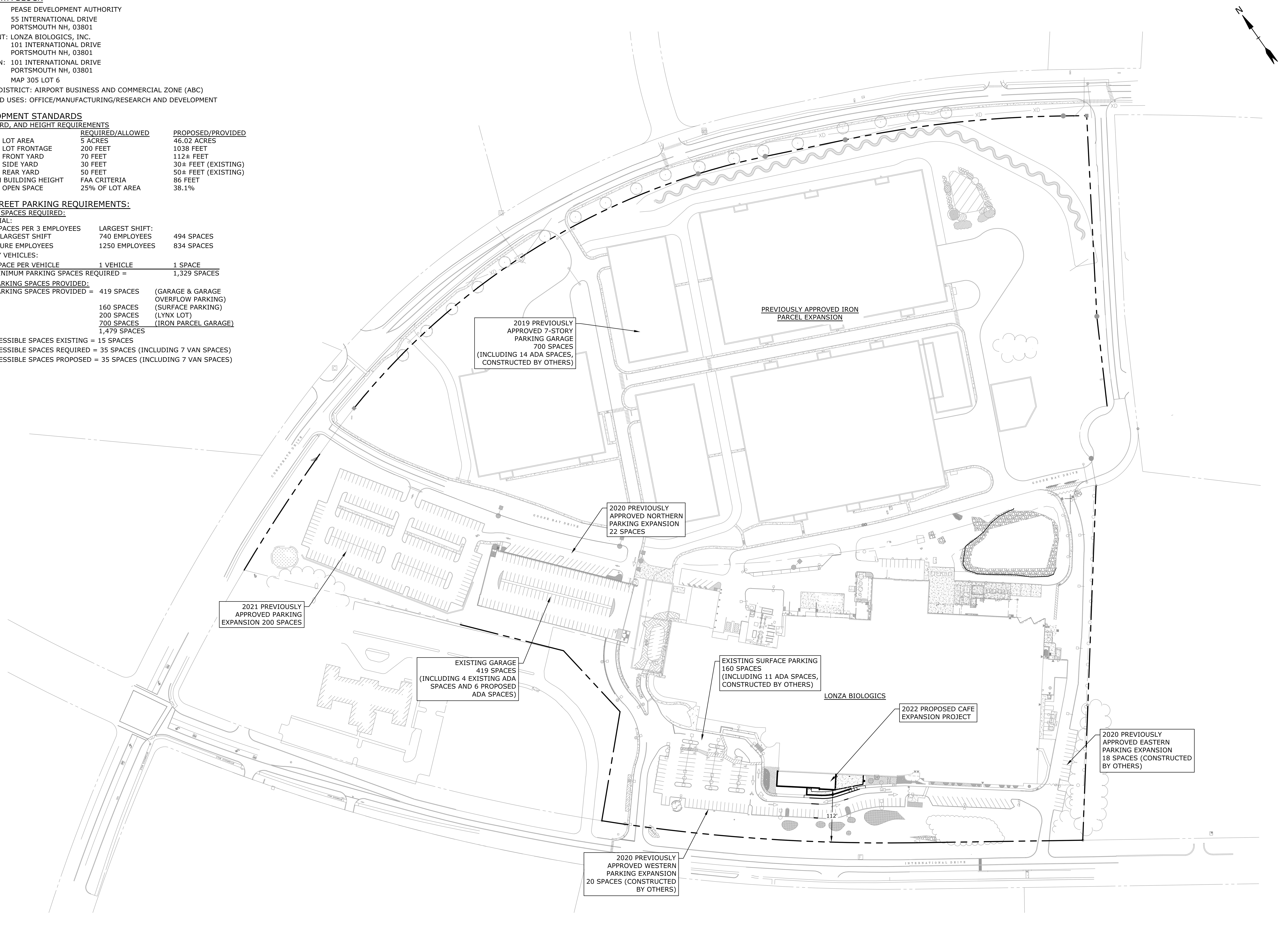
TOTAL PARKING SPACES PROVIDED:

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)



Tighe&Bond

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
6/21/22

0 100' 200'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

OVERALL SITE PLAN

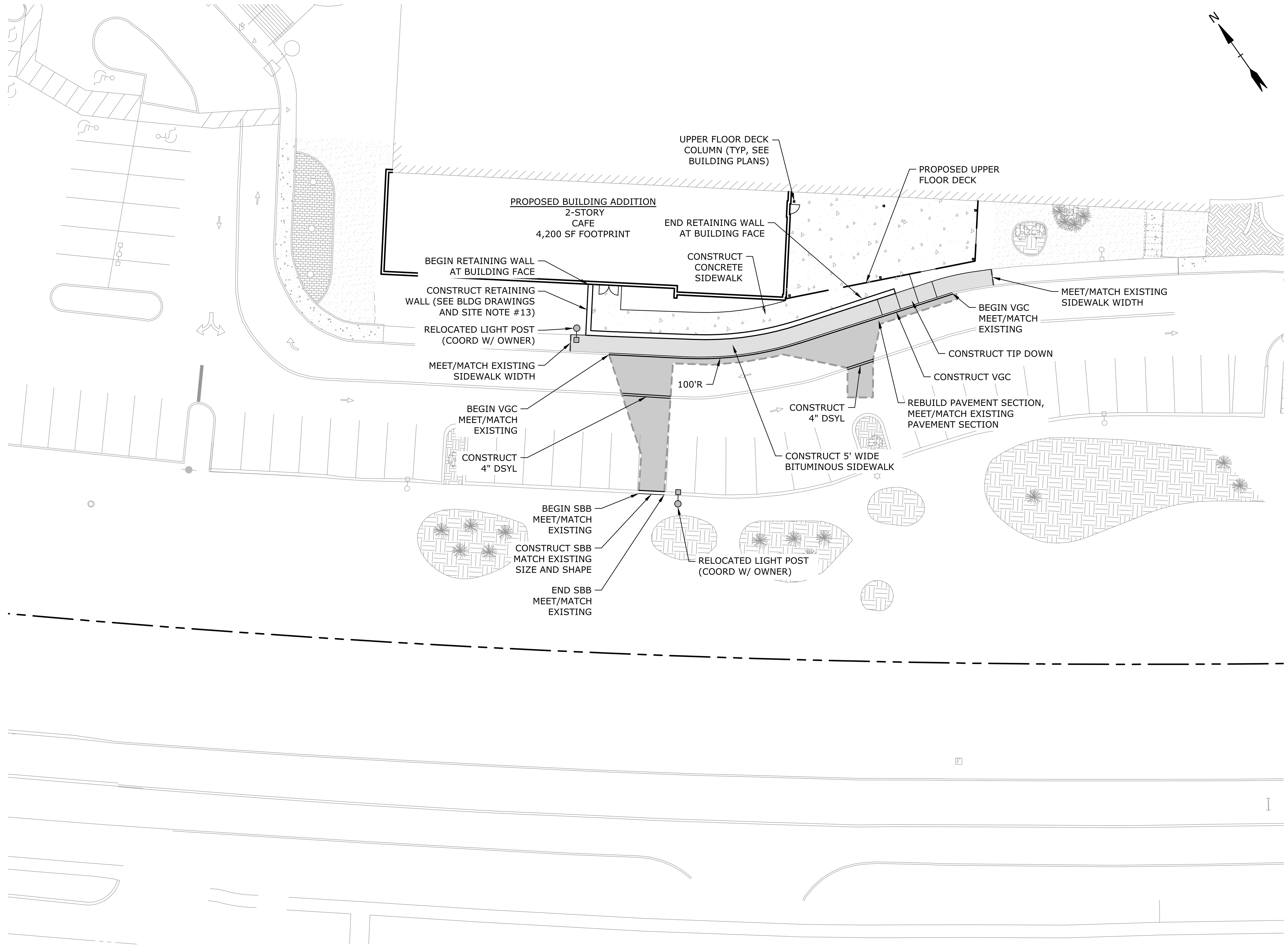
SCALE: AS SHOWN

C-102

Last Saved: 6/17/2022
Plotted On:Jun 20, 2022-11:04am By: CKrzcuik
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576\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
6/21/22

STATE OF NEW HAMPSHIRE
NEIL A. HANSEN
No. 15227
LICENSED
PROFESSIONAL ENGINEER
6/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-11:11am By: CKrzcuik
Tighe & Bond J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

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.

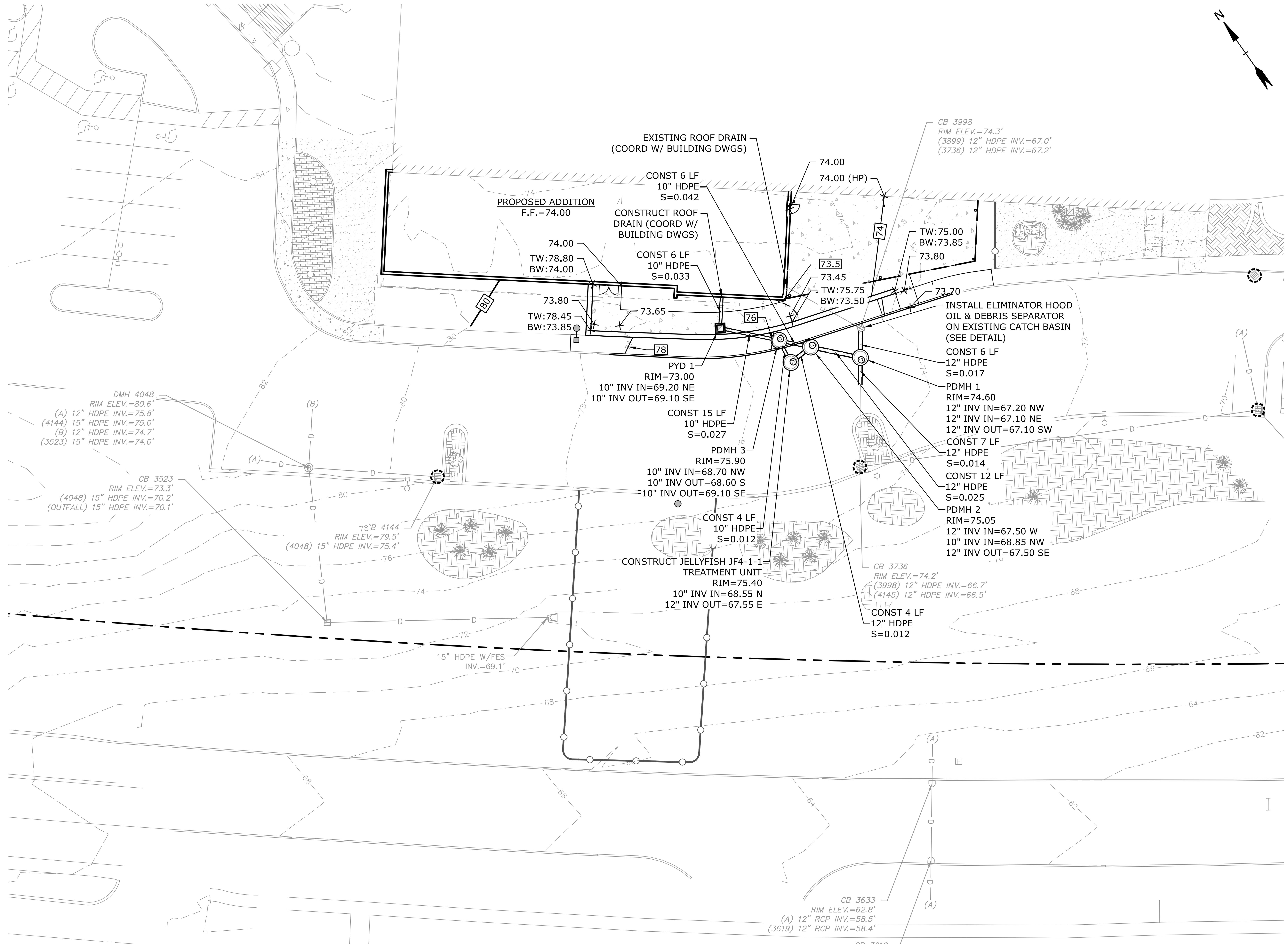
GRADING AND DRAINAGE NOTES:

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 / 78	PROPOSED MAJOR CONTOUR LINE
	PROPOSED MINOR CONTOUR LINE
	PROPOSED DRAIN LINE (TYP)
	PROPOSED SILT SOCK
	INLET PROTECTION SILT SACK
	PROPOSED DRAIN MANHOLE
	PROPOSED YARD DRAIN
	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 6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 6/21/22

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

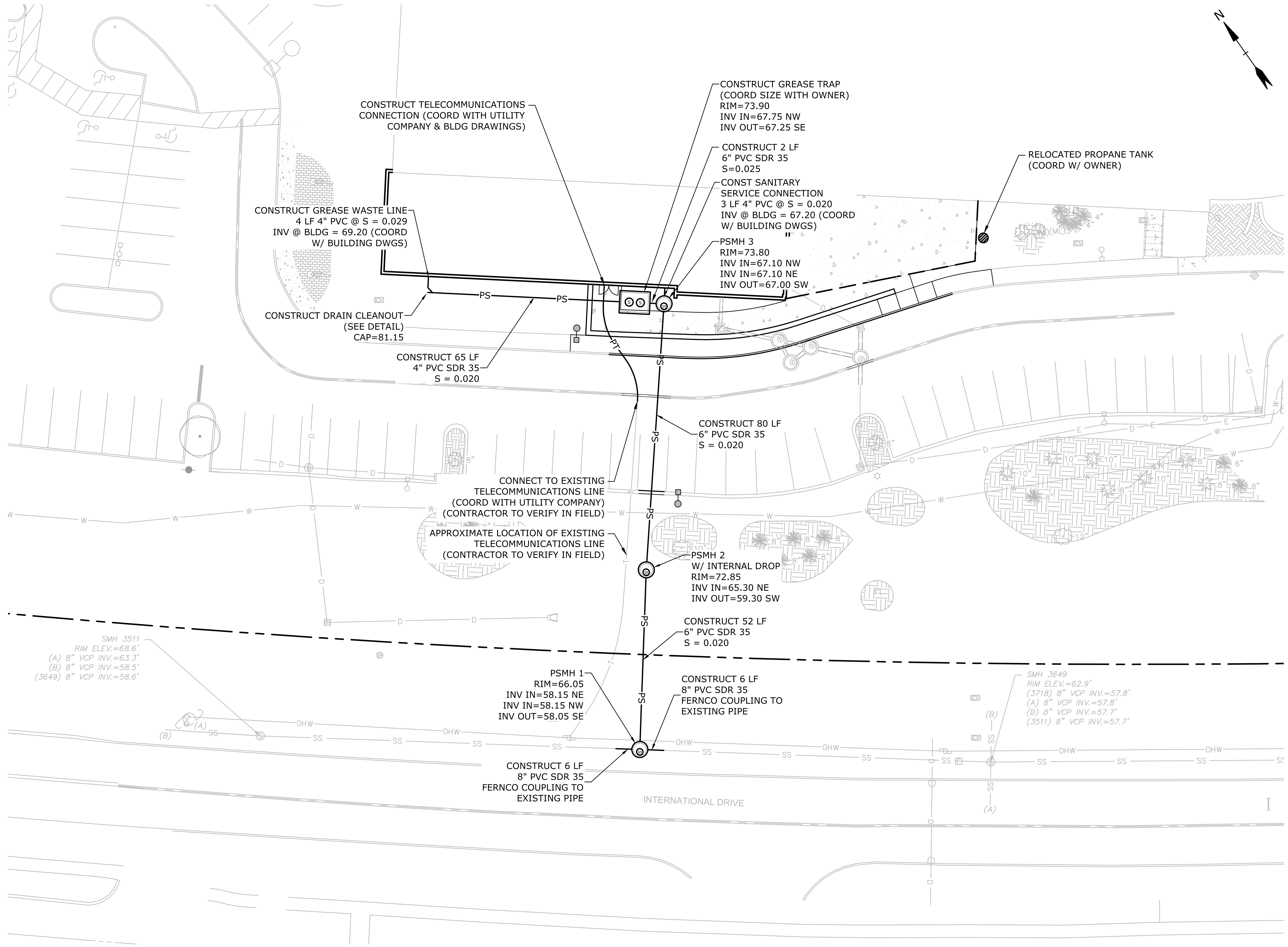
GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

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.



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
	EXISTING SEWER MANHOLE
	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

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 6/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

UTILITY PLAN

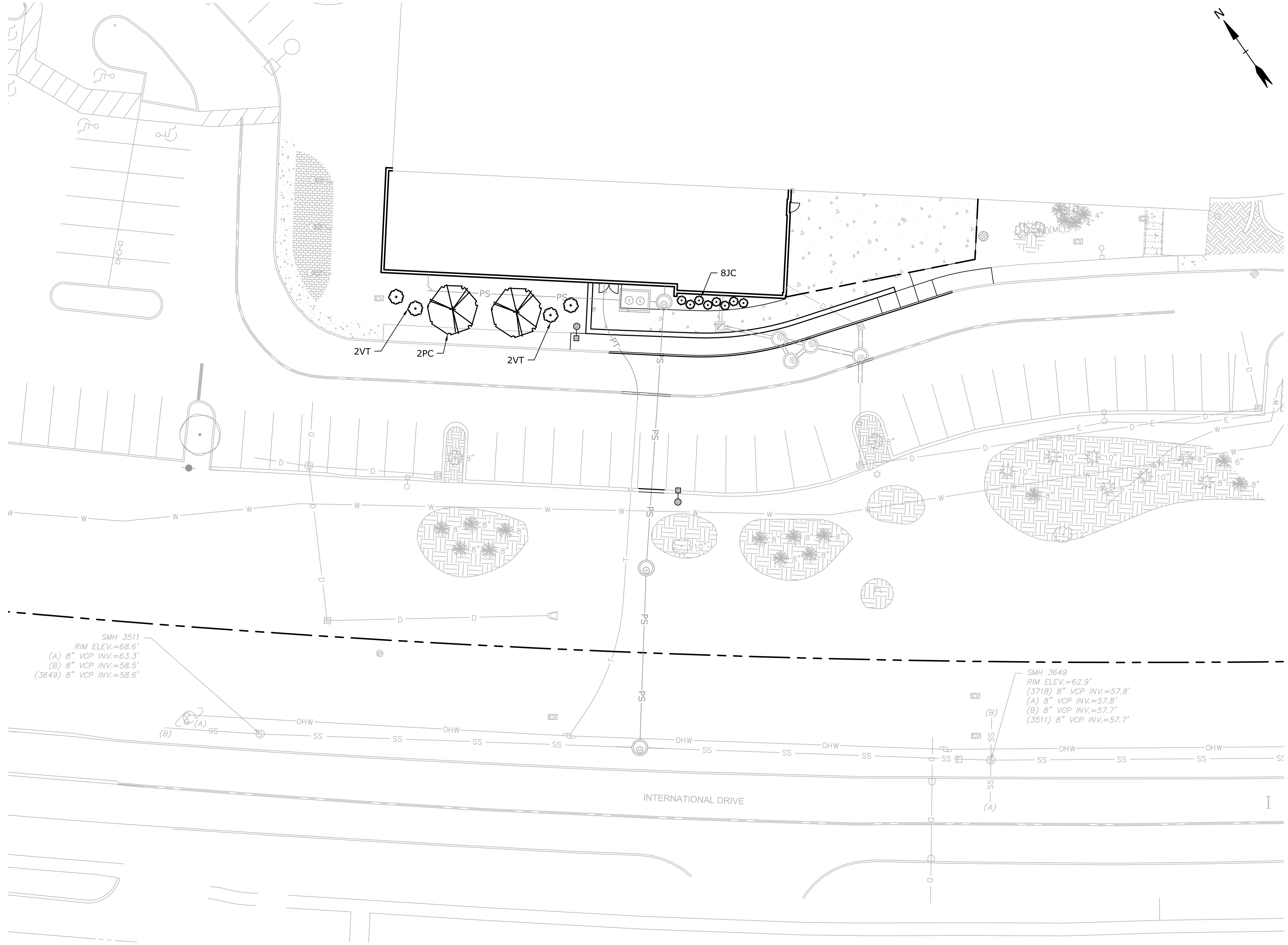
SCALE: AS SHOWN

C-104

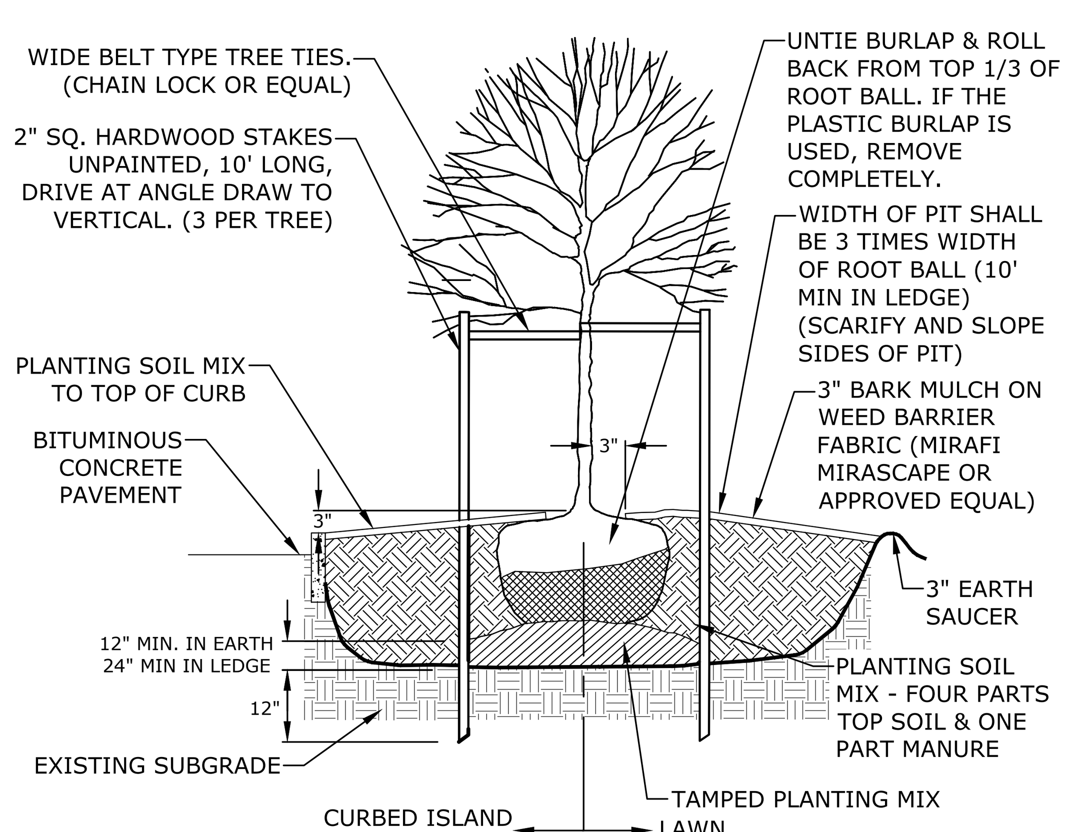
Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:01pm By: CKrzcuik
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576\P023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg

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.



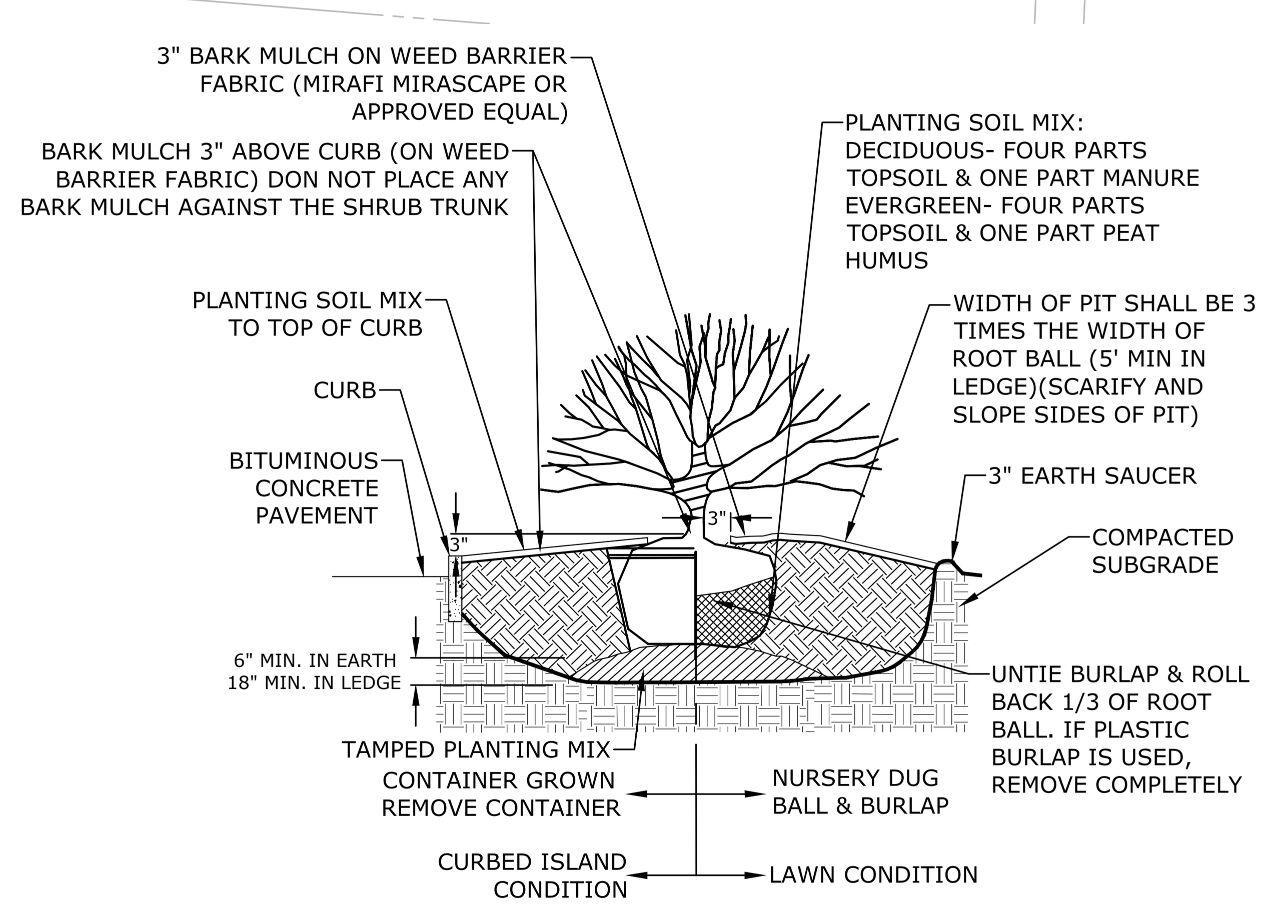
PLANT SCHEDULE				
CODE		COMMON NAME	SIZE	REMARKS
TREES				
PC	PRUNUS CERASIFERA "THUNDERCLOUD"	THUNDERCLOUD PLUMB	2-2 ½" CALIPER	B & B
SHRUBS				
JC	JUNIPERUS COMMUNIS 'BLUEBERRY DELIGHT'	BLUEBERRY DELIGHT JUNIPER	3 GALLON	CONTAINER
VT	VIBURNUM TRILOBUM 'COMPACTA'	COMPACT AMERICAN CRANBERRY	5 GALLON	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

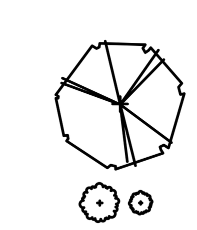


NOTE:
1. PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING

NO SCALE

LEGEND



PROPOSED DECIDUOUS TREE

PROPOSED SHRUB

Tighe&Bond

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER 6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER 6/21/22

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

LANDSCAPE PLAN

SCALE: AS SHOWN

C-105

Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:02pm By: CKrzcuik
Tighe & Bond: J:\L\L0700 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 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:

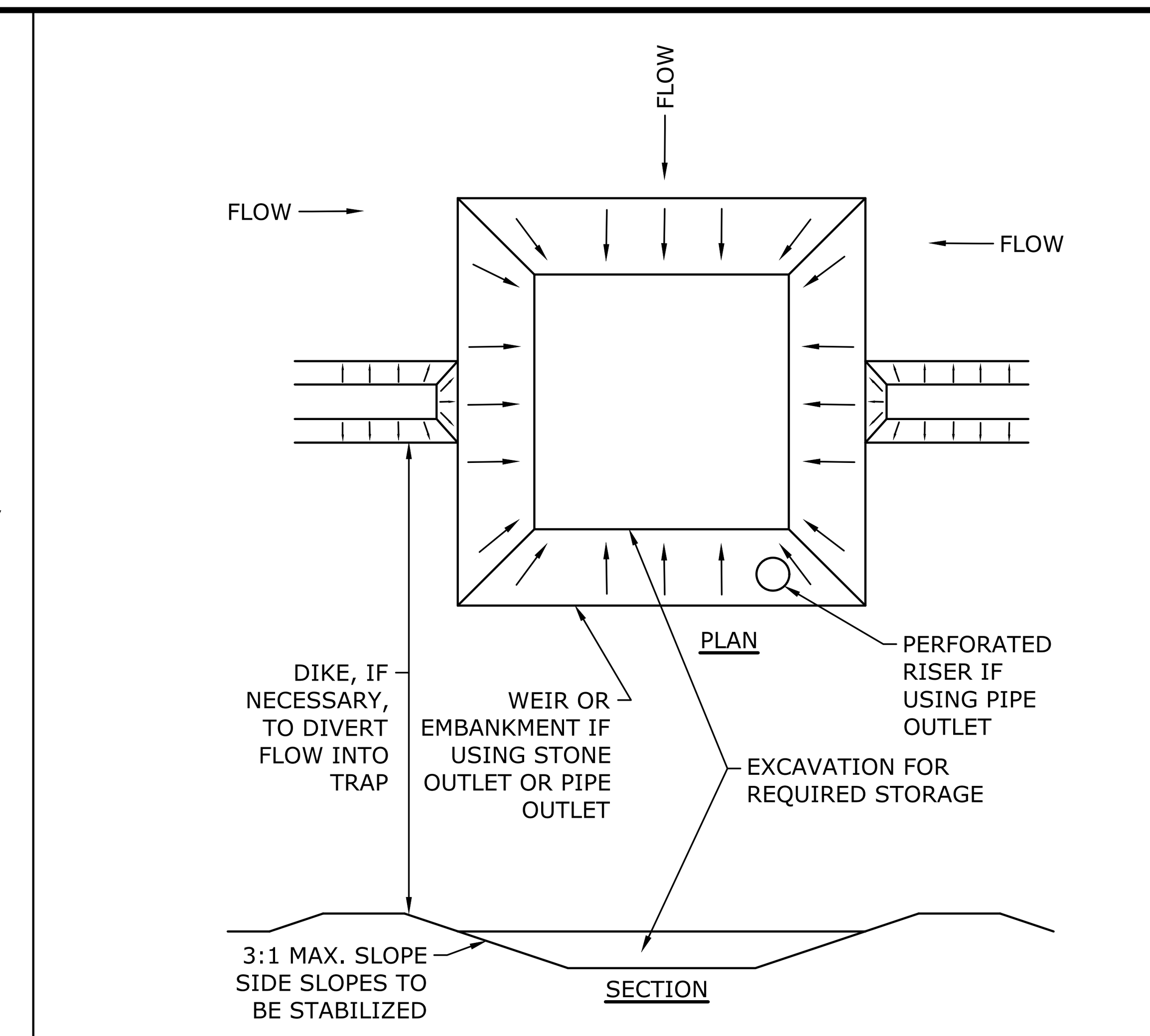
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING 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.

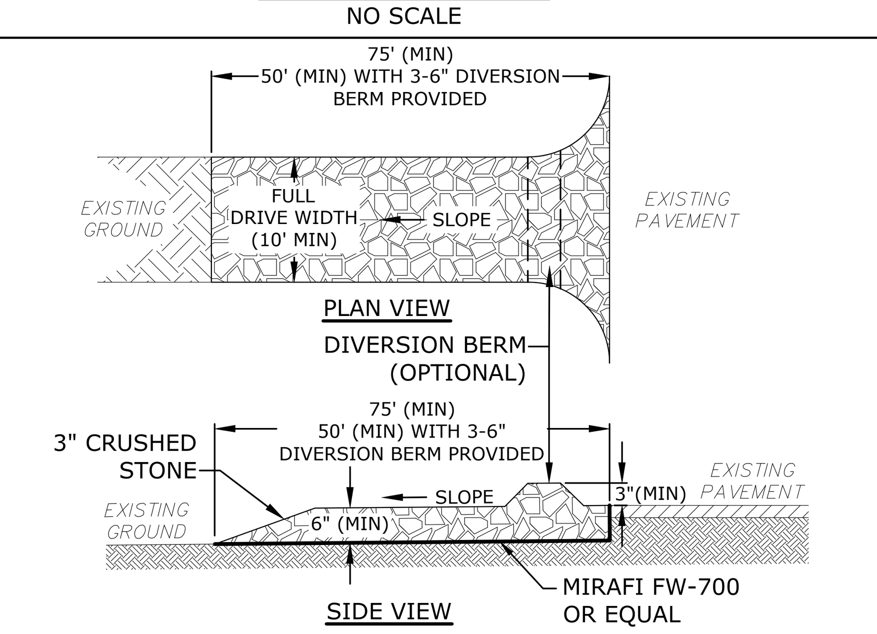
EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

THIS PROJECT DOES NOT EXCEED ONE (1) ACRE OF DISTURBANCE AND THUS DOES NOT REQUIRES A SWPPP.



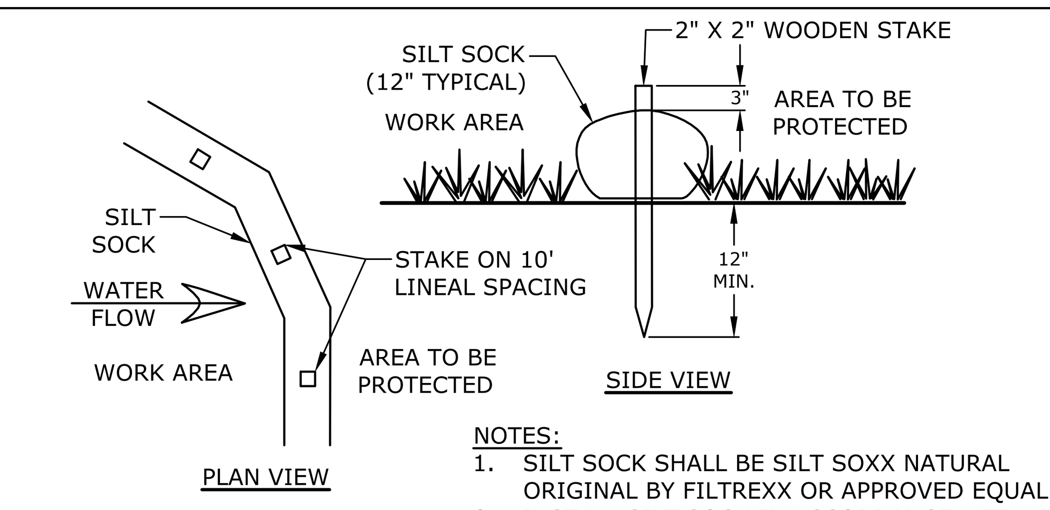
NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE 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



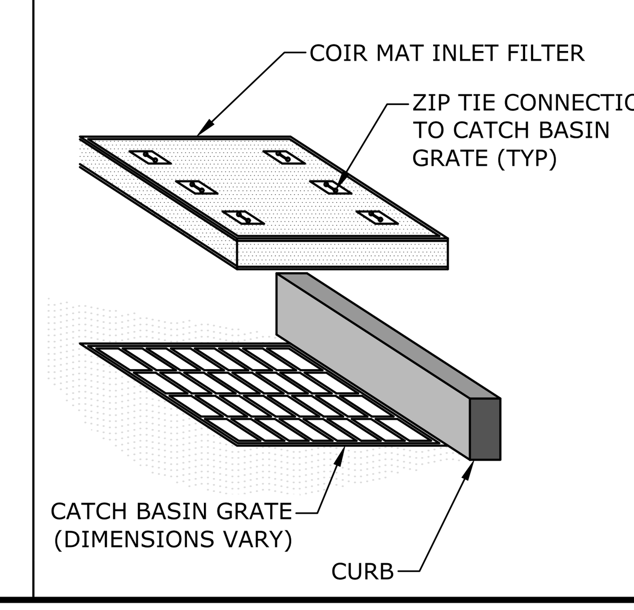
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

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.

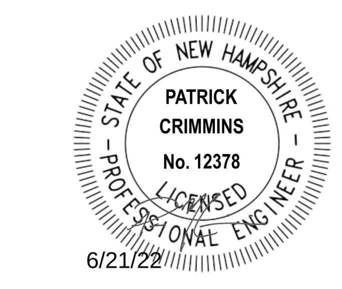
SILT SOCK
NO SCALE

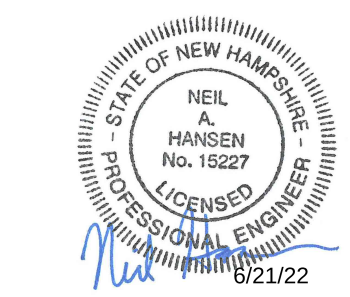


NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION
NO SCALE

Tighe&Bond





Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

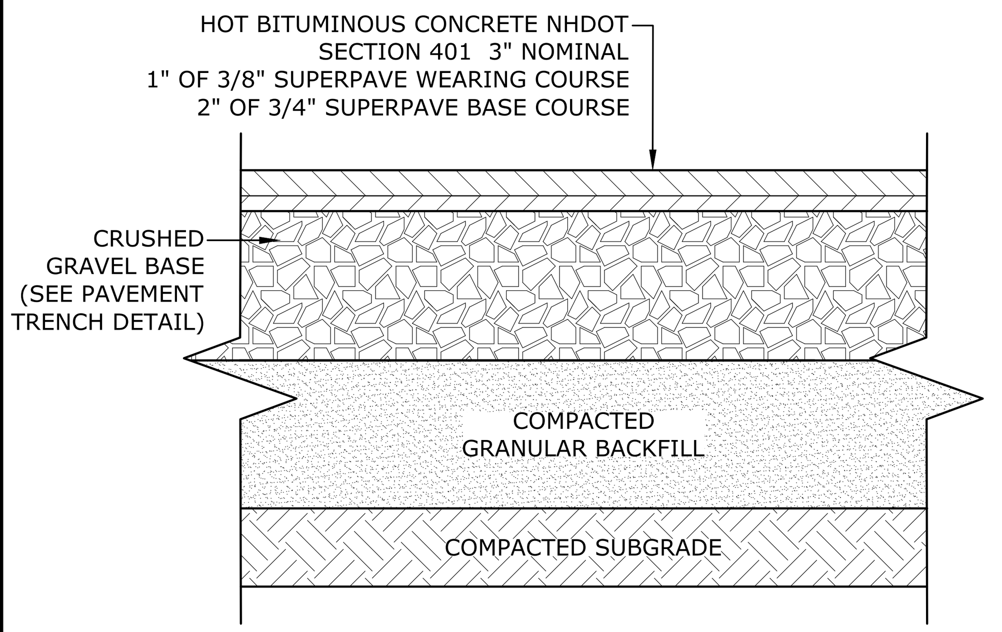
EROSION CONTROL NOTES & DETAILS

SCALE: AS SHOWN

C-501

Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-4:17pm By: CKrzcuik
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576P\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DTLS.dwg

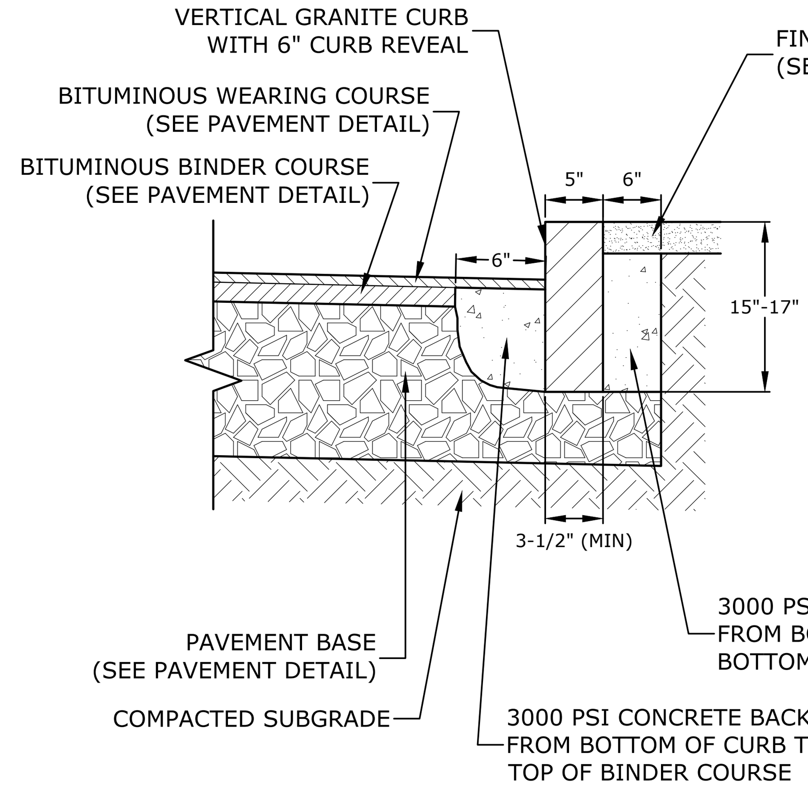
Tighe&Bond



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

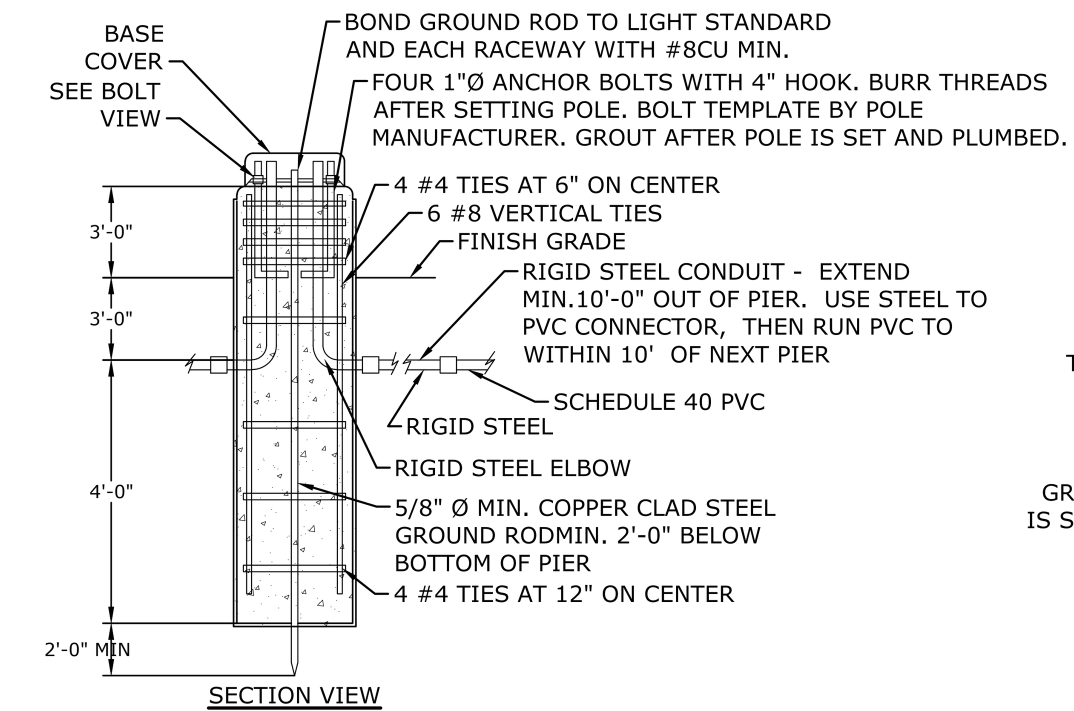


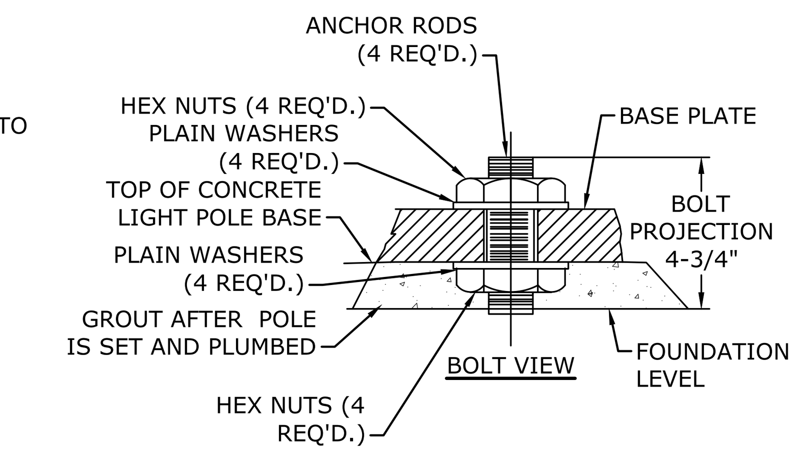
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

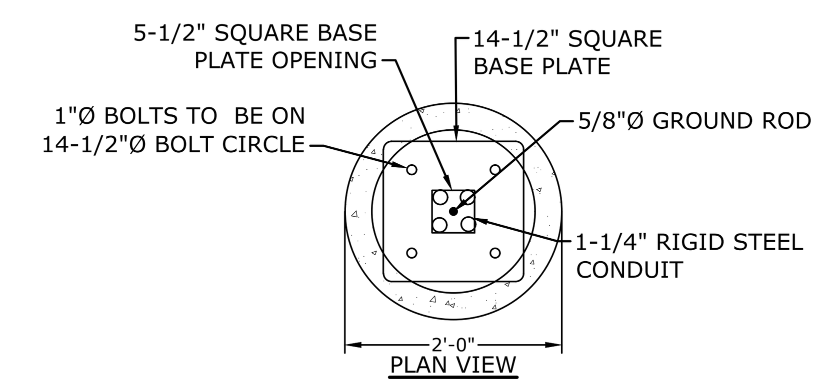
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE 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







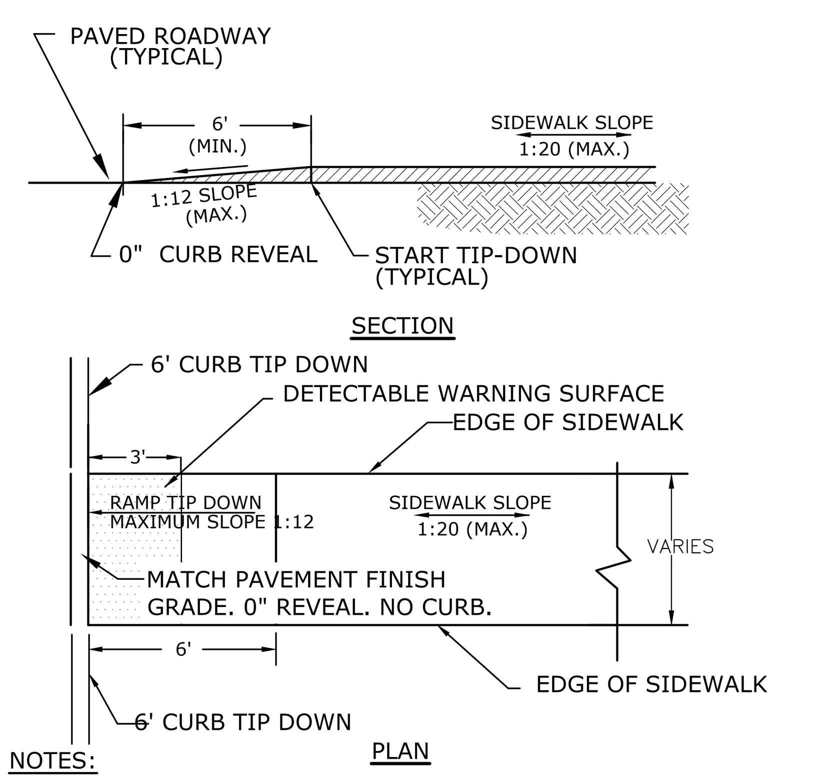
NOTES:
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
4. LIGHT POLE BASE DETAIL FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.

TYPICAL LIGHT POLE BASE

NO SCALE

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
6/21/22

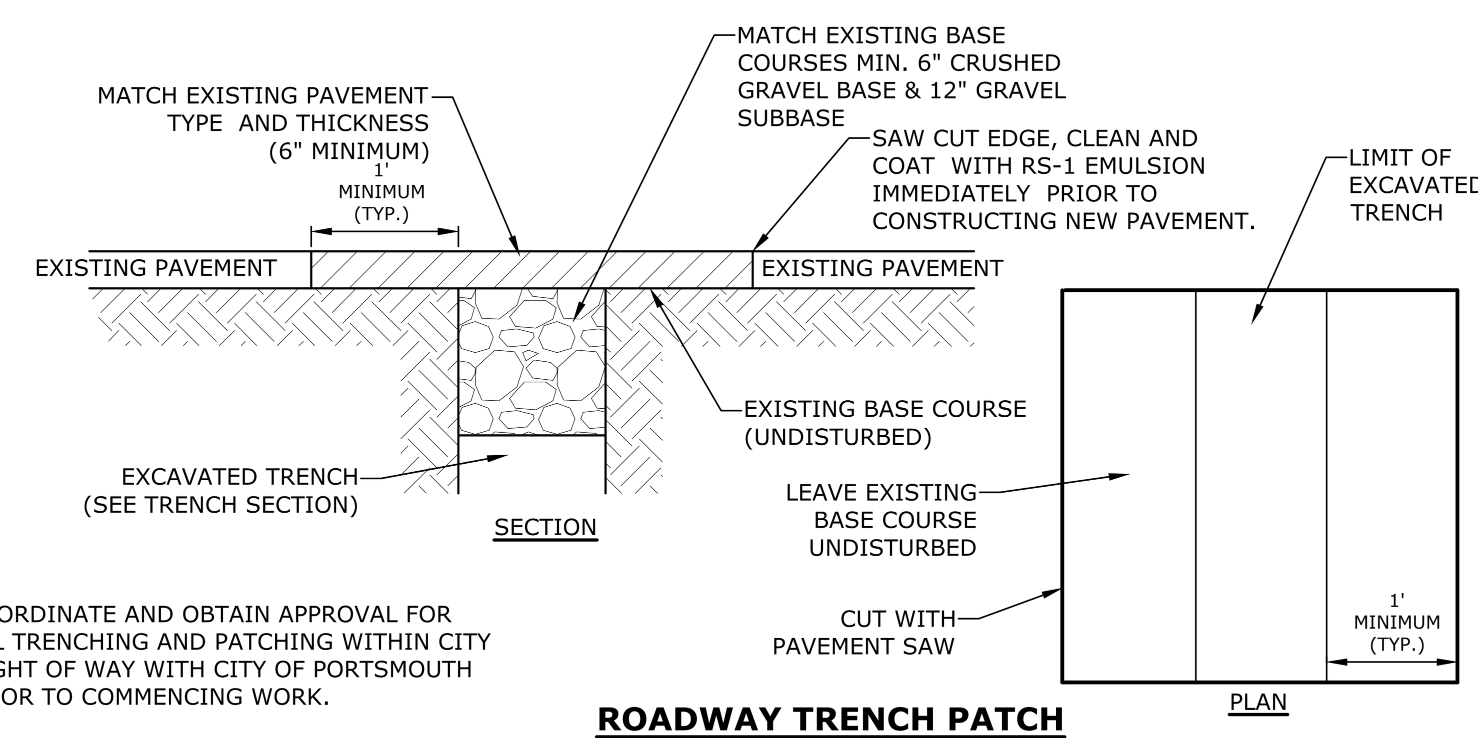
STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
6/21/22



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

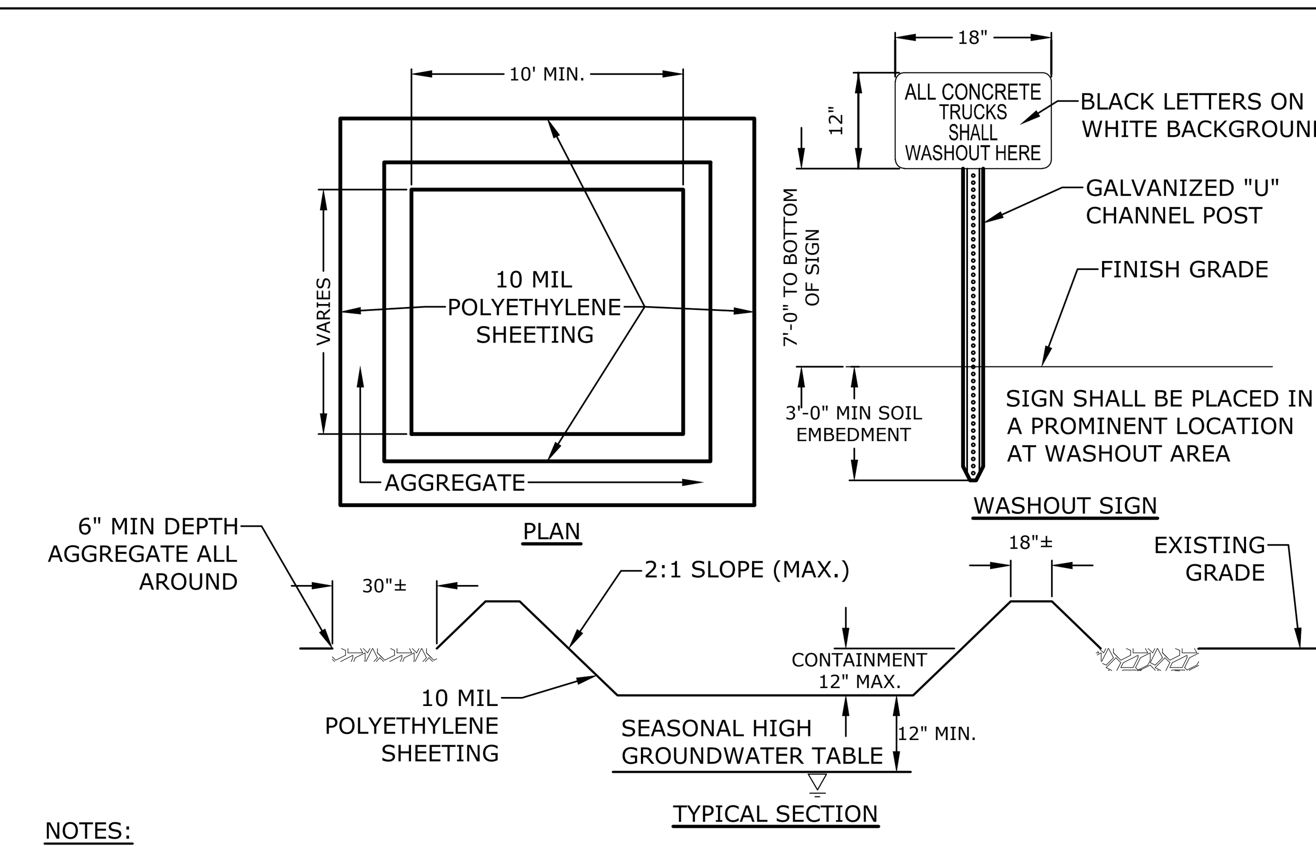
NO SCALE



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

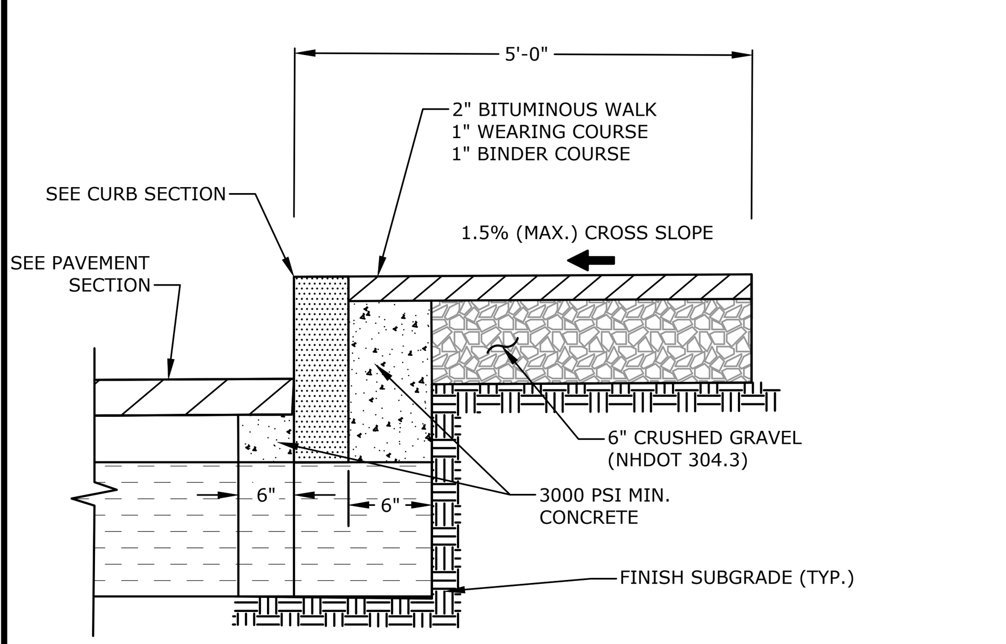
NO SCALE



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

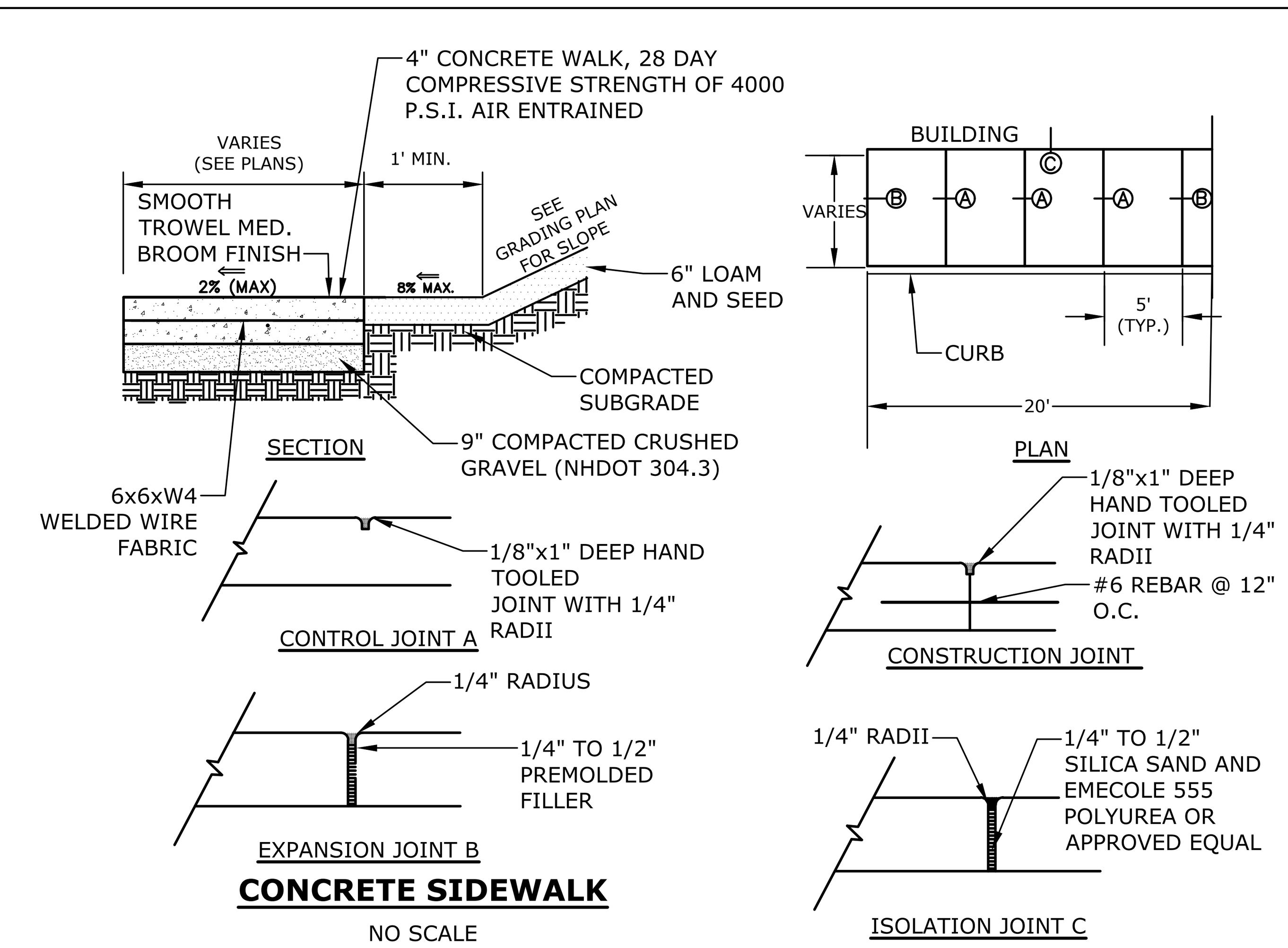
NO SCALE



NOTES:
1. SEE SITE PLAN FOR SIDEWALK WIDTH, LOCATIONS AND CURB TYPE.
2. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDESLOPE GRADES.

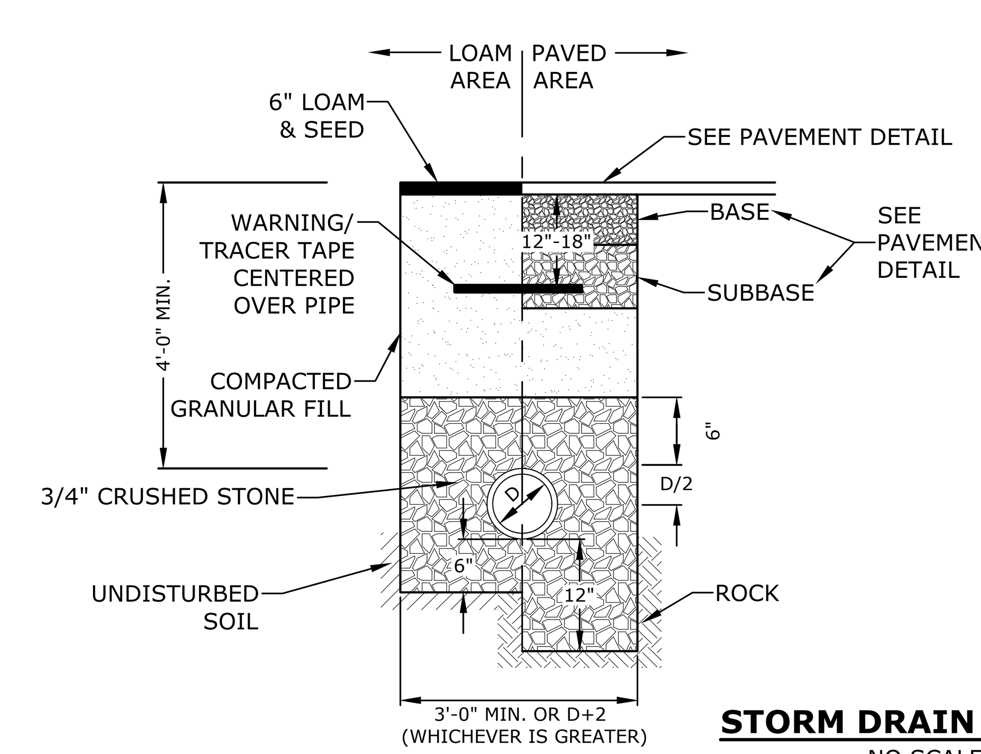
BITUMINOUS CONCRETE SIDEWALK

NO SCALE



CONCRETE SIDEWALK

NO SCALE



STORM DRAIN TRENCH

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.

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

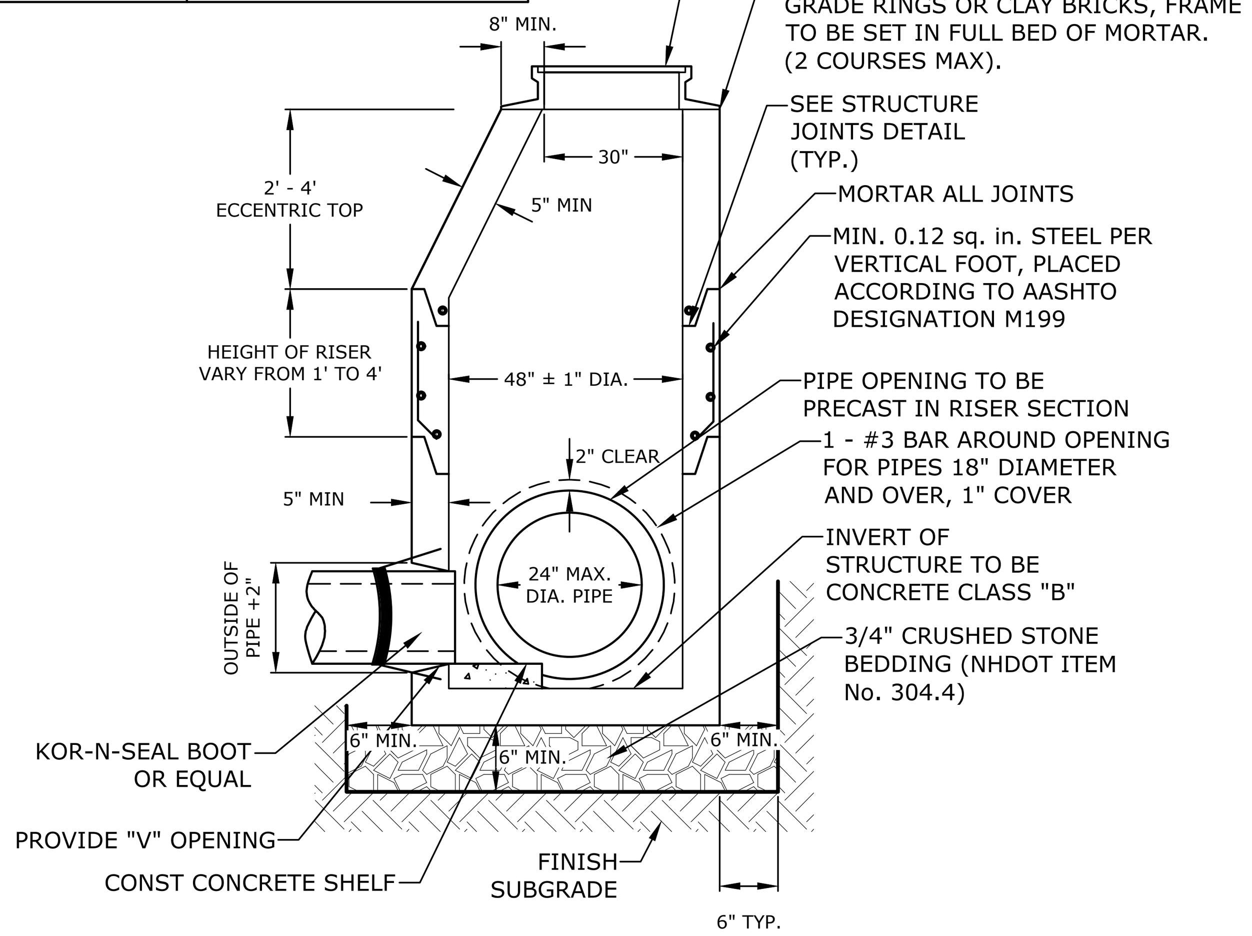
DETAILS

SCALE: AS SHOWN

C-502

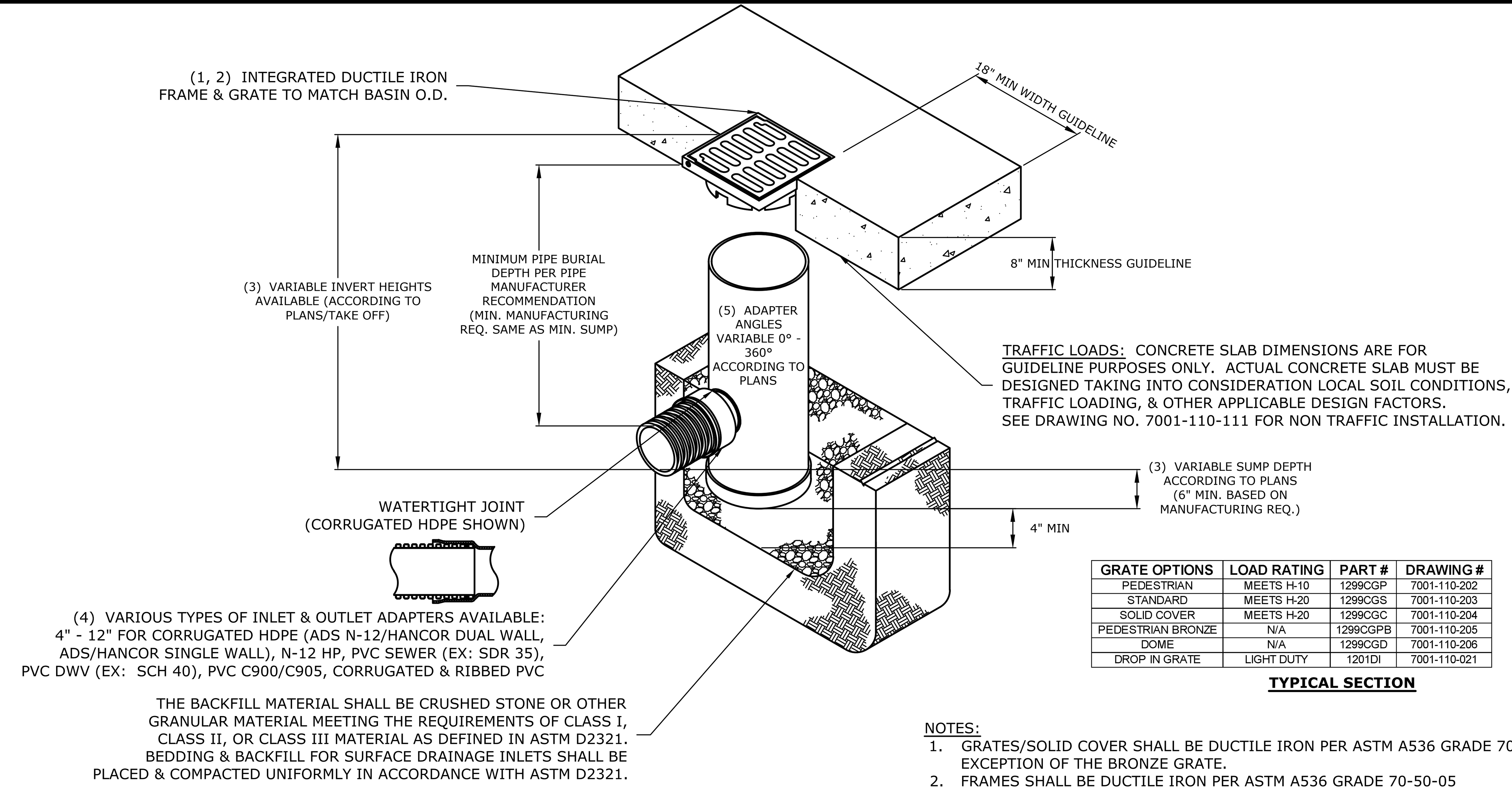
Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:54pm By: CKrzcuik
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DTLS.dwg

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



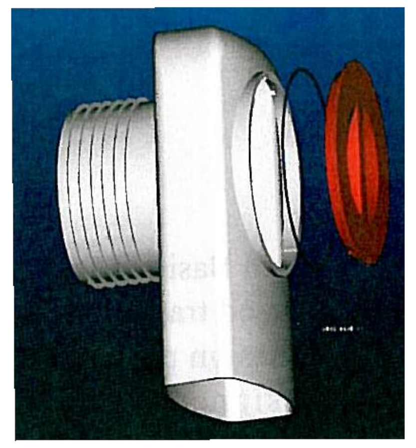
TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS. SEE DRAWING NO. 7001-110-111 FOR NON TRAFFIC INSTALLATION.

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

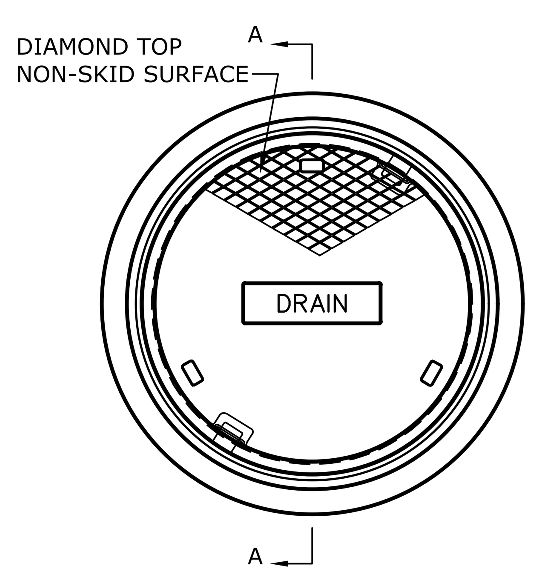
NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING 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.

YARD DRAIN
NO SCALE

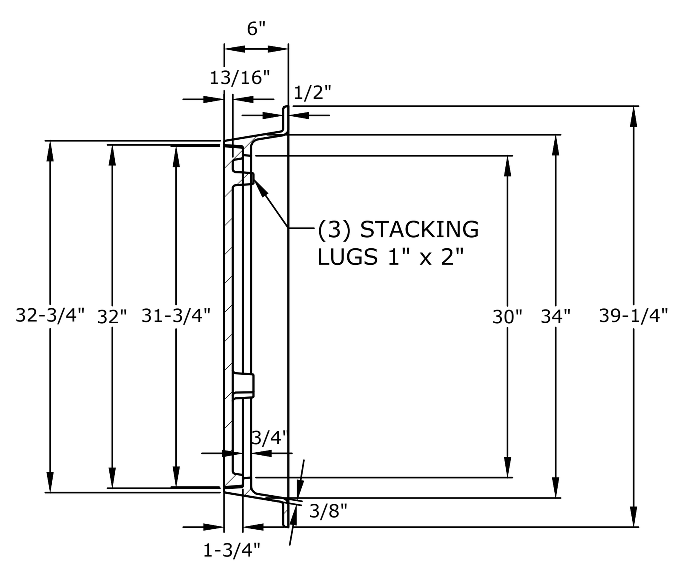


NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL "FLOATING DEBRIS TRAP
NO SCALE



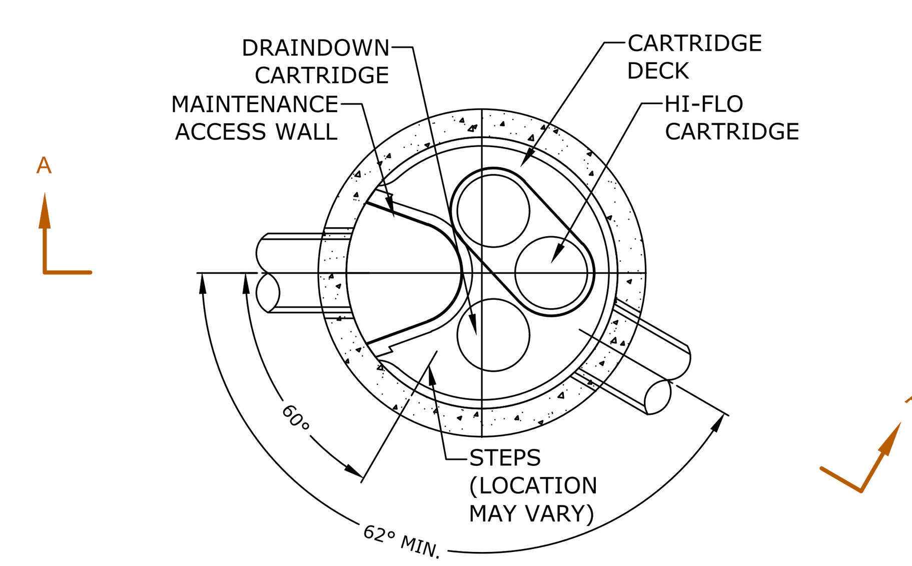
PLAN



SECTION A-A

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

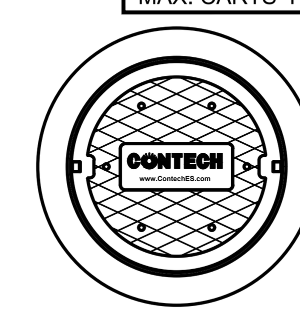


PLAN VIEW

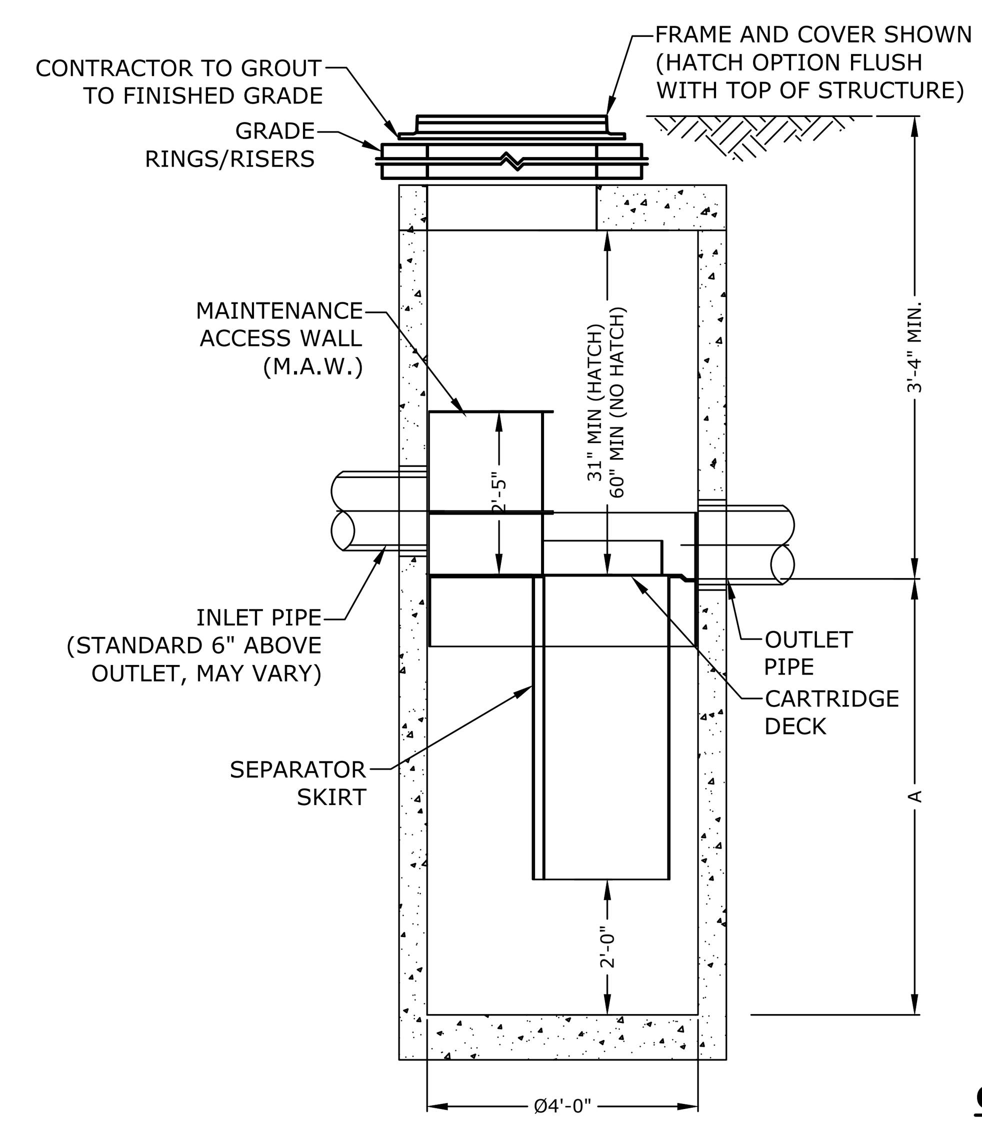
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN. Ø48" MANHOLE JELLYFISH PEAK TREATMENT CAPACITY IS 0.45 CFS. IF THE SITE CONDITIONS EXCEED 0.45 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

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)	0.14
# 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

STATE OF NEW HAMPSHIRE PATRICK CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER
6/21/22

STATE OF NEW HAMPSHIRE NEIL A. HANSEN No. 15227 LICENSED PROFESSIONAL ENGINEER
6/21/22

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

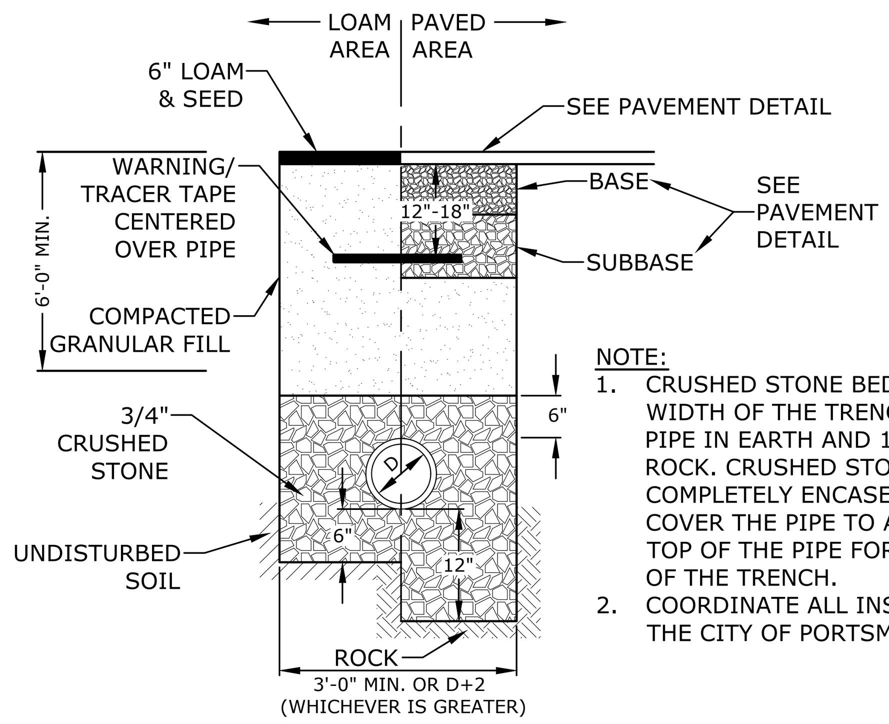
PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS

SCALE: AS SHOWN

C-503

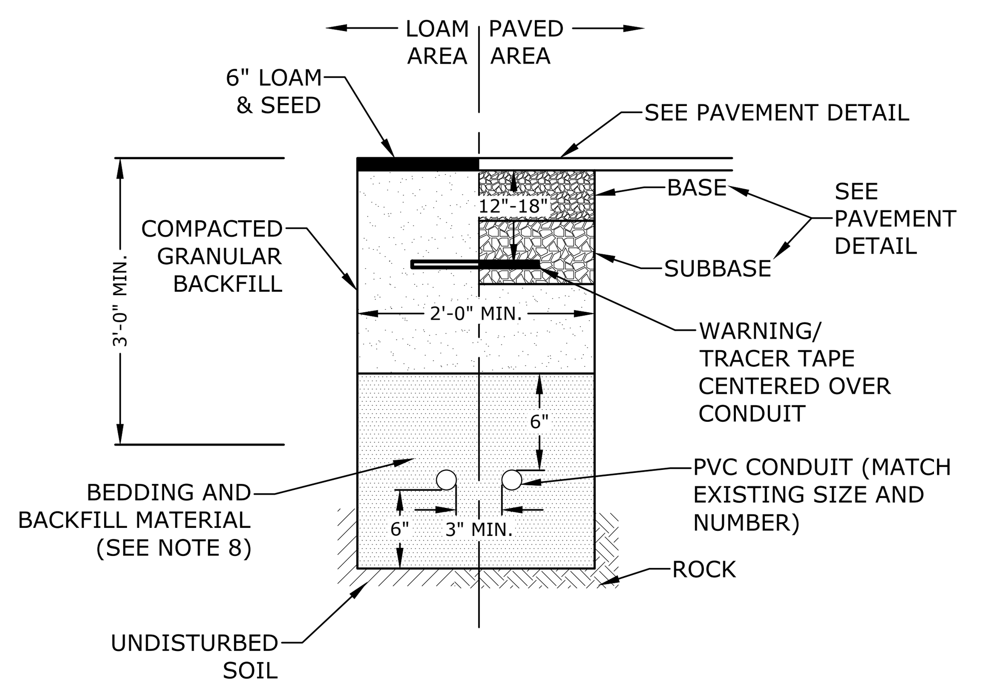
Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:54pm By: CKrzcuik
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DTLS.dwg



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



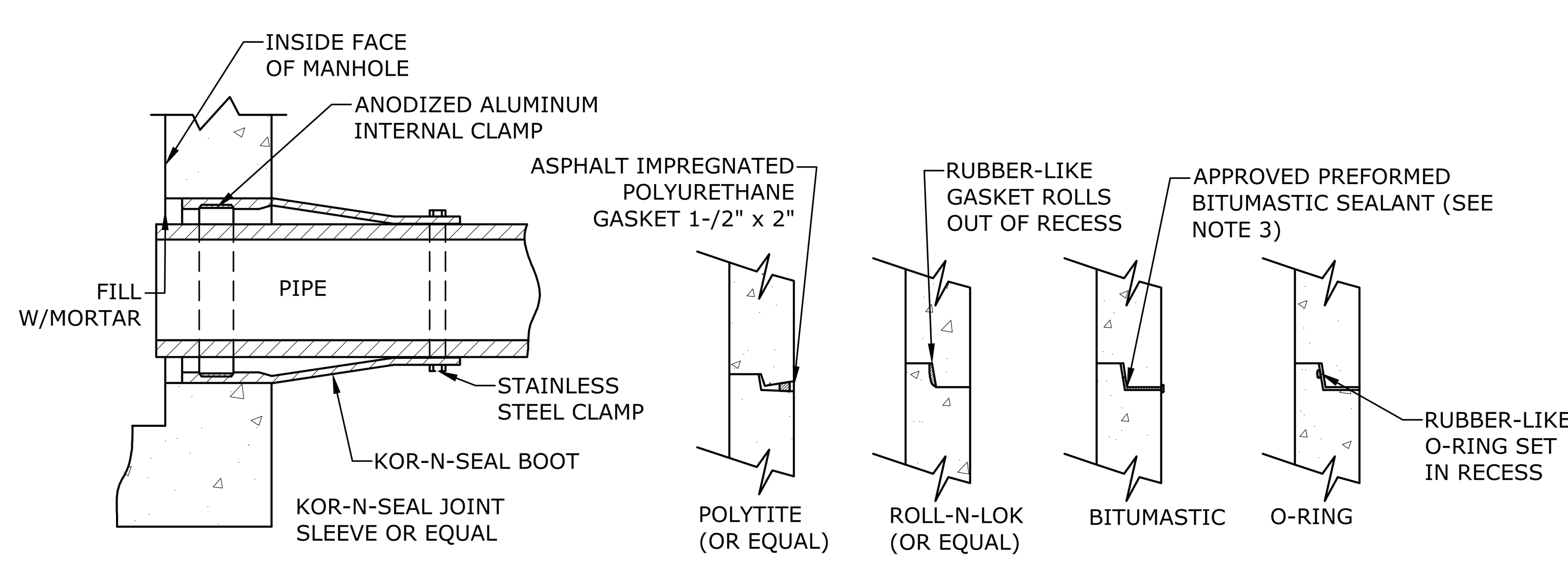
GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

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

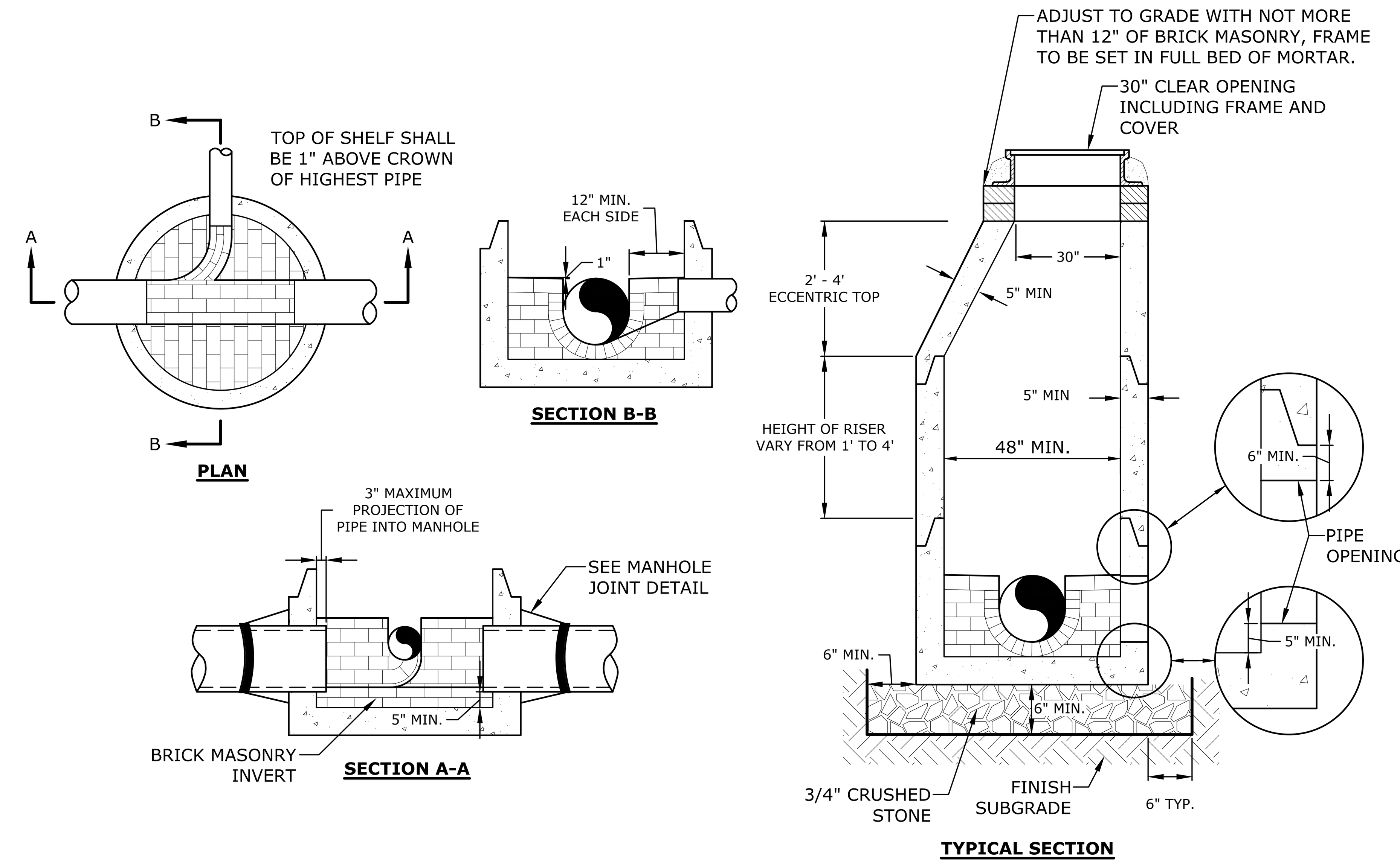
NO SCALE



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

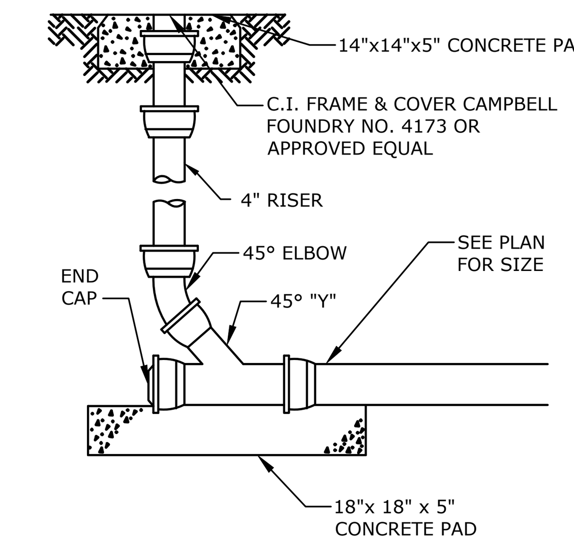
NO SCALE



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.

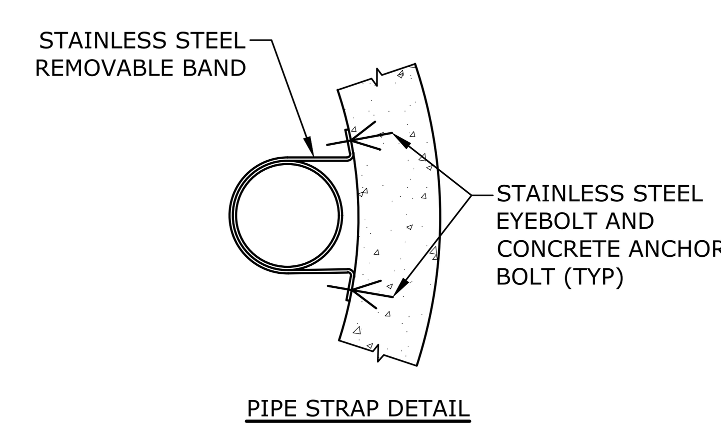
SEWER MANHOLE

NO SCALE

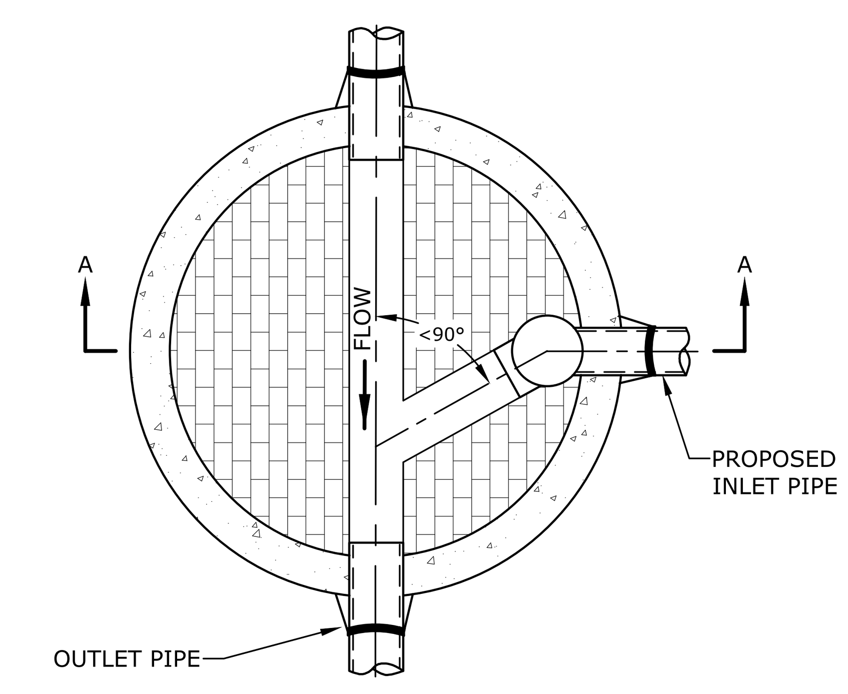


CLEAN-OUT

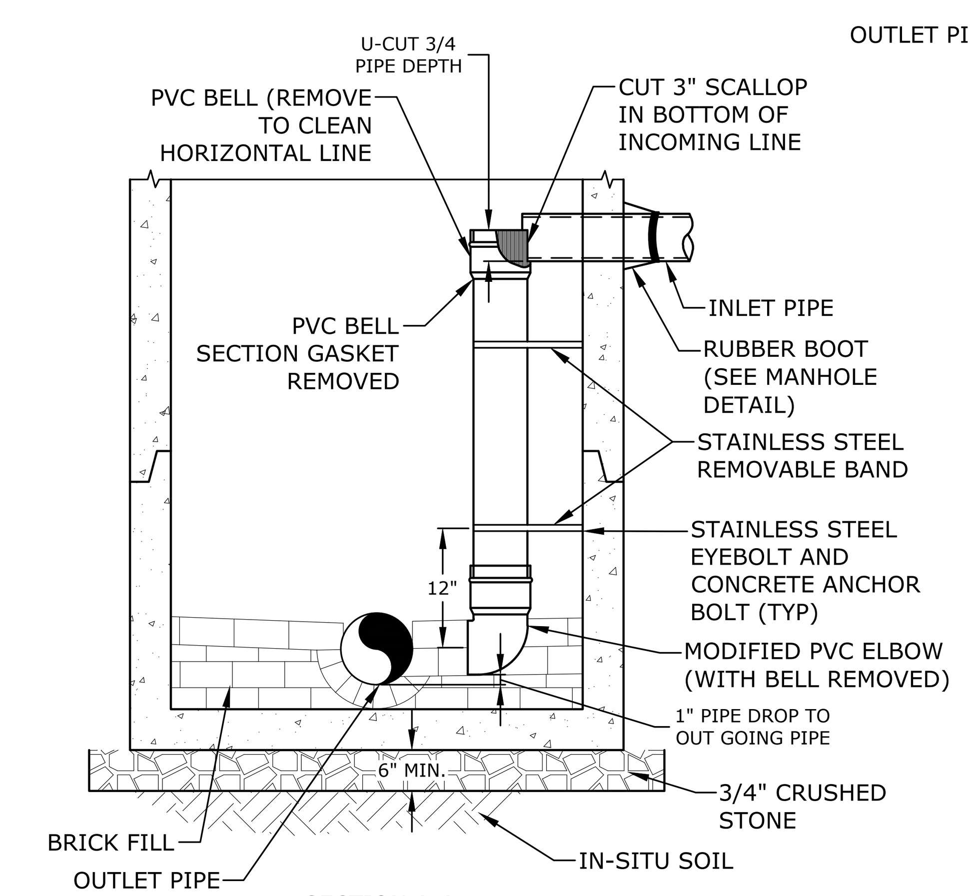
NO SCALE



PIPE STRAP DETAIL



PLAN



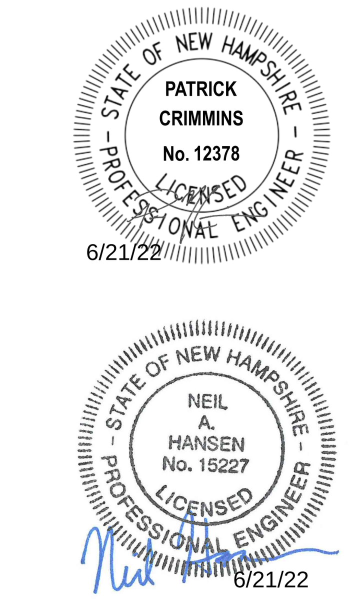
SECTION A-A

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

Tighe&Bond



Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DTLS.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

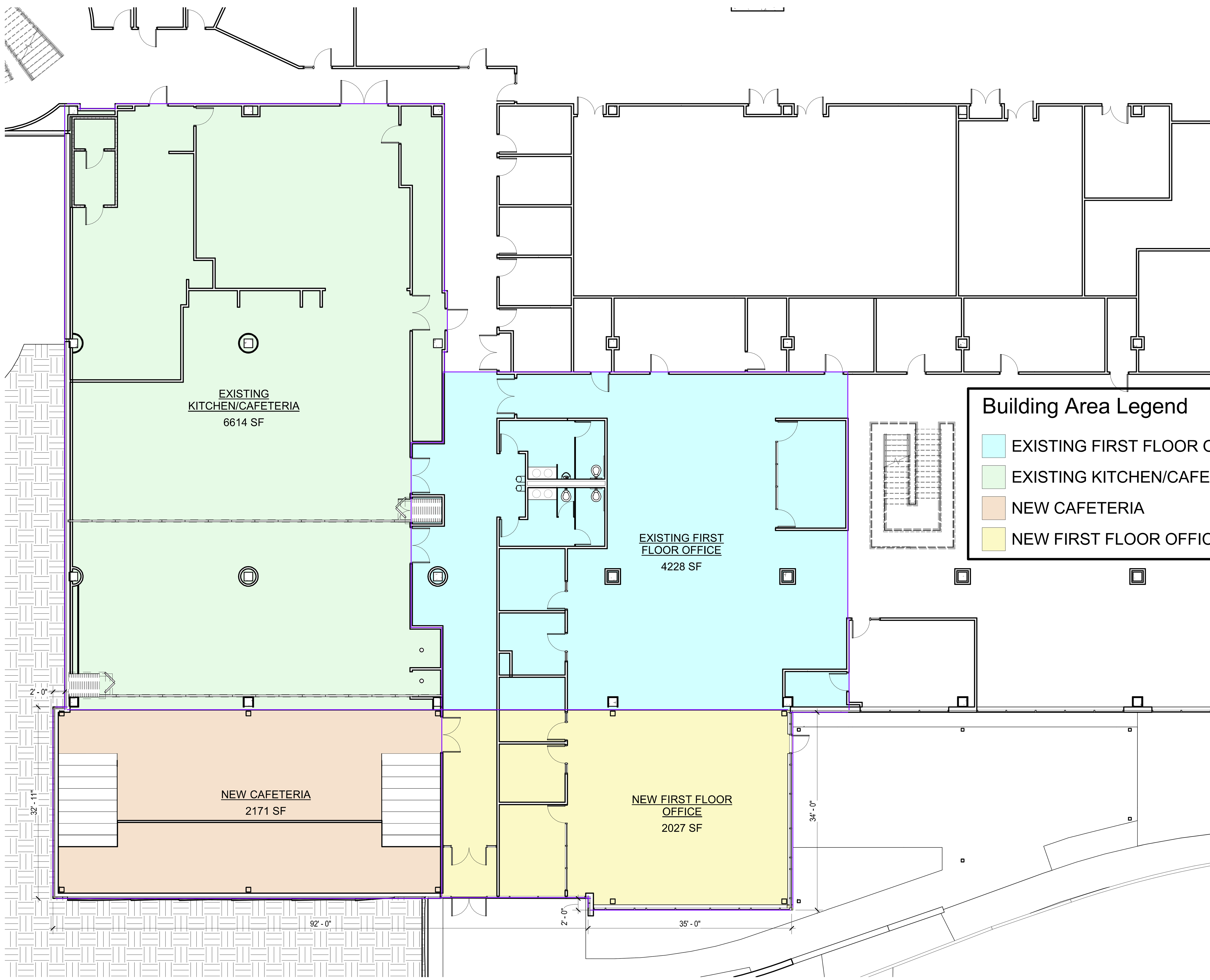
DETAILS

SCALE: AS SHOWN

C-504

Last Saved: 6/20/2022
Plotted On:Jun 20, 2022-3:54pm By: CKrzcuik
Tighe & Bond J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DTLS.dwg

Notes:

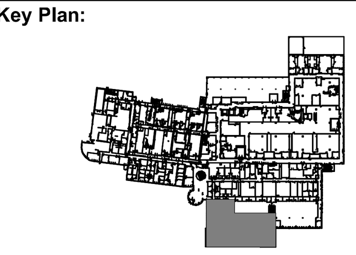


Building Area Legend

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"

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:

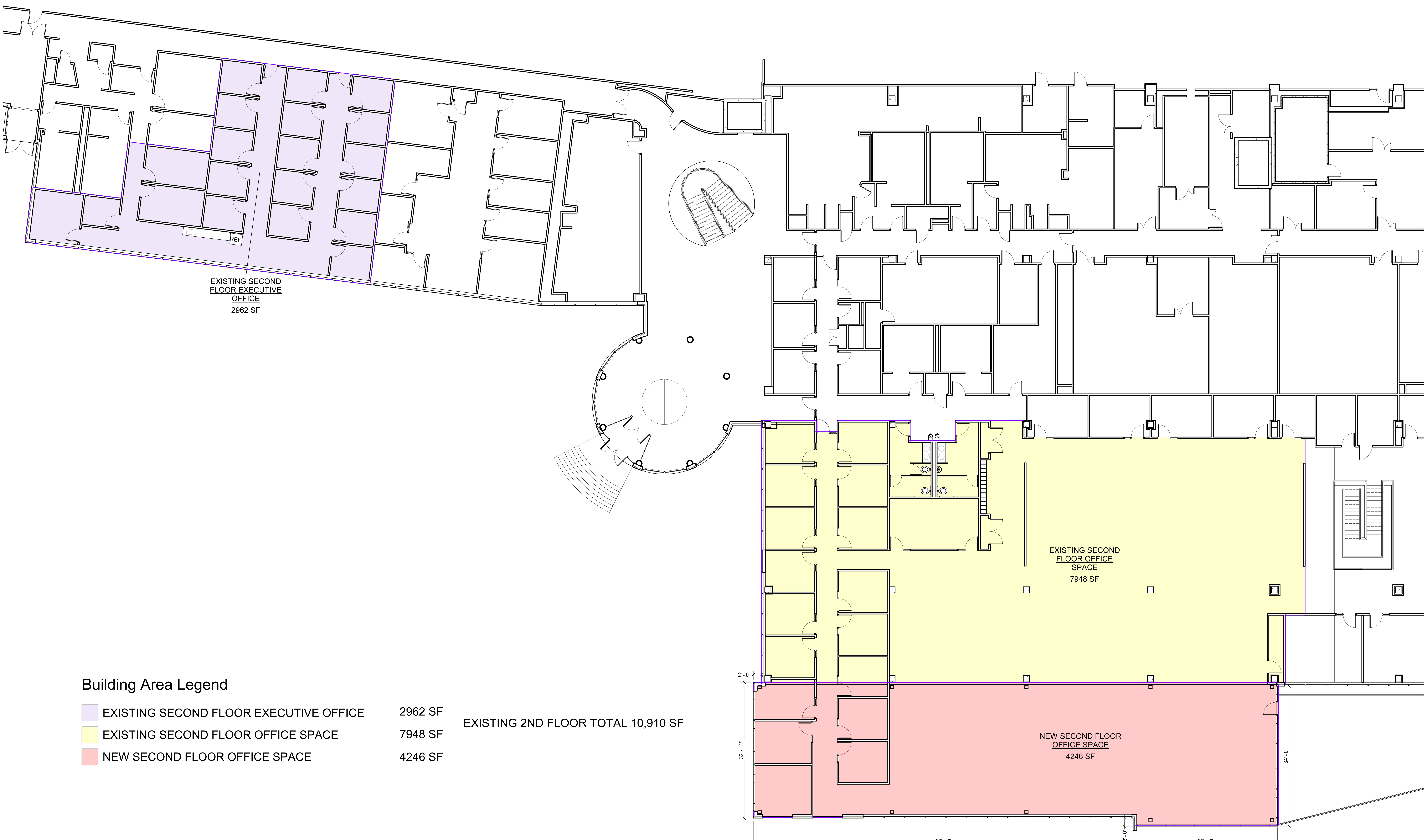
Drawing Title:
FIRST FLOOR AREA PLAN

Sheet Number:

AP-101

MAUGEL ARCHITECTS
200 AYER ROAD I SUITE 200
HARVARD, MA 01451
978 456 2800
MAUGEL.COM

Files Location: C:\Users\wpalermo\Documents\Lonza Addition 2022_wpalermo867ZP.rvt
Date Printed: 6/7/2022 9:16:28 AM



Building Area Legend

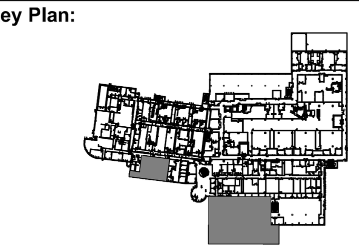
EXISTING SECOND FLOOR EXECUTIVE OFFICE	2962 SF
EXISTING SECOND FLOOR OFFICE SPACE	7948 SF
NEW SECOND FLOOR OFFICE SPACE	4246 SF

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:

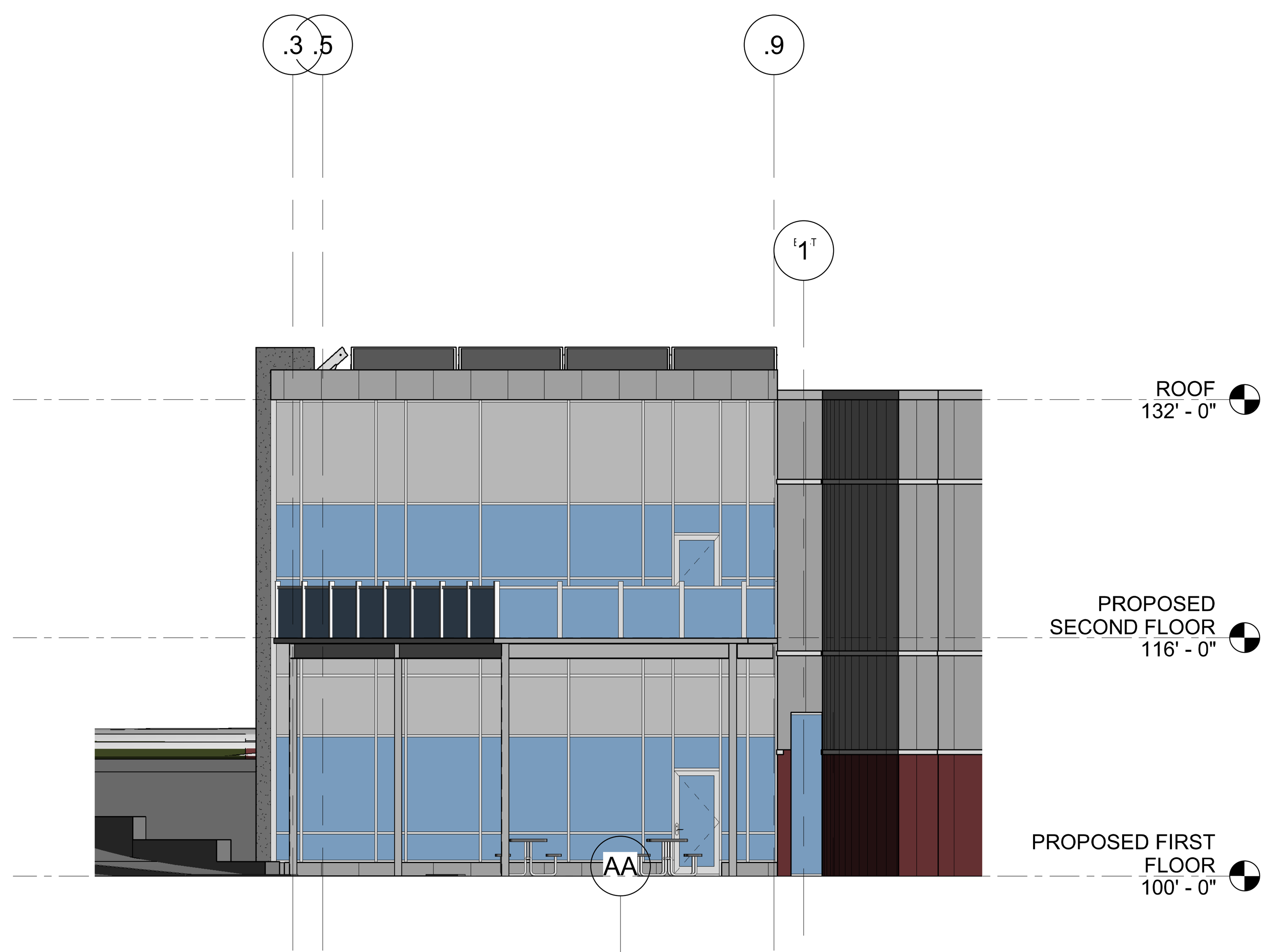
Drawing Title:
SECOND FLOOR AREA PLAN

Sheet Number:

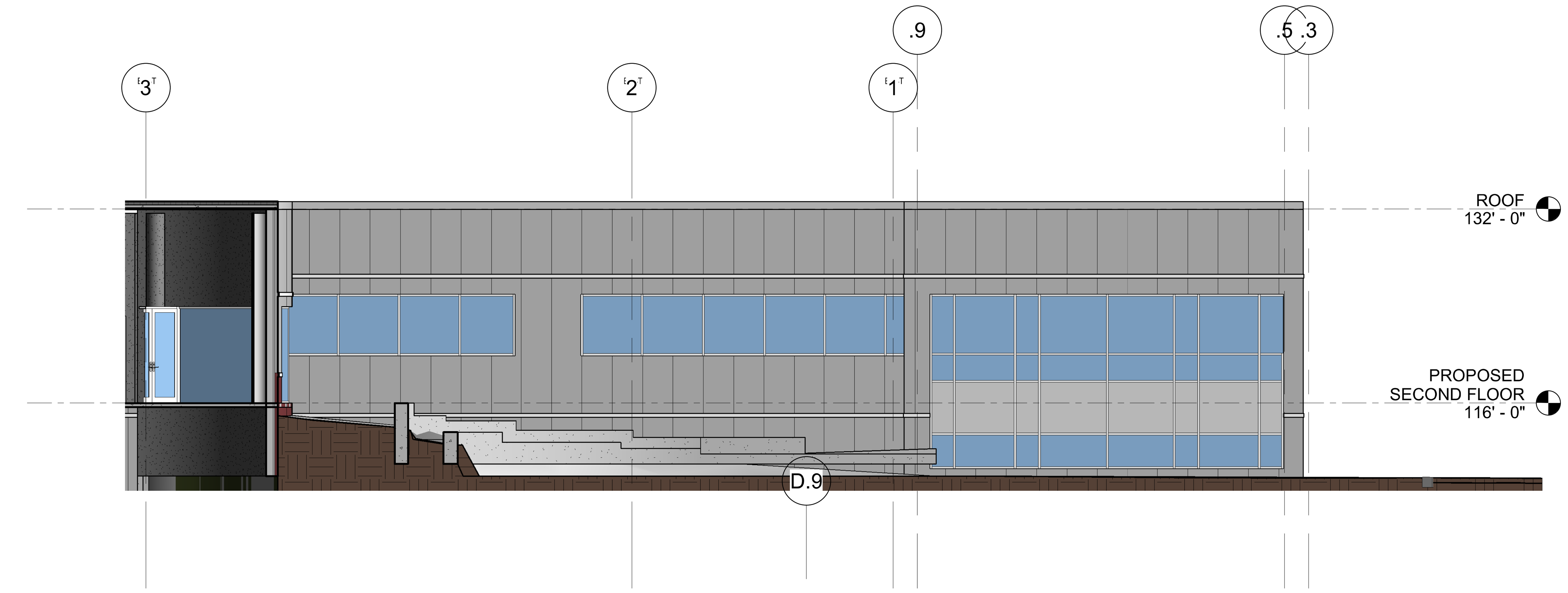
AP-102

Files Location: C:\Users\wpalermo\Documents\Lonza Addition 2022_wpalermo867ZP.rvt
Date Printed: 6/7/2022 9:16:31 AM

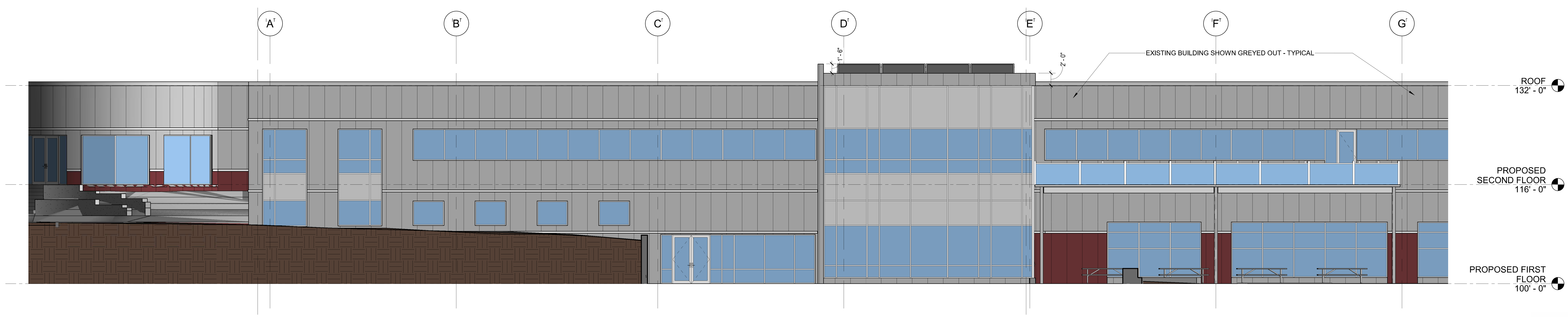
MAUGEL ARCHITECTS
200 AYER ROAD | SUITE 200
HARVARD, MA 01451
978 456 2800
MAUGEL.COM



2 EAST ELEVATION
SCALE: 1/8" = 1'-0"



3 WEST ELEVATION
SCALE: 1/8" = 1'-0"



1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

Drainage Analysis

TO: City of Portsmouth Technical Advisory Committee (TAC)

FROM: Neil A. Hansen, PE
Patrick M. Crimmins, PE

COPY: Lonza Biologics

DATE: June 21, 2022

STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER
PATRICK CRIMMINS
No. 12378
LICENSED
6/21/22

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	2,548 sf
Required Impervious Area to be Treated (2x Increase)	5,096 sf
Proposed Treated Impervious Area	6,519 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.

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	1.0/1.0	1.5/**1.5**	1.9/**1.9**	2.3/**2.3**
PA2	0.2/**0.2**	0.4/**0.4**	0.5/**0.5**	0.7/**0.7**

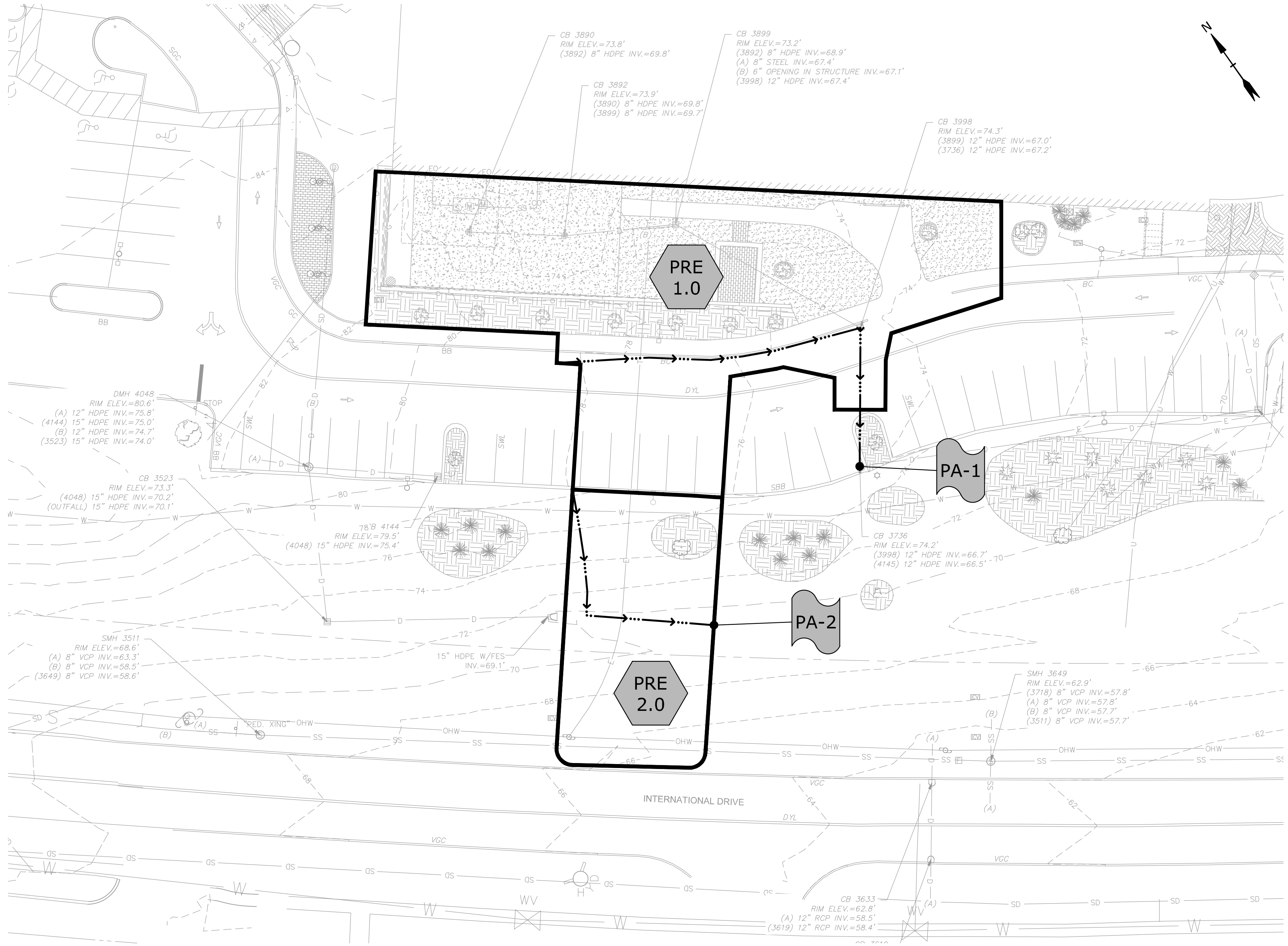
LEGEND

PRE-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION

PA-1 — POINT OF ANALYSIS



GRAPHIC SCALE 0 20' 40'

Tighe&Bond

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

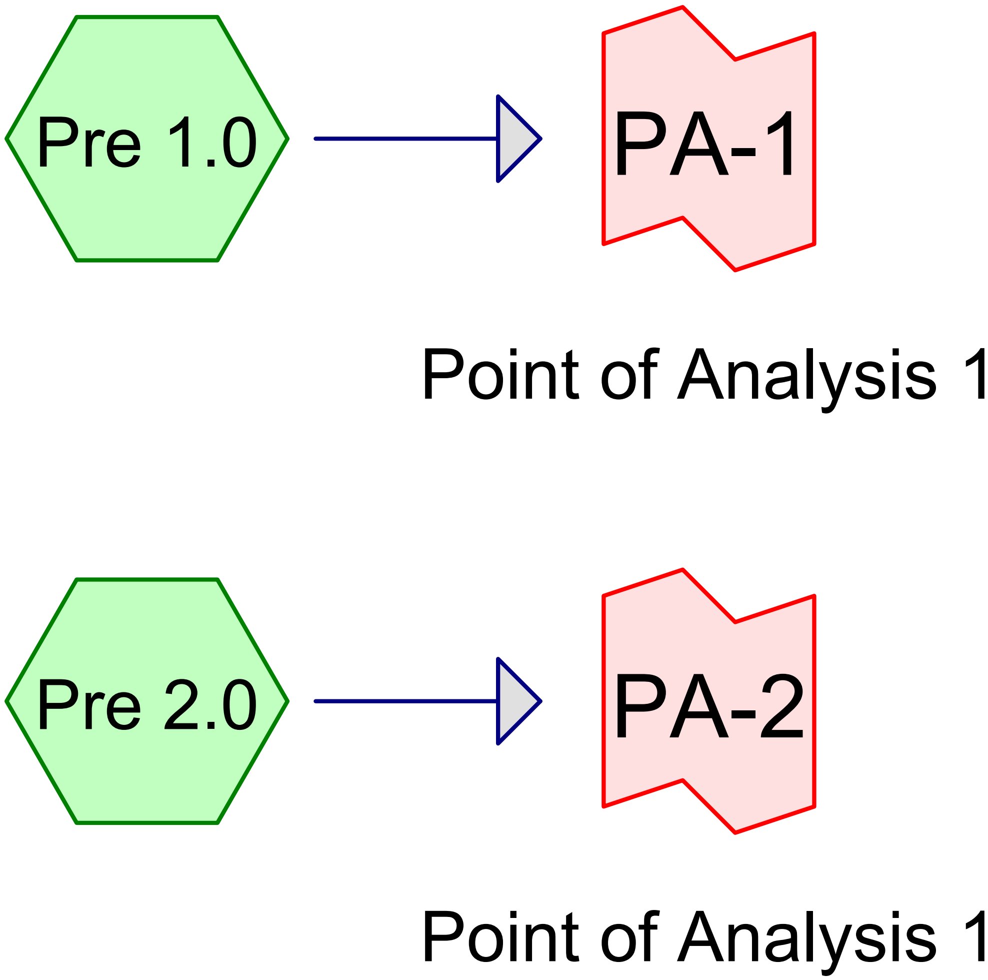
PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

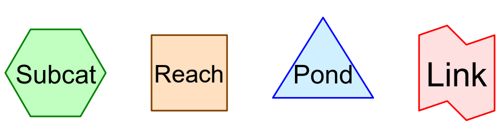
PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Saved: 6/14/2022
Plotted On:Jun 14, 2022-1:59pm By: CKrzcuik
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg





Routing Diagram for L-0700-023-PRE
Prepared by Tighe & Bond, Printed 6/14/2022
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)
8,090	98	Paved parking, HSG D (Pre 1.0)
16,069	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
16,069	HSG D	Pre 1.0, Pre 2.0
0	Other	
16,069		**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 Pre 1.0: Runoff Area=12,065 sf 67.05% Impervious Runoff Depth>3.11"
Flow Length=139' Tc=5.0 min CN=95 Runoff=0.95 cfs 3,131 cf

Subcatchment Pre 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 Analysis 1 Inflow=0.95 cfs 3,131 cf
Primary=0.95 cfs 3,131 cf

Link PA-2: Point of Analysis 1 Inflow=0.19 cfs 594 cf
Primary=0.19 cfs 594 cf

Total Runoff Area = 16,069 sf Runoff Volume = 3,725 cf Average Runoff Depth = 2.78"
49.65% Pervious = 7,979 sf 50.35% Impervious = 8,090 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 Pre 1.0: Runoff Area=12,065 sf 67.05% Impervious Runoff Depth>5.00"
Flow Length=139' Tc=5.0 min CN=95 Runoff=1.49 cfs 5,029 cf

Subcatchment Pre 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 Analysis 1 Inflow=1.49 cfs 5,029 cf
Primary=1.49 cfs 5,029 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 = 16,069 sf Runoff Volume = 6,167 cf Average Runoff Depth = 4.61"
49.65% Pervious = 7,979 sf 50.35% Impervious = 8,090 sf

Summary for Subcatchment Pre 1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.49 cfs @ 12.07 hrs, Volume= 5,029 cf, Depth> 5.00"

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
8,090	98	Paved parking, HSG D
12,065	95	Weighted Average
3,975		32.95% Pervious Area
8,090		67.05% 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 =	12,065 sf,	67.05% Impervious,	Inflow Depth > 5.00"	for 10 Year Storm event
Inflow =	1.49 cfs @	12.07 hrs, Volume=	5,029 cf	
Primary =	1.49 cfs @	12.07 hrs, Volume=	5,029 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 Pre 1.0: Runoff Area=12,065 sf 67.05% Impervious Runoff Depth>6.48"
Flow Length=139' Tc=5.0 min CN=95 Runoff=1.91 cfs 6,517 cf

Subcatchment Pre 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 Analysis 1 Inflow=1.91 cfs 6,517 cf
Primary=1.91 cfs 6,517 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 = 16,069 sf Runoff Volume = 8,107 cf Average Runoff Depth = 6.05"
49.65% Pervious = 7,979 sf 50.35% Impervious = 8,090 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 Pre 1.0: Runoff Area=12,065 sf 67.05% Impervious Runoff Depth>7.89"
Flow Length=139' Tc=5.0 min CN=95 Runoff=2.30 cfs 7,928 cf

Subcatchment Pre 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=2.30 cfs 7,928 cf
Primary=2.30 cfs 7,928 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 = 16,069 sf Runoff Volume = 9,958 cf Average Runoff Depth = 7.44"
49.65% Pervious = 7,979 sf 50.35% Impervious = 8,090 sf

LEGEND

POST-DEVELOPMENT WATERSHED BOUNDARY

LONGEST FLOW PATH

POST 1.0 — POST-DEVELOPMENT WATERSHED AREA DESIGNATION

POST POND 1 — POST-DEVELOPMENT POND DESIGNATION

PA-1 — POINT OF ANALYSIS

Tighe&Bond

0 20' 40'
GRAPHIC SCALE

Cafe Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION

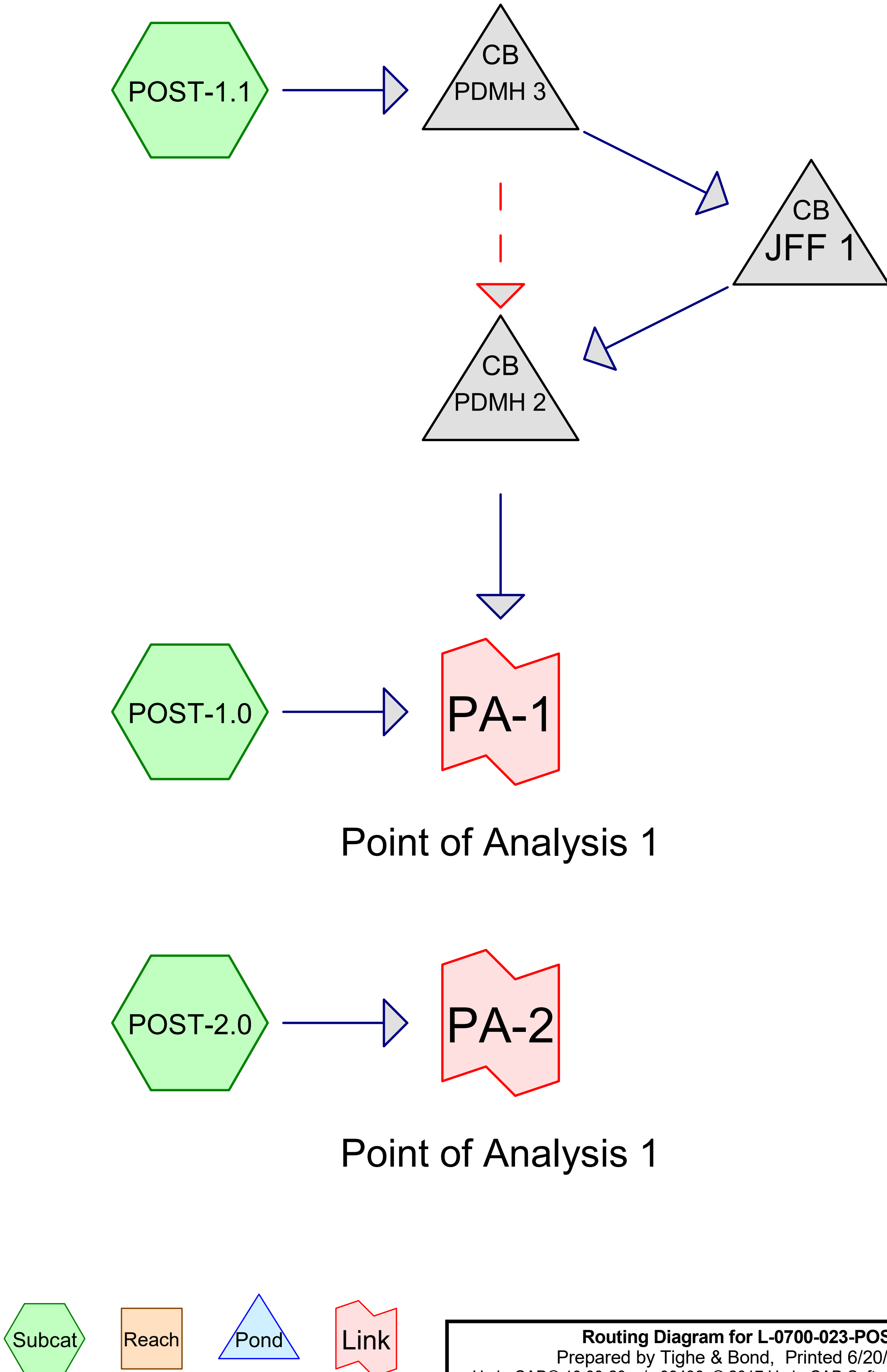
PROJECT NO:	L-0700-023
DATE:	June 21, 2022
FILE:	L-0700-023-C-DSGN.DWG
DRAWN BY:	CJK
CHECKED BY:	NAH
APPROVED BY:	PMC

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Saved: 6/14/2022
Plotted On:Jun 14, 2022-2:03pm By: CKrzcuik
Tighe & Bond\J:\L\L0700 Lonza Biologics Expansion was 1576F\023_Cafe Expansion\Drawings_Figures\AutoCAD\L-0700-023-C-DSGN.dwg



Routing Diagram for L-0700-023-POST
Prepared by Tighe & Bond, Printed 6/20/2022

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
5,431	80	>75% Grass cover, Good, HSG D (POST-1.0, POST-1.1, POST-2.0)
5,748	98	Paved parking, HSG D (POST-1.0, POST-1.1)
4,890	98	Roofs, HSG D (POST-1.1)
16,069	**92**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
16,069	HSG D	POST-1.0, POST-1.1, POST-2.0
0	Other	
16,069		**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=5,313 sf 77.53% Impervious Runoff Depth>3.01"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.41 cfs 1,333 cf

Subcatchment POST-1.1: Runoff Area=6,752 sf 96.55% Impervious Runoff Depth>3.33"
Flow Length=200' Tc=5.0 min CN=97 Runoff=0.55 cfs 1,875 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=68.00' Inflow=0.55 cfs 1,875 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=0.55 cfs 1,875 cf

Pond PDMH 2: Peak Elev=67.87' Inflow=0.55 cfs 1,875 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=0.55 cfs 1,875 cf

Pond PDMH 3: Peak Elev=69.07' Inflow=0.55 cfs 1,875 cf
Primary=0.55 cfs 1,875 cf Secondary=0.00 cfs 0 cf Outflow=0.55 cfs 1,875 cf

Link PA-1: Point of Analysis 1 Inflow=0.96 cfs 3,207 cf
Primary=0.96 cfs 3,207 cf

Link PA-2: Point of Analysis 1 Inflow=0.19 cfs 594 cf
Primary=0.19 cfs 594 cf

Total Runoff Area = 16,069 sf Runoff Volume = 3,801 cf Average Runoff Depth = 2.84"
33.80% Pervious = 5,431 sf 66.20% Impervious = 10,638 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=5,313 sf 77.53% Impervious Runoff Depth>4.89"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.65 cfs 2,164 cf

Subcatchment POST-1.1: Runoff Area=6,752 sf 96.55% Impervious Runoff Depth>5.23"
Flow Length=200' Tc=5.0 min CN=97 Runoff=0.85 cfs 2,944 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=68.12' Inflow=0.82 cfs 2,935 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=0.82 cfs 2,935 cf

Pond PDMH 2: Peak Elev=67.97' Inflow=0.85 cfs 2,944 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=0.85 cfs 2,944 cf

Pond PDMH 3: Peak Elev=69.19' Inflow=0.85 cfs 2,944 cf
Primary=0.82 cfs 2,935 cf Secondary=0.03 cfs 9 cf Outflow=0.85 cfs 2,944 cf

Link PA-1: Point of Analysis 1 Inflow=1.50 cfs 5,109 cf
Primary=1.50 cfs 5,109 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 = 16,069 sf Runoff Volume = 6,247 cf Average Runoff Depth = 4.67"
33.80% Pervious = 5,431 sf 66.20% Impervious = 10,638 sf

Summary for Subcatchment POST-1.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.65 cfs @ 12.07 hrs, Volume= 2,164 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
	1,194	80	>75% Grass cover, Good, HSG D
*	0	89	Gravel roads, HSG D
	4,119	98	Paved parking, HSG D
	5,313	94	Weighted Average
	1,194		22.47% Pervious Area
	4,119		77.53% 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 = 0.85 cfs @ 12.07 hrs, Volume= 2,944 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
	233	80	>75% Grass cover, Good, HSG D
*	0	89	Gravel roads, HSG D
	1,629	98	Paved parking, HSG D
	4,890	98	Roofs, HSG D
	6,752	97	Weighted Average
	233		3.45% Pervious Area
	6,519		96.55% 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 = 6,752 sf, 96.55% Impervious, Inflow Depth > 5.22" for 10 Year Storm event
Inflow = 0.82 cfs @ 12.07 hrs, Volume= 2,935 cf
Outflow = 0.82 cfs @ 12.07 hrs, Volume= 2,935 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.07 hrs, Volume= 2,935 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 68.12' @ 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=0.72 cfs @ 12.07 hrs HW=68.10' TW=67.96' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.72 cfs @ 2.34 fps)

Summary for Pond PDMH 2:

Inflow Area = 6,752 sf, 96.55% Impervious, Inflow Depth > 5.23" for 10 Year Storm event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 2,944 cf
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 2,944 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 2,944 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 67.97' @ 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=0.82 cfs @ 12.07 hrs HW=67.96' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.82 cfs @ 2.31 fps)

Summary for Pond PDMH 3:

Inflow Area = 6,752 sf, 96.55% Impervious, Inflow Depth > 5.23" for 10 Year Storm event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 2,944 cf
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 2,944 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.07 hrs, Volume= 2,935 cf
Secondary = 0.03 cfs @ 12.07 hrs, Volume= 9 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 69.19' @ 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=0.79 cfs @ 12.07 hrs HW=69.18' TW=68.10' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.79 cfs @ 2.75 fps)

Secondary OutFlow Max=0.03 cfs @ 12.07 hrs HW=69.18' TW=67.96' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 0.03 cfs @ 0.96 fps)

Summary for Link PA-1: Point of Analysis 1

Inflow Area = 12,065 sf, 88.17% Impervious, Inflow Depth > 5.08" for 10 Year Storm event
Inflow = 1.50 cfs @ 12.07 hrs, Volume= 5,109 cf
Primary = 1.50 cfs @ 12.07 hrs, Volume= 5,109 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=5,313 sf 77.53% Impervious Runoff Depth>6.36"
Flow Length=139' Tc=5.0 min CN=94 Runoff=0.83 cfs 2,818 cf

Subcatchment POST-1.1: Runoff Area=6,752 sf 96.55% Impervious Runoff Depth>6.72"
Flow Length=200' Tc=5.0 min CN=97 Runoff=1.08 cfs 3,780 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=68.19' Inflow=0.98 cfs 3,745 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=0.98 cfs 3,745 cf

Pond PDMH 2: Peak Elev=68.04' Inflow=1.08 cfs 3,780 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=1.08 cfs 3,780 cf

Pond PDMH 3: Peak Elev=69.26' Inflow=1.08 cfs 3,780 cf
Primary=0.98 cfs 3,745 cf Secondary=0.10 cfs 35 cf Outflow=1.08 cfs 3,780 cf

Link PA-1: Point of Analysis 1 Inflow=1.91 cfs 6,598 cf
Primary=1.91 cfs 6,598 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 = 16,069 sf Runoff Volume = 8,188 cf Average Runoff Depth = 6.11"
33.80% Pervious = 5,431 sf 66.20% Impervious = 10,638 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=5,313 sf 77.53% Impervious Runoff Depth>7.77"
Flow Length=139' Tc=5.0 min CN=94 Runoff=1.01 cfs 3,438 cf

Subcatchment POST-1.1: Runoff Area=6,752 sf 96.55% Impervious Runoff Depth>8.13"
Flow Length=200' Tc=5.0 min CN=97 Runoff=1.30 cfs 4,572 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=68.25' Inflow=1.12 cfs 4,498 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0125 '/' Outflow=1.12 cfs 4,498 cf

Pond PDMH 2: Peak Elev=68.10' Inflow=1.30 cfs 4,572 cf
12.0" Round Culvert n=0.013 L=12.0' S=0.0250 '/' Outflow=1.30 cfs 4,572 cf

Pond PDMH 3: Peak Elev=69.32' Inflow=1.30 cfs 4,572 cf
Primary=1.12 cfs 4,498 cf Secondary=0.18 cfs 74 cf Outflow=1.30 cfs 4,572 cf

Link PA-1: Point of Analysis 1 Inflow=2.30 cfs 8,010 cf
Primary=2.30 cfs 8,010 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 = 16,069 sf Runoff Volume = 10,040 cf Average Runoff Depth = 7.50"
33.80% Pervious = 5,431 sf 66.20% Impervious = 10,638 sf

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.

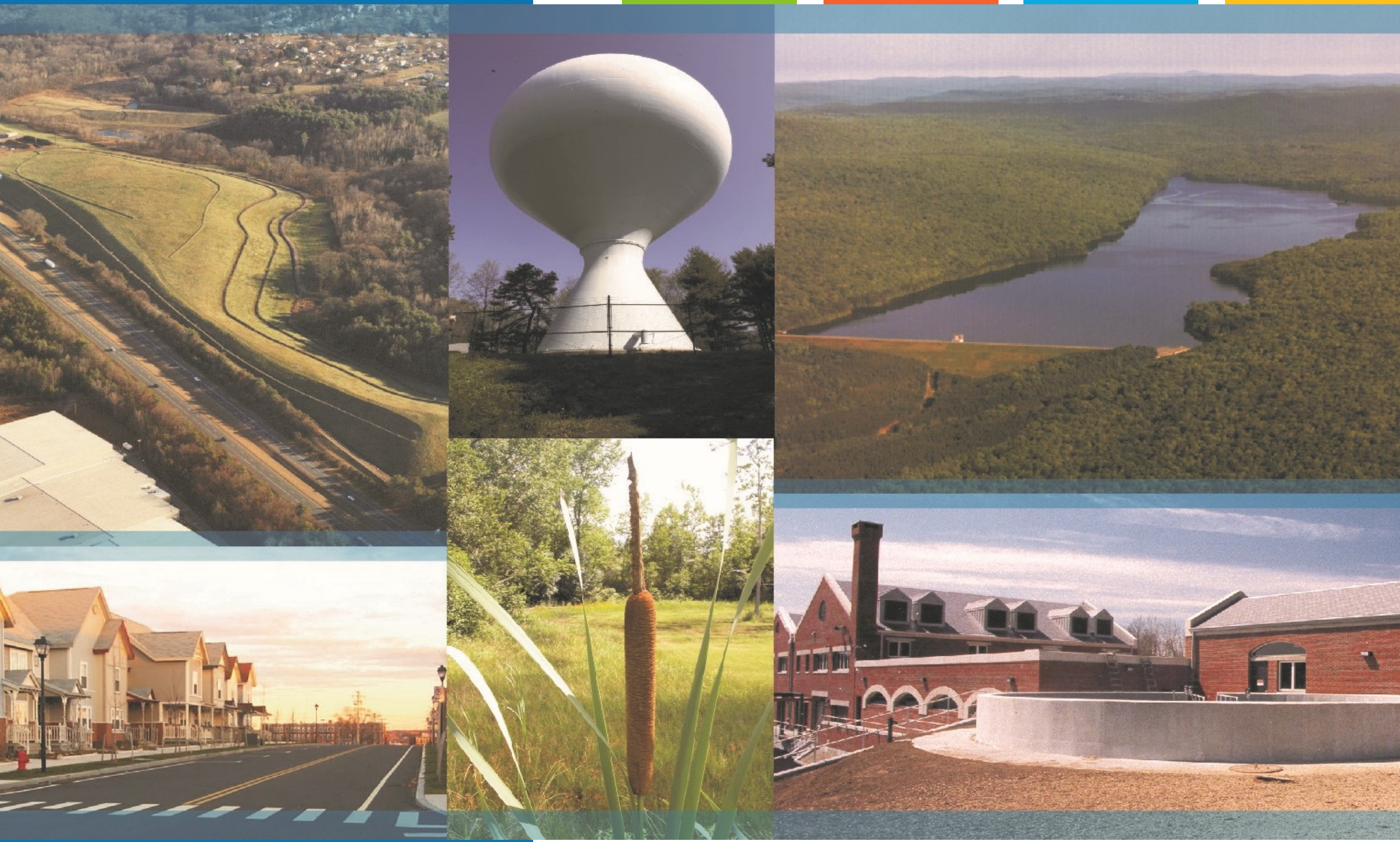
Runoff generated from the proposed impervious areas within the café expansion will be treated by a Contech Jellyfish Filter filtration system. The Jellyfish Filter was sized to treat the Water Quality Flow (WQF), as shown in Table 2.2. The subcatchment area (POST-1.1) for this expansion can be referenced 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	0.15 AC
Ai	Impervious Area Draining to Design Structure	0.14 AC
I	% Impervious Area Draining to Design Structures	93%
Rv	Runoff Coefficient, Rv = 0.05 + (0.9*I)	0.89
WQV	**Water Quality Volume, WQV = P*A*Rv**	**485 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**	**0.137 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

Table of Contents

Section 1 Long-Term Operation & Maintenance Plan

1.1 Contact/Responsible Party 1-1
1.2 Maintenance Items 1-1
1.3 Overall Site Operation & Maintenance Schedule 1-2
1.3.1 Disposal Requirements...1-2
1.4 Contech Jellyfish Filter System Maintenance Requirements.................1-3
1.5 Snow & Ice Management for Standard Asphalt and Walkways.............1-4

Section 2 Chloride Management Plan

2.1 Background Information...2-1
2.2 Operational Guidelines – Chloride Management.................................2-1
2.2.1 Winter Operator Certification Requirements............................2-1
2.2.2 Improved Weather Monitoring...2-2
2.2.3 Equipment Calibration Requirements 2-2
2.2.4 Increased Mechanical Removal Capabilities.............................2-2
2.3 Salt Usage Evaluation and Monitoring 2-3
2.4 Summary 2-3

Section 3 Invasive Species

Section 4 Annual Updates and Log Requirements

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

Table of Contents

Chapter 1

1.0 Owner Specific Jellyfish Product Information 4

Chapter 2

2.0 Jellyfish Filter System Operations & Functions 5
2.1 Components & Cartridges 6
2.2 Jellyfish Membrane Filtration Cartridges Assembly 7
2.3 Installation of Jellyfish Membrane Filtration Cartridges 7

Chapter 3

3.0 Inspection and Maintenance Overview 8

Chapter 4

4.0 Inspection Timing 8

Chapter 5

5.0 Inspection Procedure 8
5.1 Dry Weather Inspections 8
5.1 Wet Weather Inspections 9

Chapter 6

6.0 Maintenance Requirements 9

Chapter 7

7.0 Maintenance Procedure 9
7.1 Filter Cartridge Removal 9
7.2 Filter Cartridge Rinsing 9
7.3 Sediment and Flotables Extraction 10
7.4 Filter Cartridge Reinstallation and Replacement 10
7.5 Chemical Spills 10
5.6 Material Disposal 10

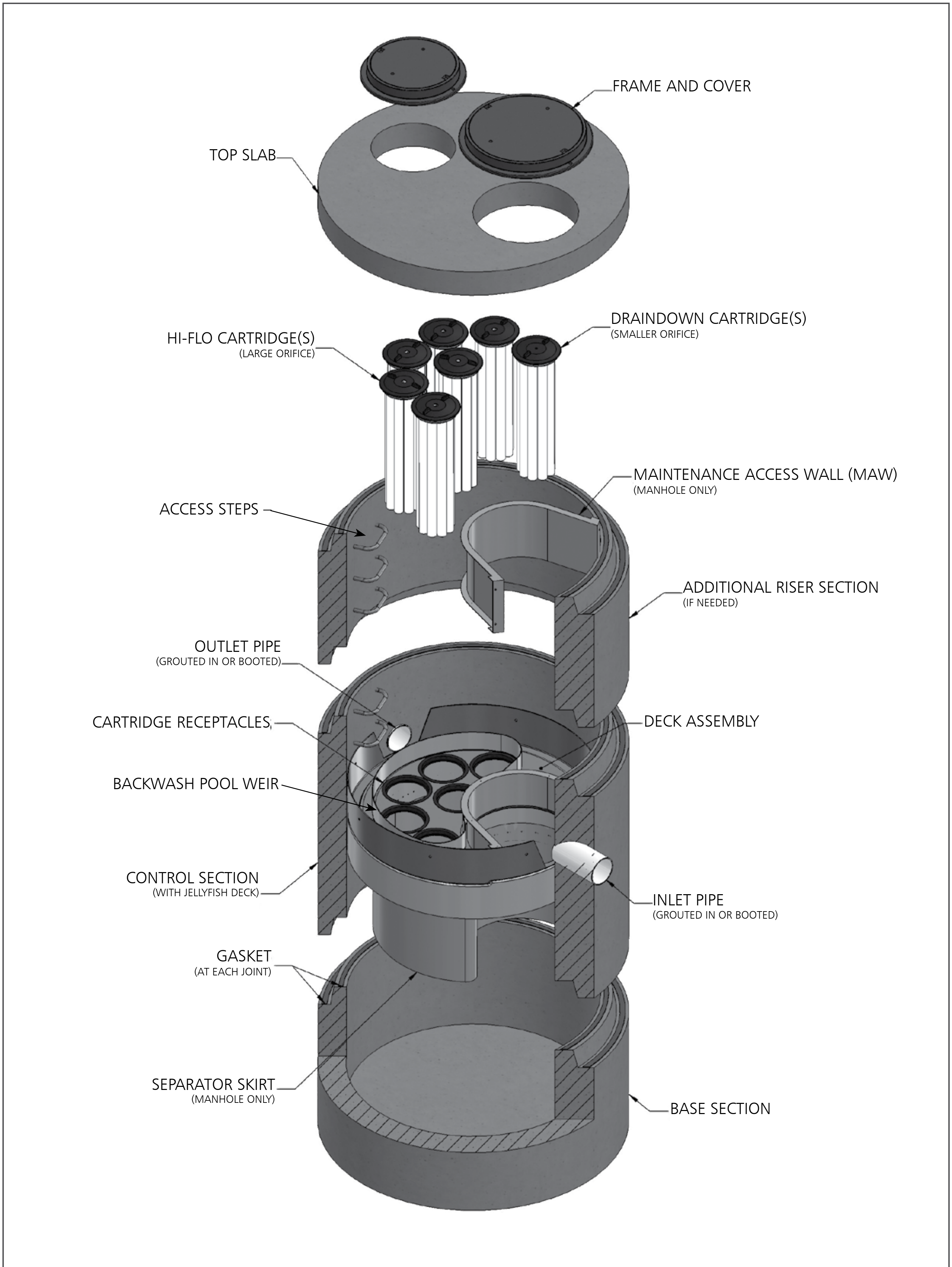
Jellyfish Filter Inspection and Maintenance Log 12

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:

Contech Engineered Solutions
9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
513-645-7000 | 800-338-1122
www.ContechES.com
info@conteches.com


FRAME AND COVER
TOP SLAB
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
DRAINDOWN CARTRIDGE(S)
(SMALLER 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.

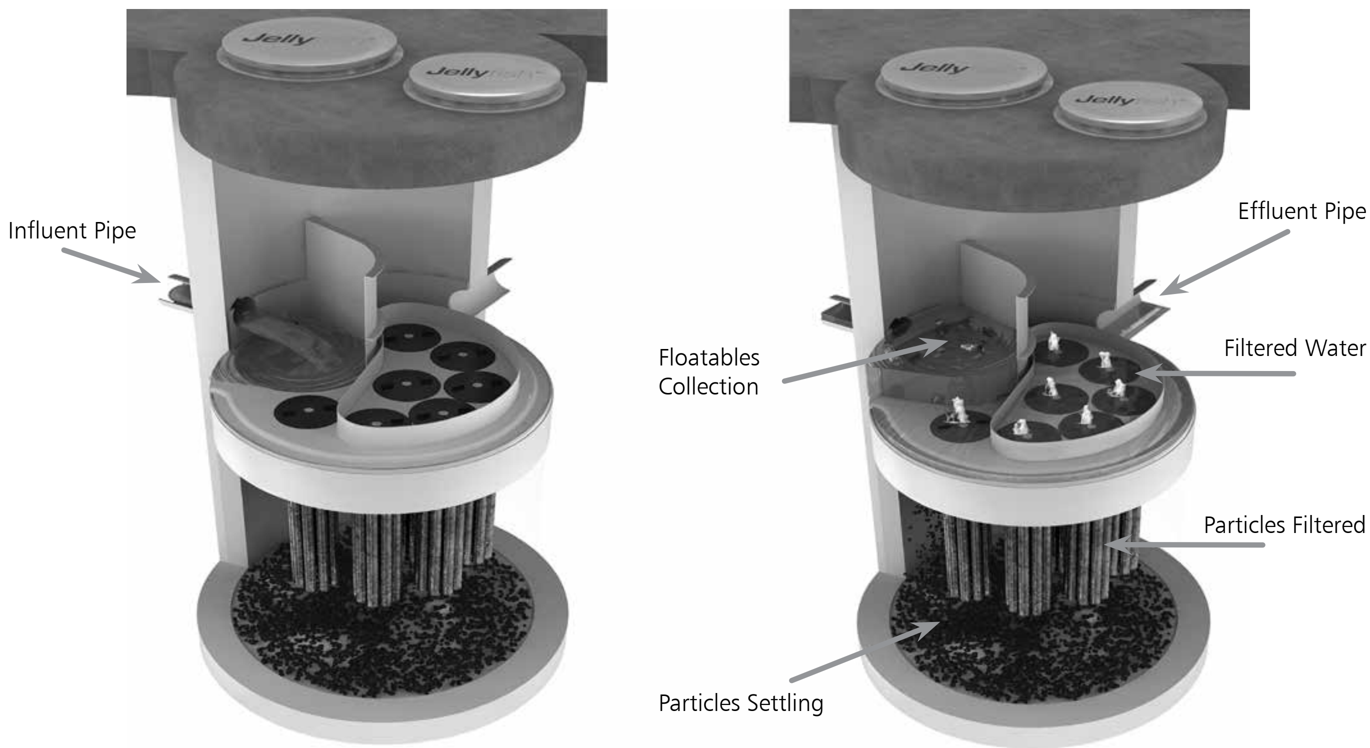
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



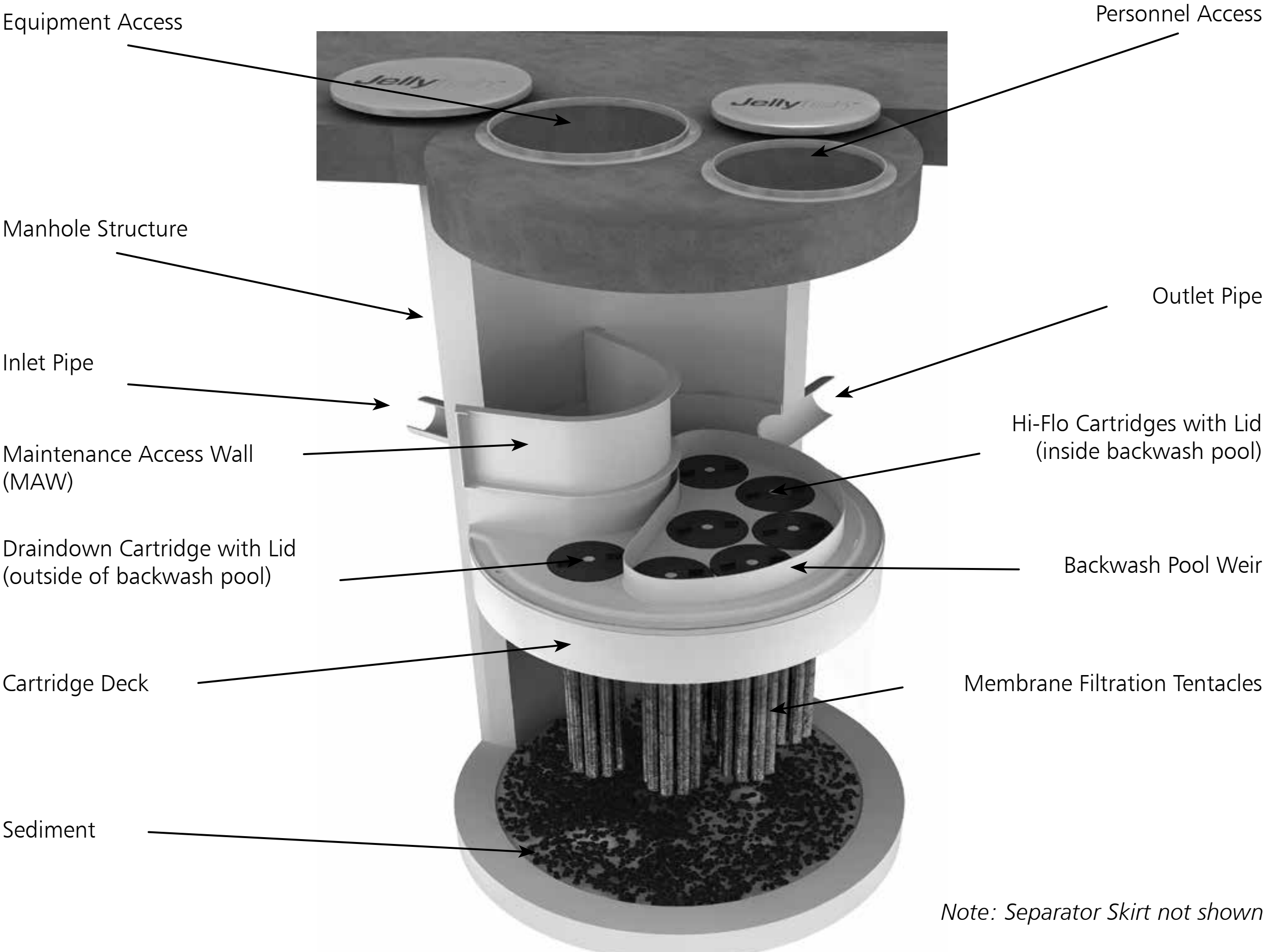
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

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**



Note: Separator Skirt not shown

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 <u>small orifice</u> are to be inserted into the <u>Draindown cartridge receptacles</u>, outside of the backwash pool weir.
  - Lids with a <u>large orifice</u> are to be inserted into the <u>Hi-Flo cartridge receptacles</u> within the backwash pool weir.
  - Lids with <u>no orifice</u> (blank cartridge lids) and a <u>blank headplate</u> 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:

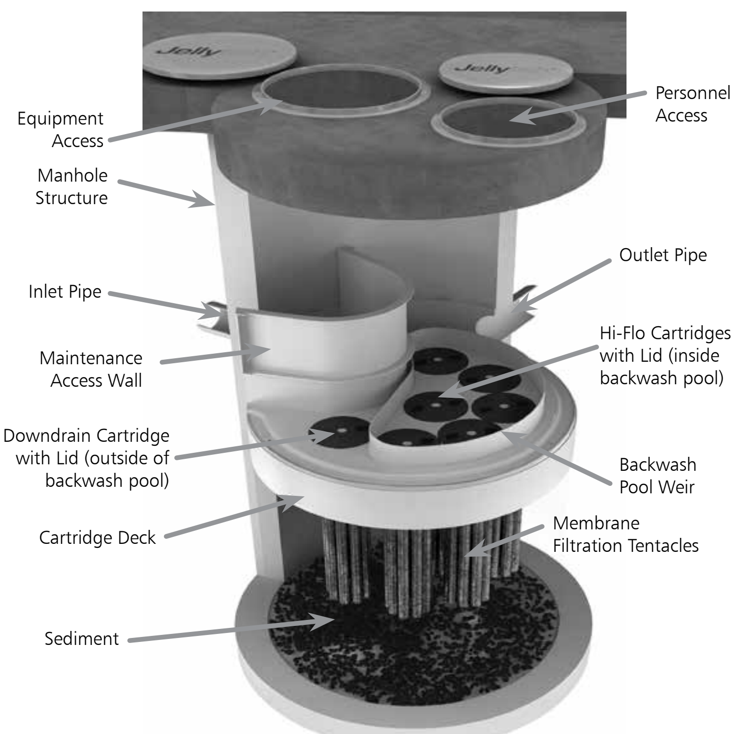
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

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

Cartridge Removal & Lifting Device

threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.

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 sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

Rinsing Cartridge with Contech Rinse Tool

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 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.

Vacuuming Sump Through MAW

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

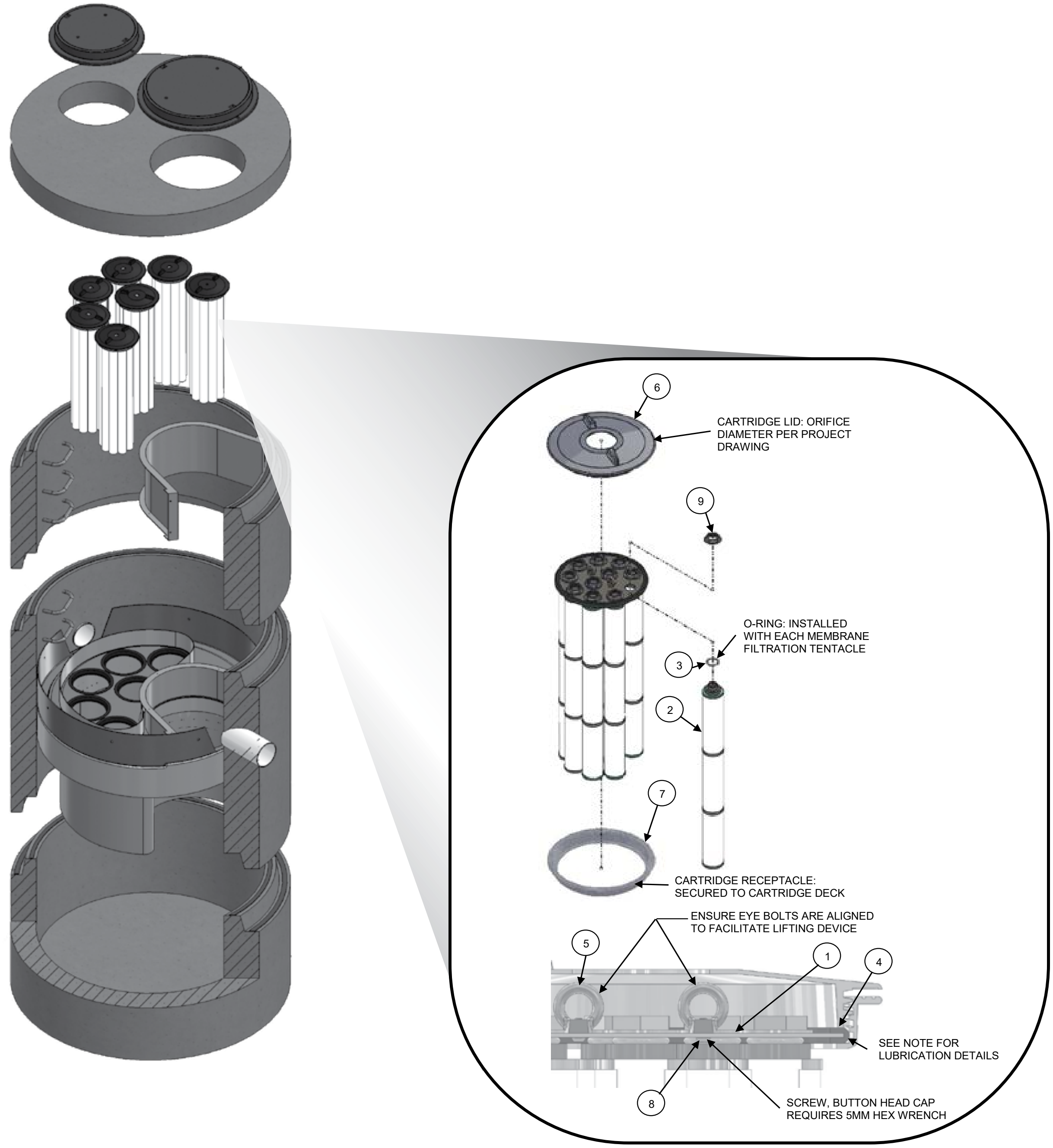


TABLE 1: BOM

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.

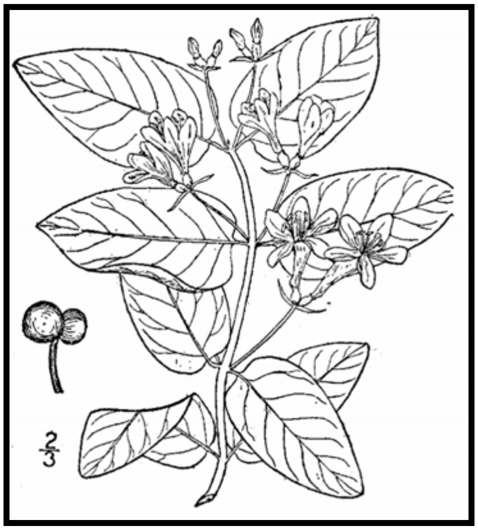
Section 3
Invasive Species

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

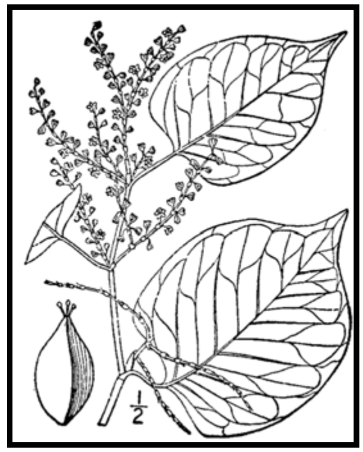
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

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

25 Years of Shaping the Exceptional / 200 Ayer Road / Suite 200 / Harvard, MA 01451 / 978 458 2800 /

MAUGEL
ARCHITECTS

Site Plan Review Application Fee

Project: 101 International Drive **Map/Lot:** 305/6

Applicant: Lonza Biologics, Inc.

All development

Base fee $500			$500.00
Plus $5.00 per $1,000 of site costs			
Site costs	$400,000	+	$2,000.00
Plus $10.00 per 1,000 S.F. of site development area			
Site development area	16,000 S.F.	+	$160.00
		Fee	**$2,660.00**

Maximum fee: $15,000.00

Fee received by: ______________________ Date: __________

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.

Owner's/Agent Letter of Authorization

This letter is to authorize Tighe & Bond, Inc. (Civil Engineer), to represent and submit on behalf of Lonza Biologics, Inc. (Applicant), applications and materials in all site design and permitting matters for the proposed project at 101 International Drive in Portsmouth, New Hampshire. This project includes the construction of an expansion to the café area of the front of the existing cafeteria in the 101B building, and associated site, stormwater and utility improvements. This authorization shall relate to those activities that are required for local, state and federal permitting for the above project and include any required signatures for those applications.

Signature	Jennalynn Coulp-Yu Print Name	01JUN22 Date
Witness	Matt Sullivan Print Name	01JUN22 Date

(L-0700-023 (eng auth form).docx)

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
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

June 21, 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

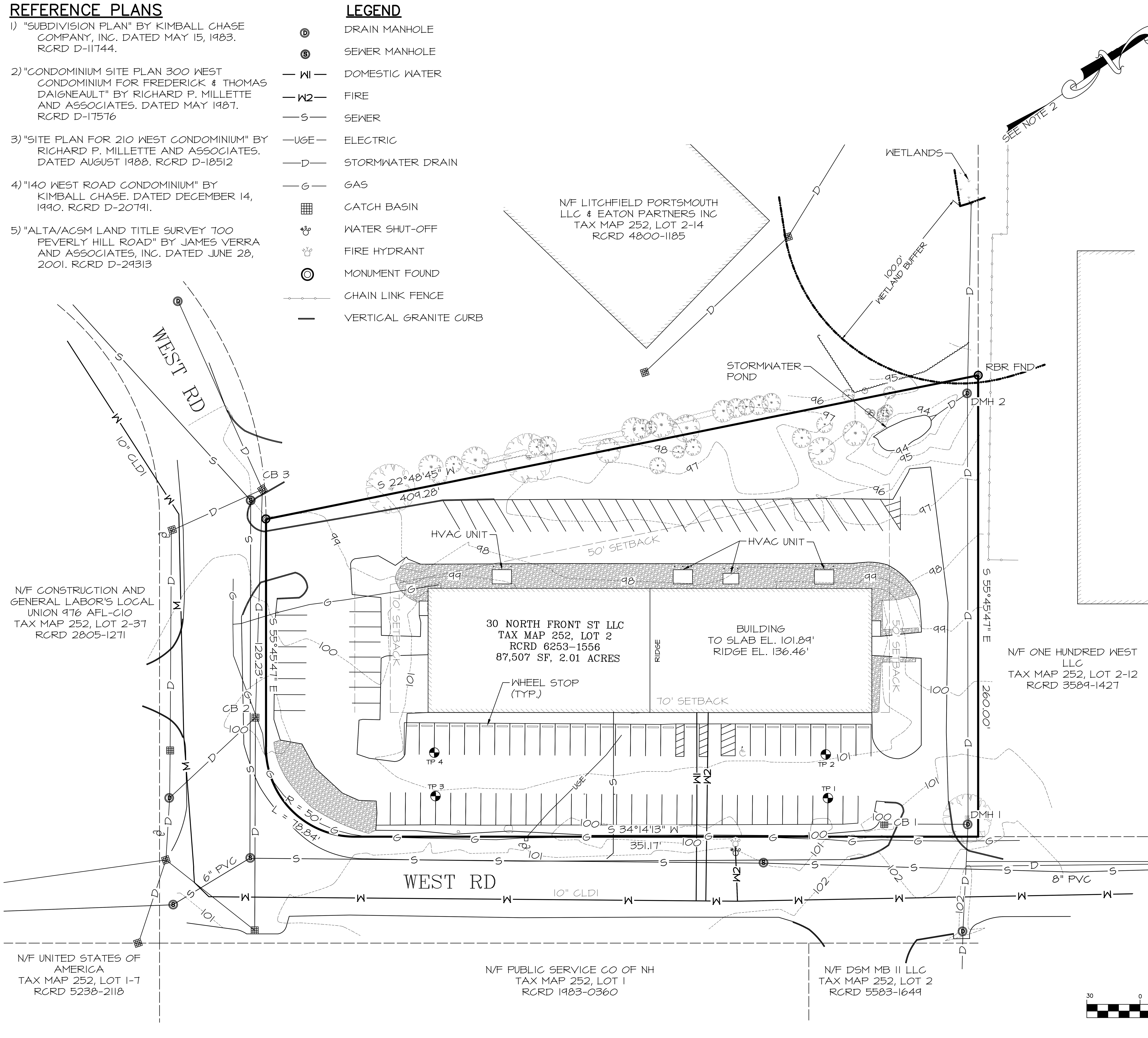
3) "SITE PLAN FOR 210 WEST CONDOMINIUM" BY RICHARD P. MILLETTE AND ASSOCIATES. DATED AUGUST 1988. RCRD D-18512

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
▦	CATCH BASIN
	WATER SHUT-OFF
	FIRE HYDRANT
◎	MONUMENT FOUND
	CHAIN LINK FENCE
—	VERTICAL GRANITE CURB



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%

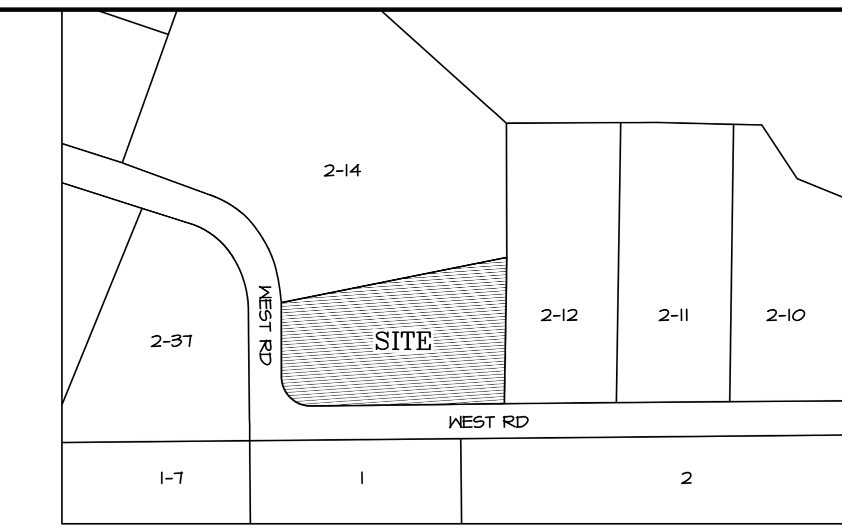
4) THE PARCEL IS NOT WITHIN A FEMA FLOOD ZONE, AS PER FLOOD INSURANCE RATE MAP #33015C0270F, PANEL 270 OF 681, DATED JANUARY 29, 2021. VERTICAL DATUM IS NAVD 1988.

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'.



LOCUS PLAN
N.T.S.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
SCALE: 1" = 30'

STATE OF NEW HAMPSHIRE R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

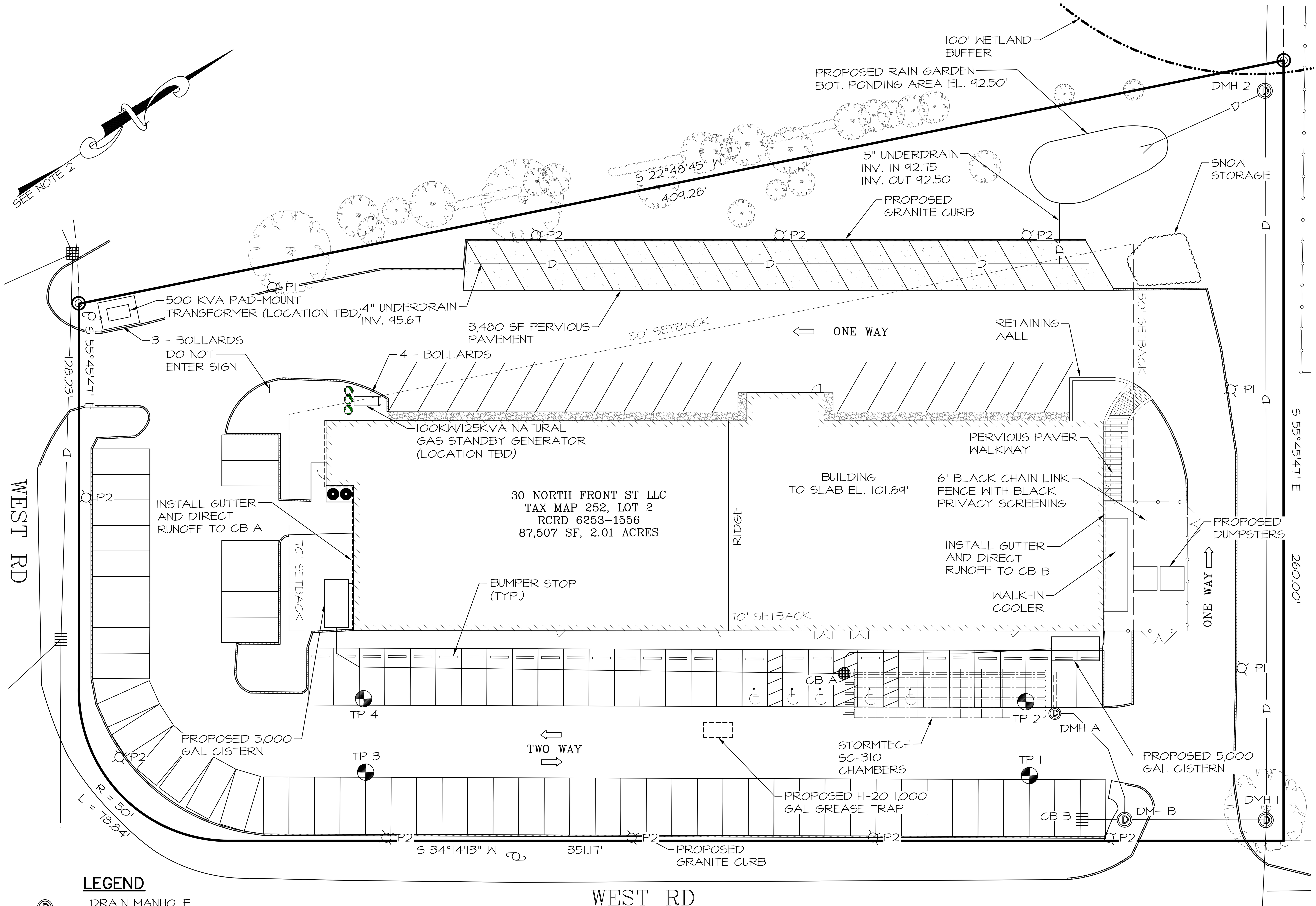
SCALE 1" = 30'
CHECKED A.ROSS
DRAWN I.C.A.
CHECKED

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 13	2



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.

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.

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

STATE OF NEW HAMPSHIRE
R. ALEX ROSS
No. 9409
LICENSED
PROFESSIONAL ENGINEER

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

SITE PLAN

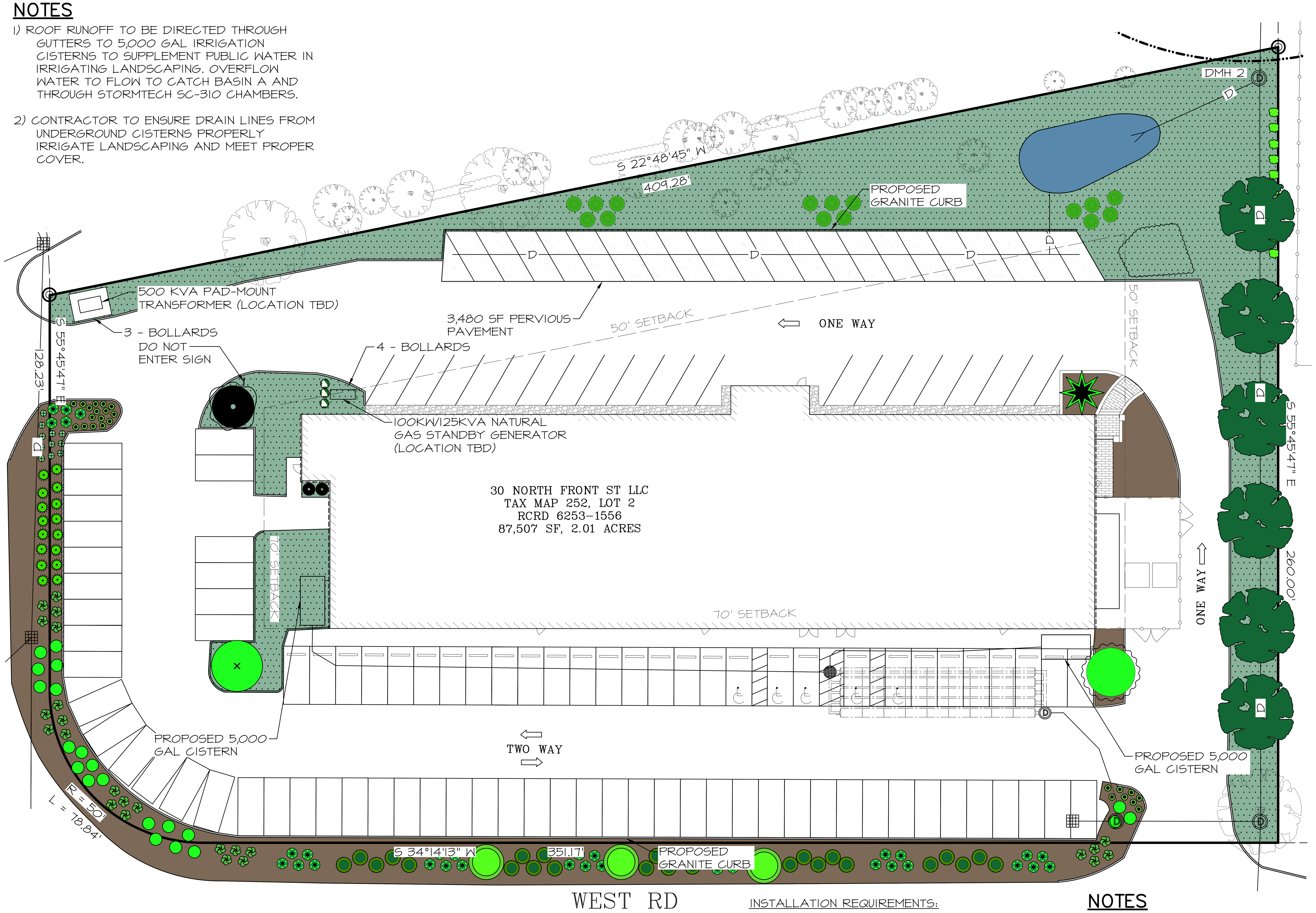
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	2 OF 13	2

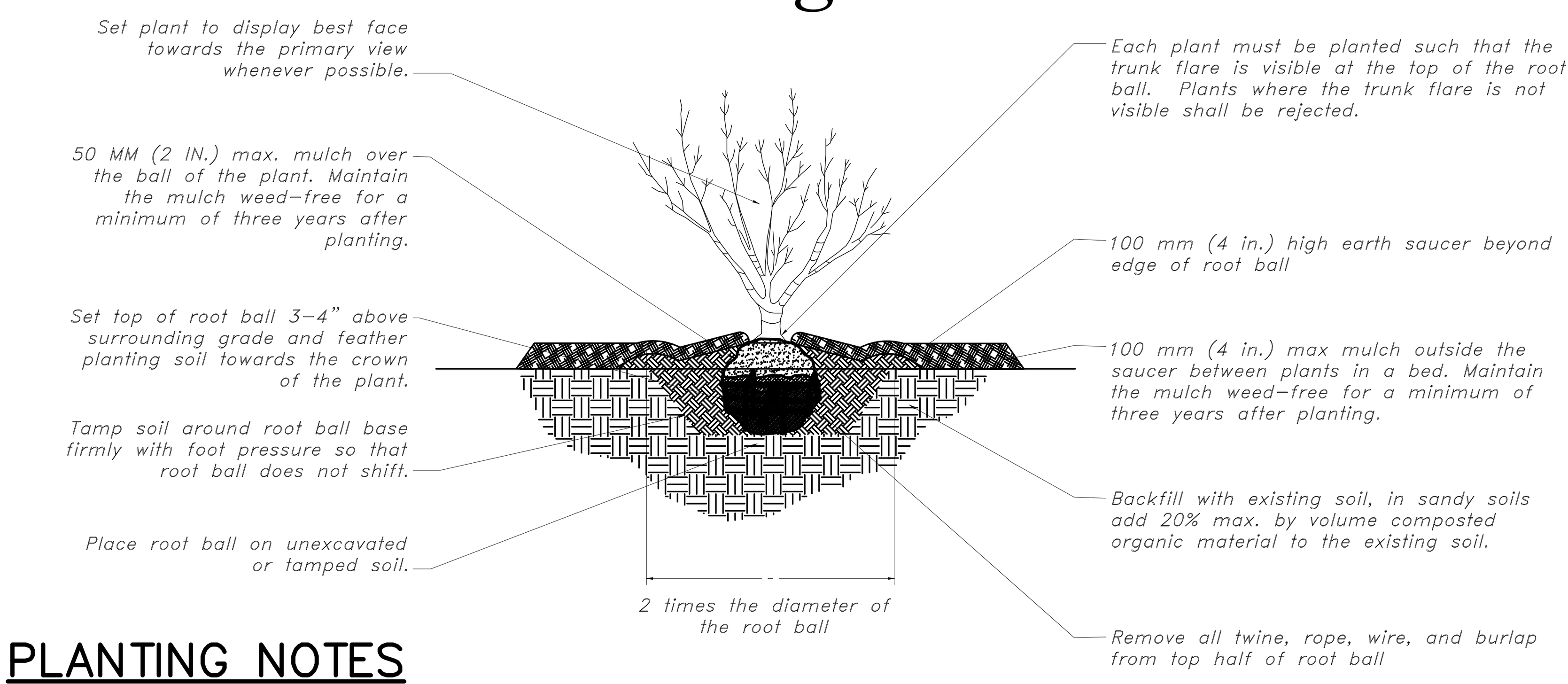
NOTES

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.



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

LEGEND

- HOMSTRUP ARBORVITAE
- SEDUM 'AUTUMN JOY'
- HEMEROCALLIS
- BUXUS 'GREEN VELVET'
- NIPPONAUTHERMUM NIPPONICUM
- CALAMAGROSTIS
- SYRINGA MEYERI 'PALIBIN'
- PINUS MUGO 'MOPS'
- VACCINIUM CORYUBOSUM
- ROSA RUGOSA
- PRUNUS SARGENTI
- MAGNOLIA LOEBNERI 'LEONARD MESSEL'
- CORNUS KOUSA 'MILKY WAY'
- TAXUS CUSPIDATA 'CAPITATA'
- ACER GINNALA 'FLAME'
- PLATANUS X ACERFOLIA

BOTANICAL NAME	COMMON NAME	SIZE	QTY:
ACER GINNALA 'FLAME'	FLAME AMUR MAPLE	3" C	1
BUXUX 'GREEN VELVET'	GREEN VELVET BOXWOOD	#5	2
CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	1 GAL	16
CORNUS KOUSA 'MILKY WAY'	MILKY WAY KOUSA DOGWOOD	3" C	2
HEMEROCALLIS 'RUBY RETURNS'	RE-BLOOMING DAYLILY	1 QT	24
MAGNOLIA LOEBNERI 'LEONARD MESSEL'	LEONARD MESSEL MAGNOLIA	3" C	1
NIPPONAUTHERMUM NIPPONICUM	MONTAUK DAISY	1 QT	21
PINUS MUGO 'MOPS'	MOPS MUGO PINE	2 GAL	35
PLATANUS X ACERIFOLIA 'EXCLAMATION'	EXCLAMATION PLANETREE	3" C	6
PRUNUS SARGENTII 'RANCHO'	RANCHO SARGENT CHERRY TREE	2" C	3
ROSA RUGOSA	SALT SPRAY ROSE	2 GAL	25
SEDUM 'AUTUMN JOY'	STONECROP	1 QT	11
SYRINGA PATULA 'BABY HIM'	DWARF KOREAN LILAC	2 GAL	25
TAXUS CUSPIDATA 'CAPITATA'	PYRAMIDIAL JAPANESE YEW	4' BB	1
THUJA OCCIDENTALIS 'HOLMSTRUP'	HOLMSTRUP ARBORVITAE	4-5 BB	3
VACCINIUM CORYURBOSUM	HIGHBUSH BLUEBERRY	2 GAL	15

INSTALLATION REQUIREMENTS:

1. THE INSTALLATION OF A DRIP IRRIGATION SYSTEM IS RECOMMENDED TO ASSURE WELL GROWN PLANTS.
2. IN CASE OF DROUGHT (DEFINED AS TWO WEEK PERIOD WITHOUT RAIN) ALL NEW PLANTS SHALL BE WATERED THROUGH NOVEMBER 1ST DURING THE FIRST SEASON IN WHICH THE 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 ONLY REQUIRE WATERING DURING TIMES OF LENGTHY DROUGHT.
3. 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.

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.

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON DATE

STATE OF NEW HAMPSHIRE
R. ALEX ROSS
No. 9409
LICENSED
PROFESSIONAL ENGINEER

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

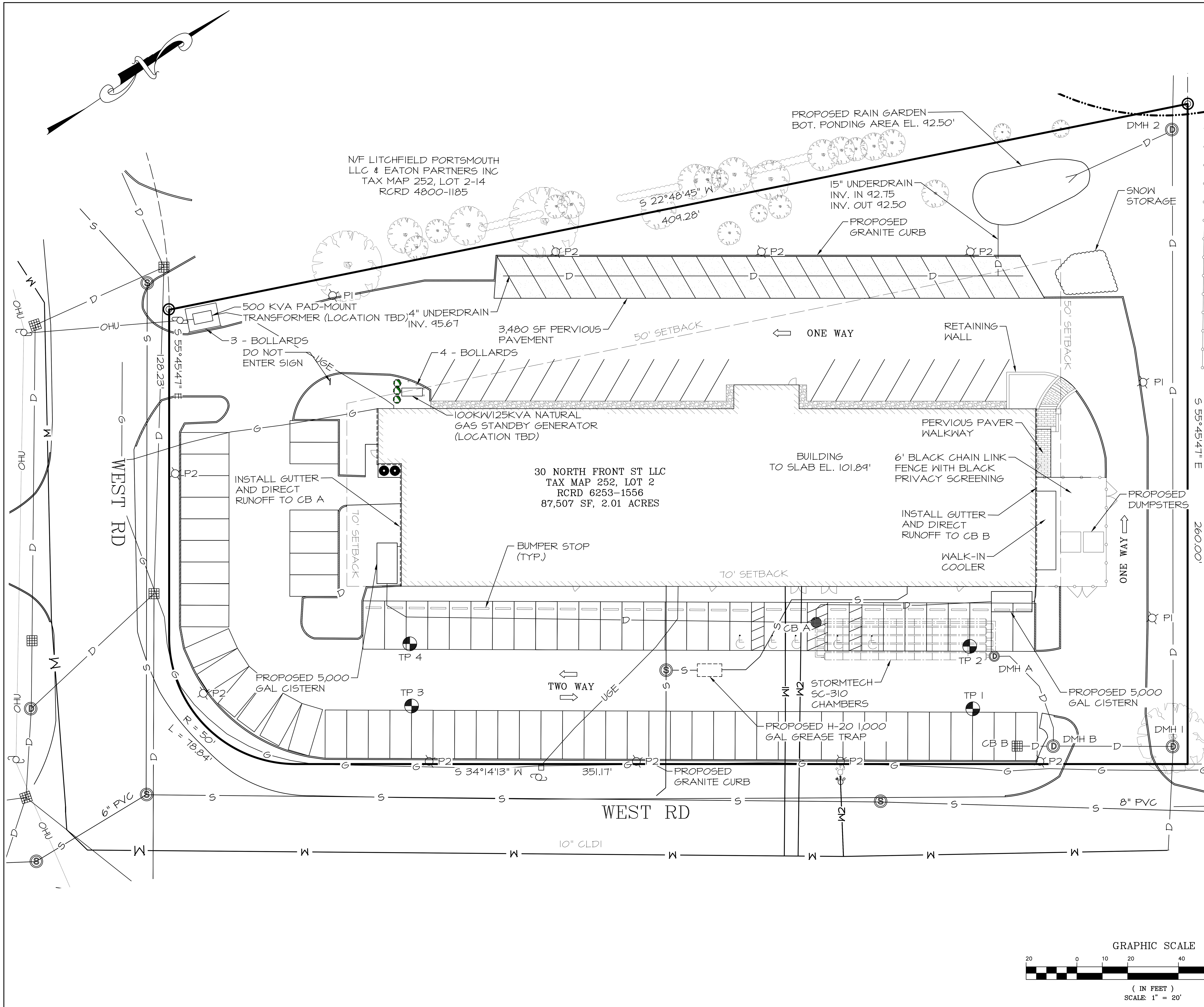
SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

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
LANDSCAPE PLAN
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER 21-168 | DWG. NO. 3 OF 13 | ISSUE 2



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.
5) SIZE ALL LINES AS PER REQUIREMENTS AND ASSURE THAT PROPOSED HOUSE LOADING AND PRESSURE DEMANDS WILL BE MET.

LEGEND

D	DRAIN MANHOLE
S	SEWER MANHOLE
—W—	WATER
—S—	SEWER
—D—	STORMWATER DRAIN
—G—	GAS
	CATCH BASIN
	WATER SHUT-OFF
	FIRE HYDRANT
	MONUMENT FOUND
	CHAIN LINK FENCE
	VERTICAL GRANITE CURB
	UTILITY POLE
—OHU—	OVERHEAD UTILITY
→	DRAINAGE FLOW PATH
P1	LIGHT POST EX-P1
P2	LIGHT POST EX-P2

STATE OF NEW HAMPSHIRE R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

ISS.	DATE	DESCRIPTION OF ISSUE
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

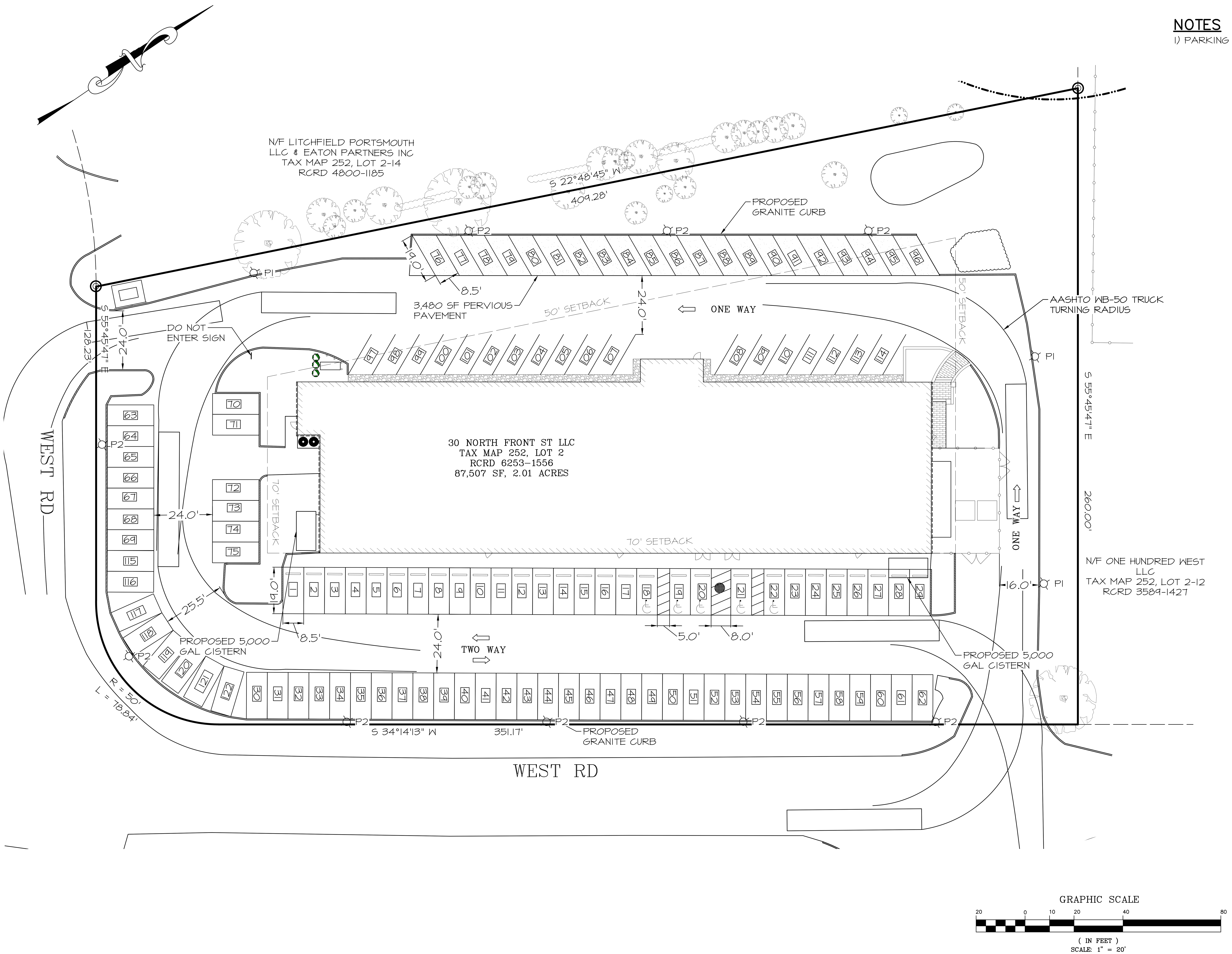
UTILITY PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	4 OF 13	2

NOTES

1) PARKING SPACES PROVIDED = 122 SPACES



ISS.	DATE	DESCRIPTION OF ISSUE
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

STATE OF NEW HAMPSHIRE R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

TITLE

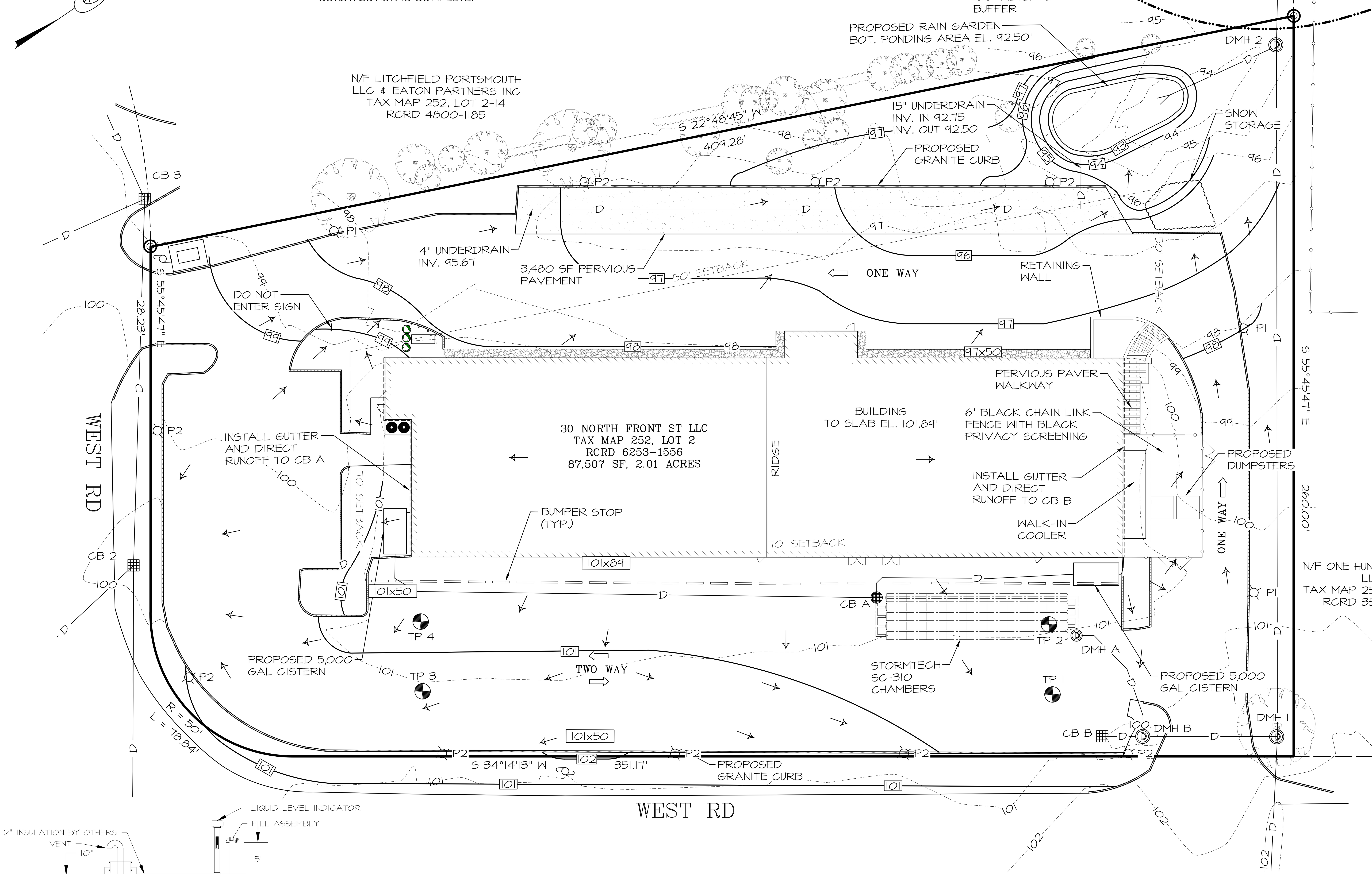
PARKING PLAN

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	5 OF 13	2

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.



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 (12" RCP)
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 (10" ADS-N-12) PROPOSED
INV. IN 90.50 (24" RCP)
INV. OUT 90.47 (20" RCP)

PROPOSED STRUCTURES

CATCH BASINS

CB 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

CB B
RIM EL. 99.50
INV. OUT 95.40 (12" ADS-N-12)
STRUCTURE: 4'Ø JELLYFISH FILTER

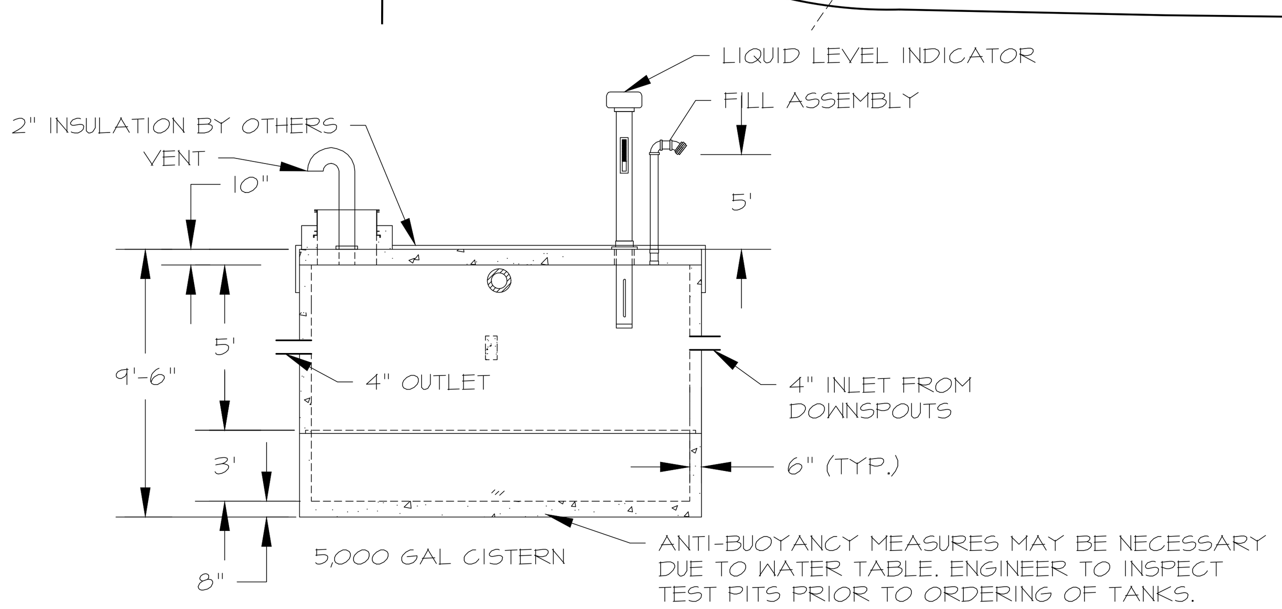
DRAIN MANHOLES

DMH A
RIM EL. 101.25
INV. IN 98.17 (12" ADS-N-12)
INV. OUT 98.00 (12" ADS-N-12)
STRUCTURE: 4' Ø CONC. BASIN

DMH B
RIM EL. 99.50
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

LEGEND

DRAIN MANHOLE
SEWER MANHOLE
W WATER
S SEWER
D STORMWATER DRAIN
G GAS
CATCH BASIN
WATER SHUT-OFF
FIRE HYDRANT
MONUMENT FOUND
CHAIN LINK FENCE
VERTICAL GRANITE CURB
UTILITY POLE
OHU OVERHEAD UTILITY
DRAINAGE FLOW PATH



IRRIGATION CISTERN (TYP.)
NTS

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
SCALE: 1" = 20'

ISS.	DATE	DESCRIPTION OF ISSUE
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

STATE OF NEW HAMPSHIRE R. ALEX ROSS No. 9409 LICENSED PROFESSIONAL ENGINEER

CLIENT
ROAD TO THE WEST, LLC
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

JOB NUMBER	DWG. NO.	ISSUE
21-168	6 OF 13	2

TEST PIT 1 (of 4)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT	N/A	N/A	N/A
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 5/4 YELLOWISH BROWN, 10% 7.5 YR 5/6 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"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A
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 4)

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 5/6 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"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A
NOTES	FILL (EXCEPT FOR LAYER IMMEDIATELY BENEATH ASPHALT) MAY ALSO BE UNCONSOLIDATED SPOIL LEFTOVER FROM MINING ACTIVITIES				

TEST PIT 3 (of 4)

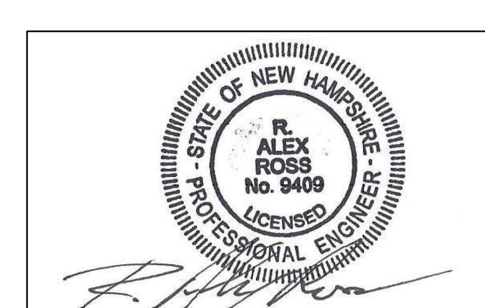
DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT	N/A	N/A	N/A
0	10 YR 5/3 BROWN	GRAVELLY LOAMY SAND (FILL)	MASSIVE	MOIST FRIABLE
5	10 YR 5/3 BROWN	FINE SAND	MASSIVE	MOIST FRIABLE
23	10 YR 5/3 BROWN, 15% FINE 7.5 YR 5/6 STRONG BROWN REDOXIMORPHIC CONCENTRATIONS	FINE SAND, DISCONTINUOUS LENSES OF SILT LOAM FROM 18"-24" IN SOME LOCATIONS	WEAK MEDIUM PLATY	MOIST FRIABLE
35	10 YR 5/3 BROWN (NO REDOXIMORPHIC FEAUTRES)	VERY FINE SAND	MASSIVE	MOIST FIRM

ESHWT	23 INCHES (PERCHED)	ROOTS	NONE	RESTRICTIVE LAYERS	35"
OBSERVED H_2O	NONE	REFUSAL (INCHES):	NONE TO 66"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A
NOTES					

TEST PIT 4 (of 4)

DEPTH (INCHES)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE
+3	ASPHALT	N/A	N/A	N/A
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"	ESTIMATED PERCOLATION RATE (MIN/IN)	N/A
NOTES	LOW CONFIDENCE LEVEL IN REDOXIMORPHIC FEATURES AT 24" - MORPHOLOGY POSSIBLY INFLUENCED BY ROOF RUNOFF, CONVERSELYM OTHER FEATURES RELICT - POSSIBLY REFLECTIVE OF FORMER CONDITIONS				



ISS.	DATE	DESCRIPTION OF ISSUE
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
TEST PIT DATA

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	7 OF 13	2

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.

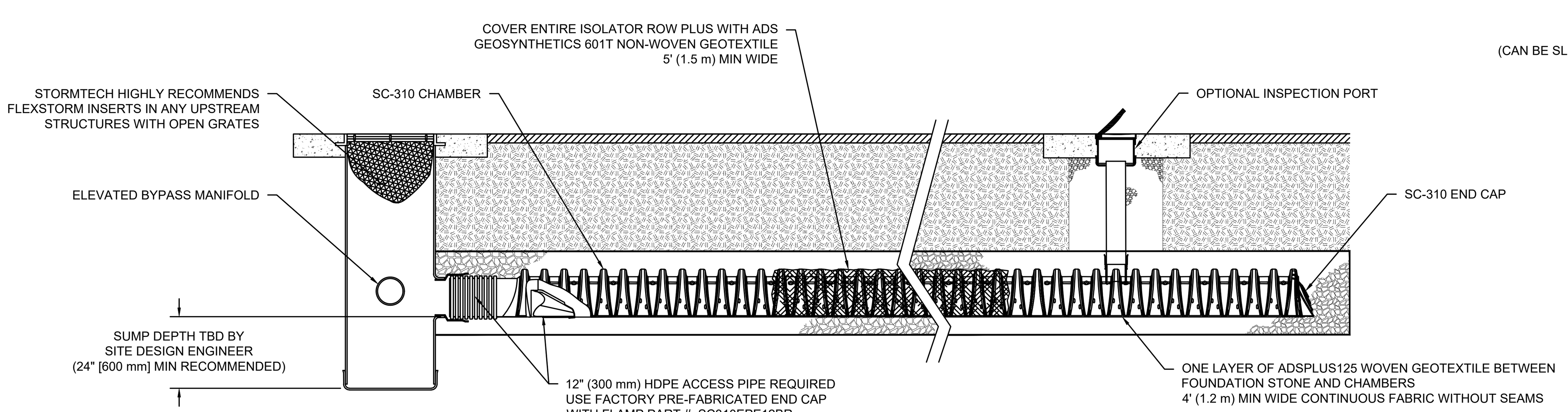
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO 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.



ISOLATOR ROW PROFILE

N.T.S.

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".

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.

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.

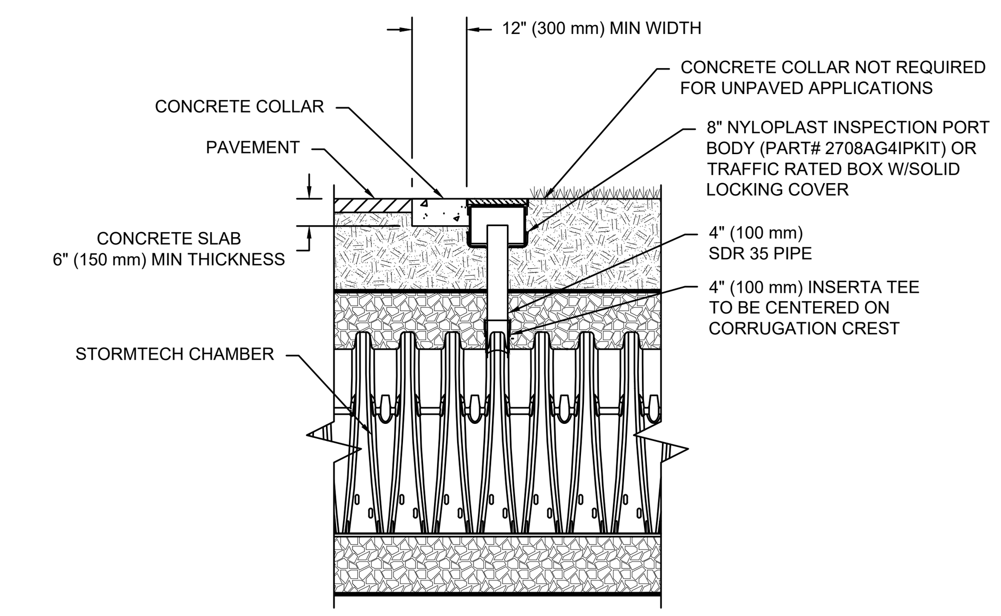
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1M) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

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.

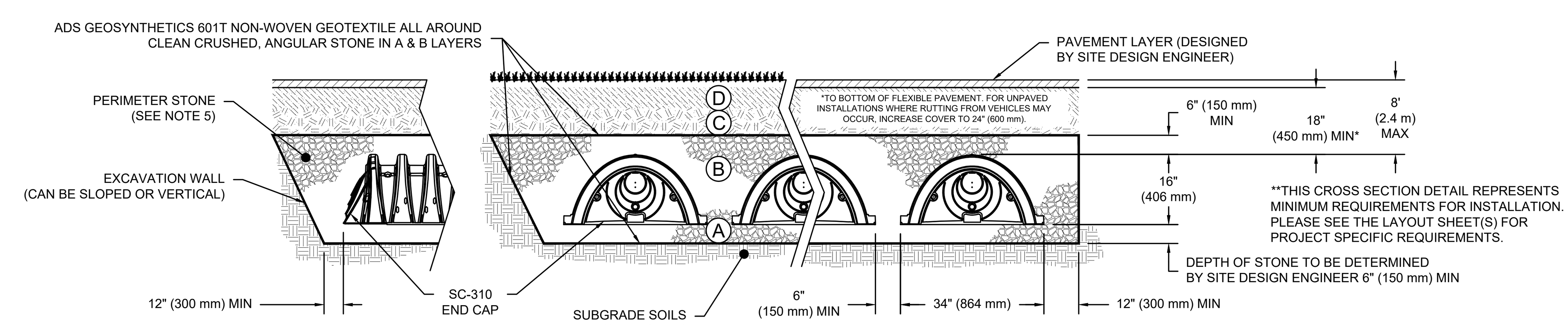
4" INSPECTION PORT DETAIL

N.T.S.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

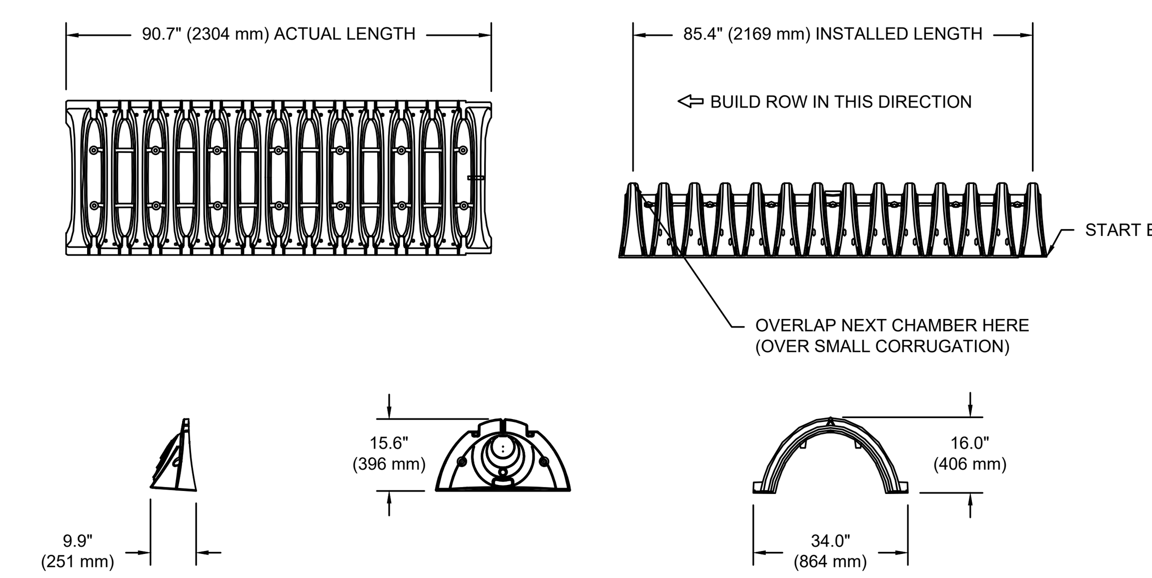
MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	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:

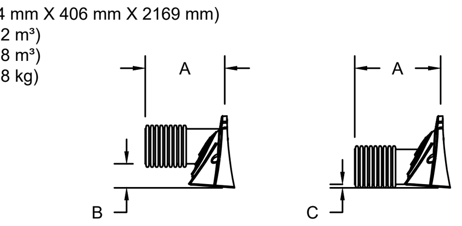
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC 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.



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.

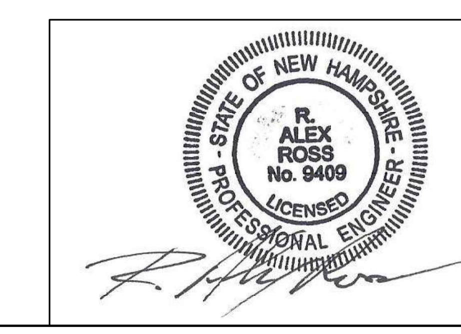
* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

SC-310 TECHNICAL SPECIFICATIONS

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

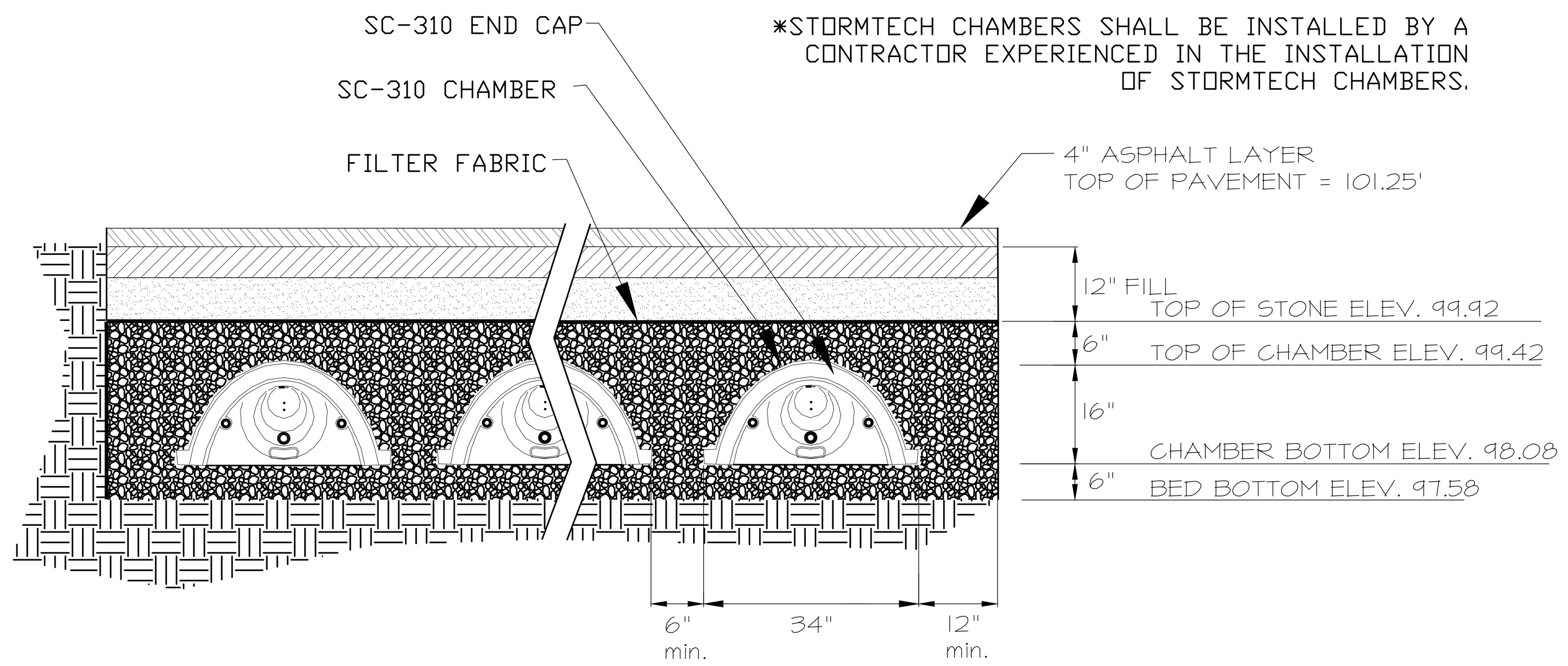


ROSS ENGINEERING, LLC
Civil/Structural Engineering & Surveying
909 Islington St.
Portsmouth, NH 03801
(603) 433-7560

CLIENT
ROAD TO THE WEST, LLC
ALEXANDER B. CHOQUETTE
14 LAFAYETTE RD. UNIT 9
NORTH HAMPTON, NH 03862

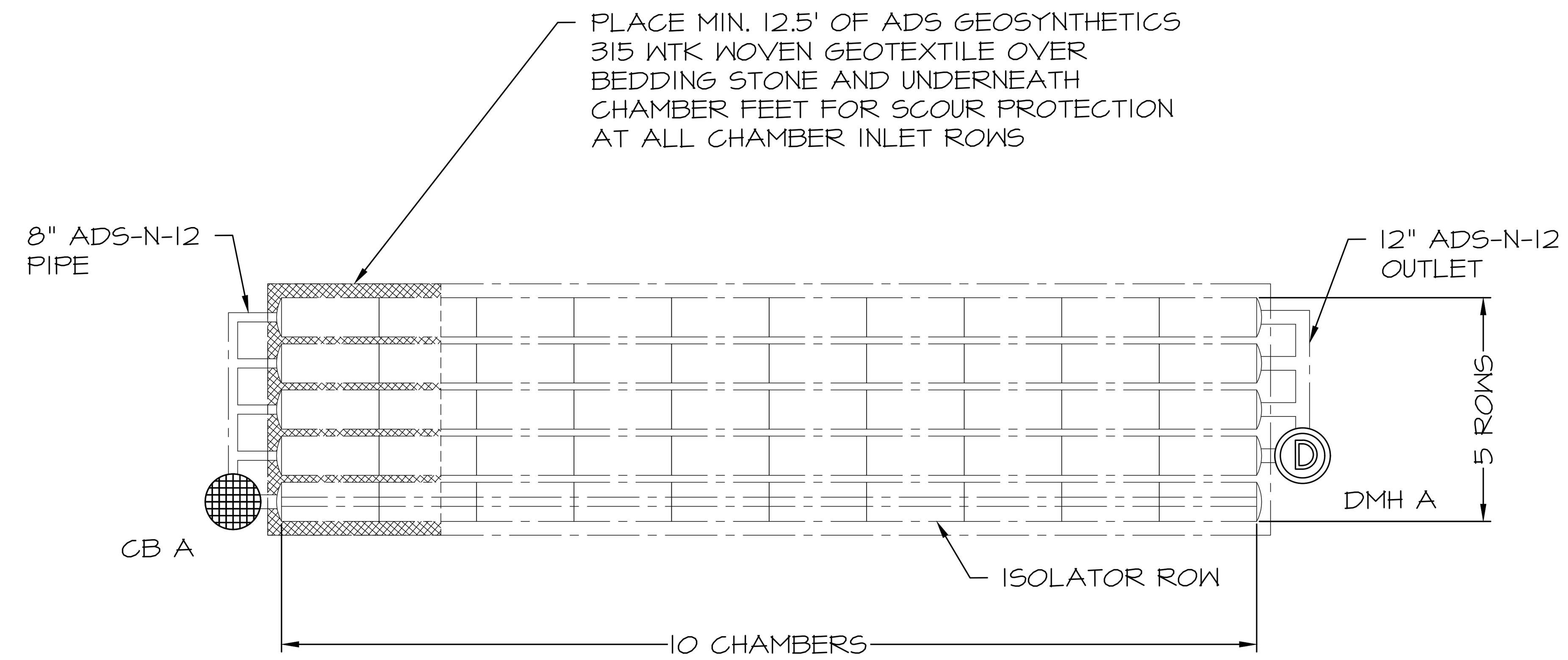
TITLE
STORMTECH DETAILS
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	8 OF 13	2



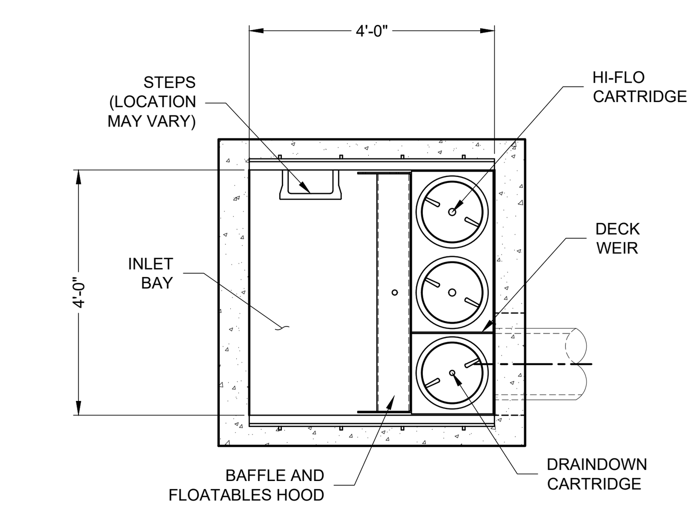
STORMTECH SC-310 CHAMBER SYSTEM CROSS SECTION

N.T.S.

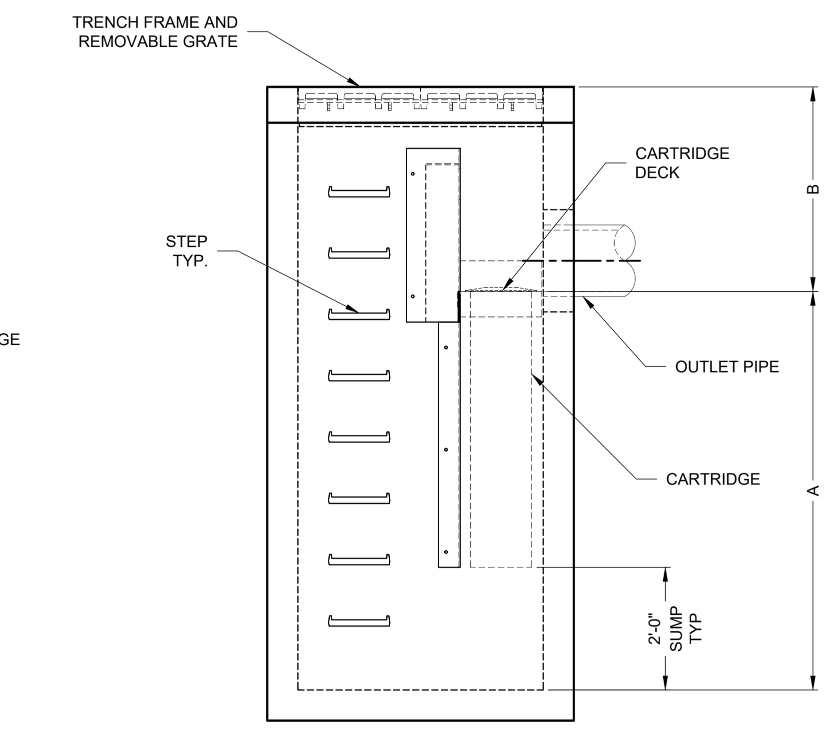


SUBSURFACE CHAMBER LAYOUT

NTS



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH FILTER JFSI0404 DETAIL

N.T.S.

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% (1/16" 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 ±3/8" OVER 10'
3. CONSTRUCTION EQUIPMENT AND PEDESTRIAN TRAVEL ON SCREEDED BEDDING COARSE IS PROHIBITED.

PAVER

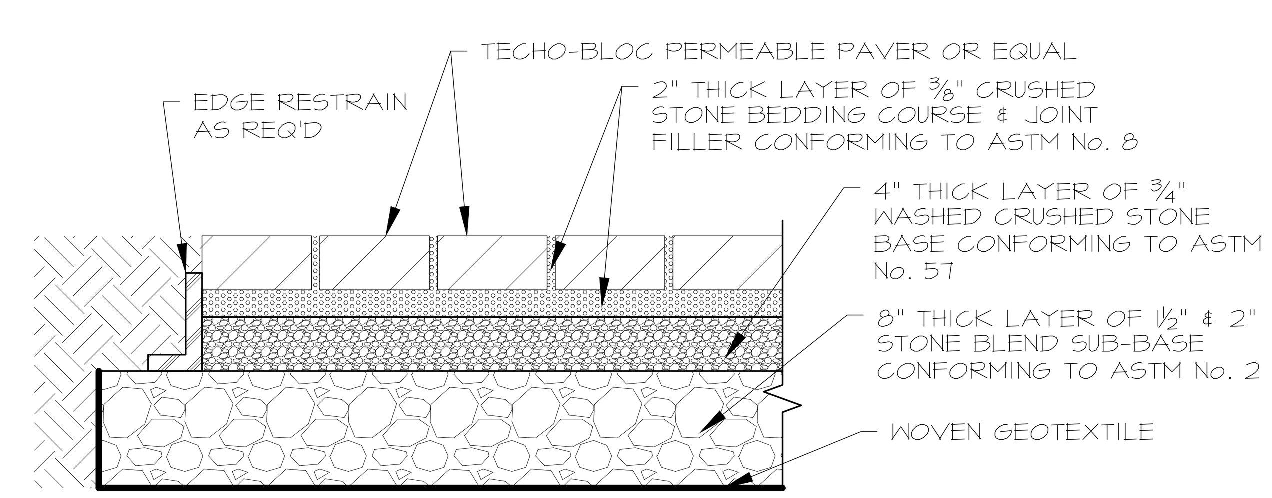
1. PAVERS SHOULD BE PLACED IN PATTERN SHOWN ON DRAWINGS. LAY UNITS TIGHT TO DESIGNATED LAYING PATTERNS. UNITS HAVE LUGS TO MAINTAIN CONSISTENT JOINT WIDTH.
2. IN SLOPED CONDITIONS START LAYING FROM THE BOTTOM IN AN UPHILL DIRECTION.
3. THE MINIMUM SLOPE FOR PERMEABLE PAVEMENT SURFACE IS 1%.
4. INFLO PAVERS CAN BE INSTALLED WITH TBIOOSI (TECHO-BLOC MECHANICAL TOOL) TO EXPEDITE INSTALLATION.
5. WHEN SUBJECT IT VEHICULAR TRAFFIC, CUT UNITS SHOULD NOT BE SMALLER THEN 1/3 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 SURFACE 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 ±3/8" OVER 10'.

POST INSTALLATION PROTECTION

1. MAINTAIN EROSION AND SEDIMENT MEASURES AT PERIMETER TO PREVENT CONTAMINATION OF POROUS PAVEMENT SYSTEM.



PERVIOUS PAVERS DETAIL

N.T.S.

JELLYFISH 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.

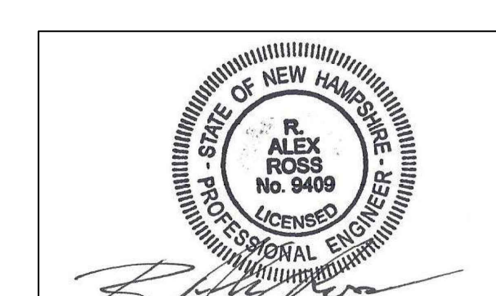
INSTALLATION NOTES

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.

ISS.	DATE	DESCRIPTION OF ISSUE
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
STORMWATER MANAGEMENT DETAILS
140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	9 OF 13	2

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 I.S 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 WHY 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 VACUUMING.
   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 PS 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 THE 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

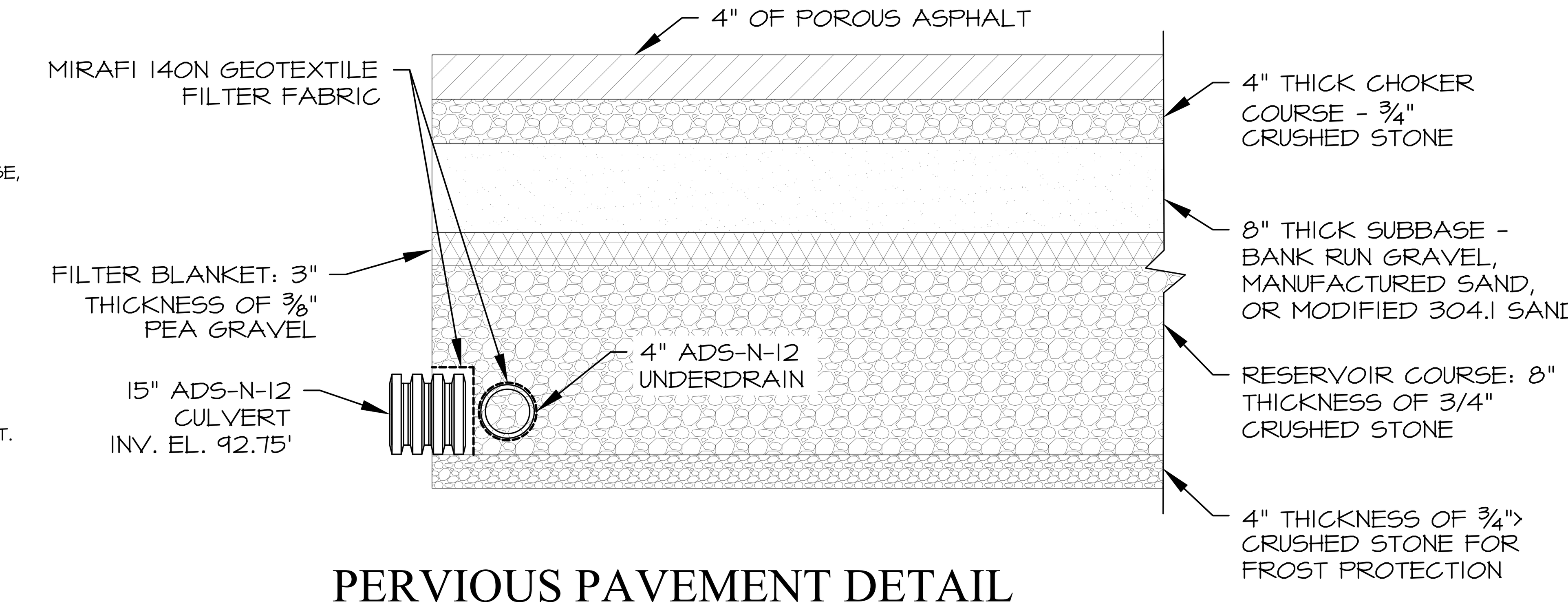
THE FOLLOWING RECOMMENDATIONS WILL HELP ASSURE THAT THE PAVEMENT IS MAINTAINED TO PRESERVE ITS HYDROLOGIC EFFECTIVENESS.

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.

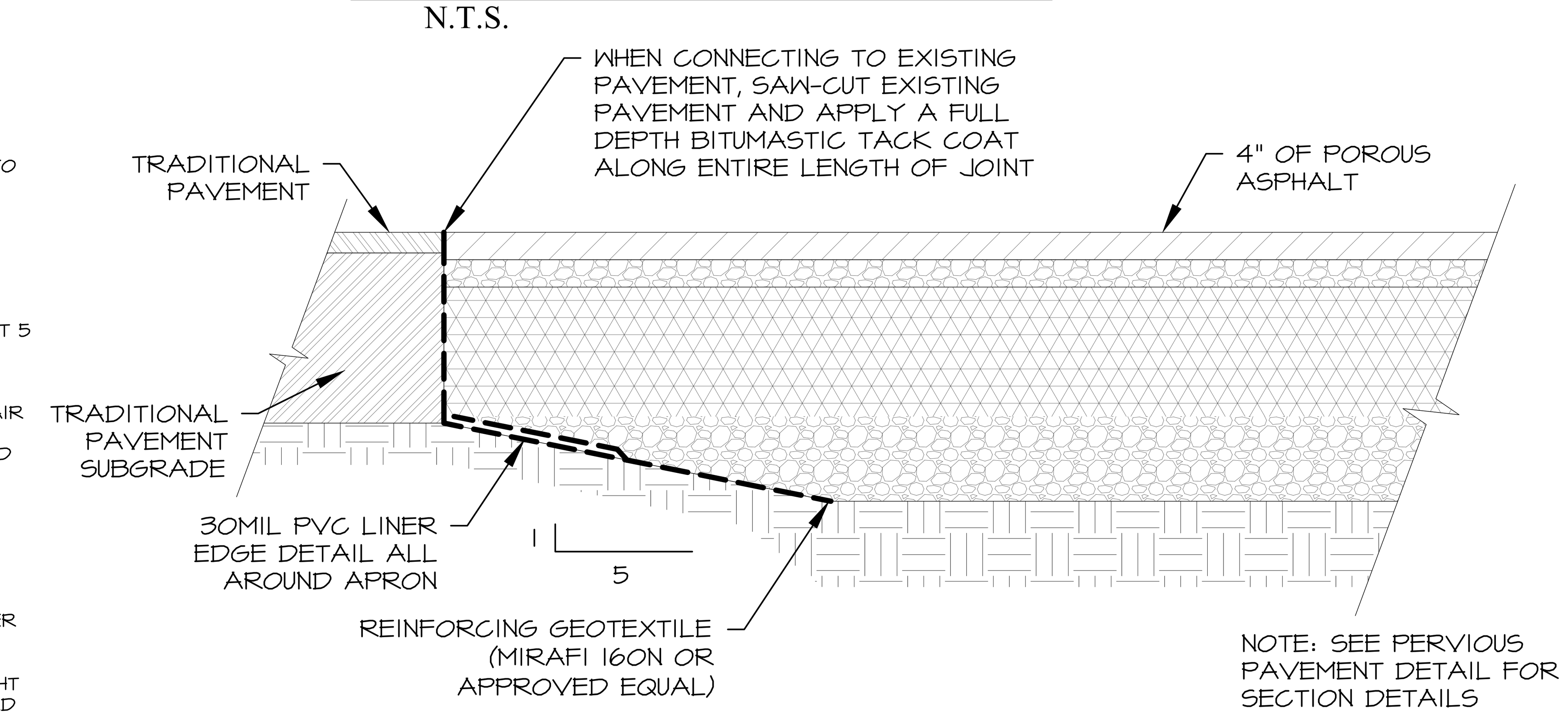
ROUTINE MAINTENANCE:

1. ASPHALT SEAL COATING MUST BE ABSOLUTELY FORBIDDEN. SURFACE SEAL COATING IS NOT REVERSIBLE.
2. THE PAVEMENT SURFACE SHOULD BE VACUUMED 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

N.T.S.



PERVIOUS PAVEMENT TRANSITION DETAIL

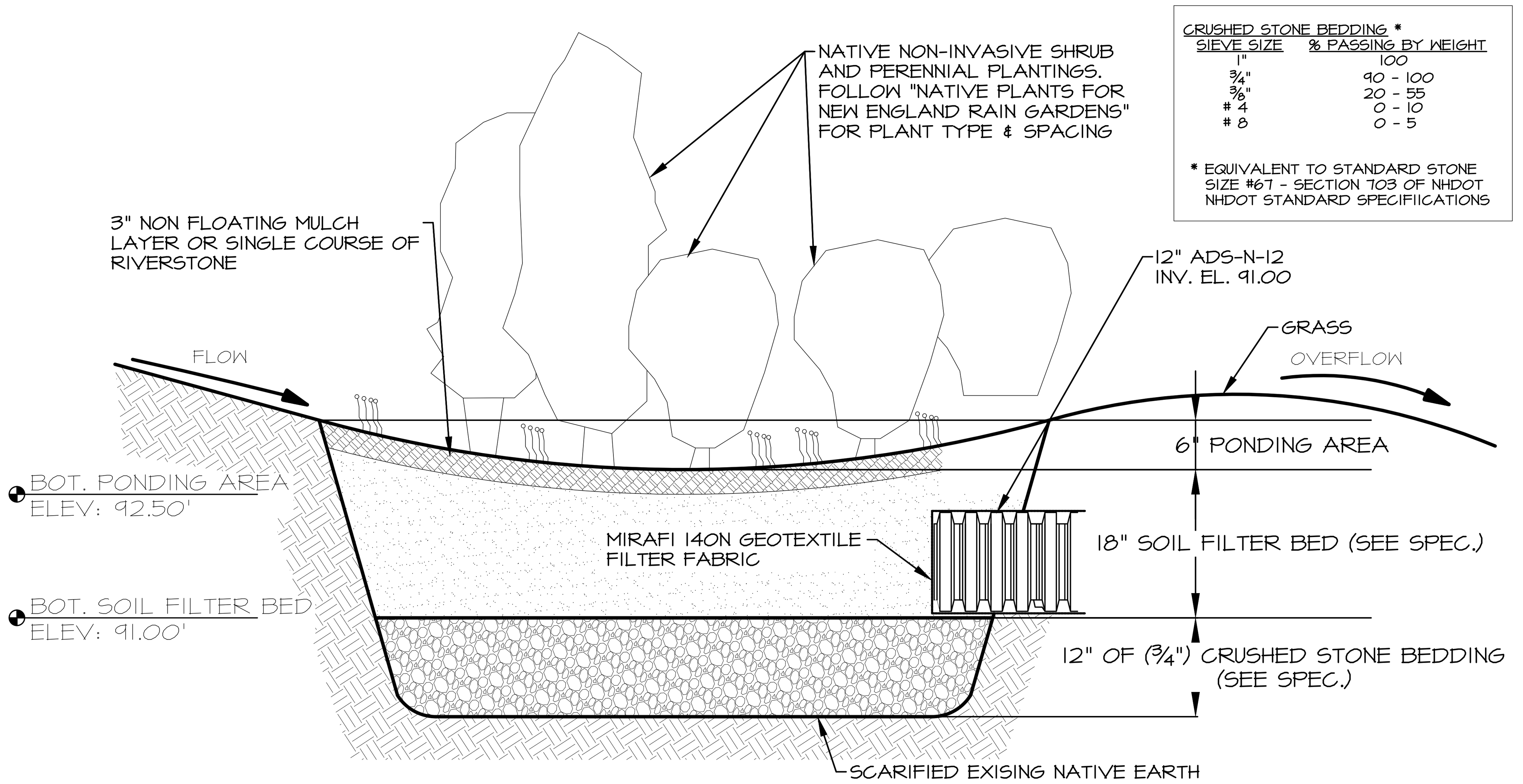
N.T.S.

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



TYPICAL RAINGARDEN DETAIL

NOT TO SCALE

CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
¾"	90 - 100
⅜"	20 - 55
# 4	0 - 10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT NHDOT STANDARD SPECIFIICATIONS

NOTES:

1) DO NOTE PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2) DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, 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 POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

Component Material	Percent of Mixture by Volume	Gradation of Material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	<5
Loamy coarse sand	70 to 80	10	85 to 100
		20	70 to 100
		60	15 to 40
		200	8 to 15

FILTER MEDIA SPECIFICATION

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

SCALE 1" = 20'

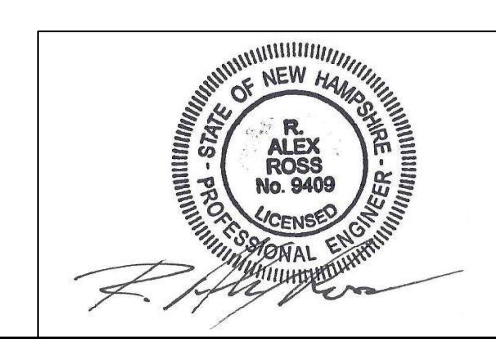
CHECKED A.ROSS

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

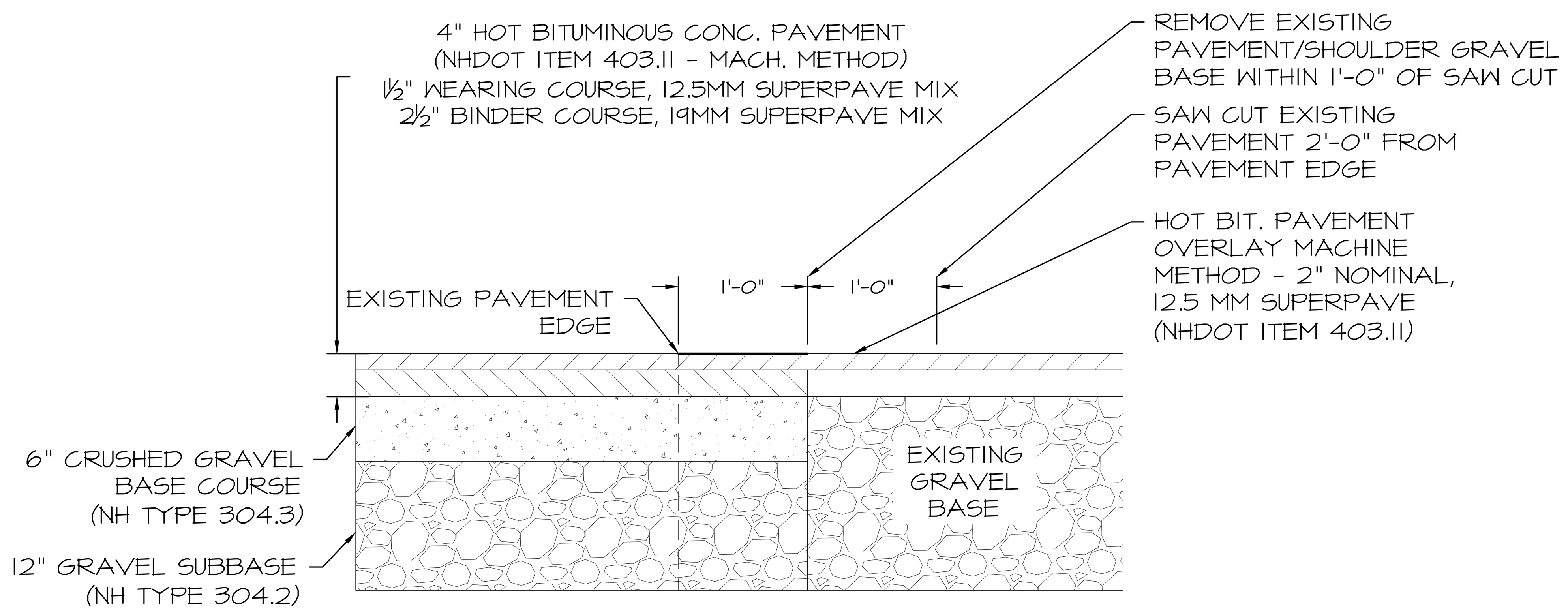
STORMWATER MANAGEMENT DETAILS

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER 21-168

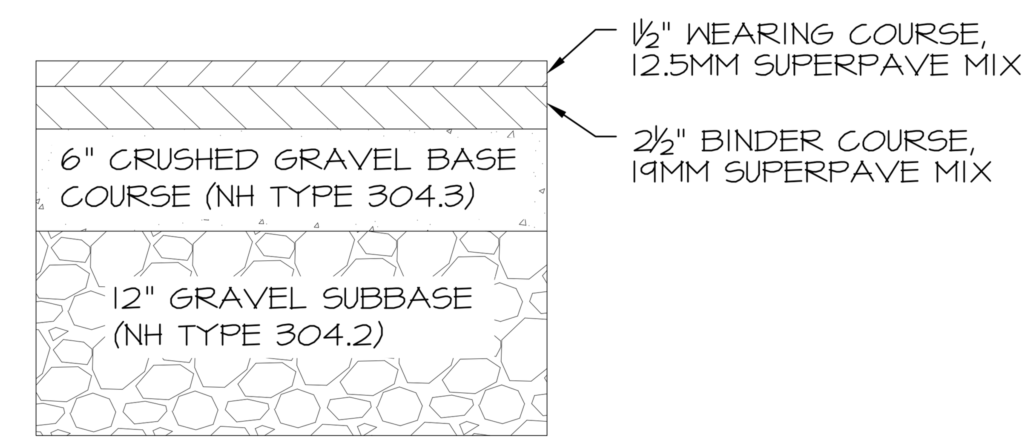
DWG. NO. 10 OF 13

ISSUE 2



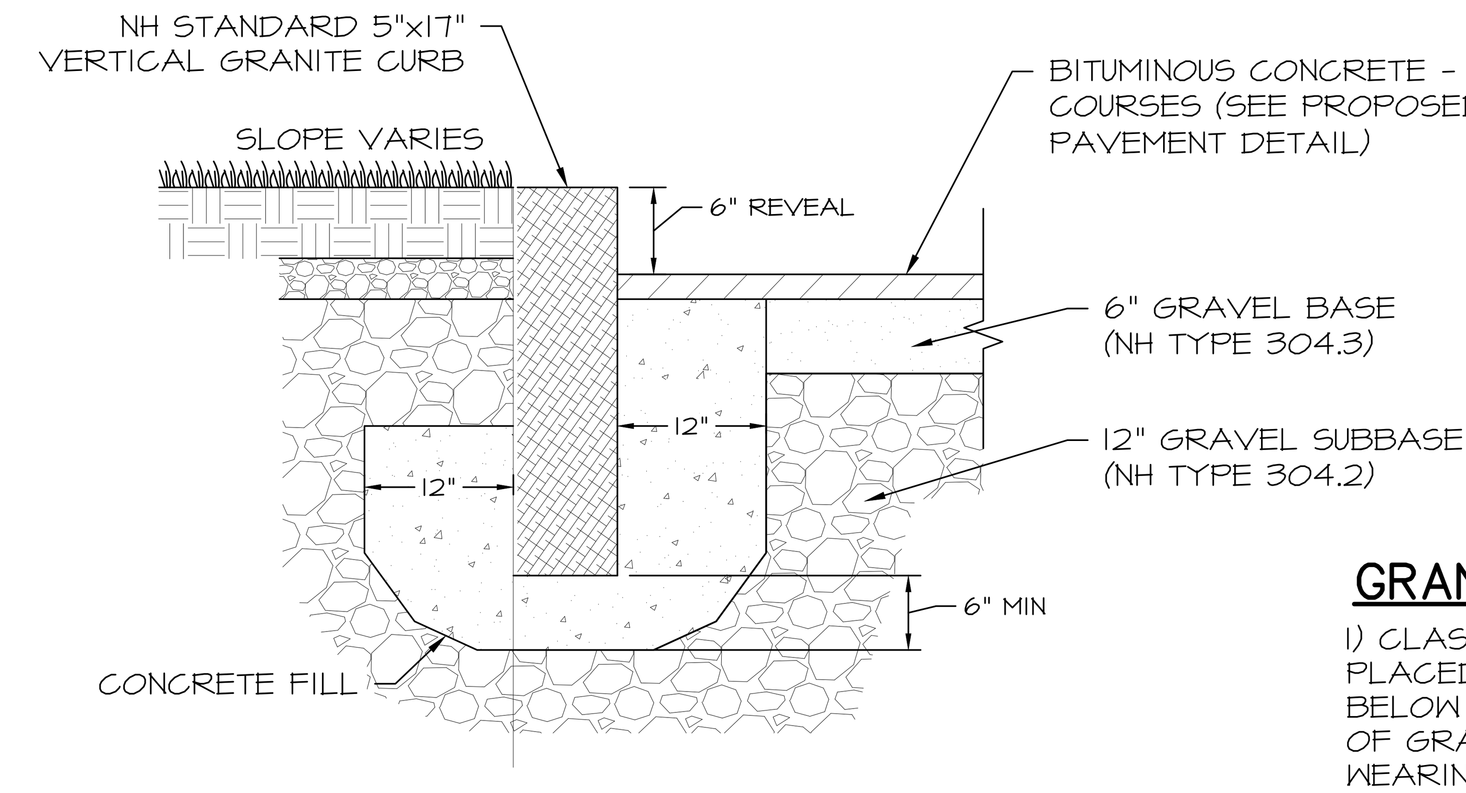
PAVEMENT JOINT DETAIL

N.T.S.



PROPOSED PAVEMENT DETAIL

N.T.S.



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.

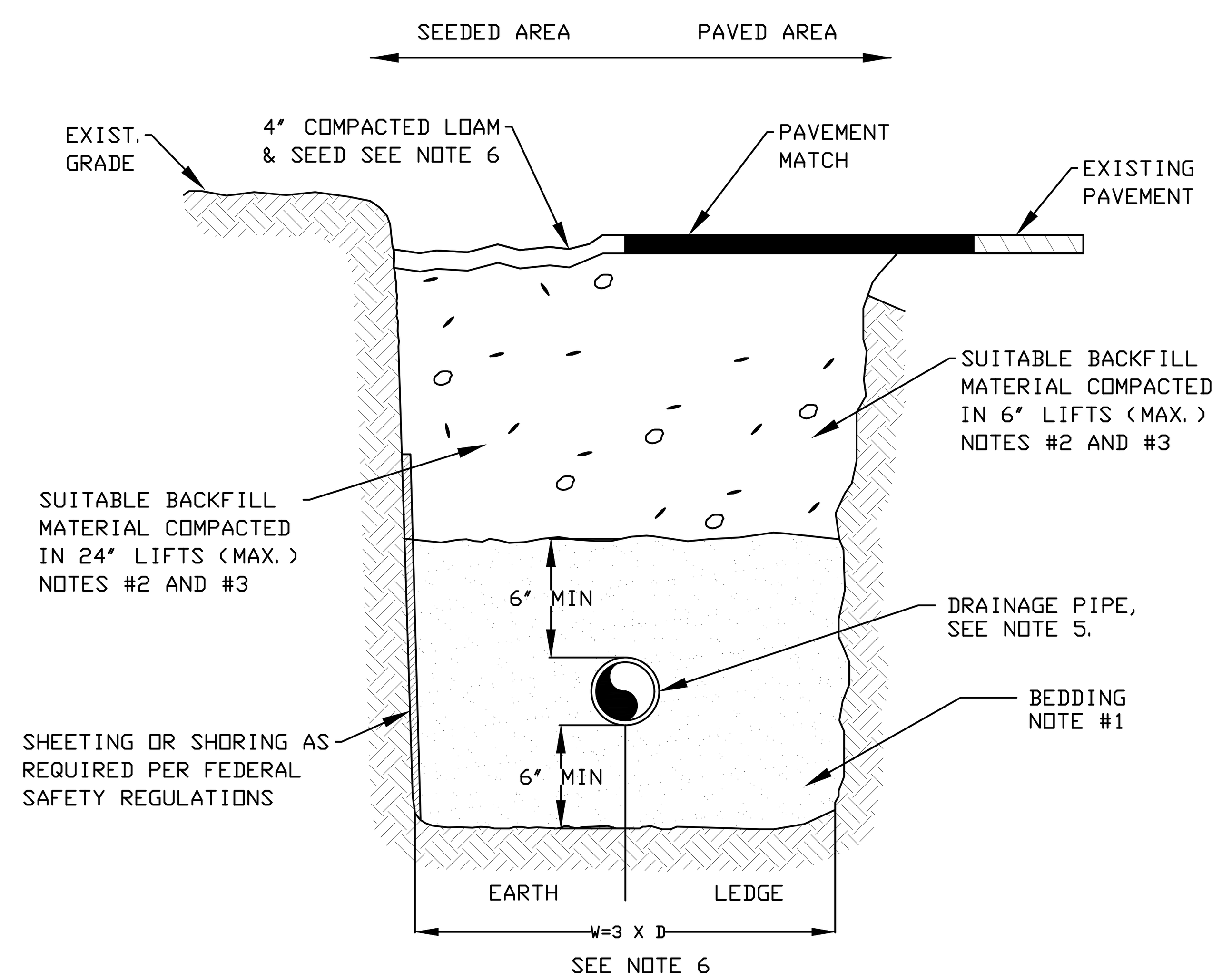
3) SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL 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.

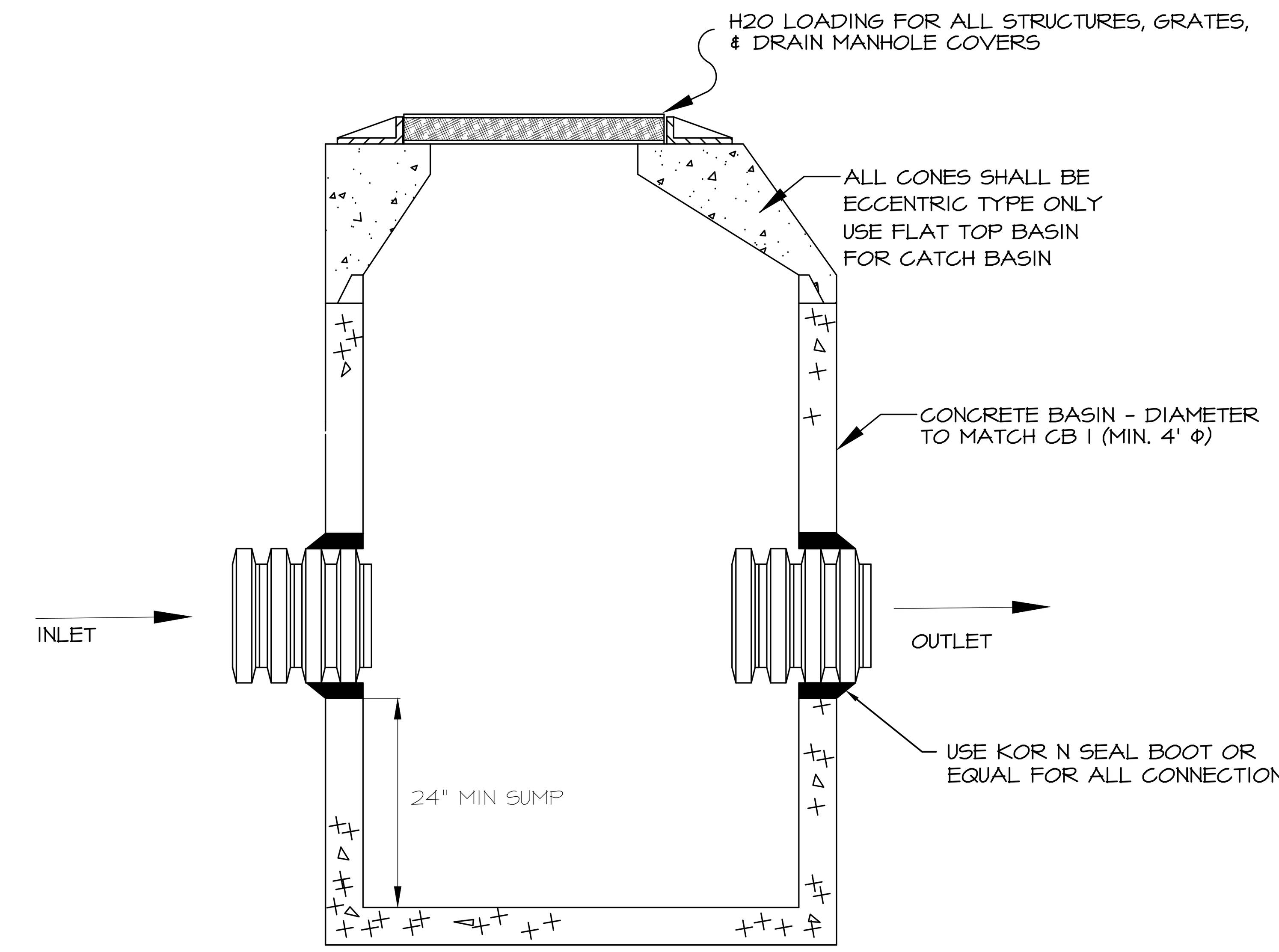
5) DRAINAGE PIPE: PIPE MATERIALS SHALL BE POLYETHYLENE (SEE SPECIFICATIONS).

6) W=MAXIMUM ALLOWABLE TRENCH WIDTH: W SHALL BE THE MAXIMUM PAYMENT WIDTH FOR ROCK EXCAVATION (TRENCH) AND FOR ORDERED EXCAVATION BELOW GRADE.



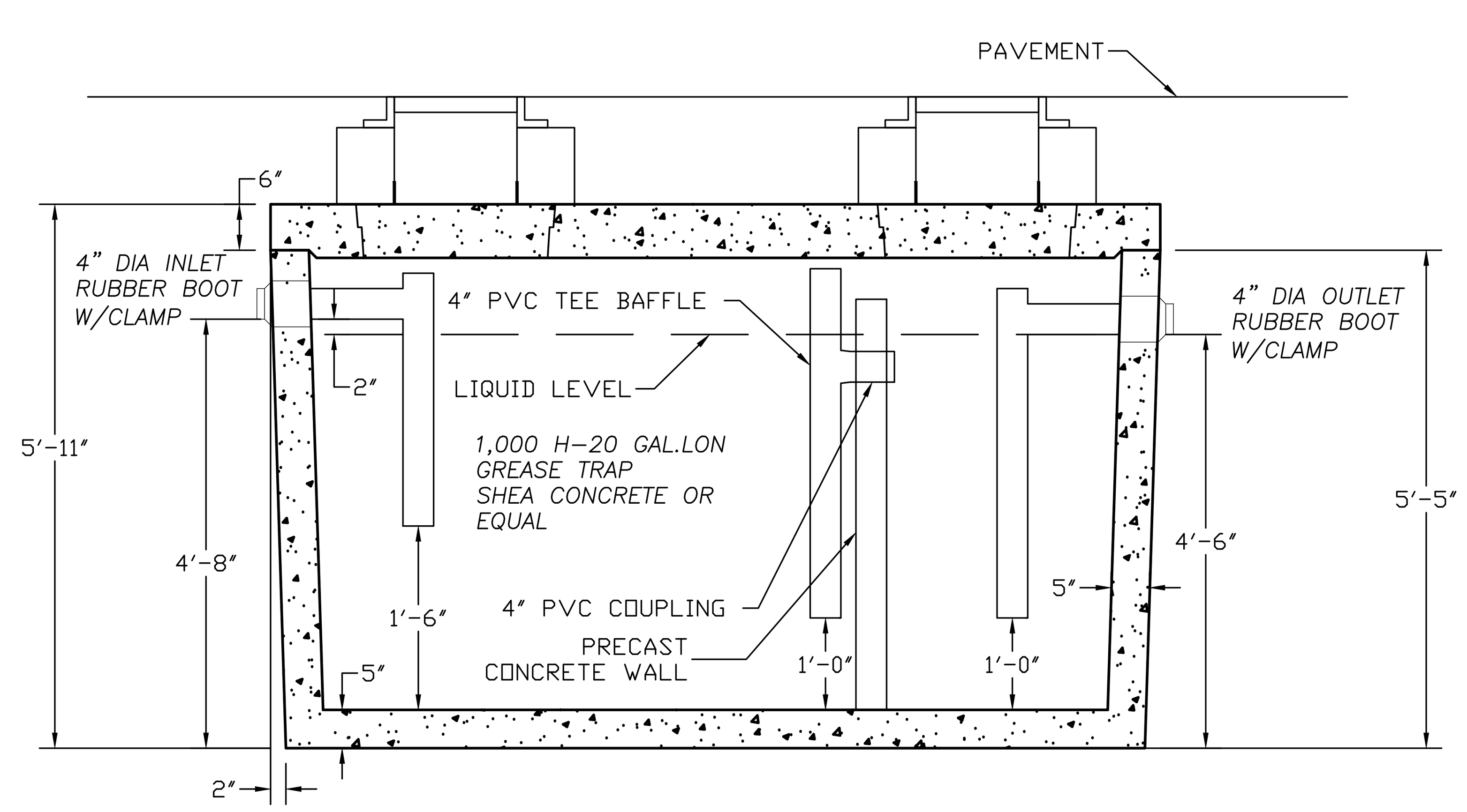
TRENCH DETAIL - STORM DRAIN

N.T.S.



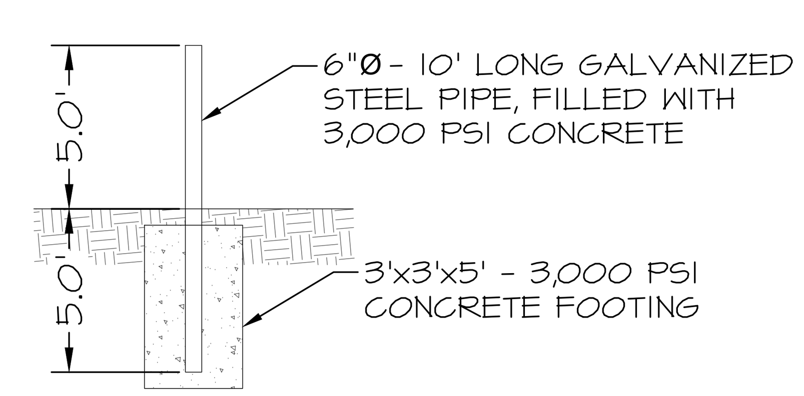
PROPOSED CATCH BASIN/DRAIN MANHOLE

N.T.S.



GREASE TRAP DETAIL

Scale : N.T.S.



BOLLARD DETAIL

SCALE: NTS

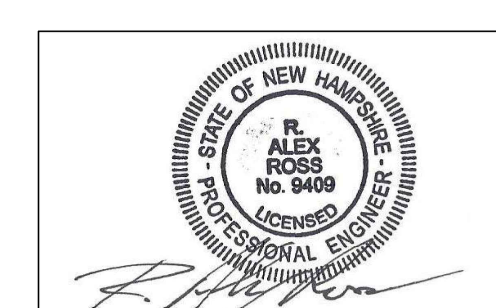
ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

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

DETAILS

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER	DWG. NO.	ISSUE
21-168	11 OF 13	2

MAINTENANCE NOTES

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, RAIN GARDEN, 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. RAIN GARDEN
   d. LANDSCAPED AREAS
   e. PERMEABLE PAVERS
   f. CULVERTS & DRAIN LINES
   g. CONTECH JELLYFISH
   h. ROOF DRAINAGE
   i. STORM TECH CHAMBERS

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. RAIN GARDEN:
RAIN GARDEN MAINTENANCE IS SIMILAR TO THE MAINTENANCE OF ANY PERENNIAL GARDEN, WITH A FEW EXTRA TASKS:

INSPECT: CHECK AFTER STORMS TO VERIFY THE INLET AND OUTLET ARE STABLE, NO CHANNELS HAVE FORMED, THAT PLANTS ARE HEALTHY AND THAT IT IS DRAINING. ADJUST AND REPAIR IF NEEDED.

PLANT CARE: WEED AND WATER AS NEEDED. REPLACE DEAD PLANTS AS NEEDED. CUT BACK, PRUNE OR DIVIDE PLANTS WHEN APPROPRIATE TO ENCOURAGE GROWTH.

CLEAN: IF THE RAIN GARDEN IS RECEIVING RUNOFF THAT CONTAINS SAND OR DEBRIS, SUCH AS FROM A DRIVEWAY OR ROADWAY, CLEAN OUT ACCUMULATED MATERIALS AS NEEDED.

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.

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.

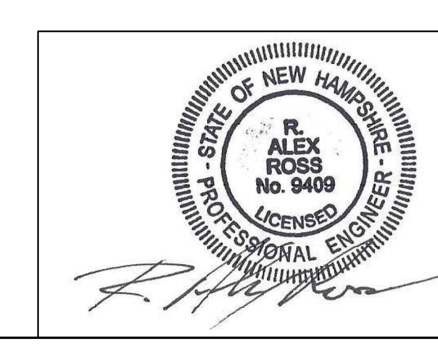
viij. G. OWNERS SHALL PROVIDE A REPORT ON ACTIVITIES PERFORMED THROUGHOUT THE YEAR. REPORT SHALL INCLUDE DOCUMENTATION THAT PAVEMENT CLEANING IS ACCOMPLISHED PER THIS DOCUMENT AND A CERTIFICATION THAT THE SYSTEM CONTINUES TO FUNCTION AS DESIGNED.

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						
	Rain Garden						
	Landscaped Areas						
	Permeable Pavers						
	Culverts & Drain lines						
	Contech Jellyfish						
	Roof Drainage						
	Storm tech Chambers						

ISS.	DATE	DESCRIPTION OF ISSUE
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

NOTES

140 WEST RD
PORTSMOUTH, NH 03801
TAX MAP 252, LOT 2-13

JOB NUMBER 21-168 | DWG. NO. 12 OF 13 | ISSUE 2

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, <u>BUT IN NO CASE SHALL EXCEED 2 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED</u>.
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: <u>STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE</u>, 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.
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: <u>STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE</u>, DECEMBER 2008.

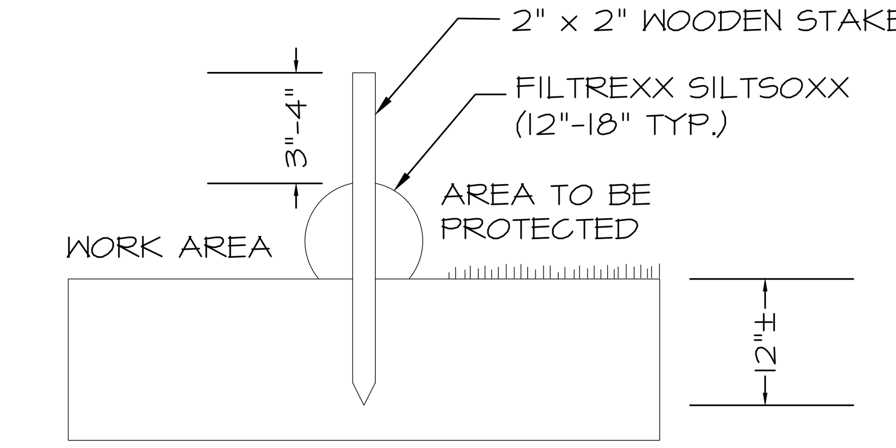
WHEN PROPOSED FOR ALTERATION DURING CONSTRUCTION AS BEING INFESTED WITH INVASIVE SPECIES SHALL BE MANAGED APPROPRIATELY USING THE DISPOSAL PRACTICES IDENTIFIED IN "NHDOT - BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS -2008" AND "METHODS FOR DISPOSING NON-NATIVE INVASIVE PLANTS - UNH COOPERATIVE EXTENSION - 2010"

SEED MIXES SHALL NOT CONTAIN ANY SPECIES IDENTIFIED BY THE NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST.

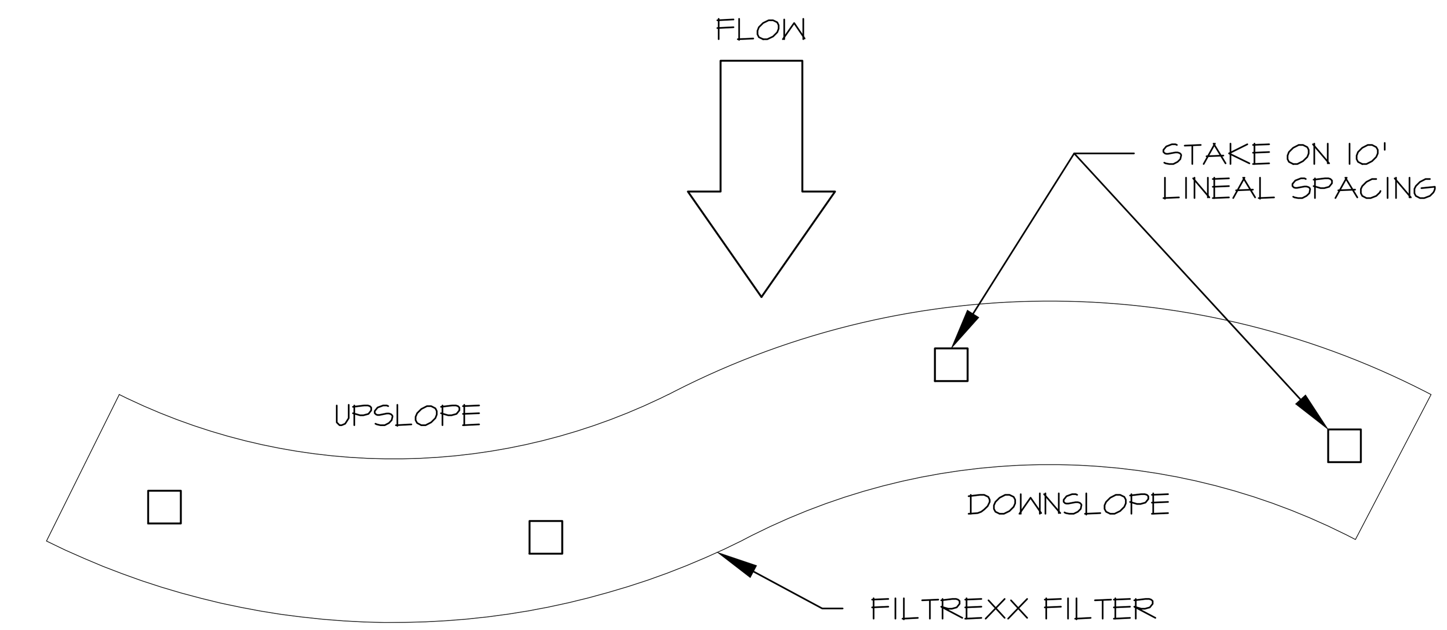
FILTREXX SILTSOXX NOTES

1) ALL MAERTIAL TO MEET FILTREXX SPECIFICATIONS

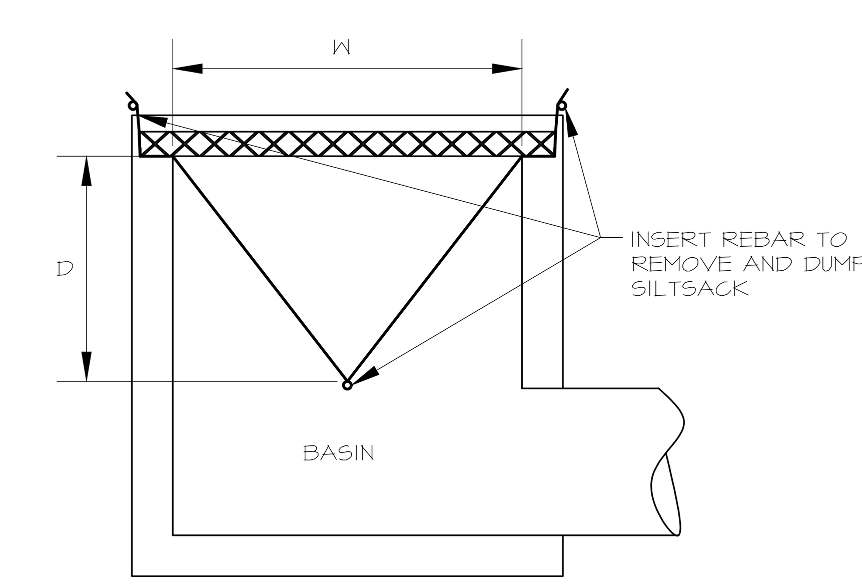
2) SILTSOXX COMPOST, SOIL, ROCK, SEED FILL TO MEET APPLICATION REQUIREMENTS



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.

STATE OF NEW HAMPSHIRE - R. ALEX ROSS No. 9409 LICENSED - PROFESSIONAL ENGINEER

ISS.	DATE	DESCRIPTION OF ISSUE
2	6/21/2022	TAC SUBMITTAL
1	6/7/2022	TAC SUBMITTAL

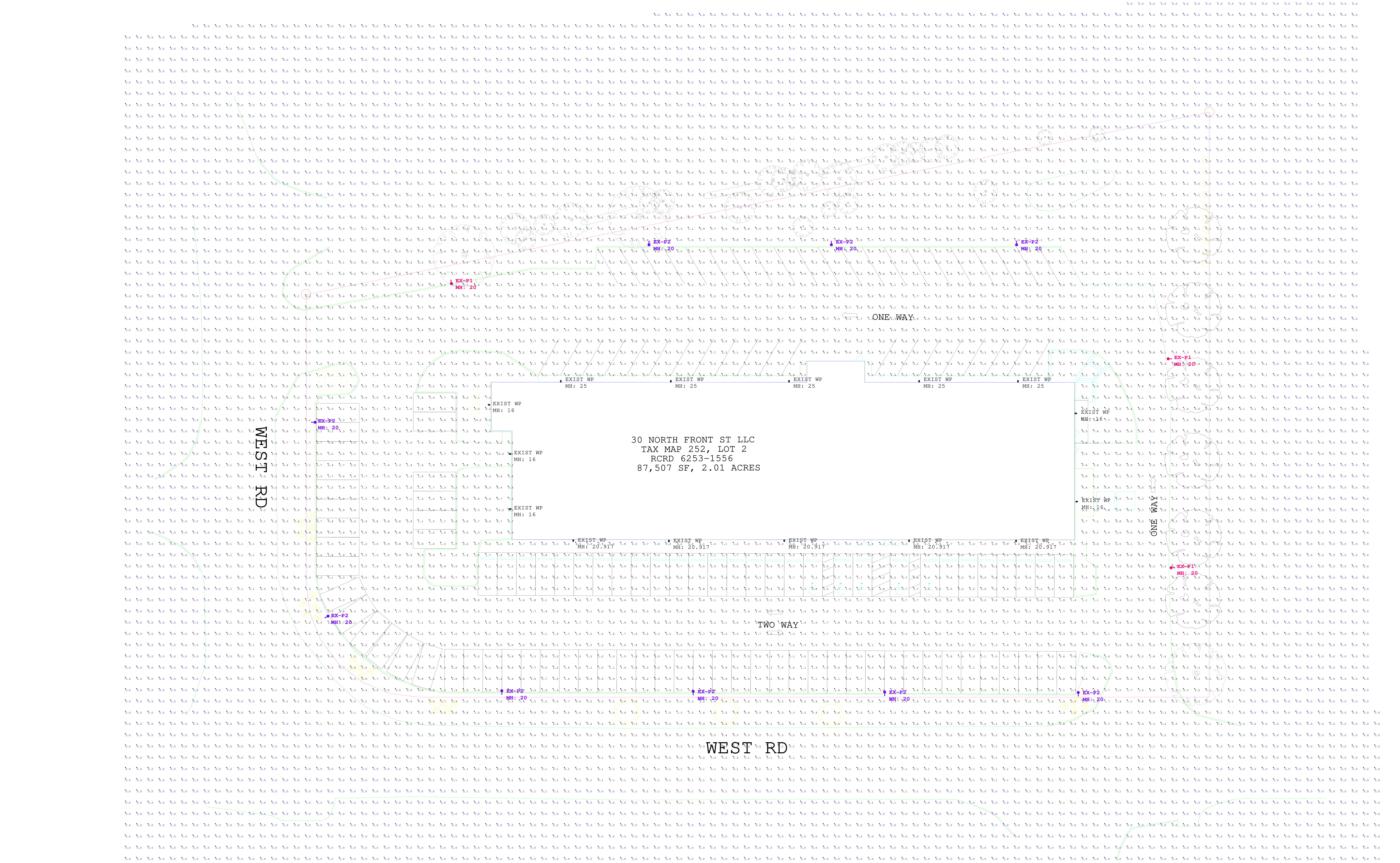
SCALE 1" = 20'
CHECKED A.ROSS
DRAWN D.D.D.
CHECKED

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 13	2



Luminaire Schedule

Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Lumens
	3	EX-P1	SINGLE	0.900	SL630-24L40T2-MDL018-SV1-BLOC	9824
	9	EX-P2	SINGLE	0.900	SL630-24L40T4-MDL018-SV1-BLOC	8414
	15	EXIST WP	SINGLE	0.730	XTOR8B	8502

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Site	Illuminance	Fc	0.90	10.2	0.0	N.A.	N.A.

illuminate

SCALE

NTS

DRAWN BY:

DATE: 6 21 22 V2

NOTES:

**IF REFLACTANCE VALUES ARE NOT PROVIDED, STANDARD VALUES WILL BE USED (80/50/20)

PROJECT: 140 WEST ROAD

LOCATION: PORTSMOUTH, NH

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)

STATE ENERGY CODE:
2015 INTERNATIONAL ENERGY CONSERVATION CODE (2015 IECC)

STATE MECHANICAL CODE:
2015 INTERNATIONAL MECHANICAL CODE (2015 IMC)

STATE ELECTRICAL CODE:
2017 NATIONAL ELECTRICAL CODE (2017 NEC)

STATE PLUMBING CODE:
2015 INTERNATIONAL PLUMBING CODE (2015 IPC)

EXISTING BUILDING CODE:
2015 INTERNATIONAL EXISTING BUILDING CODE

STATE ACCESSIBILITY CODE:
2009 ACCESSIBLE AND USEABLE BUILDINGS AND FACILITIES ANSI A117.1

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
MAXIMUM DEAD END CORRIDOR	20'	IBC 1020.4
MAXIMUM TRAVEL DISTANCE	250'	IBC TABLE 1017.2
COMMON PATH OF TRAVEL	75'	IBC TABLE 1006.2.1
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 0F 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 IBC 1029.9.1.5
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
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 FEMALE: 1 PER / 65 OC	PROVIDED: 8 PER GENDER, 2 UNISEX FAMILY REQUIRED: 3 REQUIRED: 5	
LAVATORY: MALE: 1 PER / 200 OC FEMALE: 1 PER / 200 OC	PROVIDED: 4 PER GENDER, 2 UNISEX FAMILY REQUIRED: 2 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 WATER 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

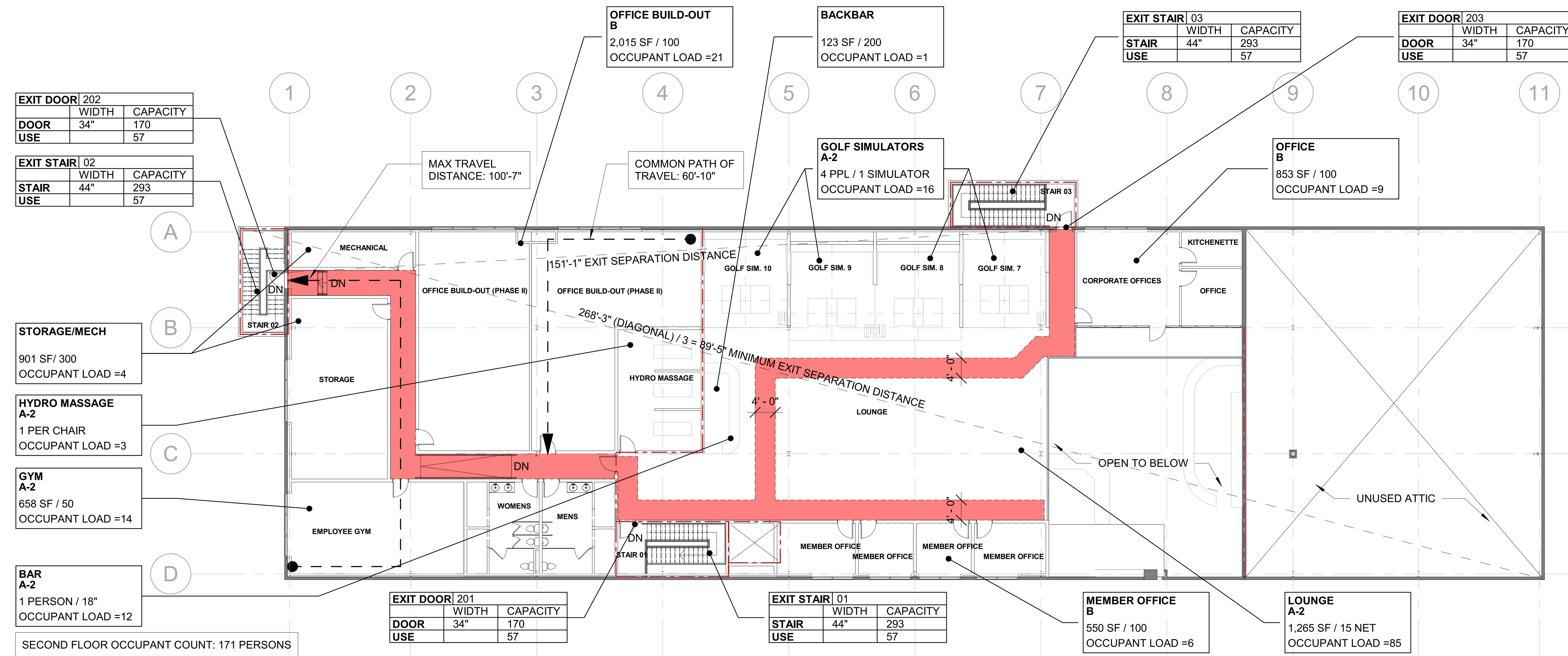
EXIT STAIR	01	
	WIDTH	CAPACITY
STAIR	72"	360
USE		62

ALLOWED USE
ACTUAL USE
CLEAR WIDTH

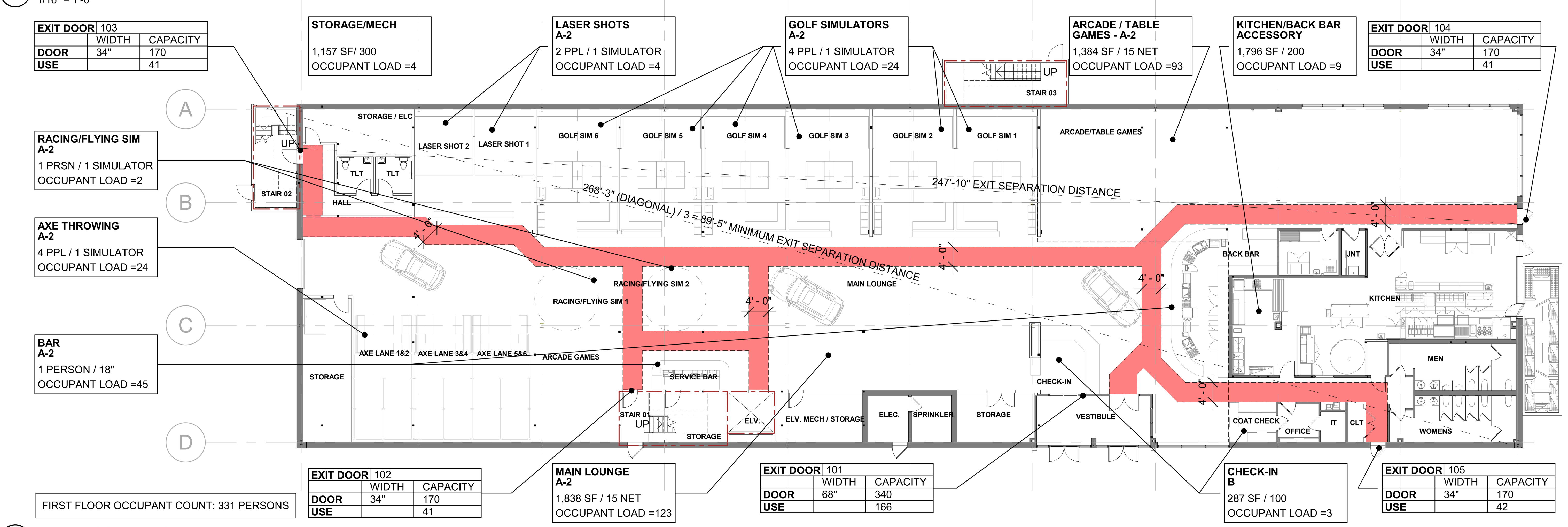
BUILDING USE TAG

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"

0' 4' 8' 16' 32'
Scale: 1/16" = 1'-0"

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

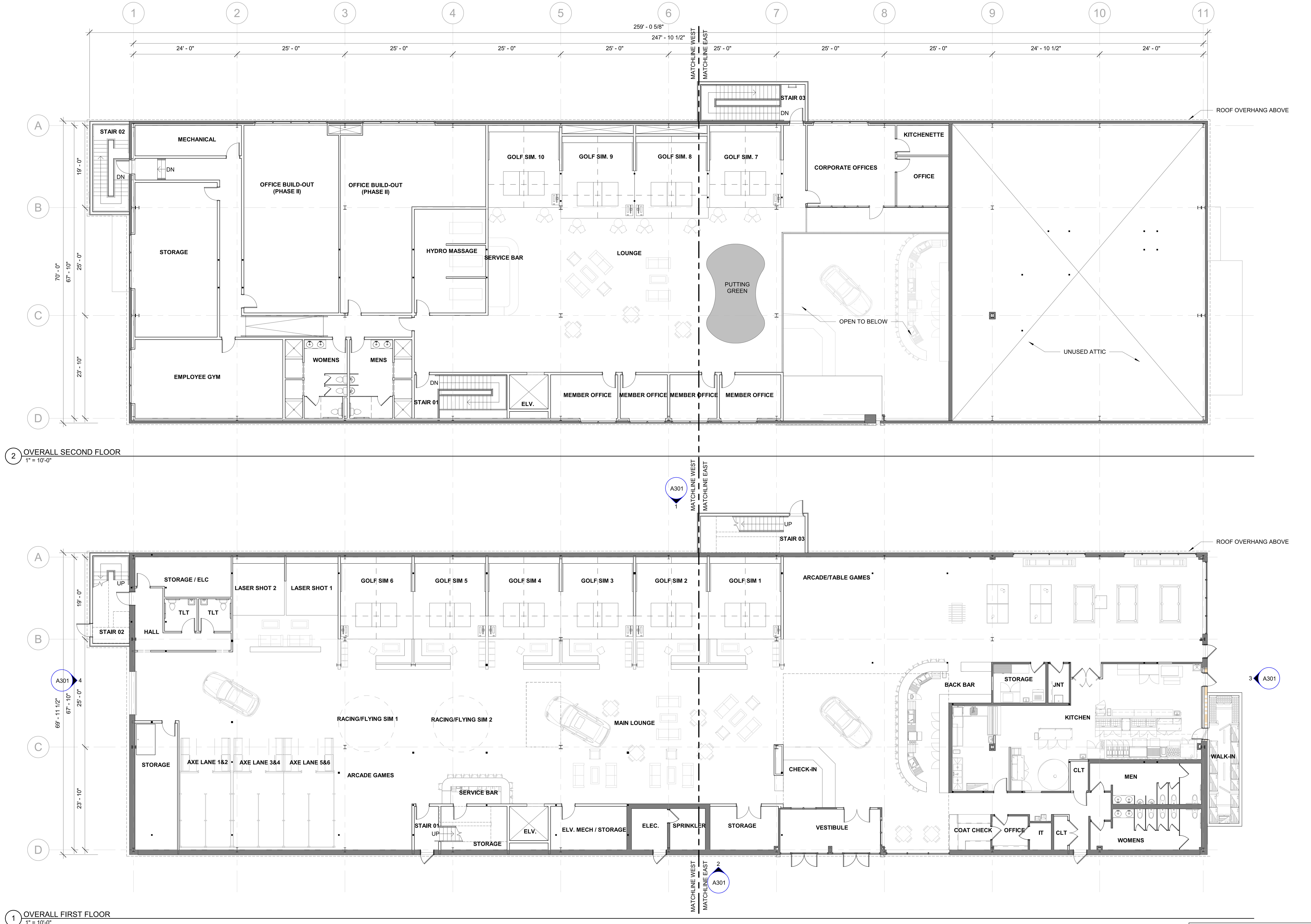
Drawing Name: GENERAL CODE REVIEW

Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

T2

Scale: AS INDICATED

Z:\Active Project Files\21121-WEST ROAD SOCIAL CLUB\Dwgs\4-CD\WEST ROAD SOCIAL CLUB - CD.rvt
6/21/2022 10:11:07 AM



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

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

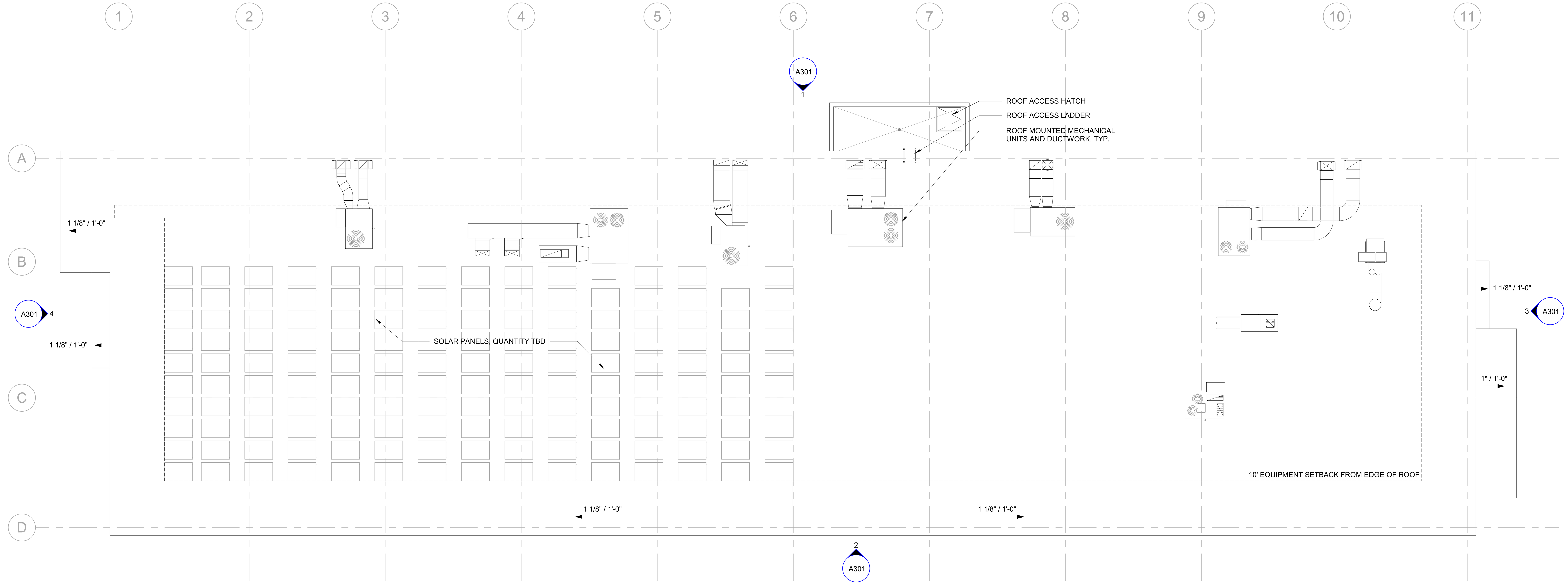
Drawing Name:
OVERALL FLOOR PLANS

Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A101

Scale: 1" = 10'-0"

Z:\Active Project Files\21121-WEST ROAD SOCIAL CLUB\Dwgs\4-CD\WEST ROAD SOCIAL CLUB - CD.rvt
6/21/2022 10:10:29 AM



1 OVERALL ROOF PLAN
1" = 10'-0"

0' 10' 20' 40'
Scale: 1:10

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:
ROOF PLAN

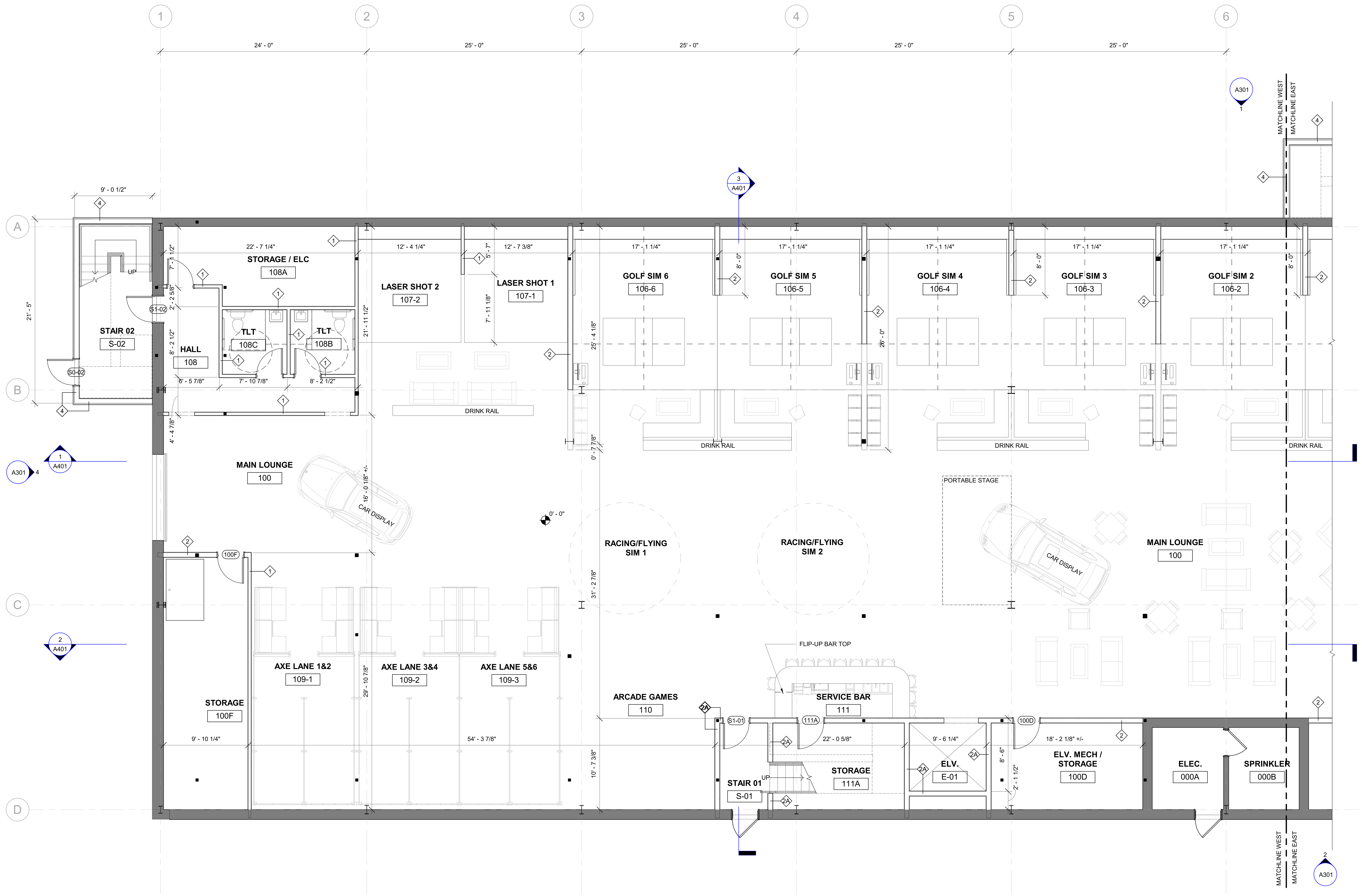
Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A102

Scale: 1" = 10'-0"

Z:\Active Project Files\21121-WEST ROAD SOCIAL CLUB\Dwgs\4-CD\WEST ROAD SOCIAL CLUB - CD.rvt

6/21/2022 10:10:32 AM



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: FIRST FLOOR PLAN - WEST

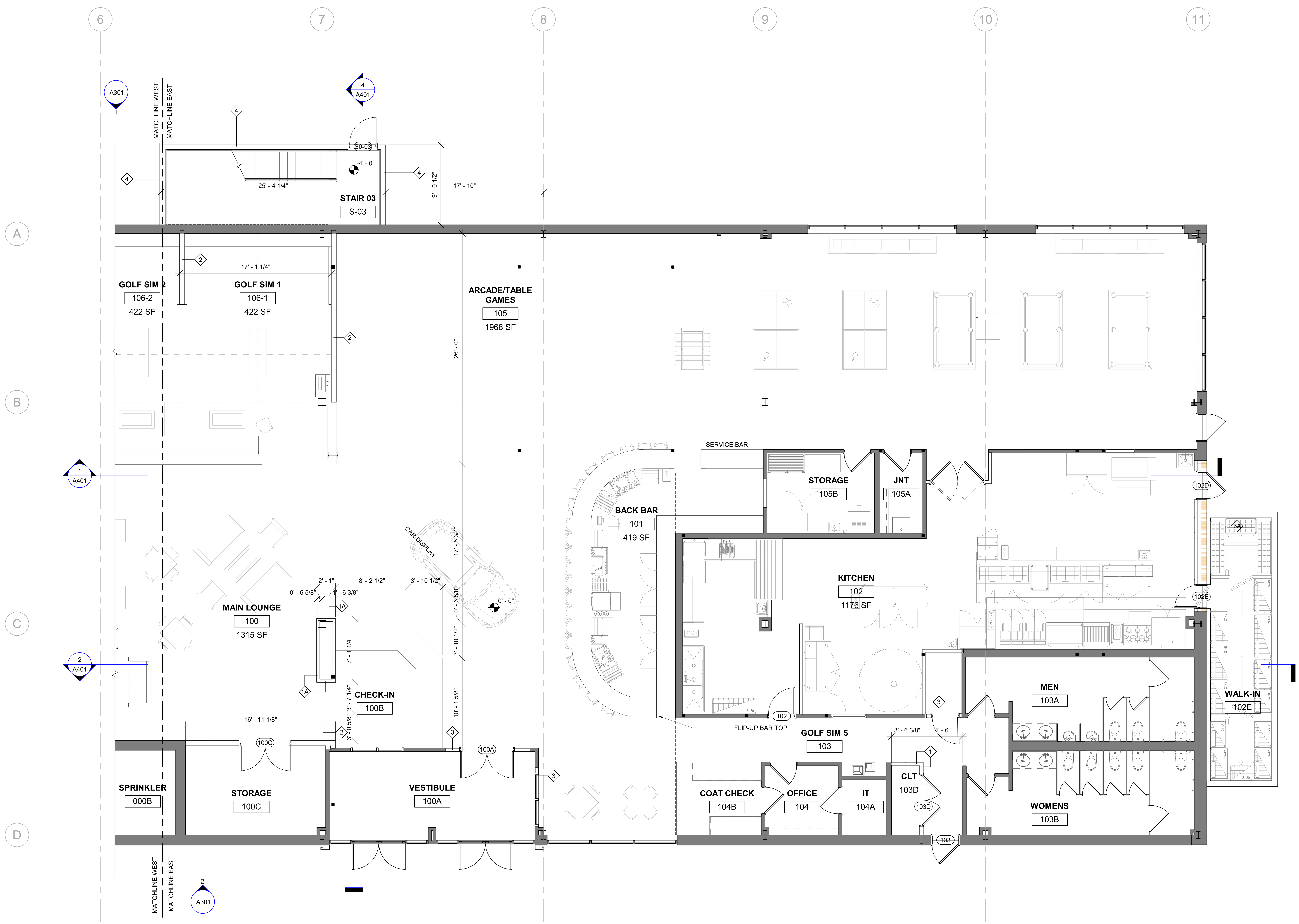
Project Number: 21121
Date: 06/21/2022
Drawn By: RD
Checked By: MG

A103

Scale: 3/16" = 1'-0"

0' 4' 8' 12'
Scale: 3/16" = 1'-0"

Z:\Active Project Files\21121-WEST ROAD SOCIAL CLUB\Dwgs\4-CD\WEST ROAD SOCIAL CLUB - CD.rvt
6/21/2022 10:10:33 AM



0' 4' 8' 12'
Scale: 3/16" = 1'-0"

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

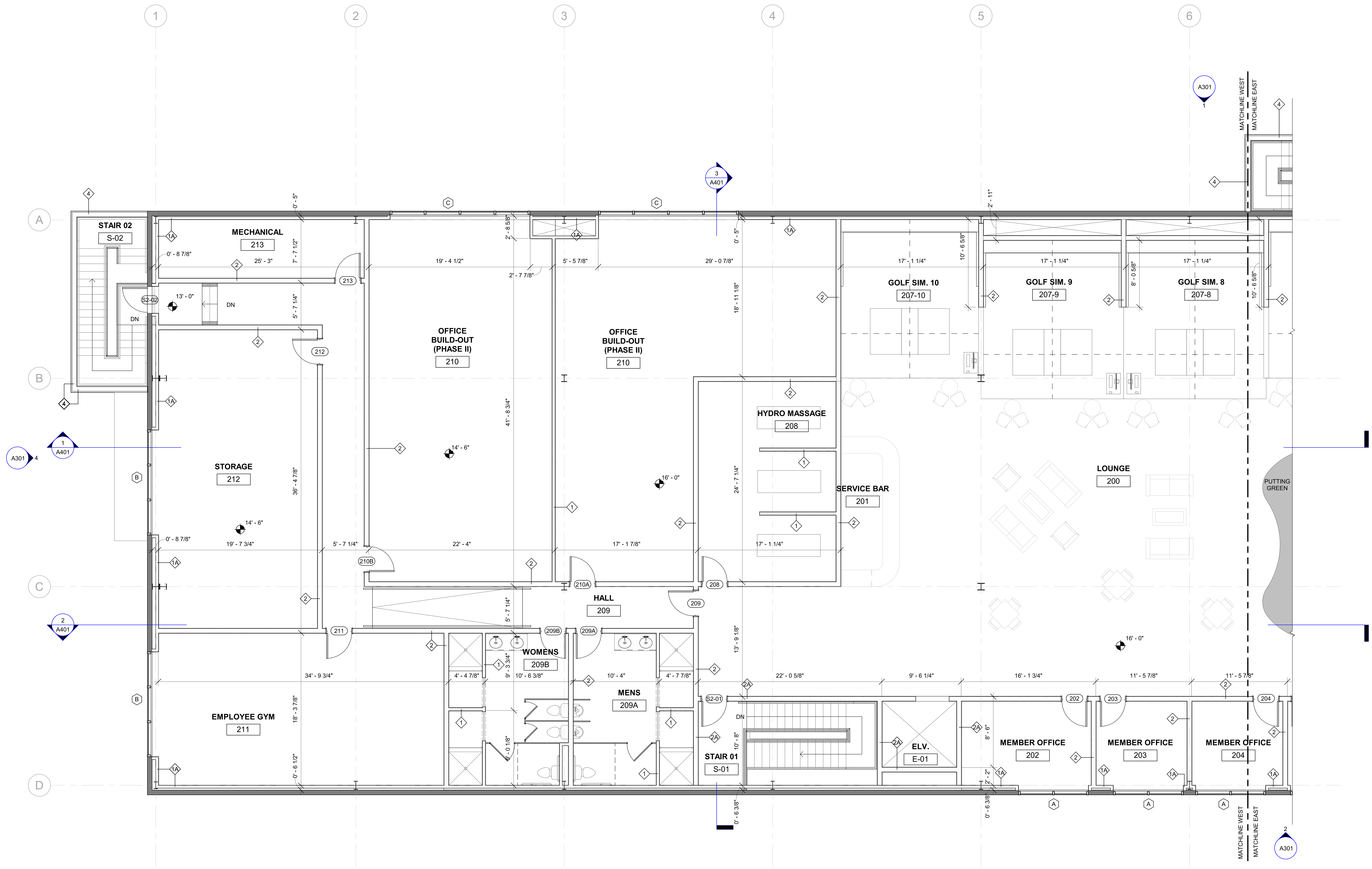
Project Name:
BLACK ROCK SOCIAL CLUB

Drawing Name:
FIRST FLOOR PLAN - EAST

Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A104

Scale: 3/16" = 1'-0"



0' 4' 8' 12'
Scale: 3/16" = 1'-0"

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: SECOND FLOOR PLAN - WEST

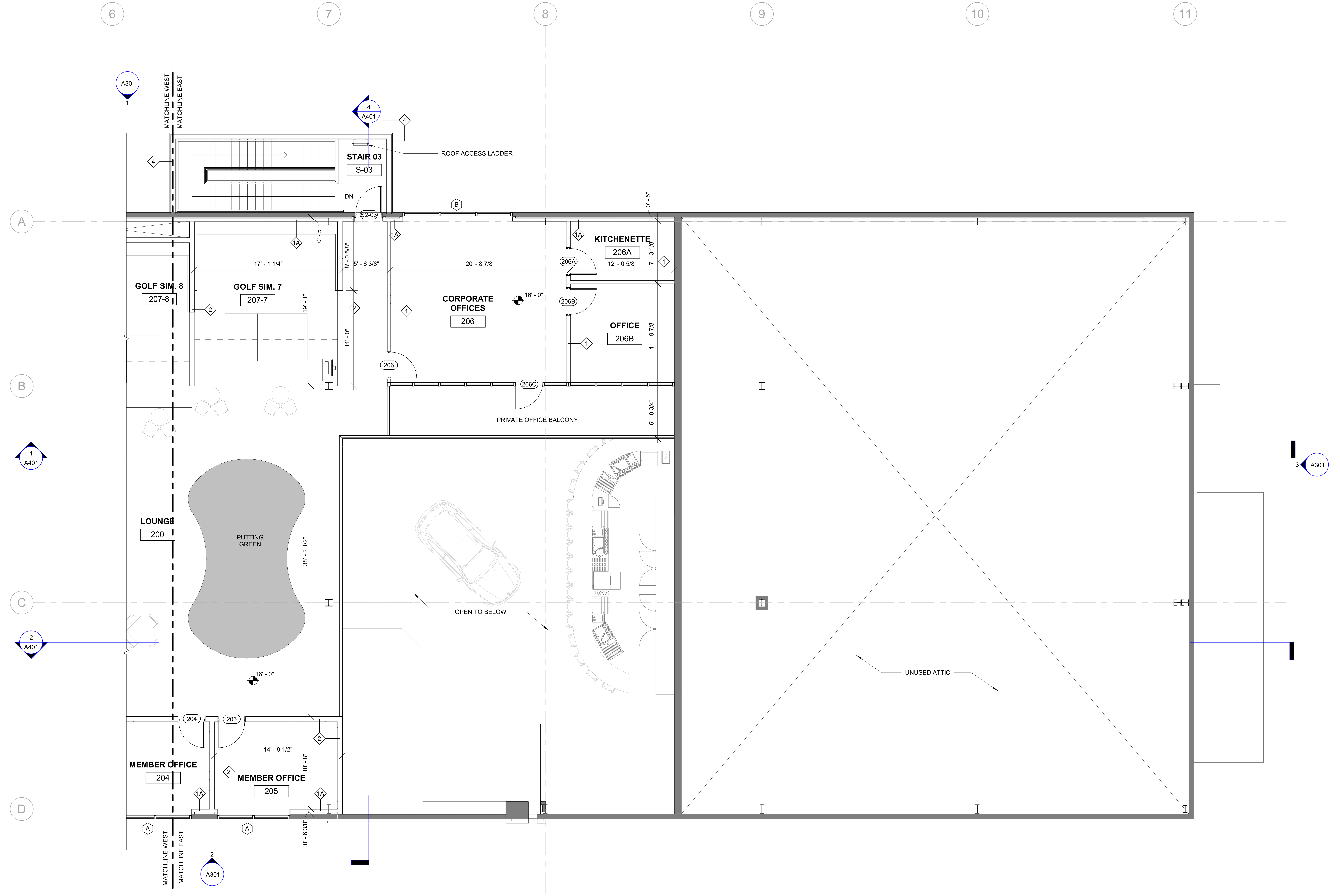
Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A105

Scale: 3/16" = 1'-0"

Z:\Active Project Files\21121-WEST ROAD SOCIAL CLUB\Dwgs\4-CD\WEST ROAD SOCIAL CLUB - CD.rvt

6/21/2022 10:10:40 AM



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: SECOND FLOOR PLAN - EAST

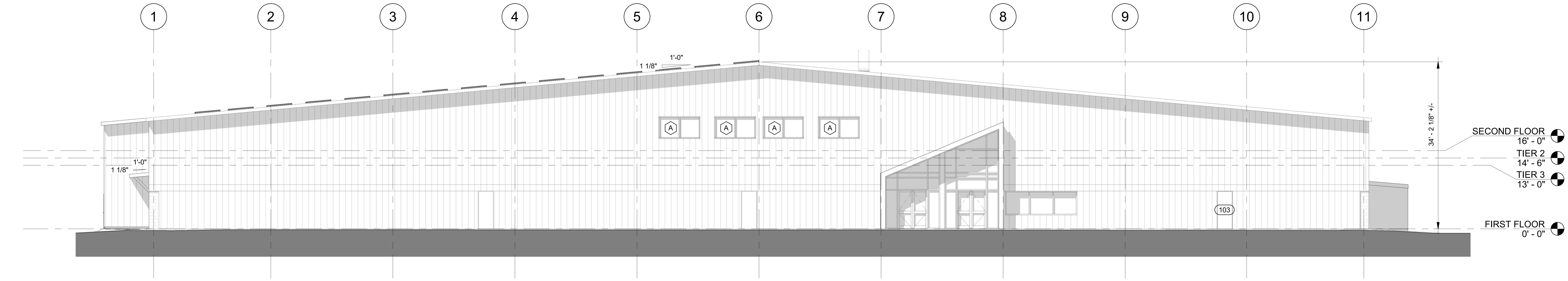
Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A106

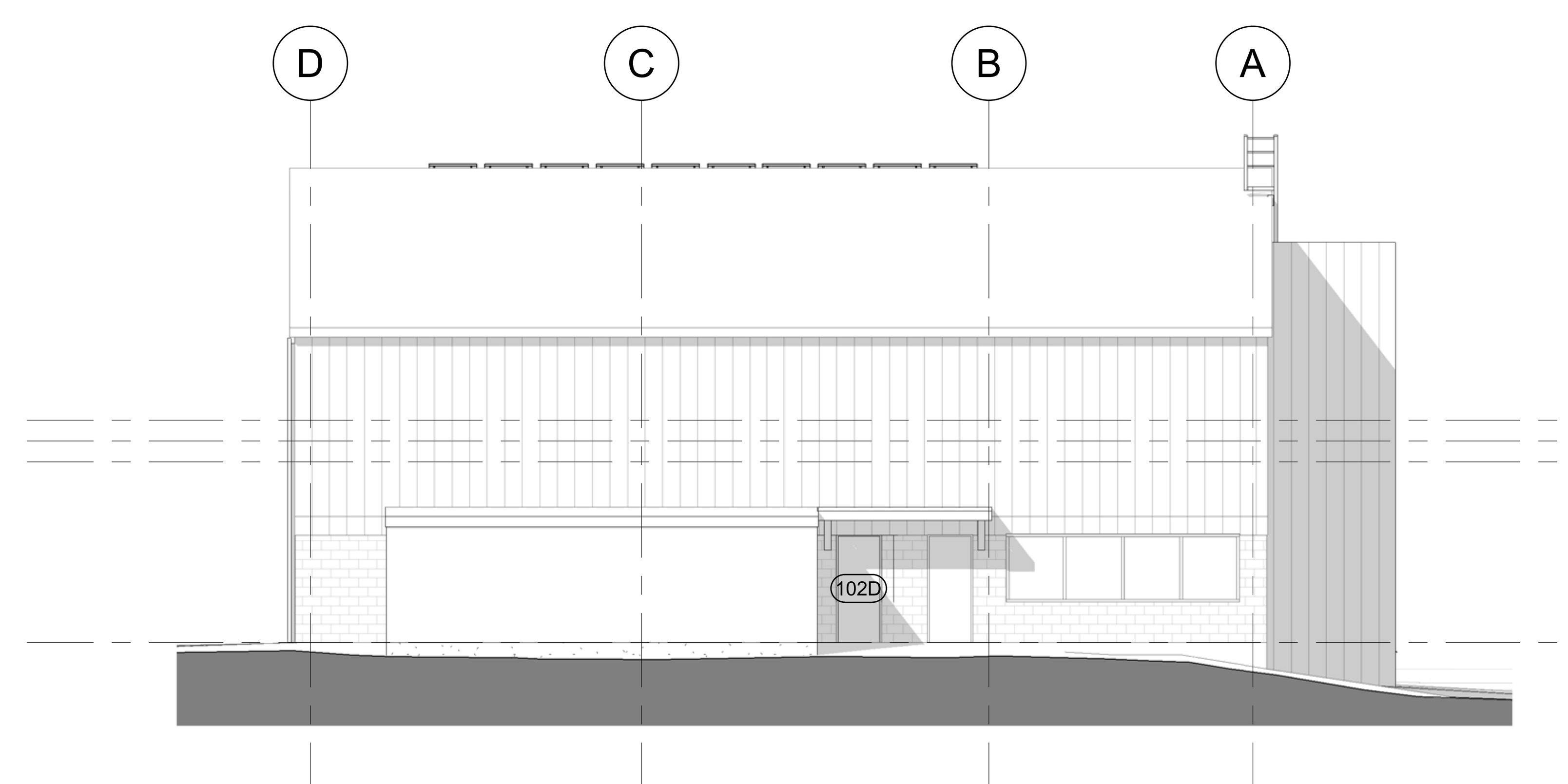
Scale: 3/16" = 1'-0"

0' 4' 8' 12'
Scale: 3/16" = 1'-0"

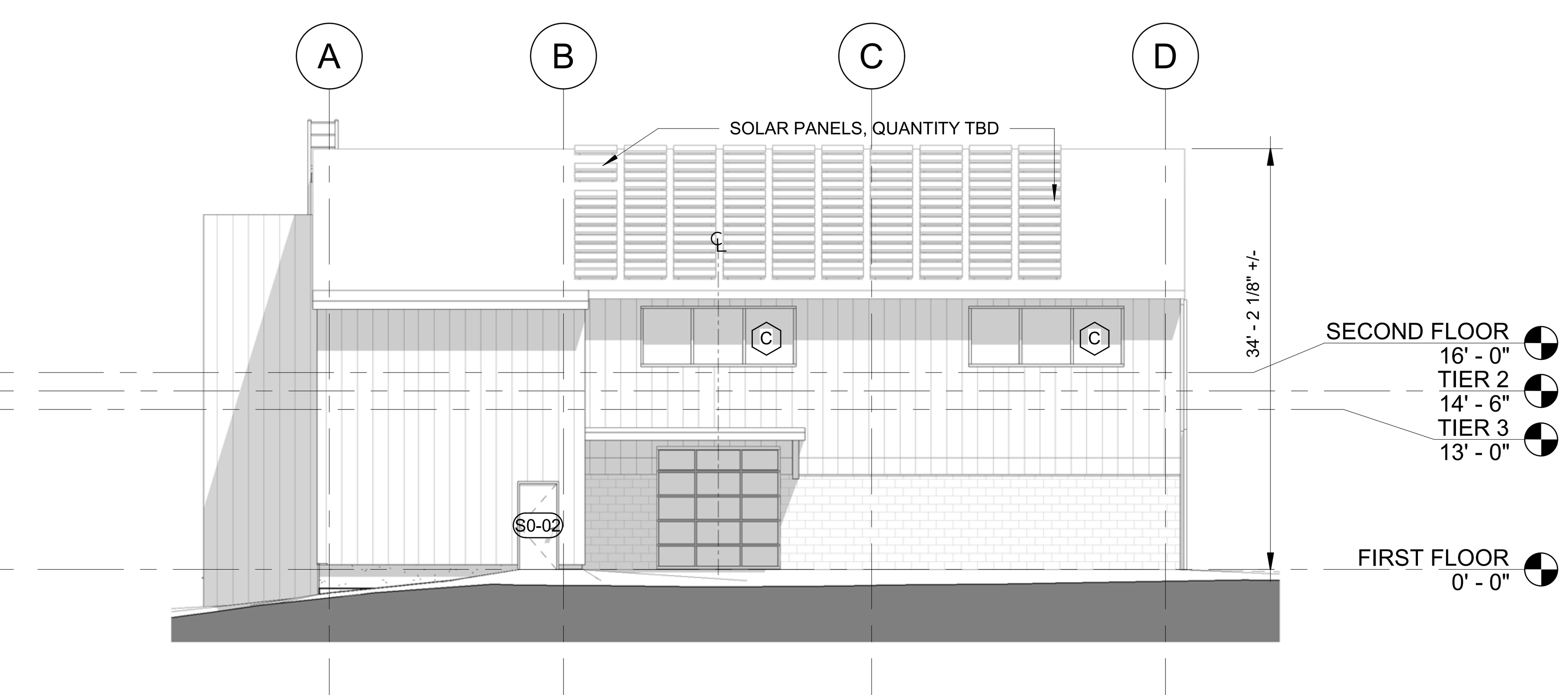
1 NORTH ELEVATION
3/32" = 1'-0"



2 SOUTH ELEVATION
3/32" = 1'-0"



3 EAST ELEVATION
3/32" = 1'-0"



4 WEST ELEVATION
3/32" = 1'-0"

0' 8' 16' 24'
Scale: 3/32" = 1'-0"

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:
OVERALL EXTERIOR ELEVATIONS

Project Number:	21121
Date:	06/21/2022
Drawn By:	RD
Checked By:	MG

A301

Scale: 3/32" = 1'-0"

Ross Engineering, LLC
Civil / Structural Engineering
909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

140 West Rd--Project Description

June 21, 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 patio 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 expanded parking, as well as a pervious paver patio/walkway from the building, to mitigate stormwater runoff. The stormwater pond in the rear of the property will be expanded and converted into a rain garden to handle the increased loading and treat the stormwater. A jellyfish filter by Contech will be installed to treat runoff from the east parking lot.

The June 21 plan set has been updated to include the June 14th TAC Work-Session comments. A traffic study and a video of the sewer line were requested at the work-session. The sewer line has been videoed and submitted to DPW. We are preparing a traffic study and will submit as soon as possible. Due to the usage and the site location with large roadways in the area, we do not anticipate this project to have any significant impact on traffic.

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 & convert to rain garden
- 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

909 Islington Street **603-433-7560**
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

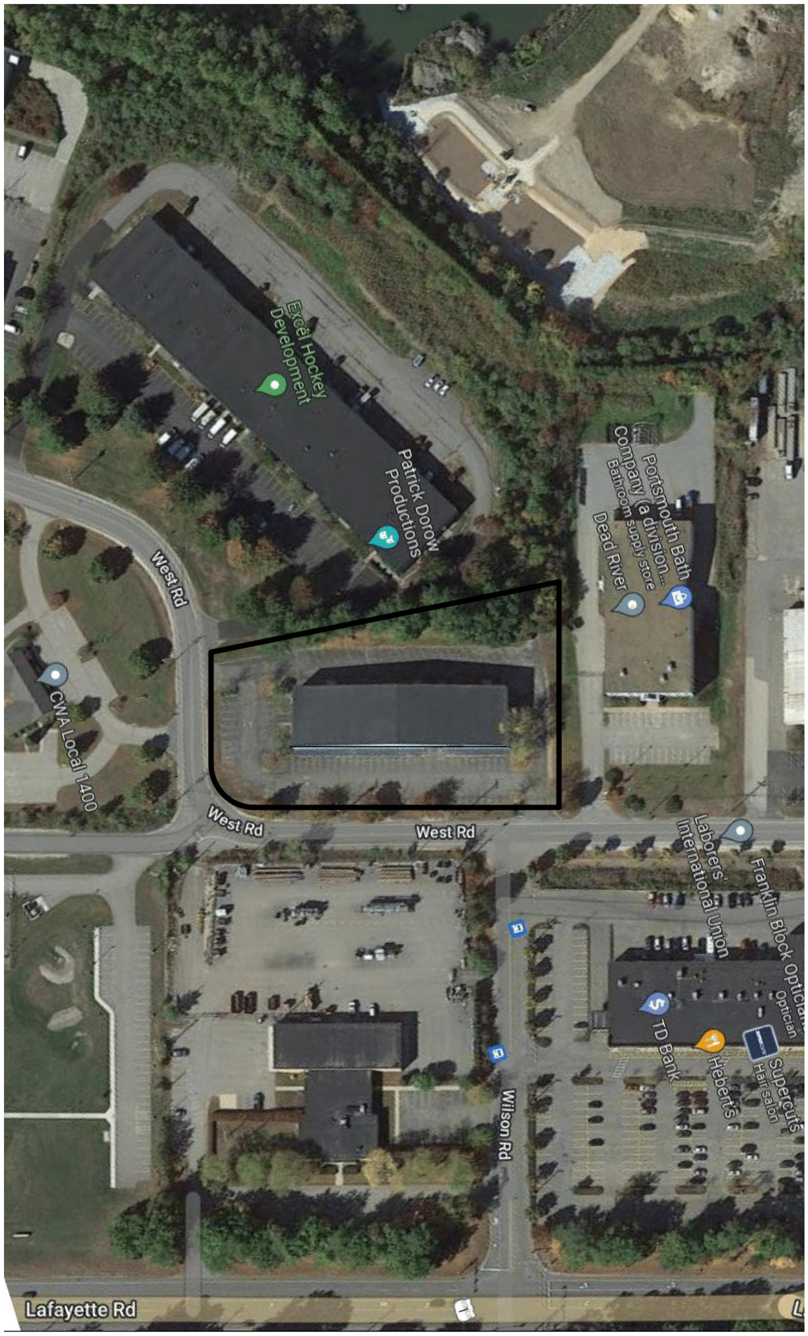
1. Civil Engineer & Surveyor
   Alex Ross
   Ross Engineering
   Certified Professional Engineer
   Licensed Land Surveyor
   909 Islington Street
   Portsmouth, NH 03801

2. Architect
   McHenry Architecture
   4 Market Street
   Portsmouth, NH 03801

3. MEP Engineer
   CSI Engineering
   125 Aviation Ave #4
   Portsmouth, NH 03801

Ross Engineering
Civil / Structural Engineering

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**



Aerial view of site

Ross Engineering
Civil / Structural Engineering
909 Islington Street
Portsmouth, NH 03801
603-433-7560
alexross@comcast.net

View of building looking to the west

View of building looking to the east

Ross Engineering
Civil / Structural Engineering
909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

View of building & parking lot looking to the south

View of building looking to the east

Ross Engineering
Civil / Structural Engineering
909 Islington Street
Portsmouth, NH 03801
603-433-7560
alexross@comcast.net

View of building looking to the south

View of dumpsters and stormwater pond looking to the west

Ross Engineering
Civil / Structural Engineering
909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

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 rain garden 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		$\boxed{119}$		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.

Ross Engineering

909 Islington Street **603-433-7560**
Portsmouth, NH 03801 **alexross@comcast.net**

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, rain garden, 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. Rain Garden
   d. Landscaped areas
   e. Permeable Pavers
   f. Culverts & Drain lines
   g. Contech jellyfish
   h. Roof drainage
   i. Storm Tech Chambers

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.

b. **<u>Pervious Asphalt:</u>** 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. **<u>Rain Garden:</u>**
Rain garden maintenance is similar to the maintenance of any perennial garden, with a few extra tasks:

INSPECT: Check after storms to verify the inlet and outlet are stable, no channels have formed, that plants are healthy and that it is draining. Adjust and repair if needed.
PLANT CARE: Weed and water as needed. Replace dead plants as needed. Cut back, prune or divide plants when appropriate to encourage growth.
CLEAN: If the rain garden is receiving runoff that contains sand or debris, such as from a driveway or roadway, clean out accumulated materials as needed.

d. **<u>Landscaped Areas:</u>**
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. **<u>Permeable Pavers:</u>**
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. **<u>Culverts and drain lines:</u>**
Inspect twice a year, more often if needed. Inspect for accumulation of debris. Remove material from inlet/outlet as necessary, dispose of offsite.

g. **<u>Contech jellyfish treatment structure:</u>**
See attached Jellyfish Maintenance Guide.

h. **<u>Roof drainage:</u>**
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.

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.

g. 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.

Ross Engineering

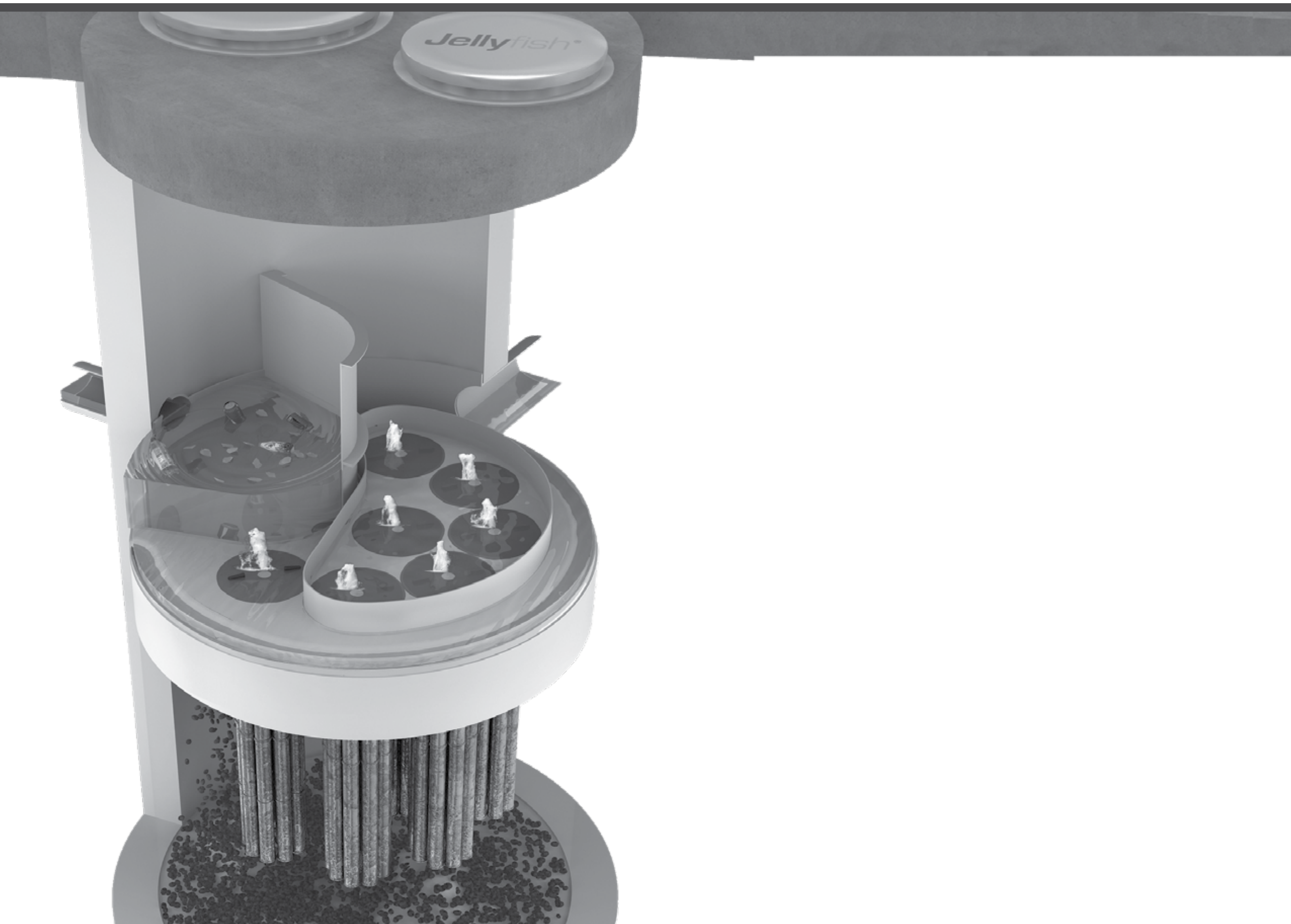
909 Islington Street
Portsmouth, NH 03801

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						
	Rain Garden						
	Landscaped Areas						
	Permeable Pavers						
	Culverts & Drain lines						
	Contech Jellyfish						
	Roof Drainage						
	Storm tech Chambers						

Jellyfish® Filter Maintenance Guide



JELLYFISH® FILTER
INSPECTION & MAINTENANCE GUIDE

Jellyfish units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the Jellyfish filter to be successful, it is imperative that all other components be properly maintained. The maintenance and repair of upstream facilities should be carried out prior to Jellyfish maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

TABLE OF CONTENTS

Inspection and Maintenance Overview 3

Inspection Procedure 3

Maintenance Procedure 4

Cartridge Assembly & Cleaning 5

Inspection Process 7

1.0 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.

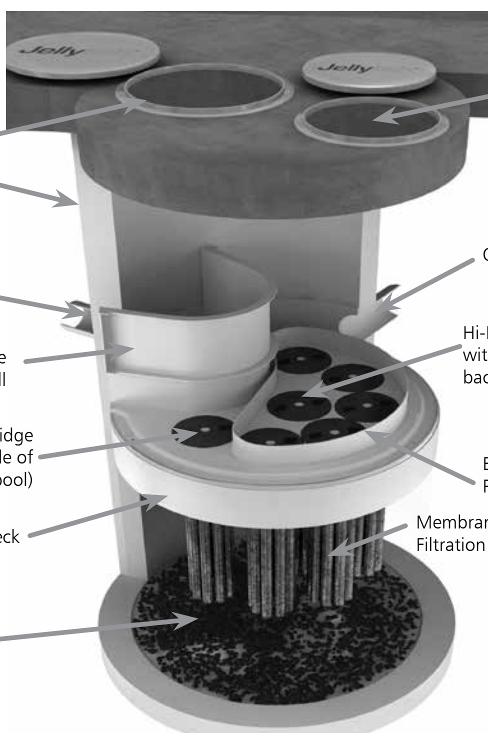
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion 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



Note: Separator Skirt not shown

2.0 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*.

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.

3.0 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.

3.1 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.

3.2 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.

4.0 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.

5.0 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.

5.1 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.

5.2 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.

Cartridge Removal & Lifting Device

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.
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.

5.3 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.

Vacuuming Sump Through MAW

3. Pressure wash cartridge deck and receptacles to remove all 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.

Vacuuming Sump Through MAW

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some 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.

5.4 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.

5.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

5.6 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

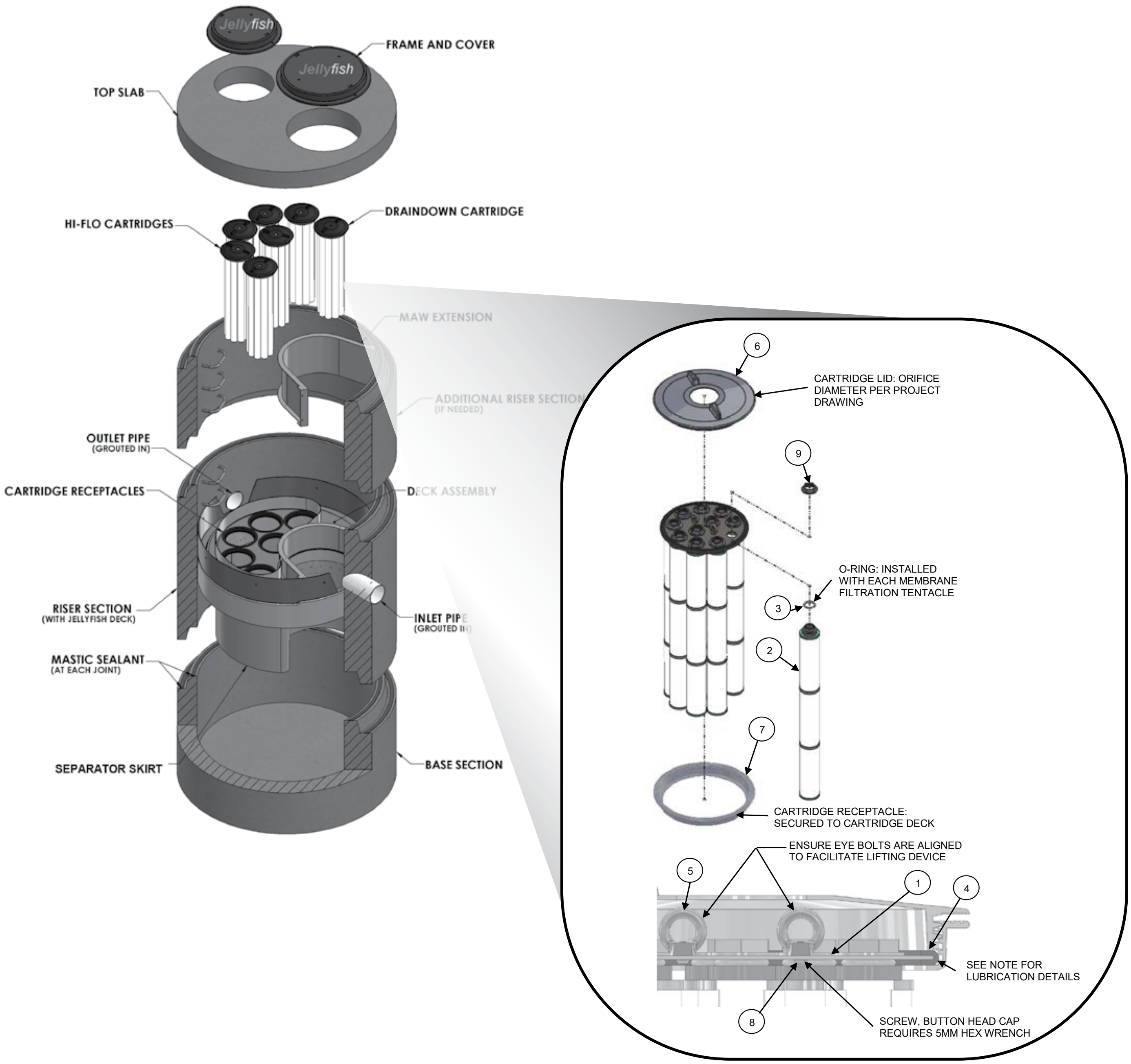


TABLE 1: BOM

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 Lide (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:	
	Roadway/Highway:		Airport:		Residential:	

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						
Draindown Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Draindown Cartridges: (Y/N)						
Hi-Flo Cartridges externally rinsed and recommissioned: (Y/N)						
New tentacles put on Hi-Flo 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:						

Jellyfish®

CONTECH®
ENGINEERED SOLUTIONS

800.338.1122
www.ContechES.com

Support

- Drawings and specifications are available at www.conteches.com/jellyfish.
- Site-specific design support is available from Contech Engineered Solutions.
- Find a Certified Maintenance Provider at www.conteches.com/ccmp

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: [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
June 21, 2022

Table of Contents

Site Description……………………………………………….… 1

USGS Map….…………………………………………………. 2

FEMA Flood Insurance Rate Map…………………………… 3

Aerial View……………………….…………………….. 4

Drainage Design………………………………………………... 5

Proposed Development…………………………………………. 6

Drainage Summary ……………………….………….……..… 10

Drainage Computations:

Pre-Development Watershed Diagram………….…… 12
Pre-Development Drainage Calculations………..…......13

Post-Development Watershed Diagram……….……… 71
Post-Development Drainage Calculations…………… 72

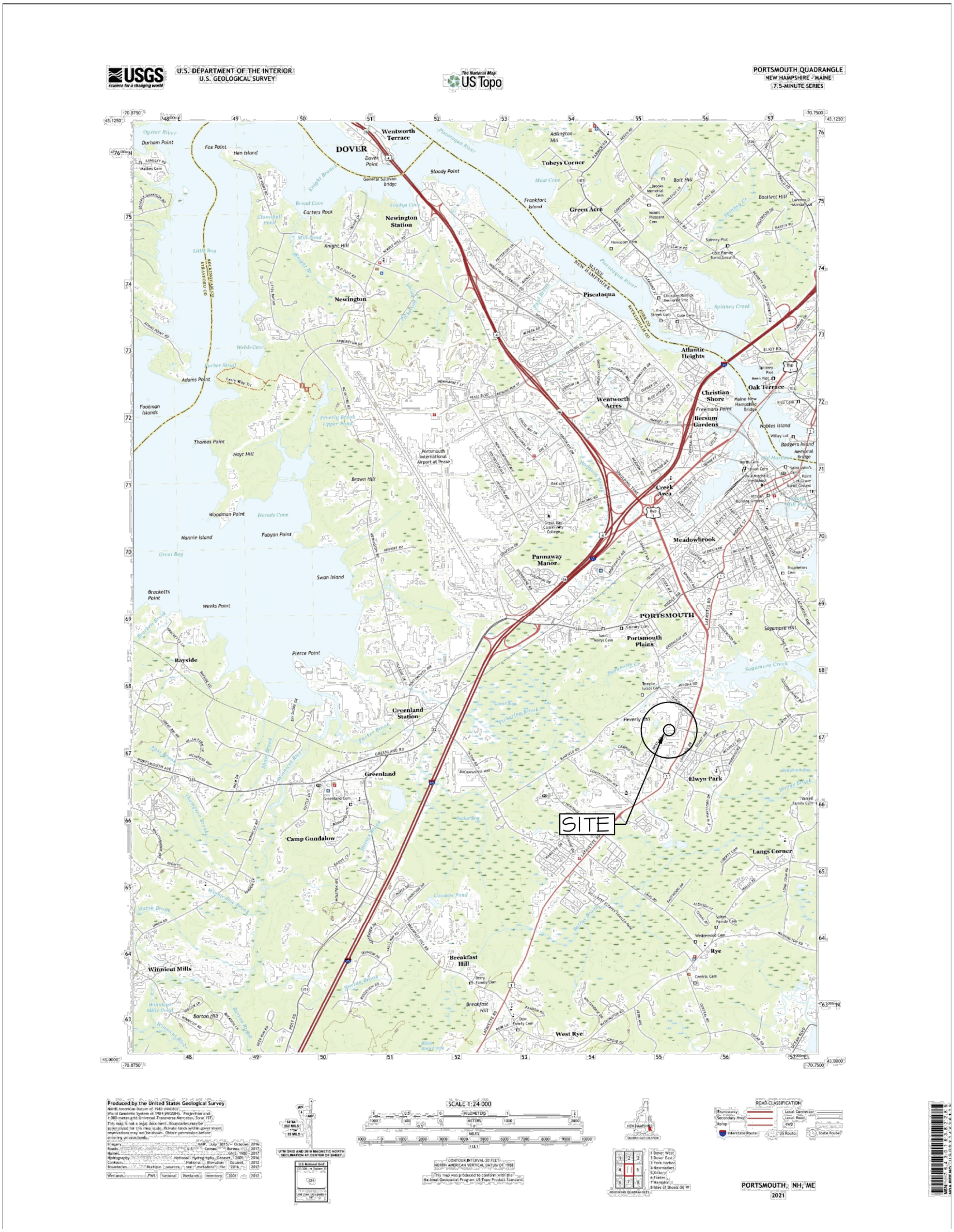
Appendix A
Extreme Precipitation Tables…….………… A1
Appendix B
Soil Information……………………………… B1

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. Four test pits have been dug on site, and the data has been included in the site plan set.


USGS
science for a changing world
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
Tobeys Corner
Green Acre
Newington Station
Newington
Piscataqua
Atlantic Heights
Oak Terrace
Christian Shore
Wentworth Acres
Bersum Gardens
Creek Area
Meadowbrook
Pannaway Manor
PORTSMOUTH
Portsmouth Plains
Bayside
Greenland Station
Greenland
Elwyn Park
Camp Gundalow
Langs Corner
Breakfast Hill
Rye
Winnicut Mills
West Rye
SITE
Produced by the United States Geological Survey
SCALE 1:24 000
ROAD CLASSIFICATION
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, AR*
		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	E 18.2 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
	8	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

N

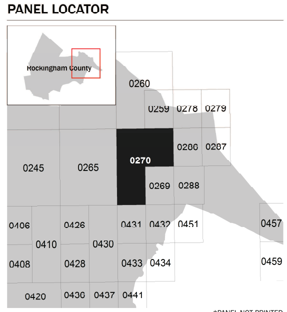
Map Projection:
NAD 1983 StatePlane New Hampshire FIPS 2800 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

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

FEMA

Panel Contains:

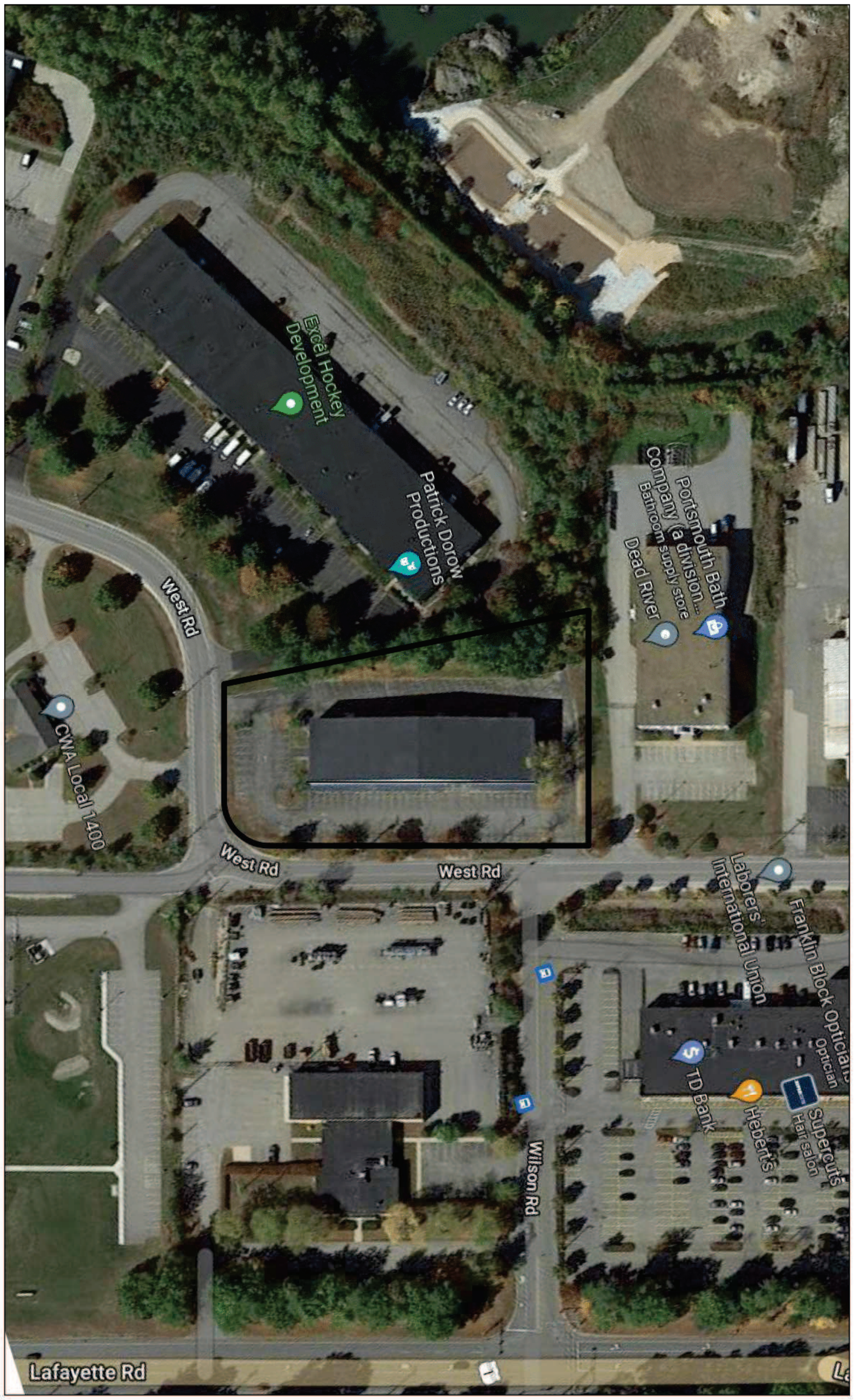
COMMUNITY	NUMBER	PANEL	SUFFIX
GREENLAND, TOWN OF	330210	0270	F
NORTH HAMPTON, TOWN OF	330232	0270	F
PORTSMOUTH, CITY OF	330139	0270	F
RYE, TOWN OF	330141	0270	F

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
Hebert's
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 jellyfish filter (CB B) that treats runoff from both the eastern parking lot as well as water from the SC-310 units. This jellyfish filter will connect to the existing drain manhole (DMH 1) on site. Pervious pavement will be located along the west side of the parking lot. Runoff will flow to the pervious pavement, where it will be stored and slowly released to a proposed rain garden in the northwest of the property. Runoff from the rain garden will be 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. A percolation test was performed on the soil with the rate found being 15 inches/hour. A conservative measurement that is 50% of the field test of 7.5 inches/hour was used for exfiltration in this analysis.

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 20" 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 20" 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 rain garden, then through a XXXX" culvert to DMH 2, then through a 20" 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 and a portion of the eastern parking lot. Runoff will flow through gutters to two irrigation cisterns, then to CB A, then through stormtech SC-310 chambers, then to DMH A, then to a catch basin using a jellyfish filter (CB B), then to DMH 1, then to DMH 2, then through a 20" 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 B), then to DMH 1, then to DMH 2, then through a 20" 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 the pervious pavers along the west side of the parking lot. Water will be detained then slowly released through an underdrain leading to a XXXX” culvert, then to the rain garden, then through a XXXX” culvert to DMH 2, then through a 20” culvert to the wetlands in the northwest off site.

.

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 rain garden, pervious pavement, stormtech SC-310 units, and jellyfish catch basin 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	4.89	3.76	4.83	5.83
Post-Development (CFS)				
Analysis Point 1	2.49	8.09	9.87	11.08
Analysis Point 2	0.37	0.64	0.85	1.04
Decrease in Flow (CFS)				
Analysis Point 1	0.06	0.07	0.76	1.86
Analysis Point 2	2.12	3.12	3.98	4.79

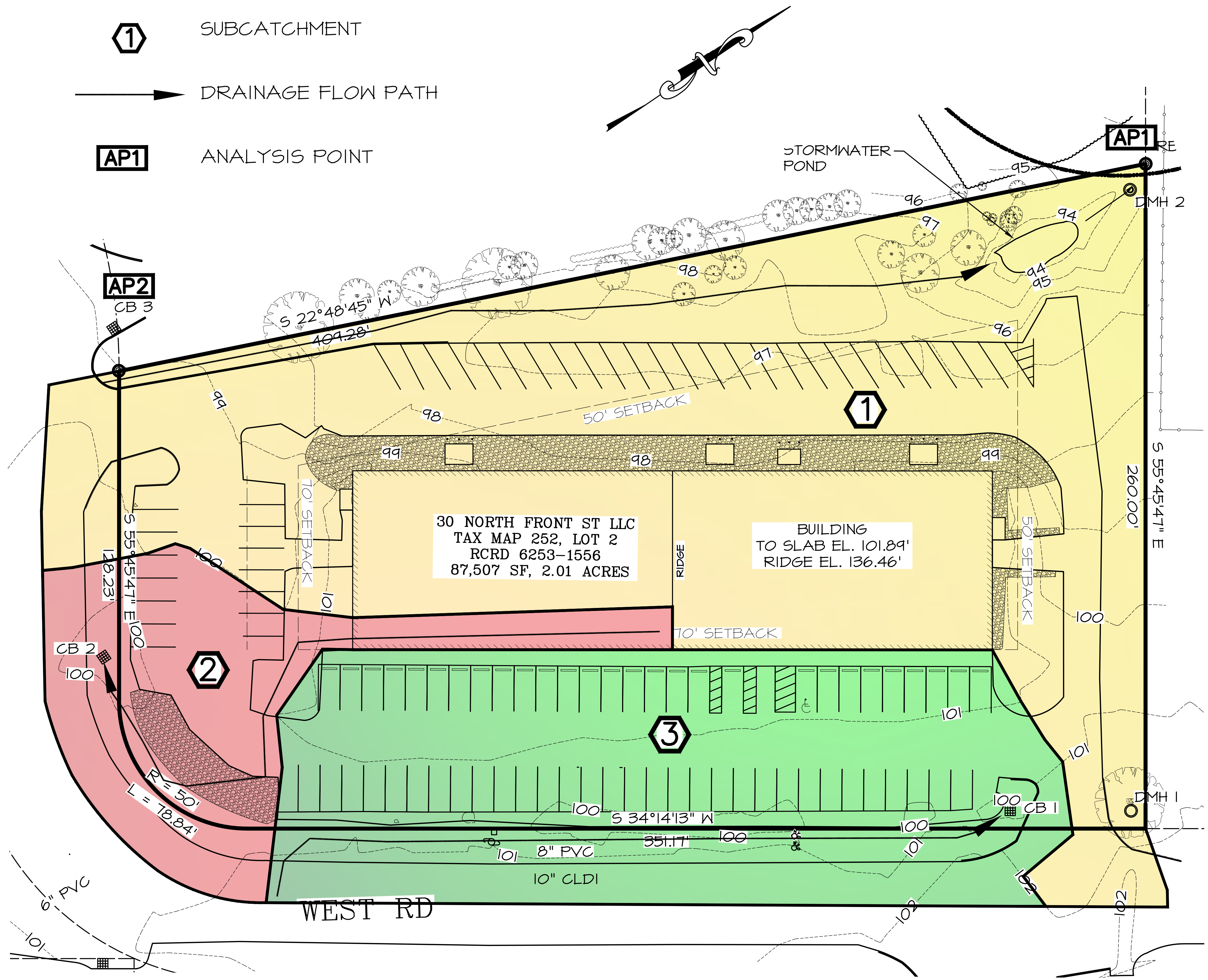
PRE-DEVELOPMENT CALCULATIONS

LEGEND

SUBCATCHMENT

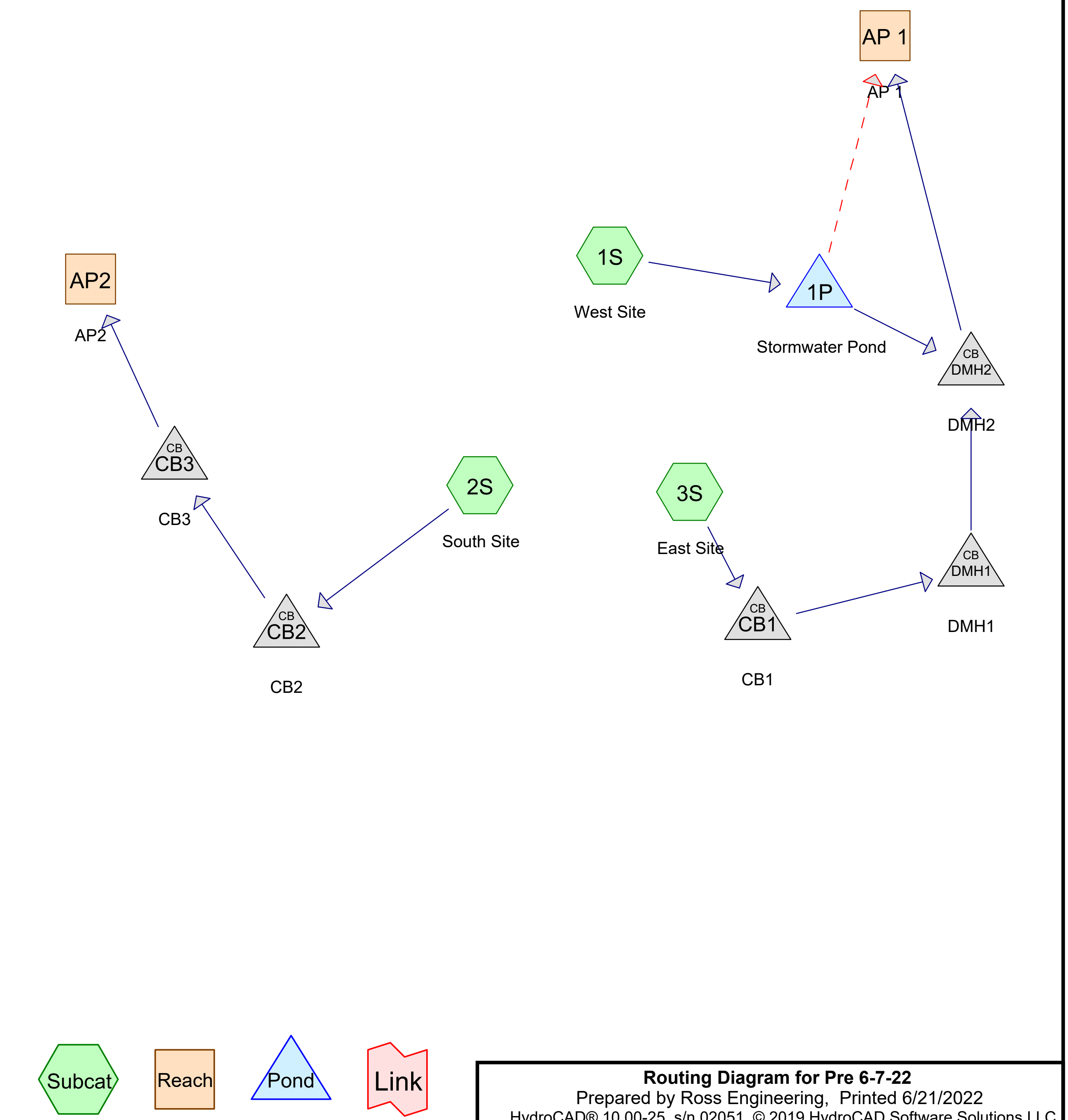
DRAINAGE FLOW PATH

AP1 ANALYSIS POINT



PRE-DEVELOPMENT

SCALE: 1" = 40'



Routing Diagram for Pre 6-7-22
Prepared by Ross Engineering, Printed 6/21/2022
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	20.0	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=91.01' Inflow=1.15 cfs 0.219 af
20.0" 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

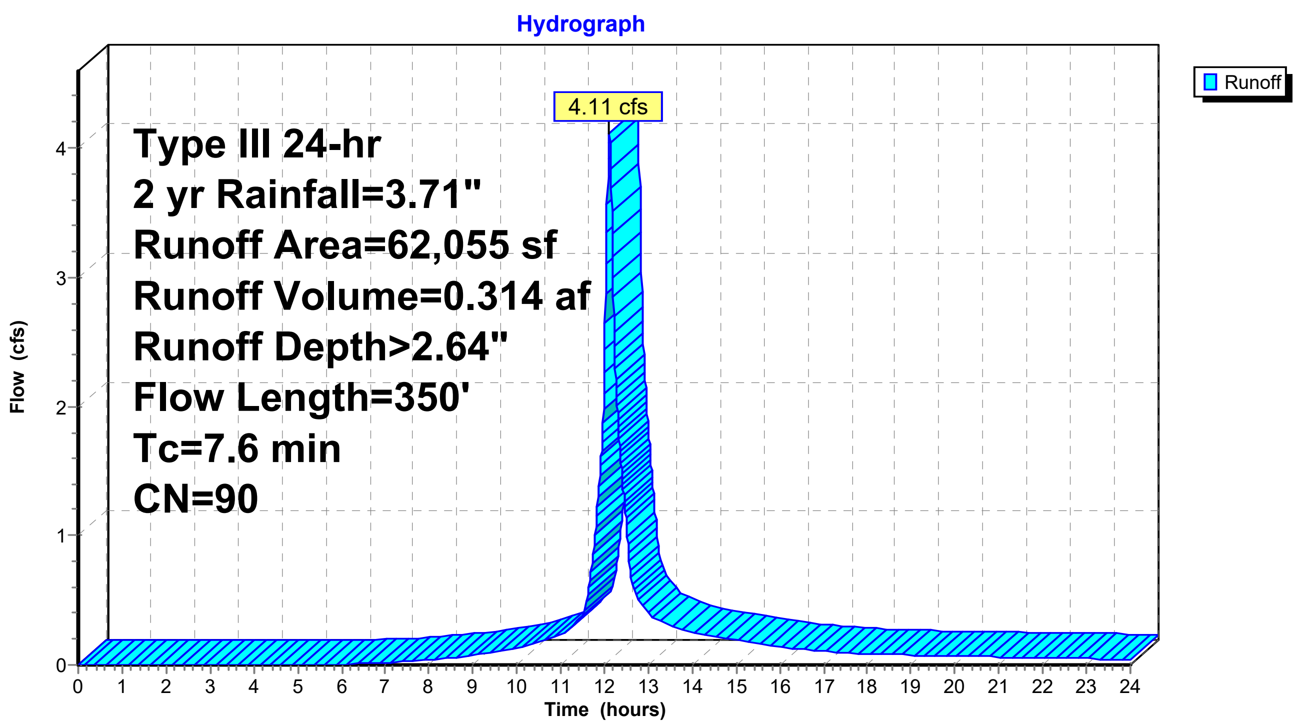
Runoff = 4.11 cfs @ 12.11 hrs, Volume= 0.314 af, Depth> 2.64"

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

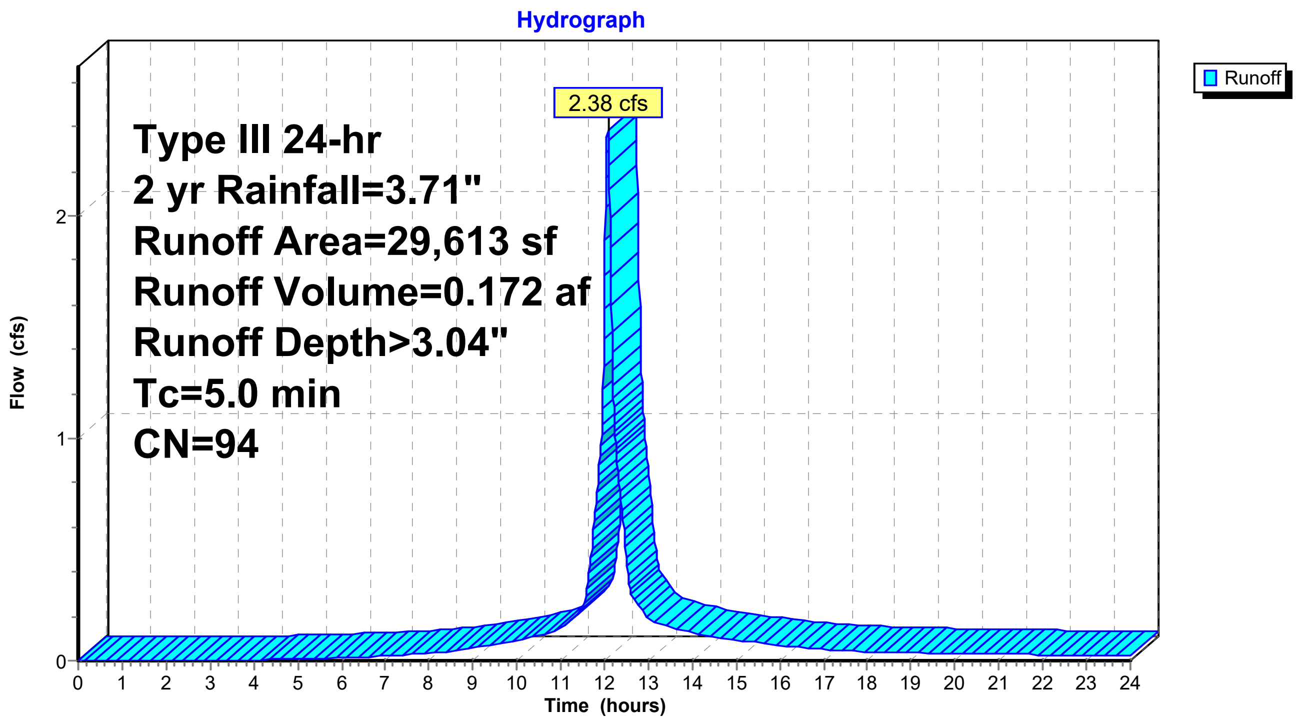
Runoff = 2.38 cfs @ 12.07 hrs, Volume= 0.172 af, Depth> 3.04"

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

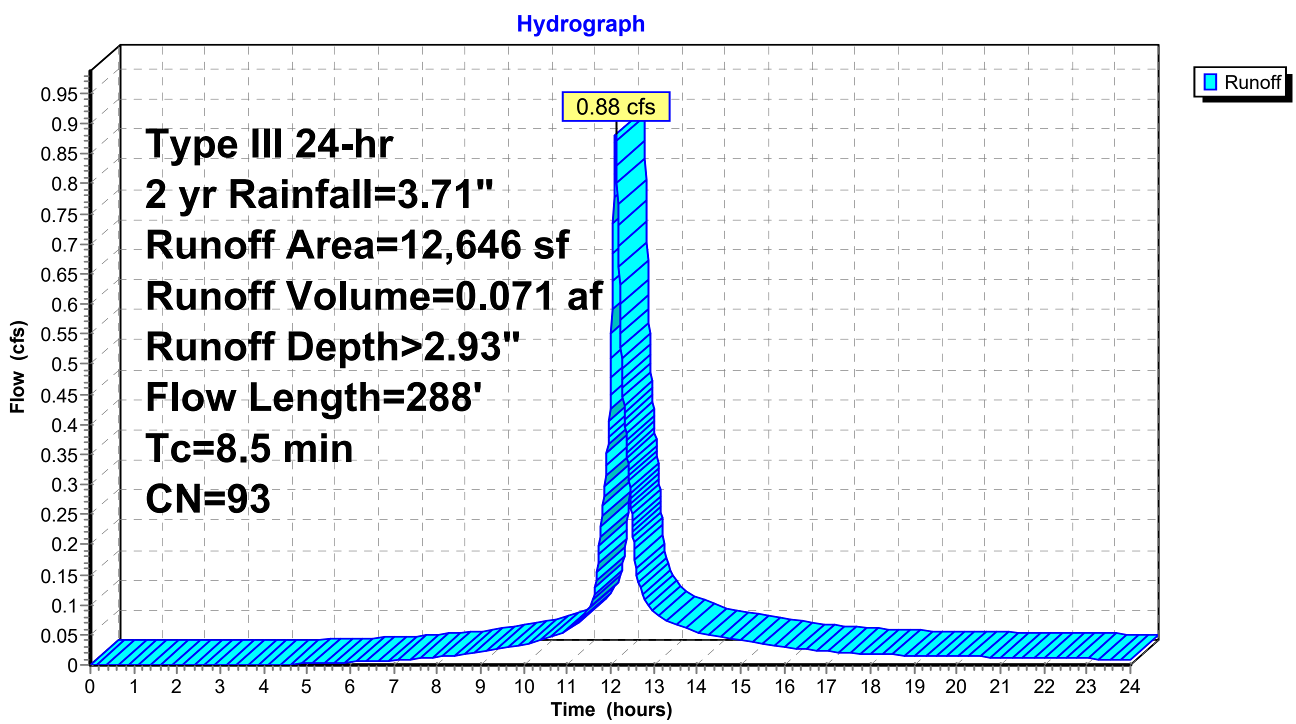
Runoff = 0.88 cfs @ 12.12 hrs, Volume= 0.071 af, Depth> 2.93"

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



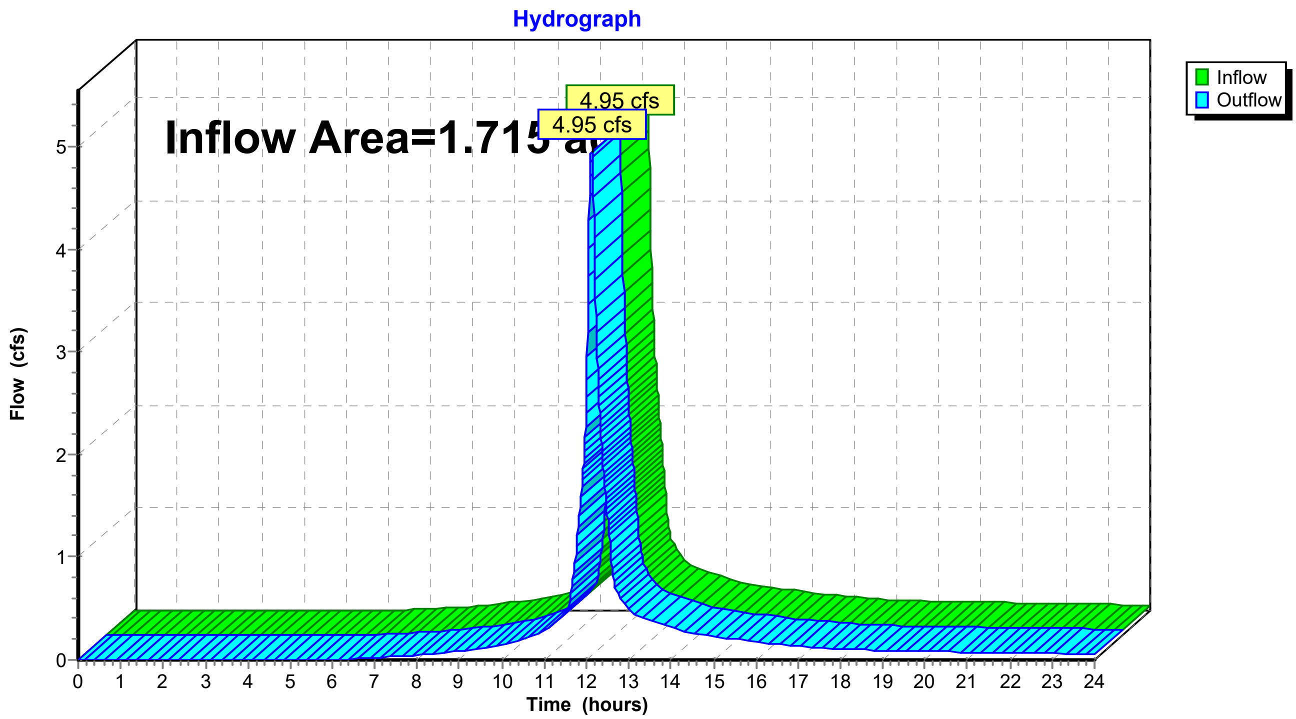
Summary for Reach AP 1: AP 1

[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



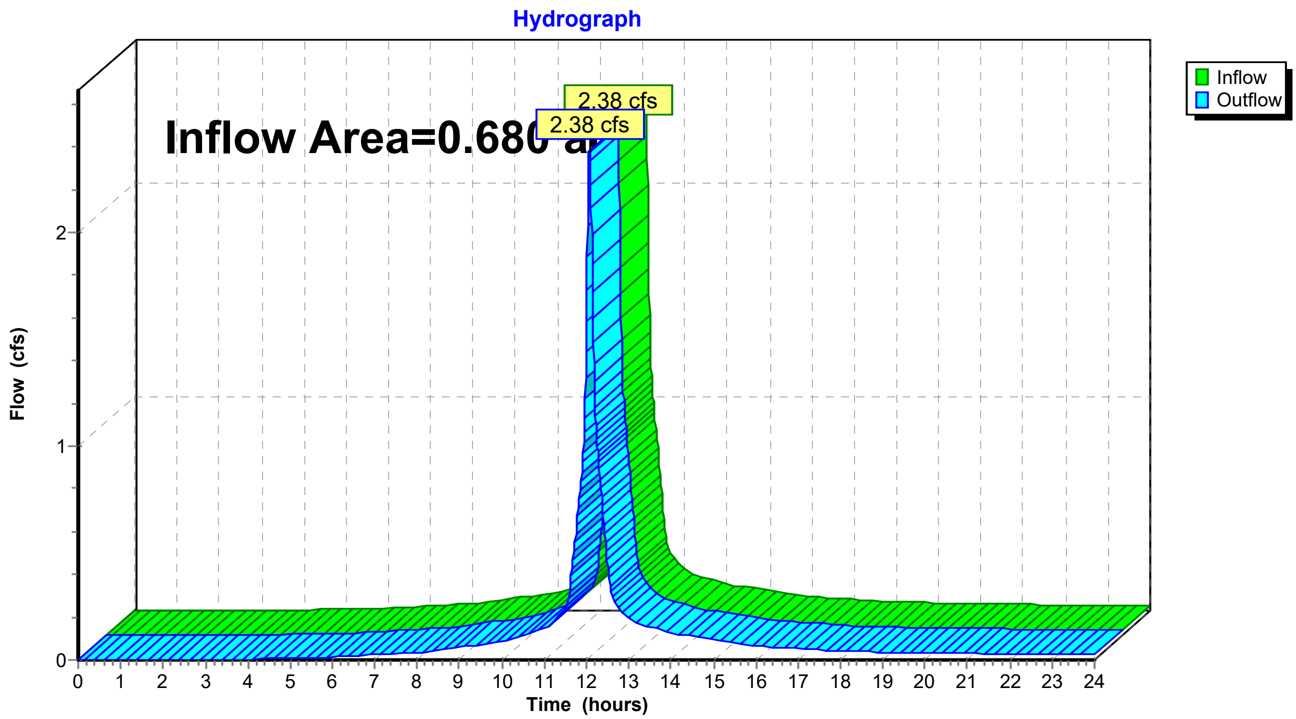
Summary for Reach AP2: AP2

[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)

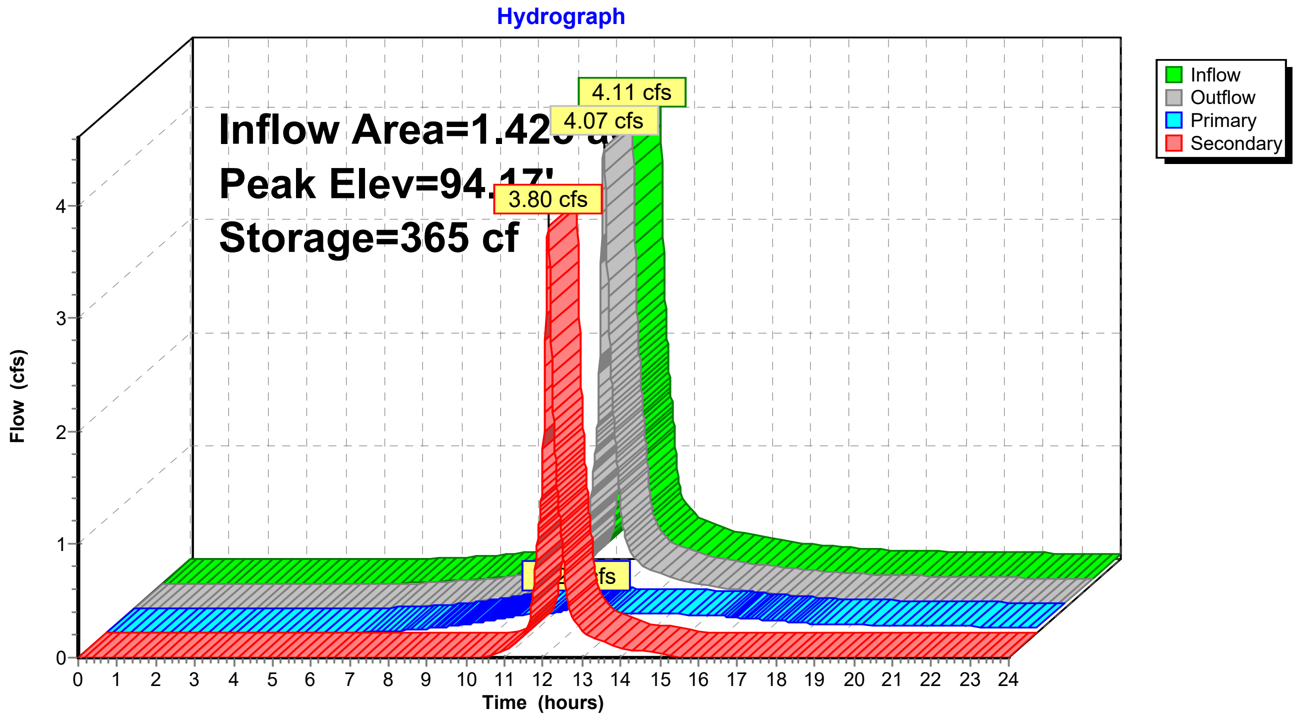
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

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=91.01' (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)

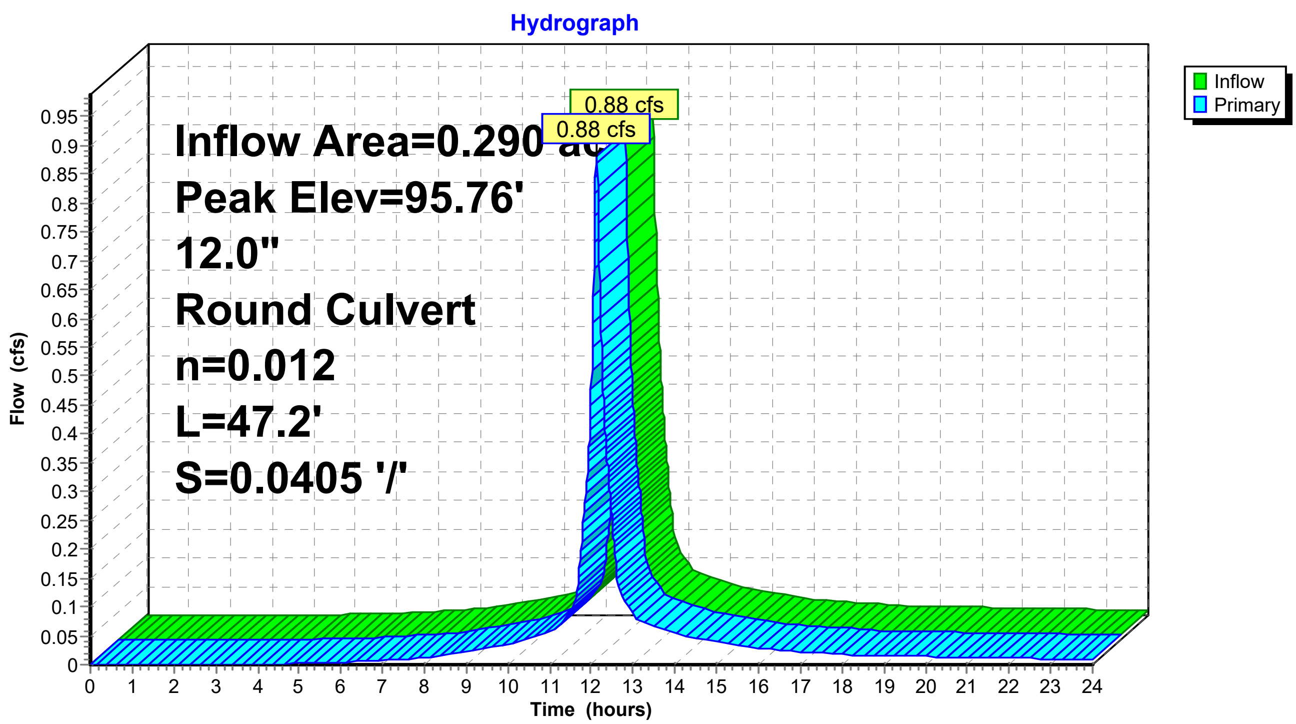
Inflow Area =	0.290 ac, 71.50% Impervious,	Inflow Depth > 2.93"	for 2 yr event	
Inflow =	0.88 cfs @	12.12 hrs, Volume=	0.071 af	
Outflow =	0.88 cfs @	12.12 hrs, Volume=	0.071 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.88 cfs @	12.12 hrs, Volume=	0.071 af	

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

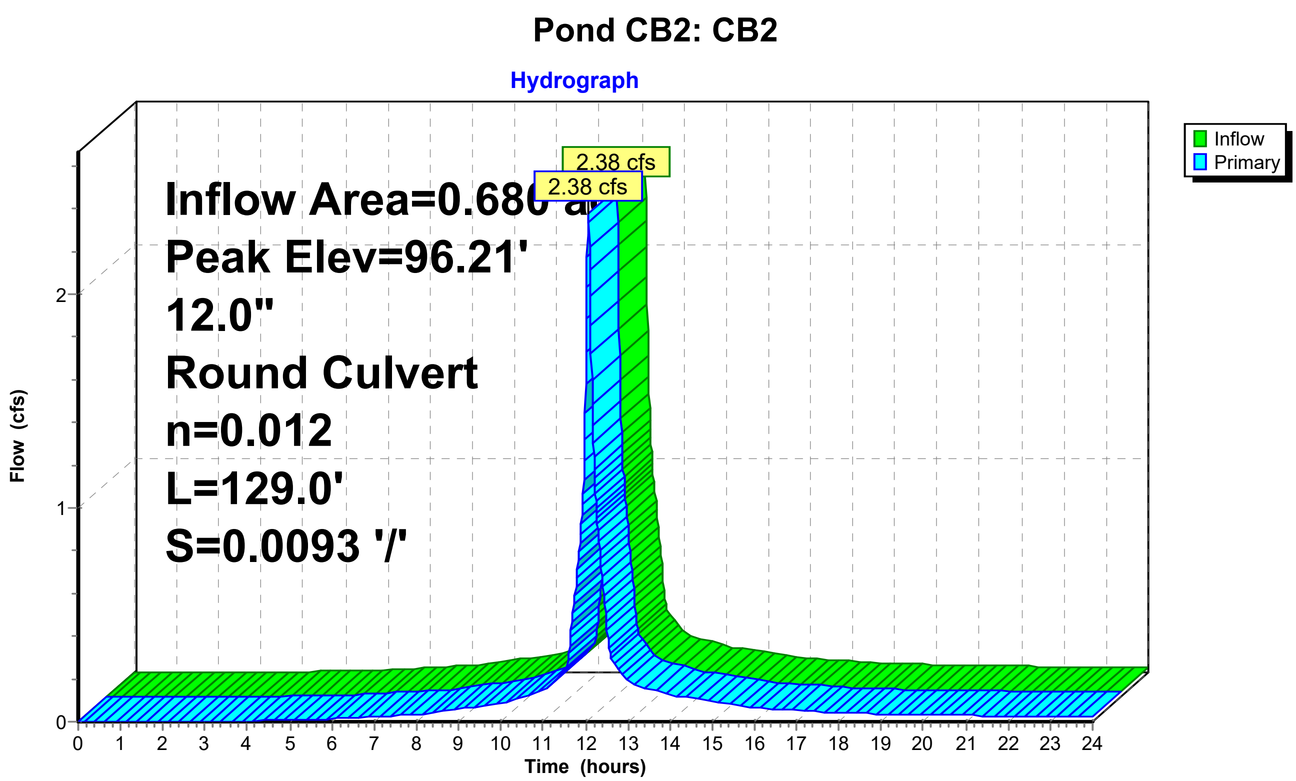
[57] Hint: Peaked at 96.21' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

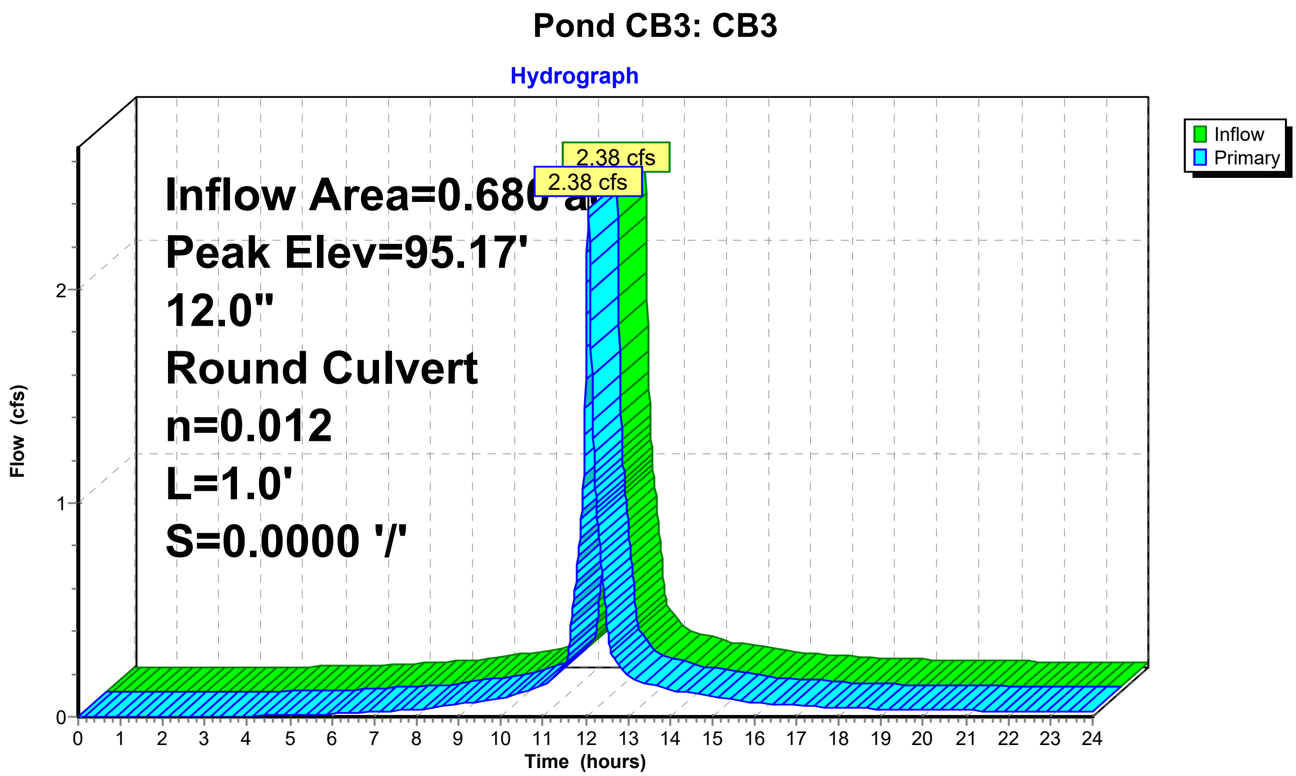
[57] Hint: Peaked at 95.17' (Flood elevation advised)

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)



Summary for Pond DMH1: DMH1

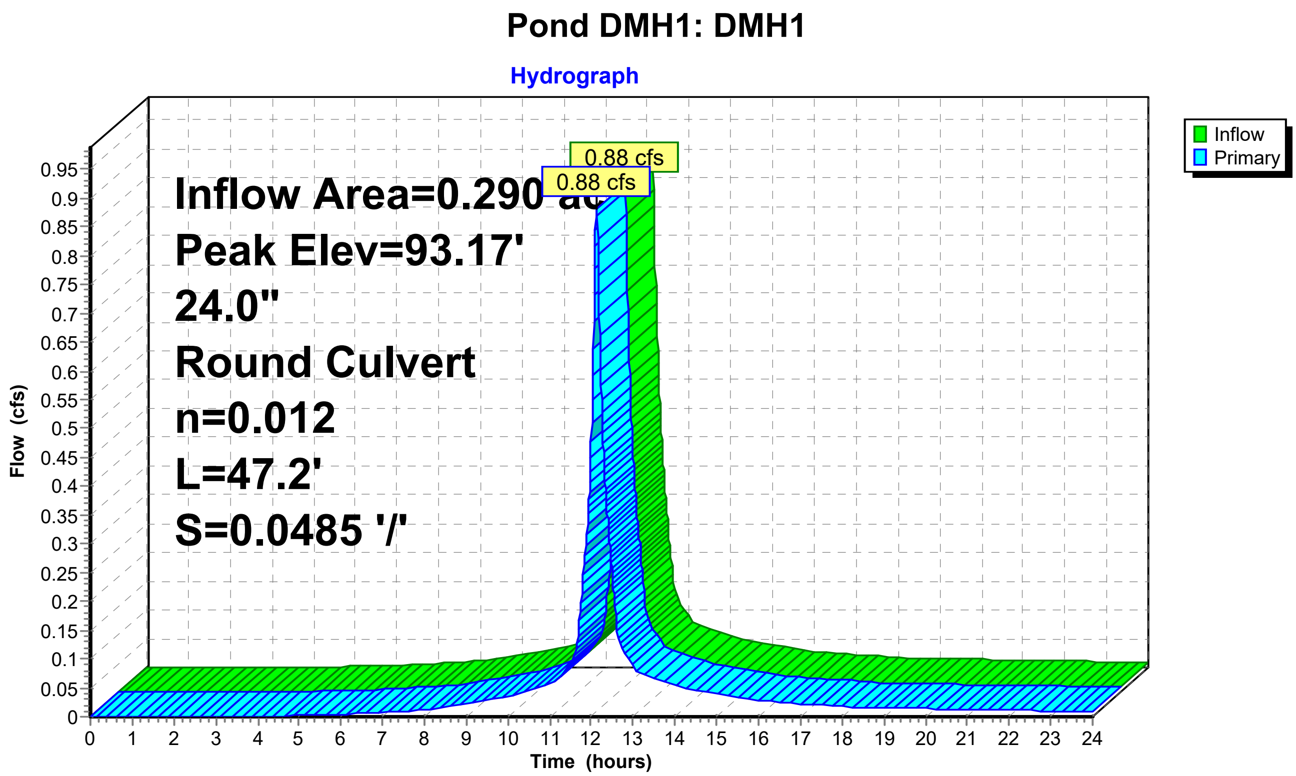
[57] Hint: Peaked at 93.17' (Flood elevation advised)

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=91.01' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.88 cfs @ 2.10 fps)



Summary for Pond DMH2: DMH2

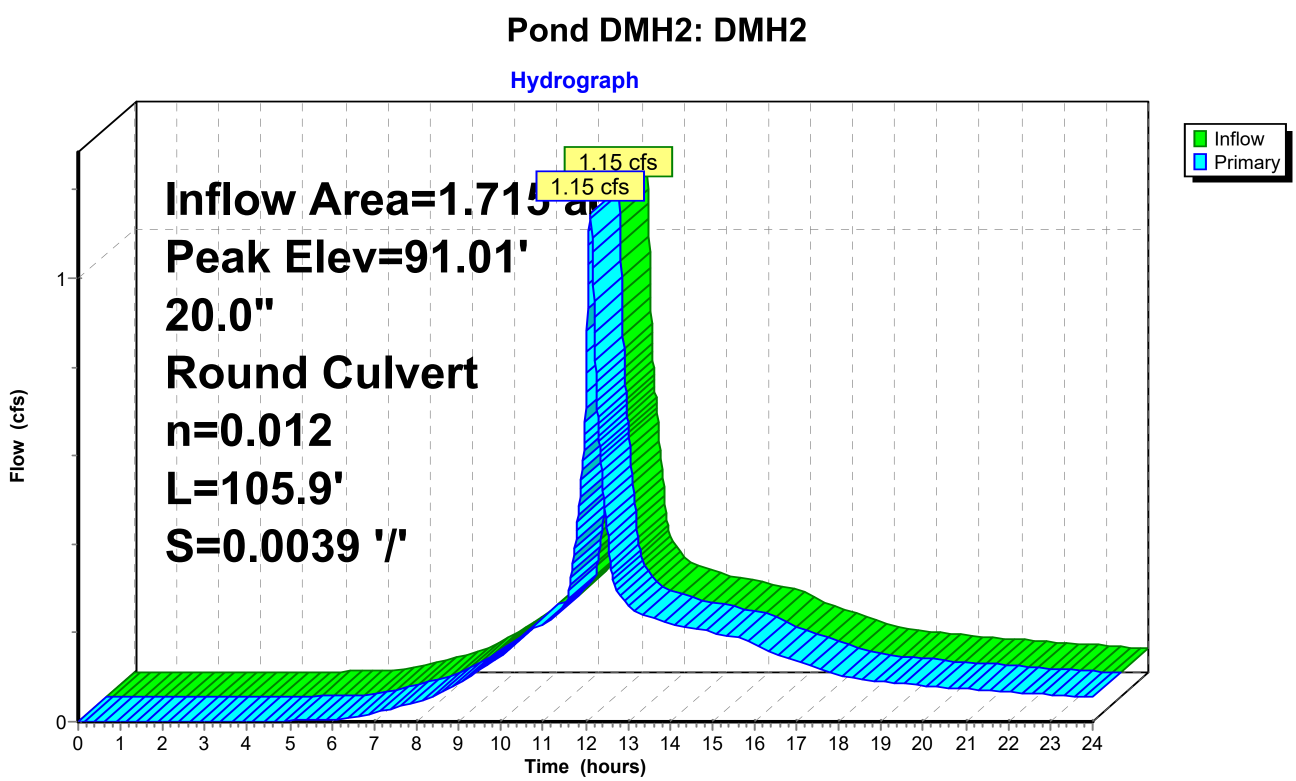
[57] Hint: Peaked at 91.01' (Flood elevation advised)

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= 91.01'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=1.15 cfs @ 12.12 hrs HW=91.01' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.15 cfs @ 2.79 fps)



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

Subcatchment 1S: 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

Subcatchment 2S: 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

Subcatchment 3S: 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=91.14' Inflow=1.71 cfs 0.317 af
20.0" 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

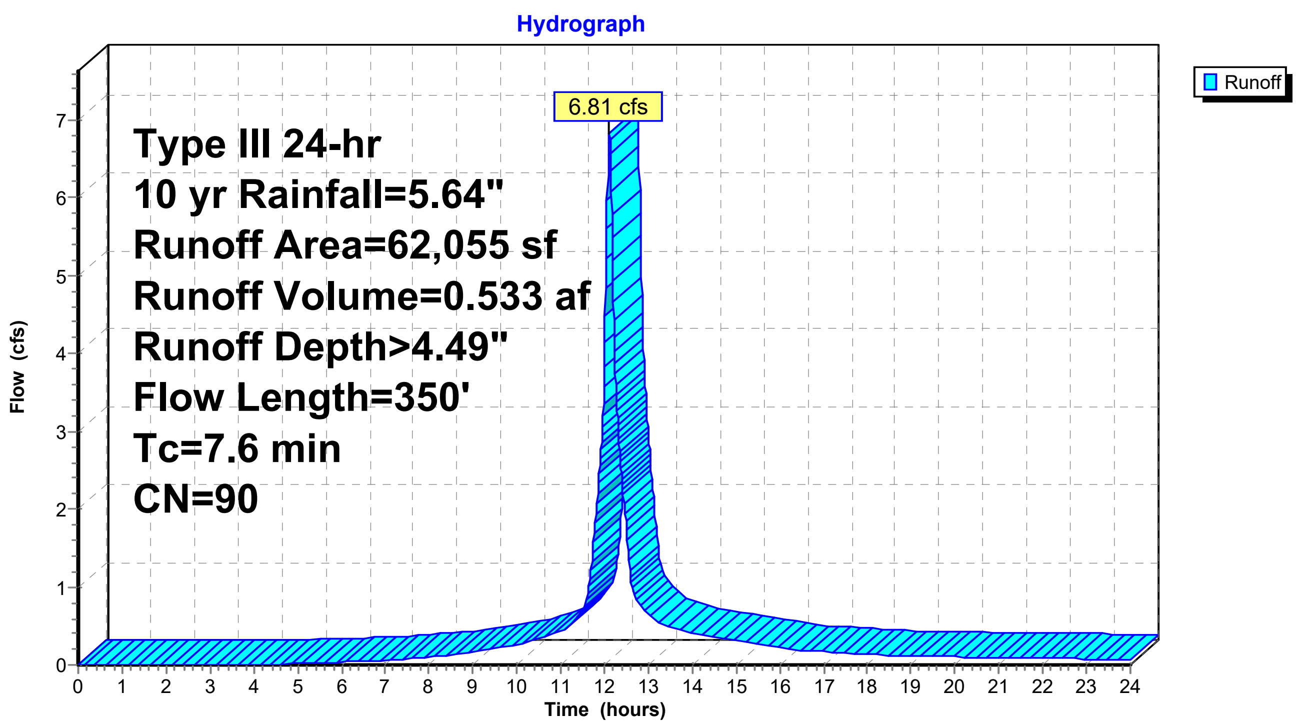
Runoff = 6.81 cfs @ 12.10 hrs, Volume= 0.533 af, Depth> 4.49"

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

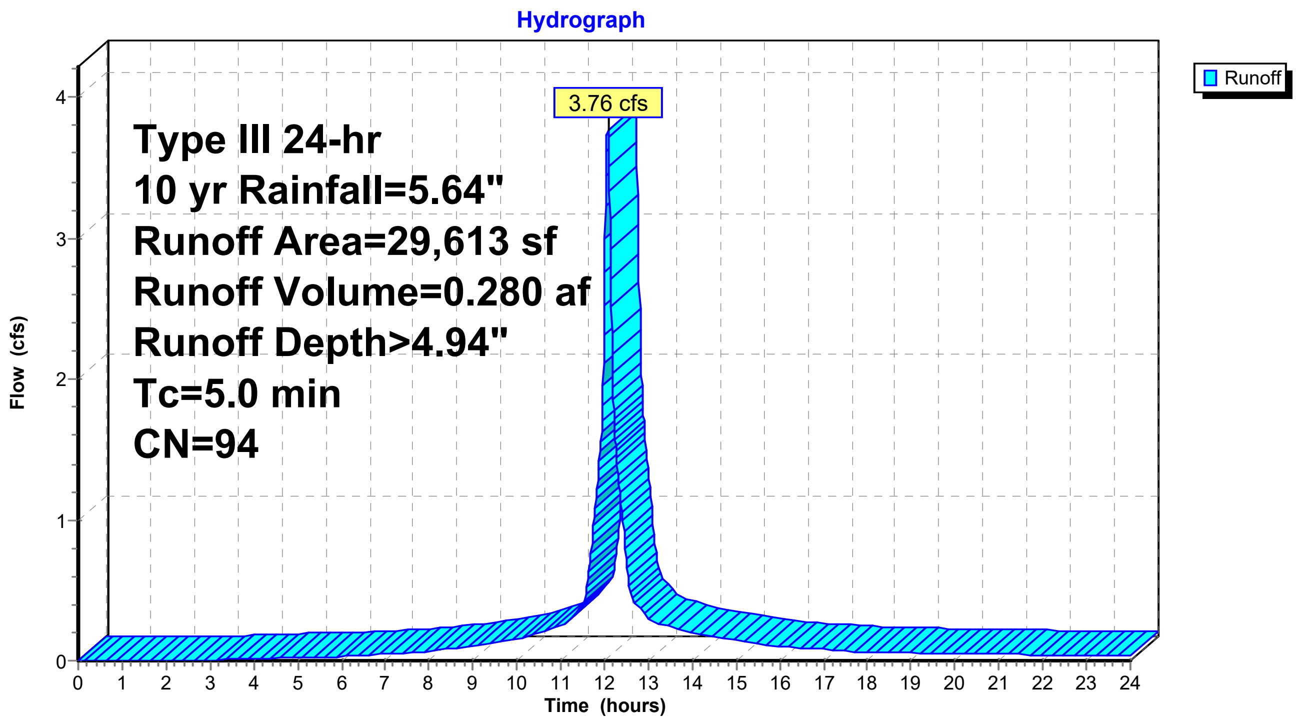
Runoff = 3.76 cfs @ 12.07 hrs, Volume= 0.280 af, Depth> 4.94"

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

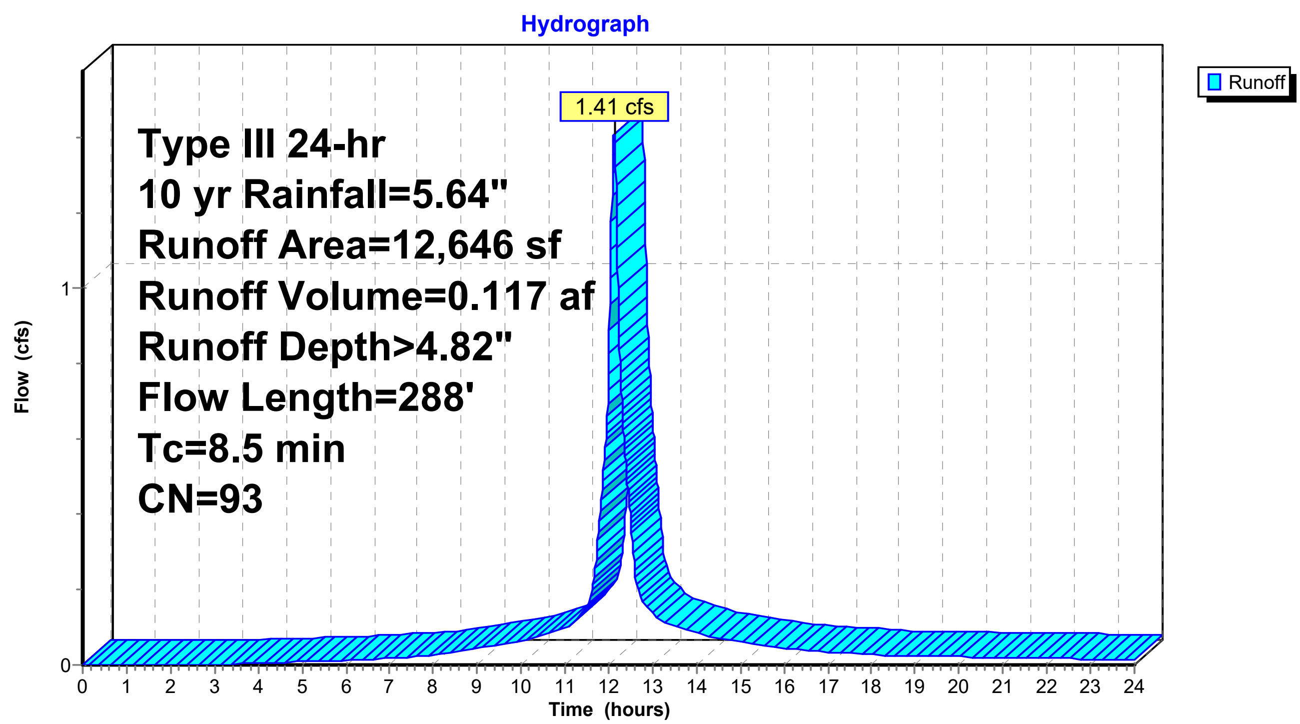
Runoff = 1.41 cfs @ 12.12 hrs, Volume= 0.117 af, Depth> 4.82"

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

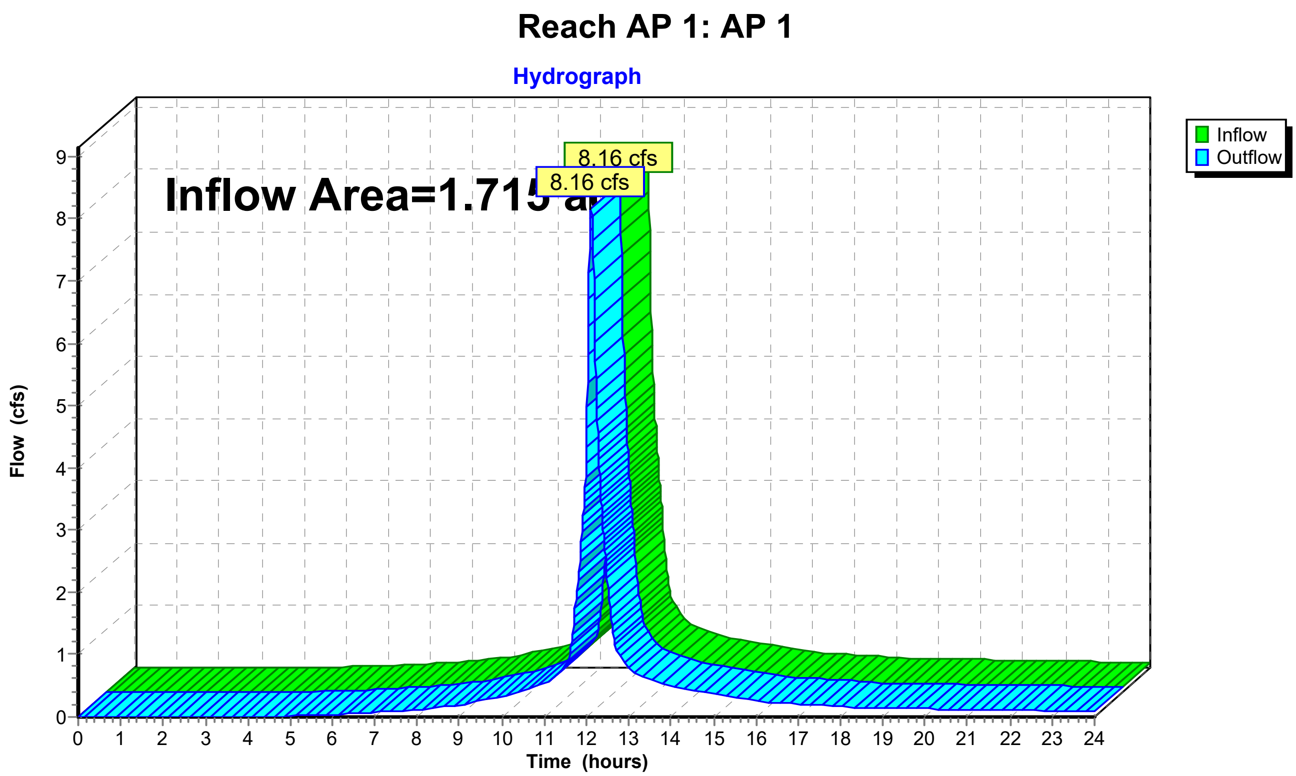


Summary for Reach AP 1: AP 1

[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



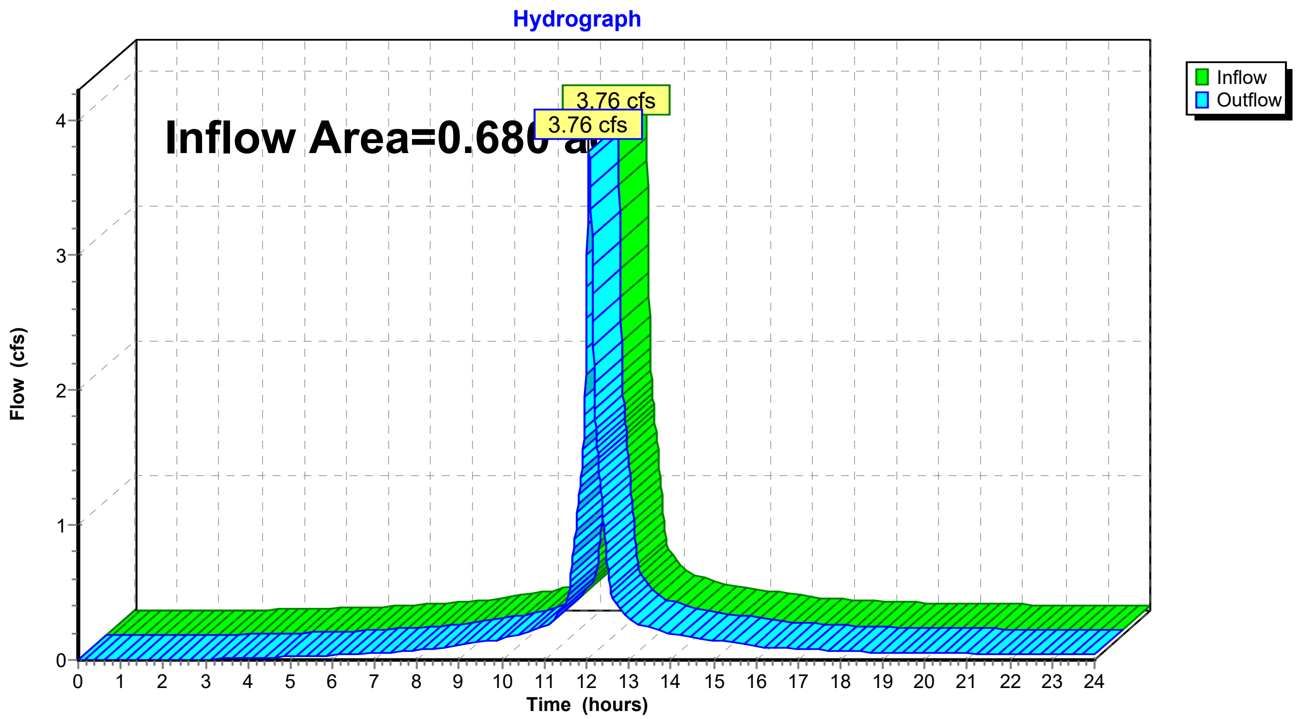
Summary for Reach AP2: AP2

[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)

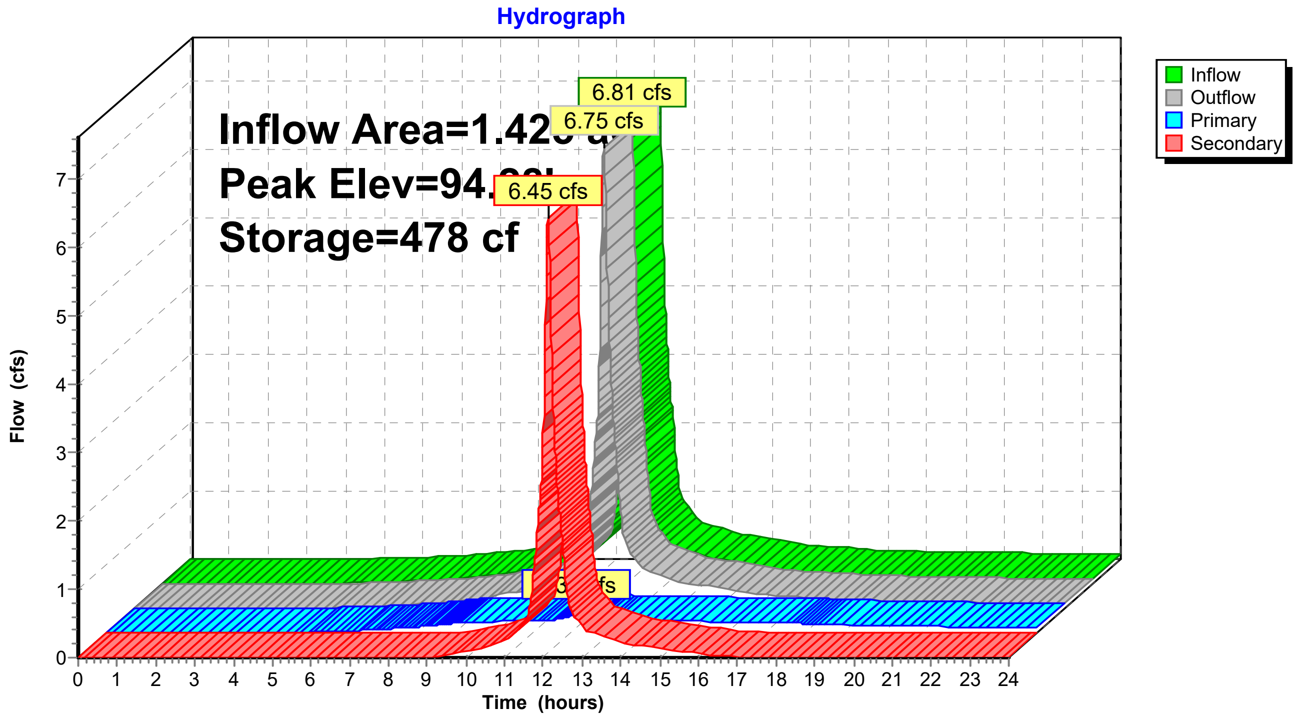
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

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=91.14' (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

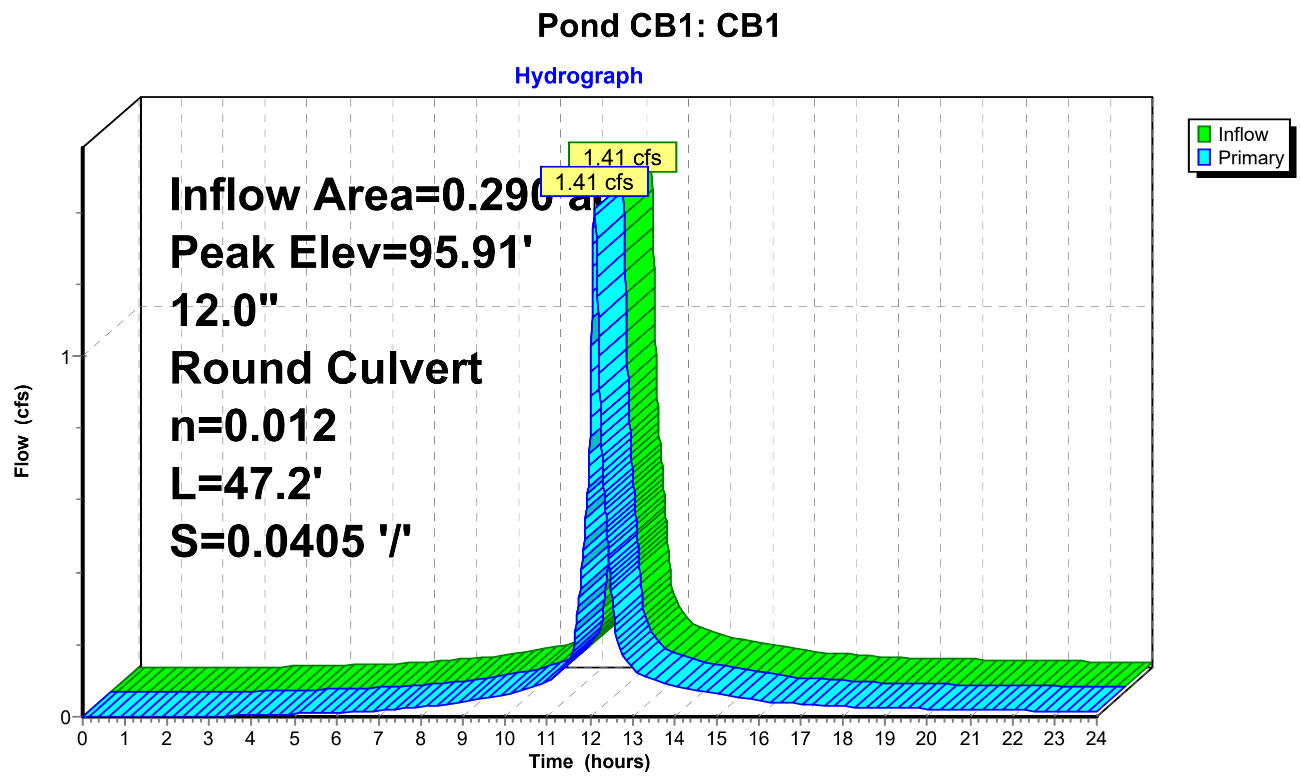
[57] Hint: Peaked at 95.91' (Flood elevation advised)

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)



Summary for Pond CB2: CB2

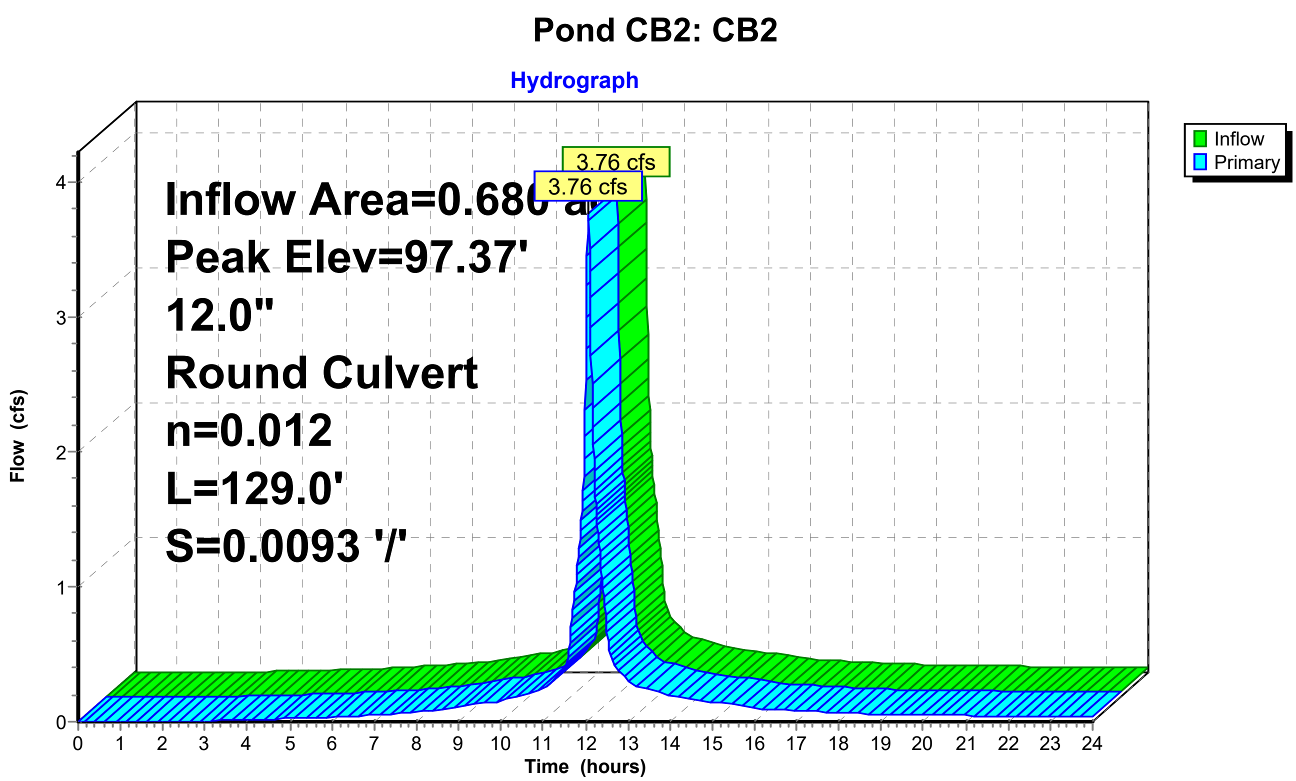
[57] Hint: Peaked at 97.37' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

[57] Hint: Peaked at 95.60' (Flood elevation advised)

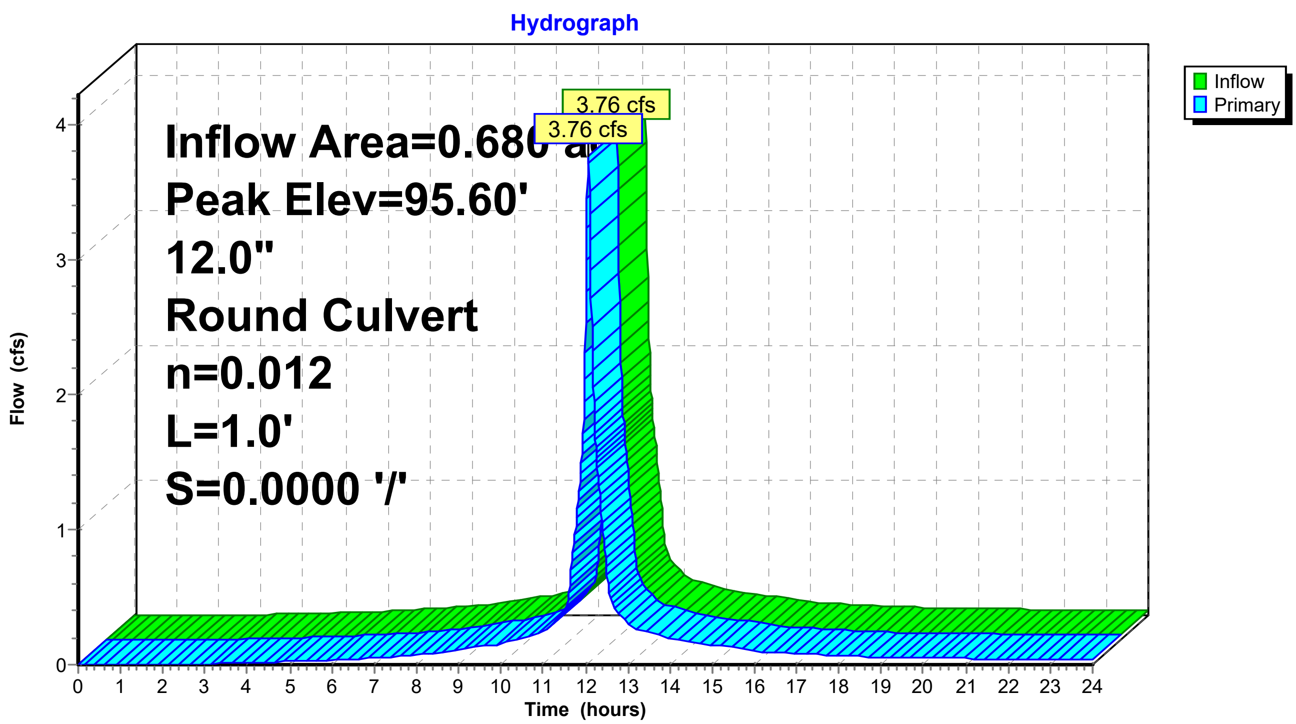
Inflow Area =	0.680 ac,	83.41% Impervious,	Inflow Depth > 4.94"	for 10 yr event	
Inflow =	3.76 cfs @	12.07 hrs,	Volume=	0.280 af	
Outflow =	3.76 cfs @	12.07 hrs,	Volume=	0.280 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.76 cfs @	12.07 hrs,	Volume=	0.280 af	

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

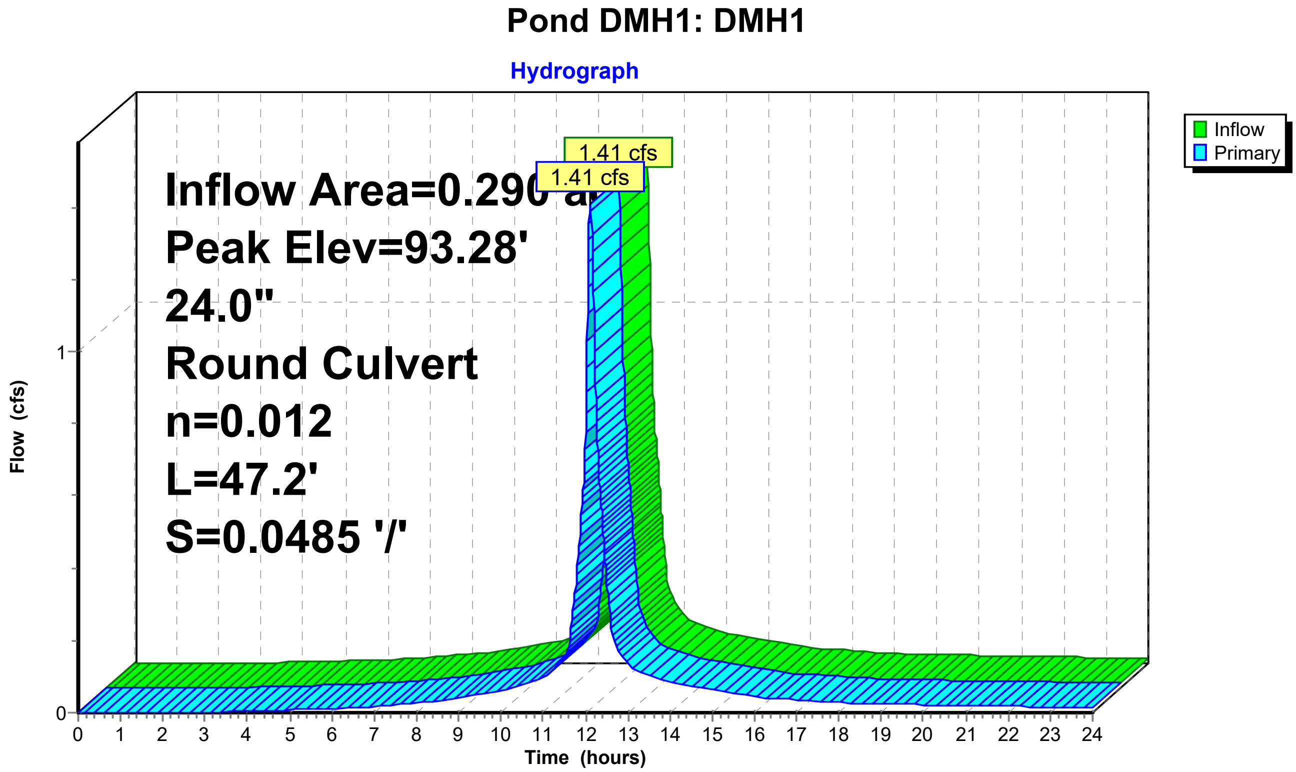
[57] Hint: Peaked at 93.28' (Flood elevation advised)

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=91.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.41 cfs @ 2.38 fps)



Summary for Pond DMH2: DMH2

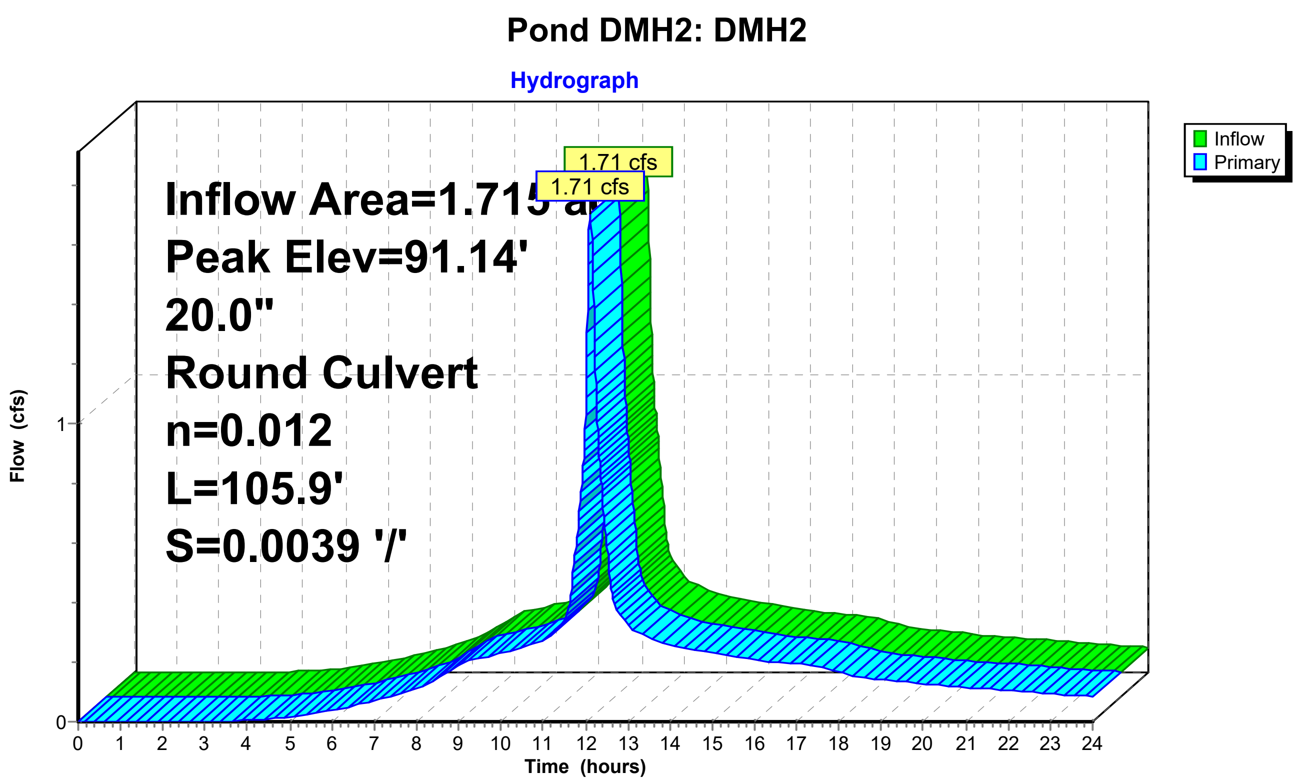
[57] Hint: Peaked at 91.14' (Flood elevation advised)

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= 91.14'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=1.71 cfs @ 12.12 hrs HW=91.14' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.71 cfs @ 3.10 fps)



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

Subcatchment 1S: 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

Subcatchment 2S: 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

Subcatchment 3S: 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=91.22' Inflow=2.14 cfs 0.385 af
20.0" 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

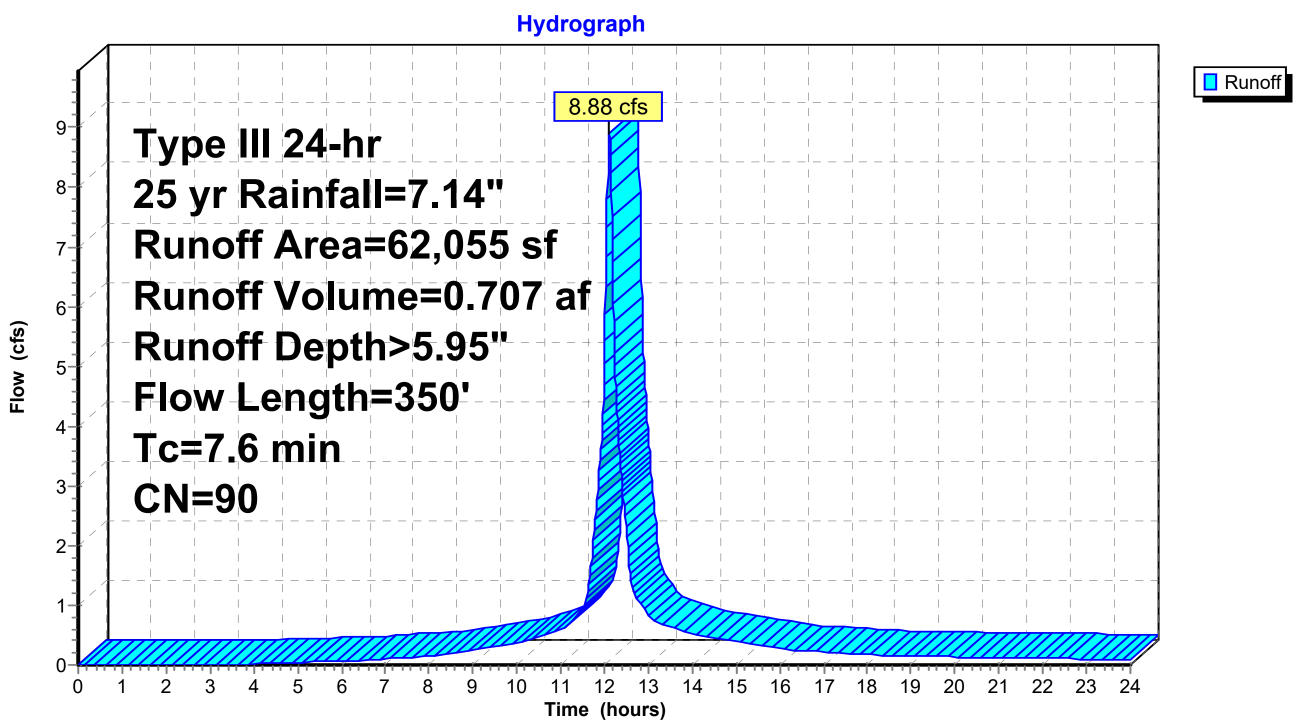
Runoff = 8.88 cfs @ 12.10 hrs, Volume= 0.707 af, Depth> 5.95"

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

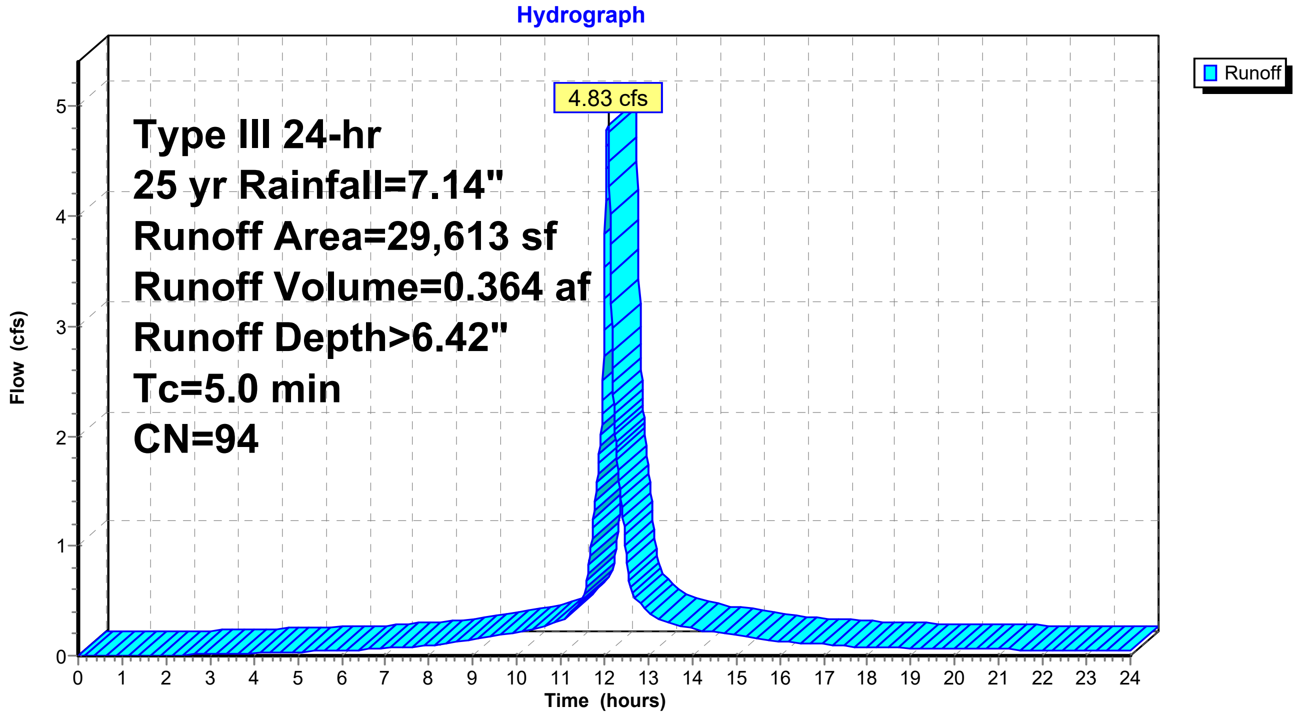
Runoff = 4.83 cfs @ 12.07 hrs, Volume= 0.364 af, Depth> 6.42"

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

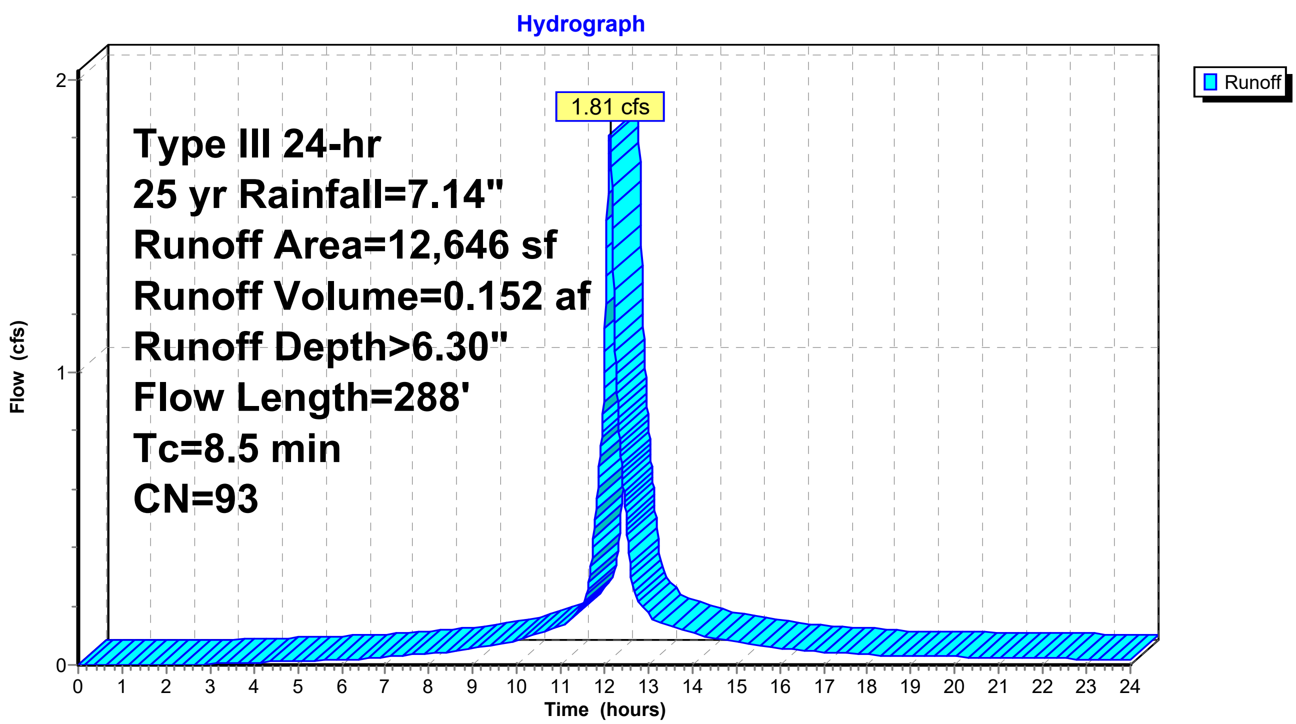
Runoff = 1.81 cfs @ 12.12 hrs, Volume= 0.152 af, Depth> 6.30"

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



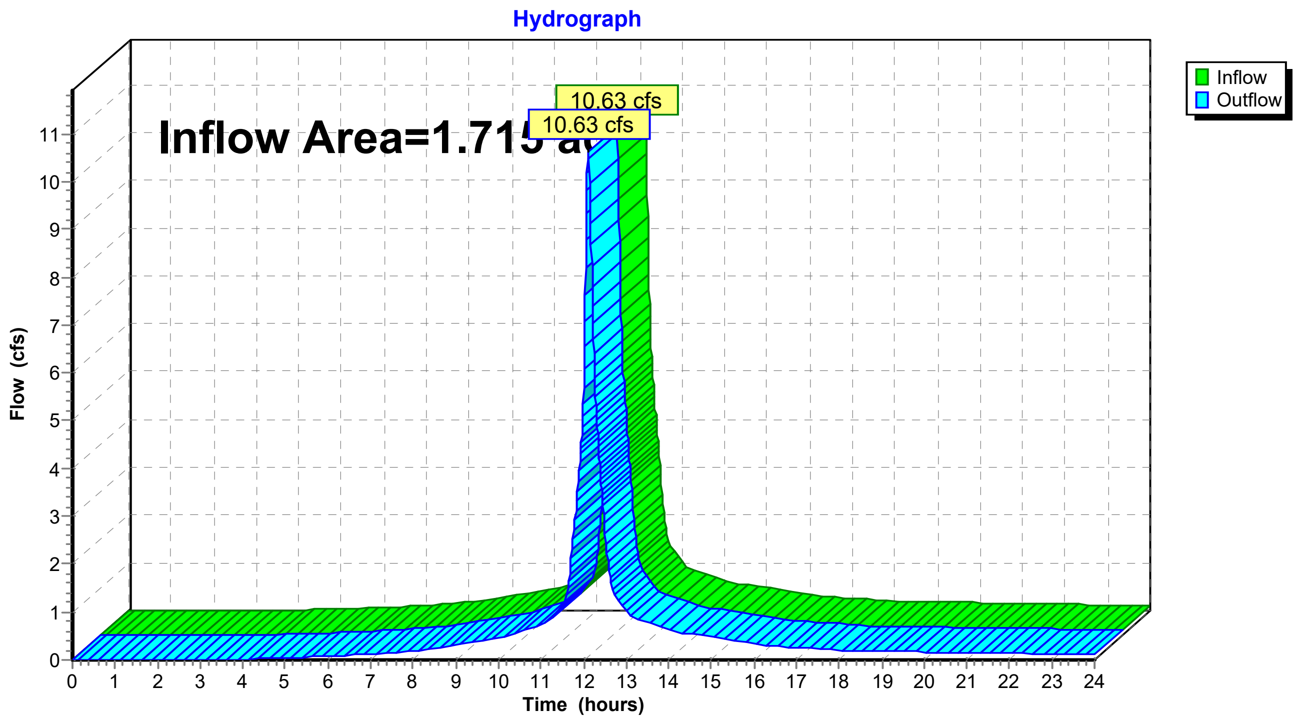
Summary for Reach AP 1: AP 1

[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



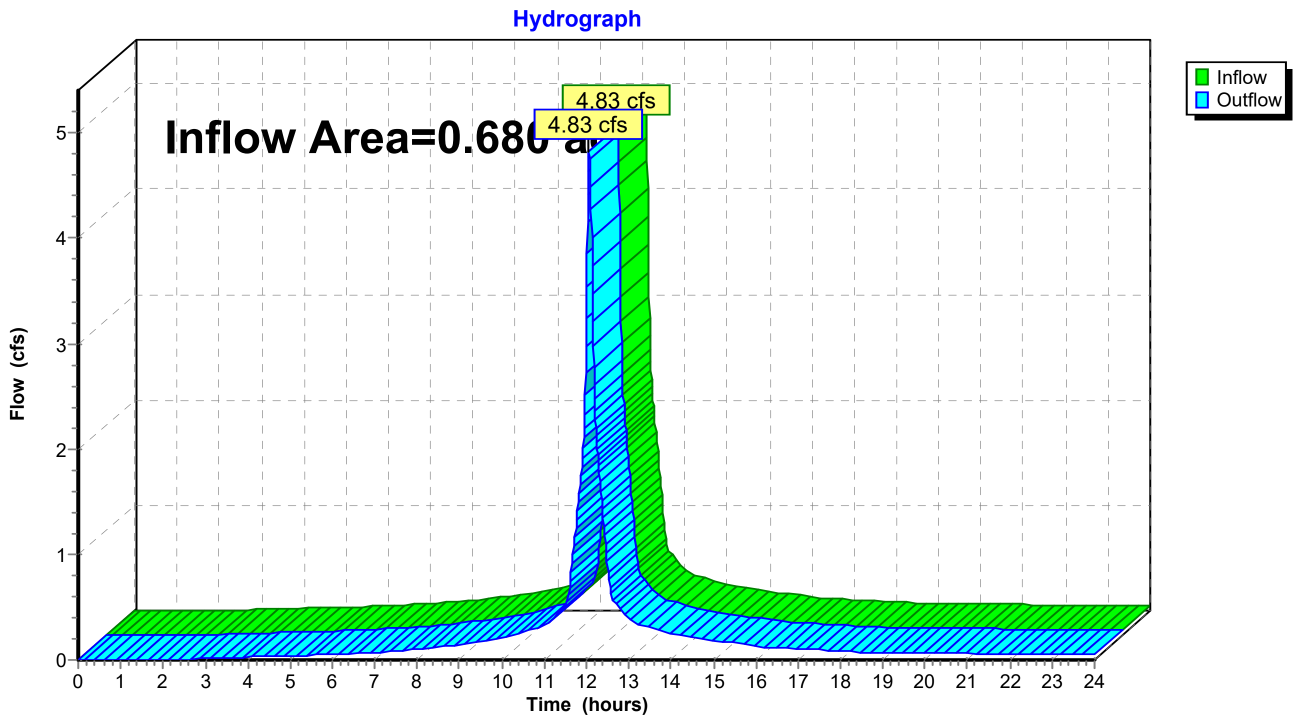
Summary for Reach AP2: AP2

[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)

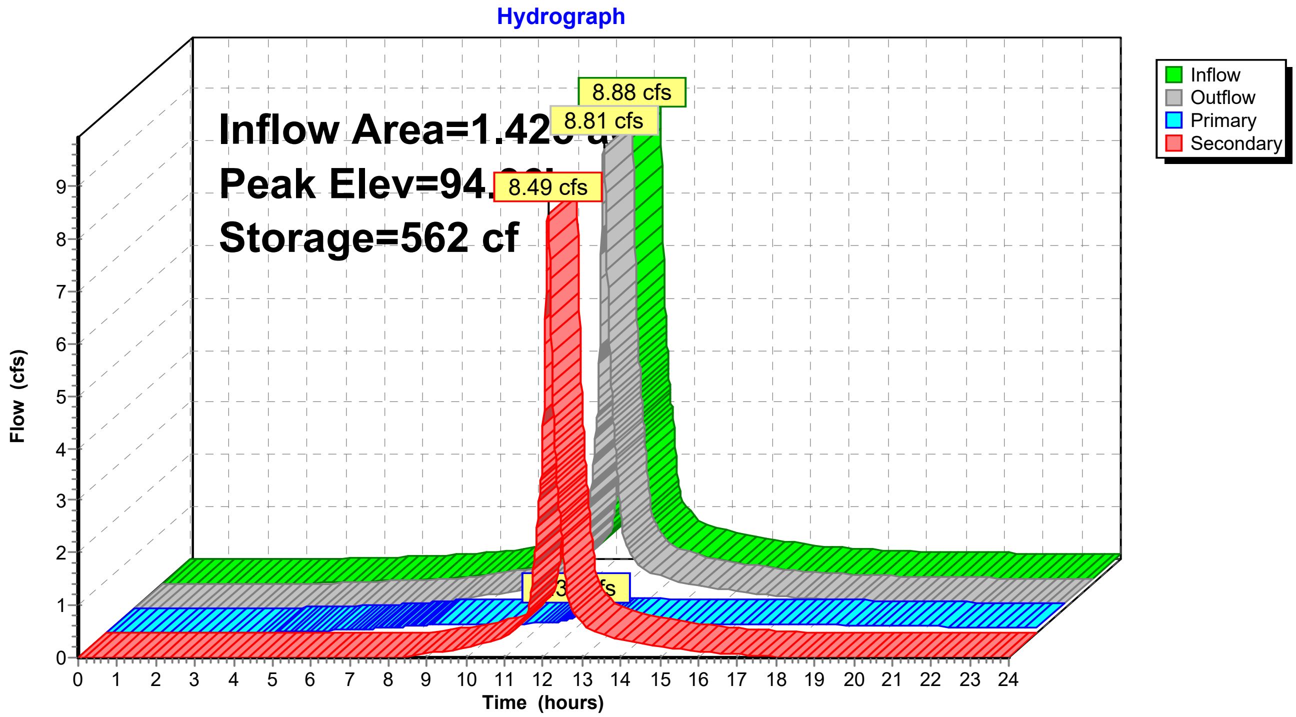
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

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=91.22' (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)

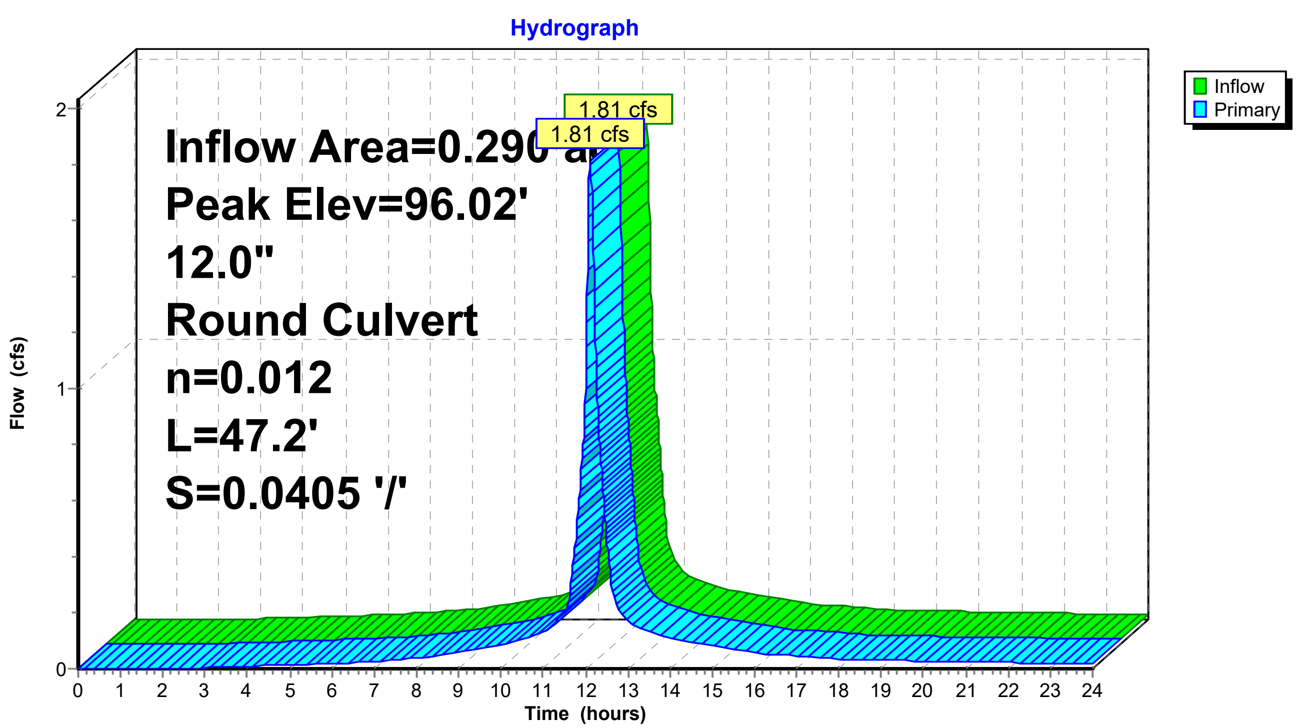
Inflow Area =	0.290 ac, 71.50% Impervious,	Inflow Depth > 6.30"	for 25 yr event	
Inflow =	1.81 cfs @	12.12 hrs, Volume=	0.152 af	
Outflow =	1.81 cfs @	12.12 hrs, Volume=	0.152 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.81 cfs @	12.12 hrs, Volume=	0.152 af	

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

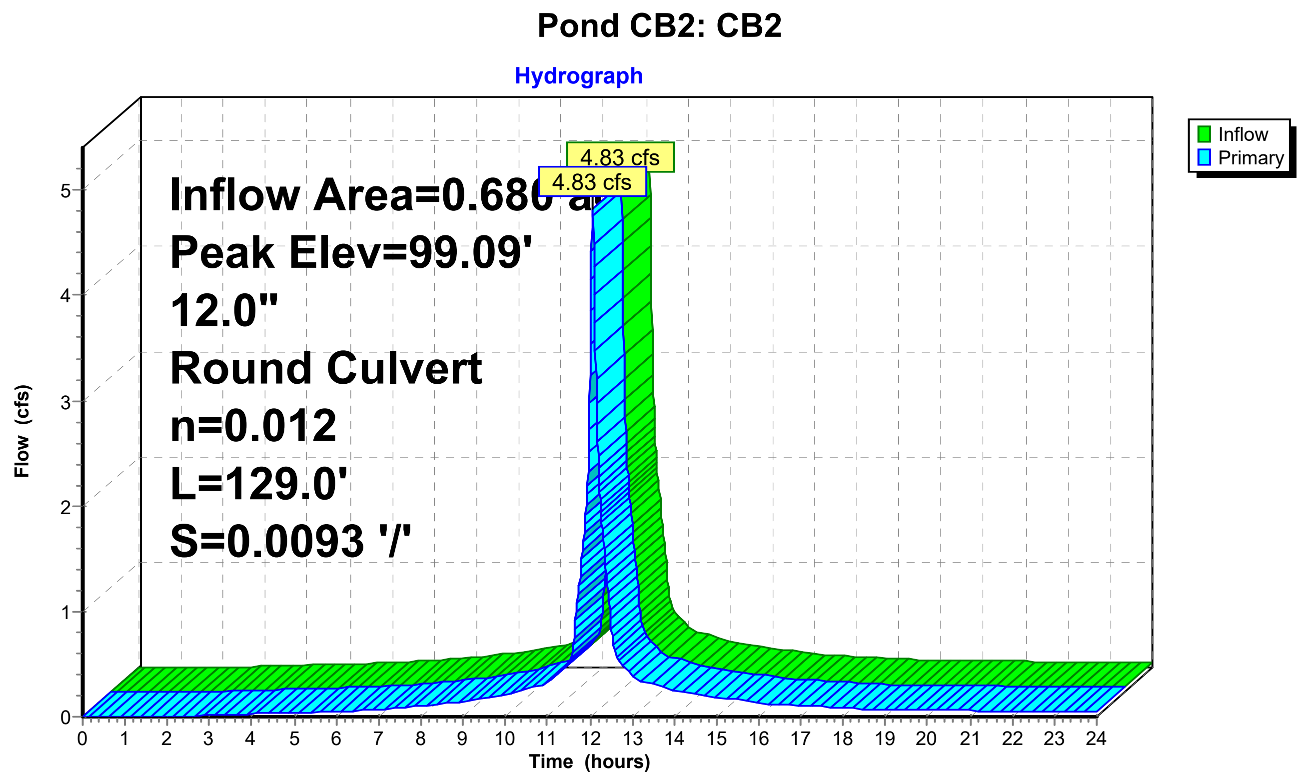
[57] Hint: Peaked at 99.09' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

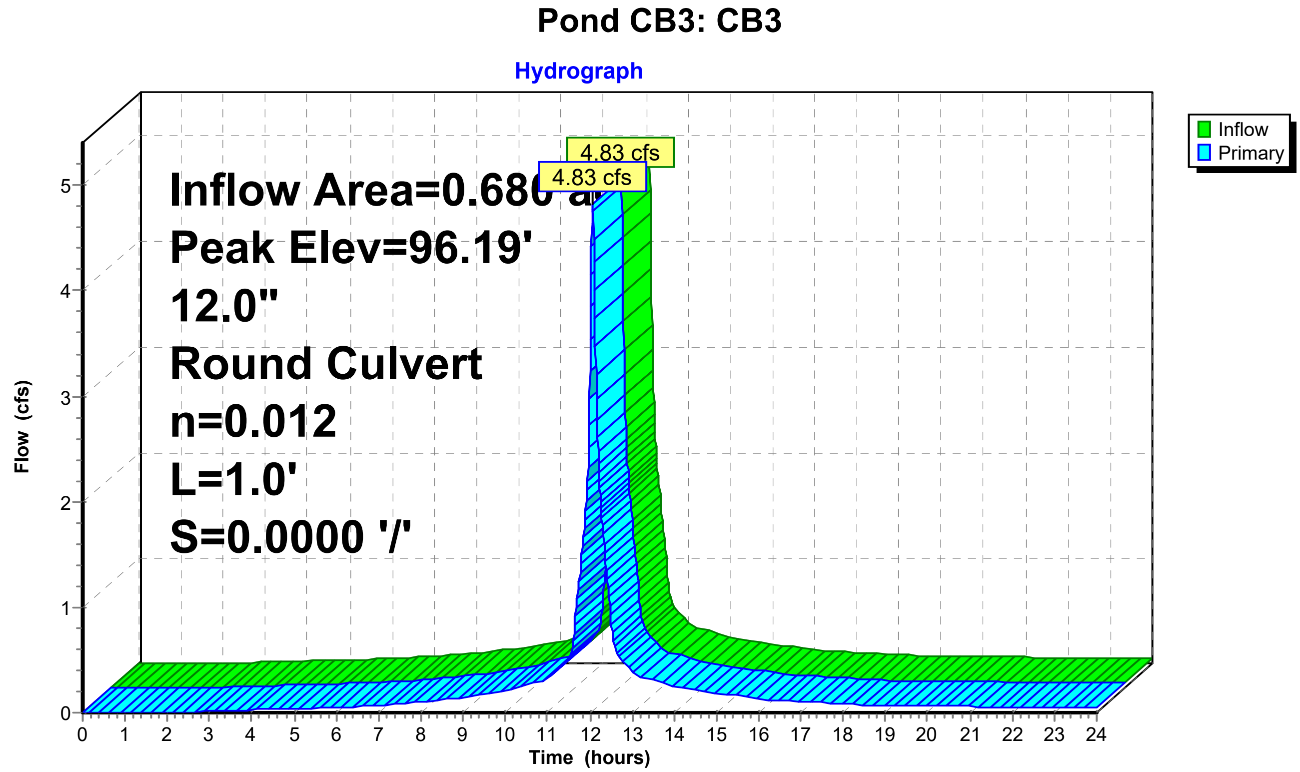
[57] Hint: Peaked at 96.19' (Flood elevation advised)

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)



Summary for Pond DMH1: DMH1

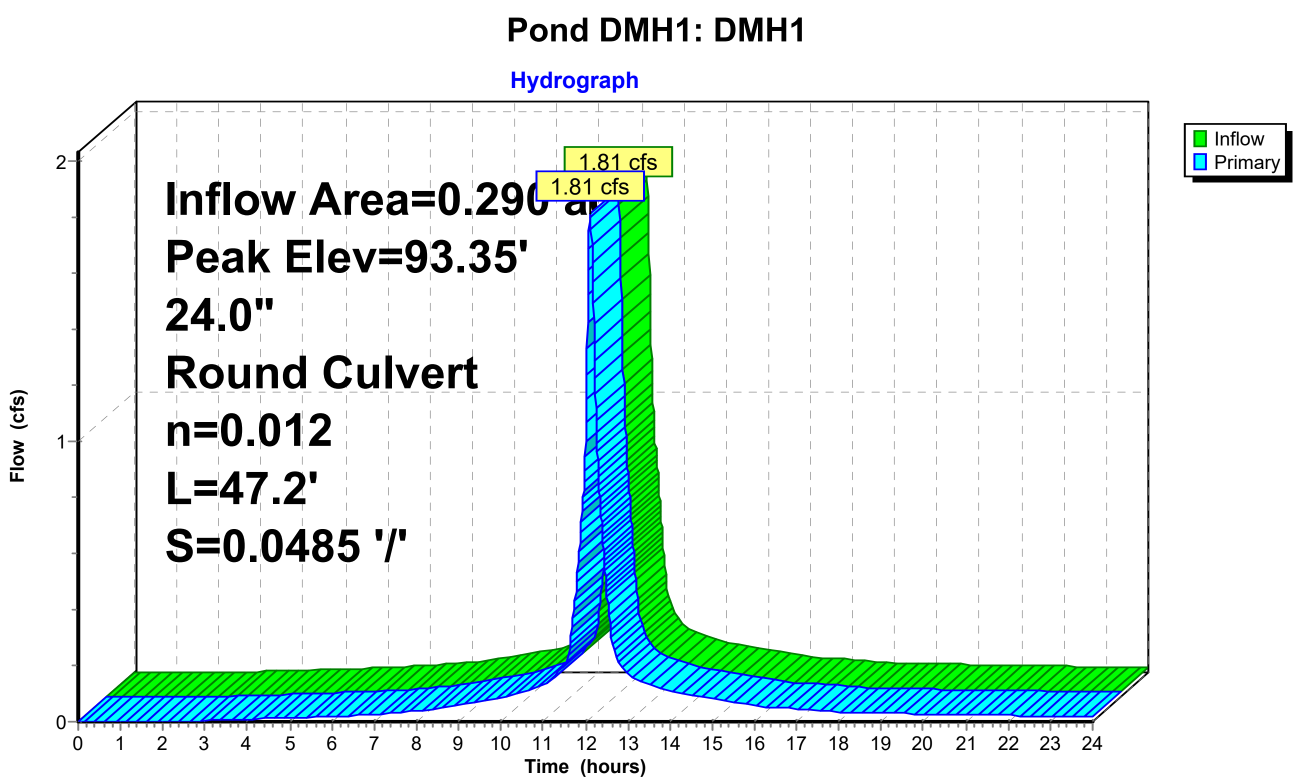
[57] Hint: Peaked at 93.35' (Flood elevation advised)

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=91.22' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.81 cfs @ 2.54 fps)



Summary for Pond DMH2: DMH2

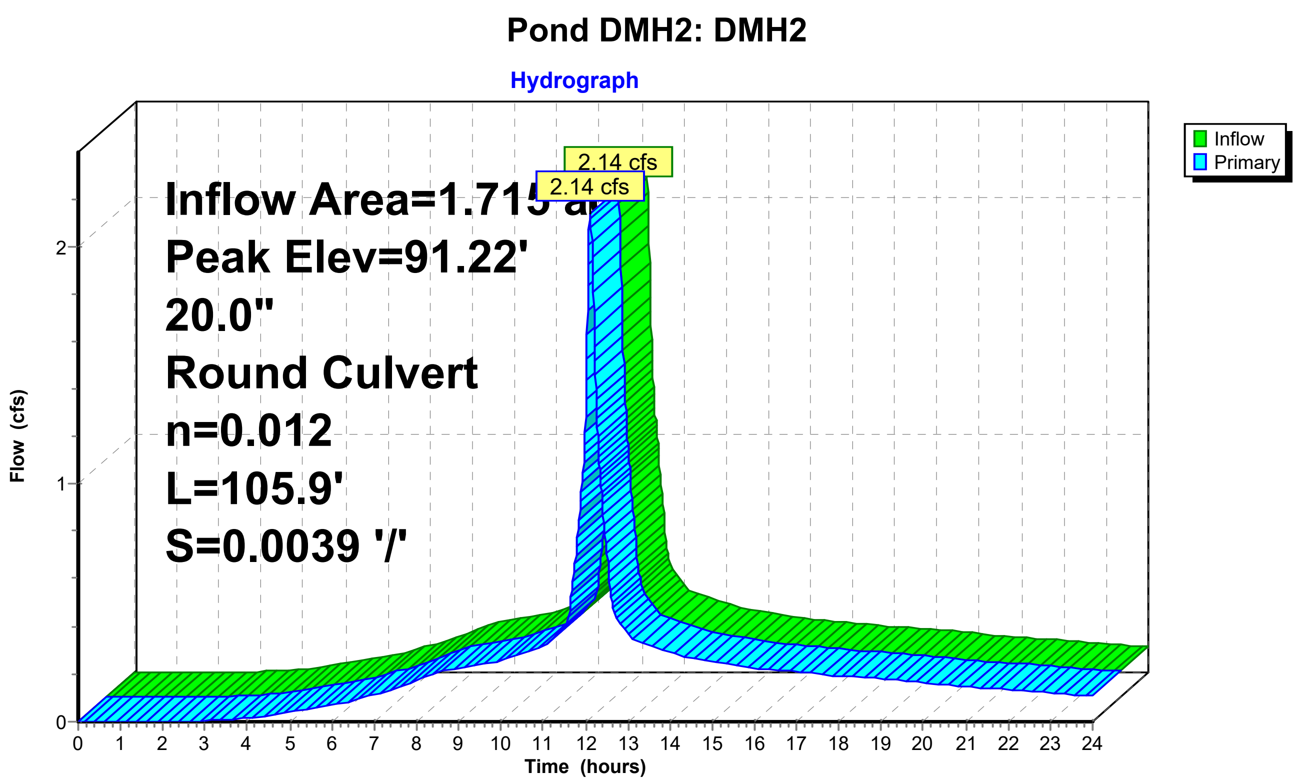
[57] Hint: Peaked at 91.22' (Flood elevation advised)

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= 91.22'@ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=2.14 cfs @ 12.12 hrs HW=91.22' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.14 cfs @ 3.28 fps)



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=91.30' Inflow=2.54 cfs 0.443 af
20.0" 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

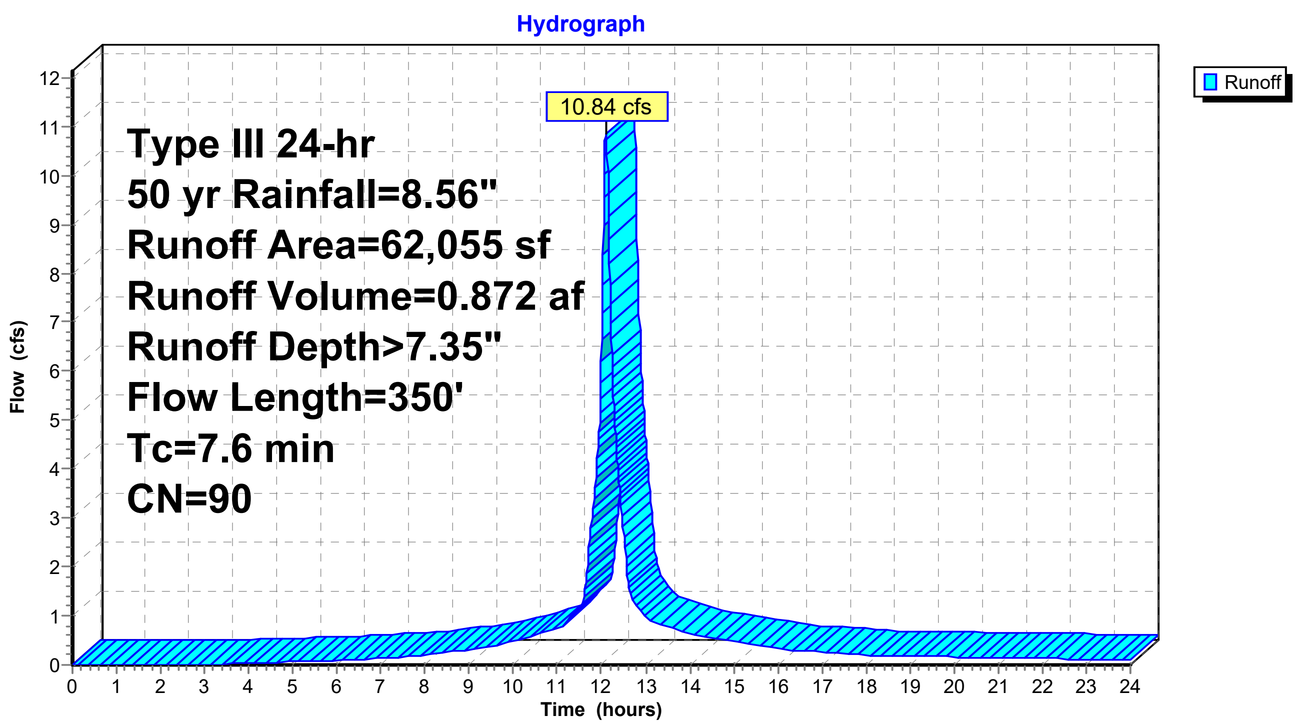
Runoff = 10.84 cfs @ 12.10 hrs, Volume= 0.872 af, Depth> 7.35"

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

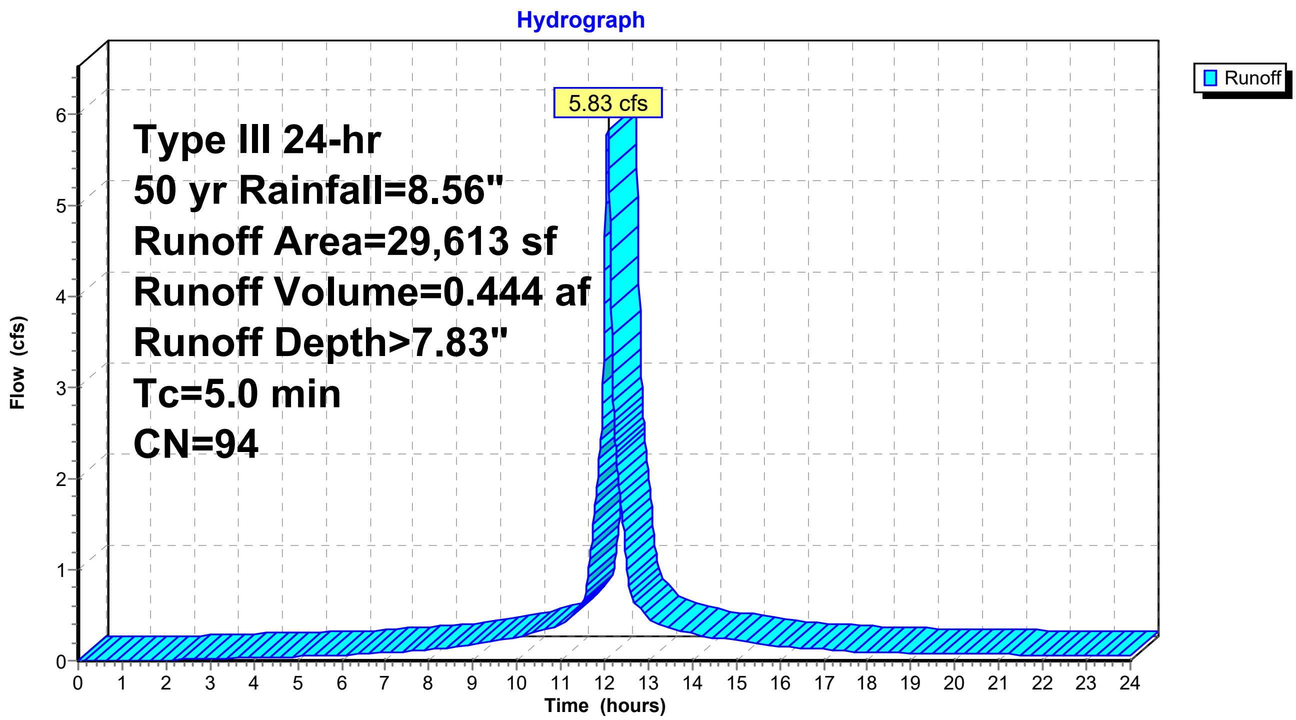
Runoff = 5.83 cfs @ 12.07 hrs, Volume= 0.444 af, Depth> 7.83"

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

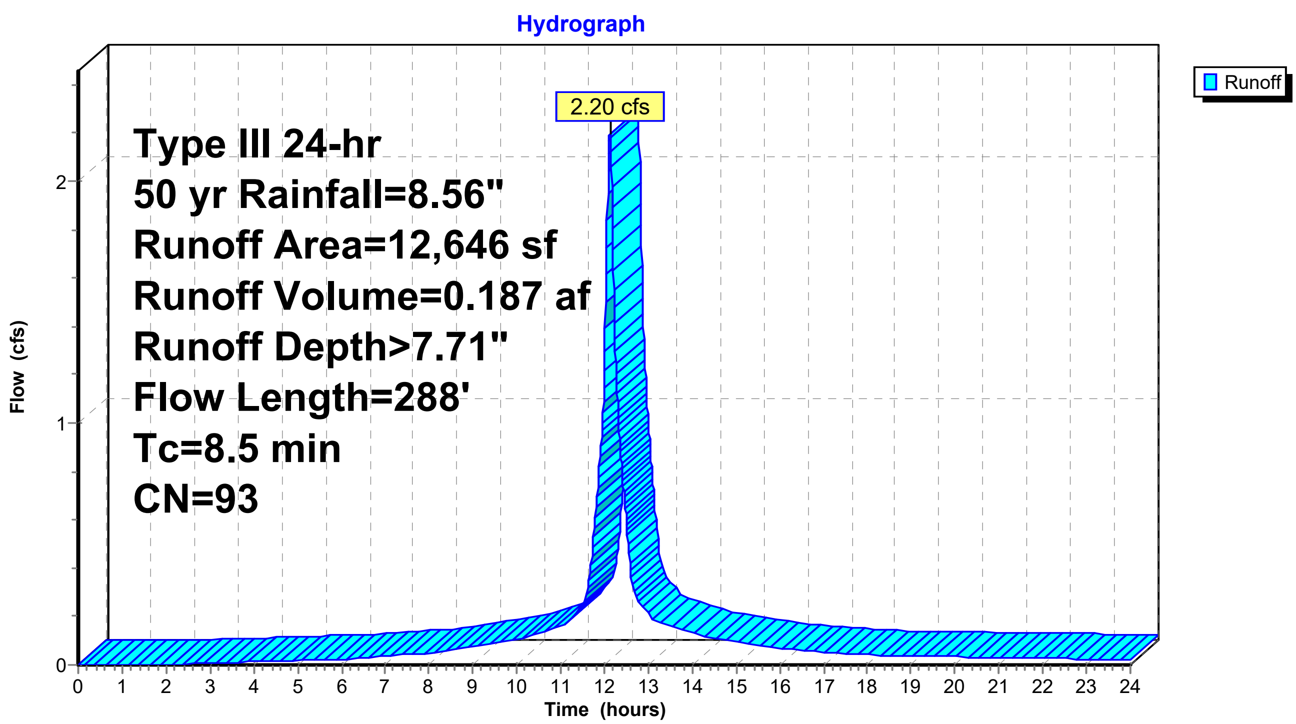
Runoff = 2.20 cfs @ 12.12 hrs, Volume= 0.187 af, Depth> 7.71"

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



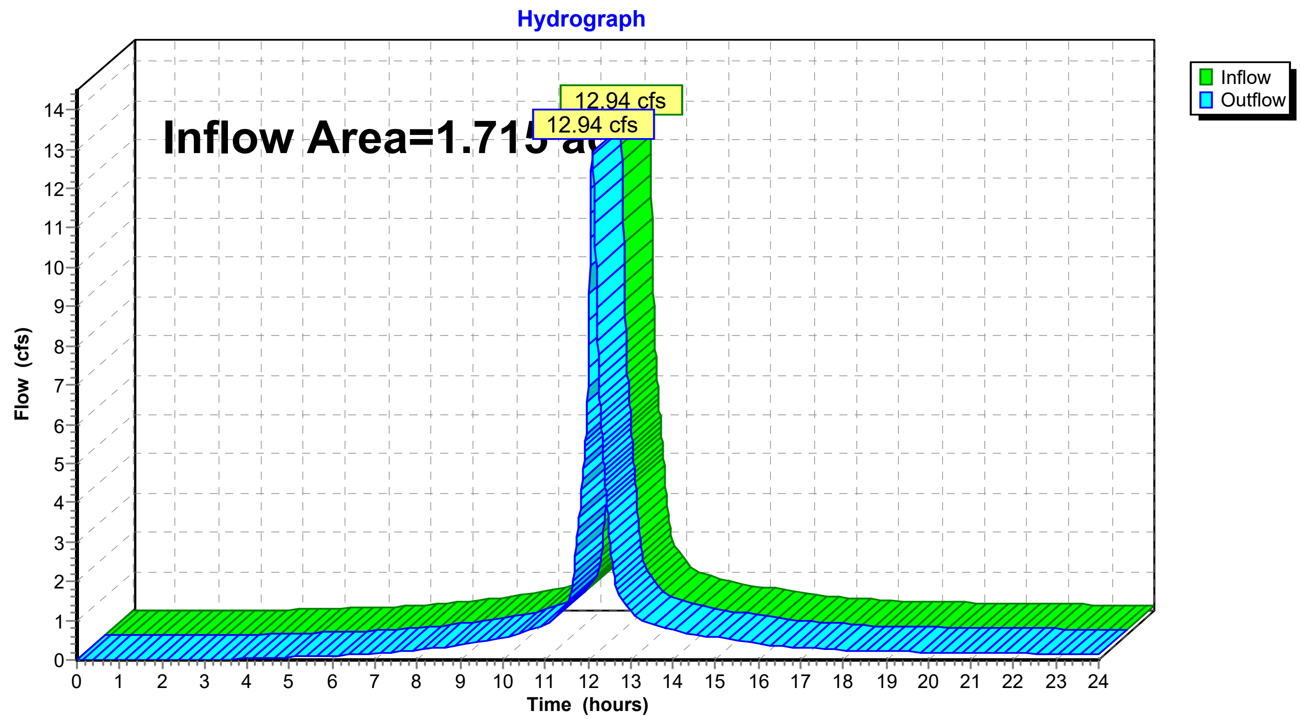
Summary for Reach AP 1: AP 1

[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



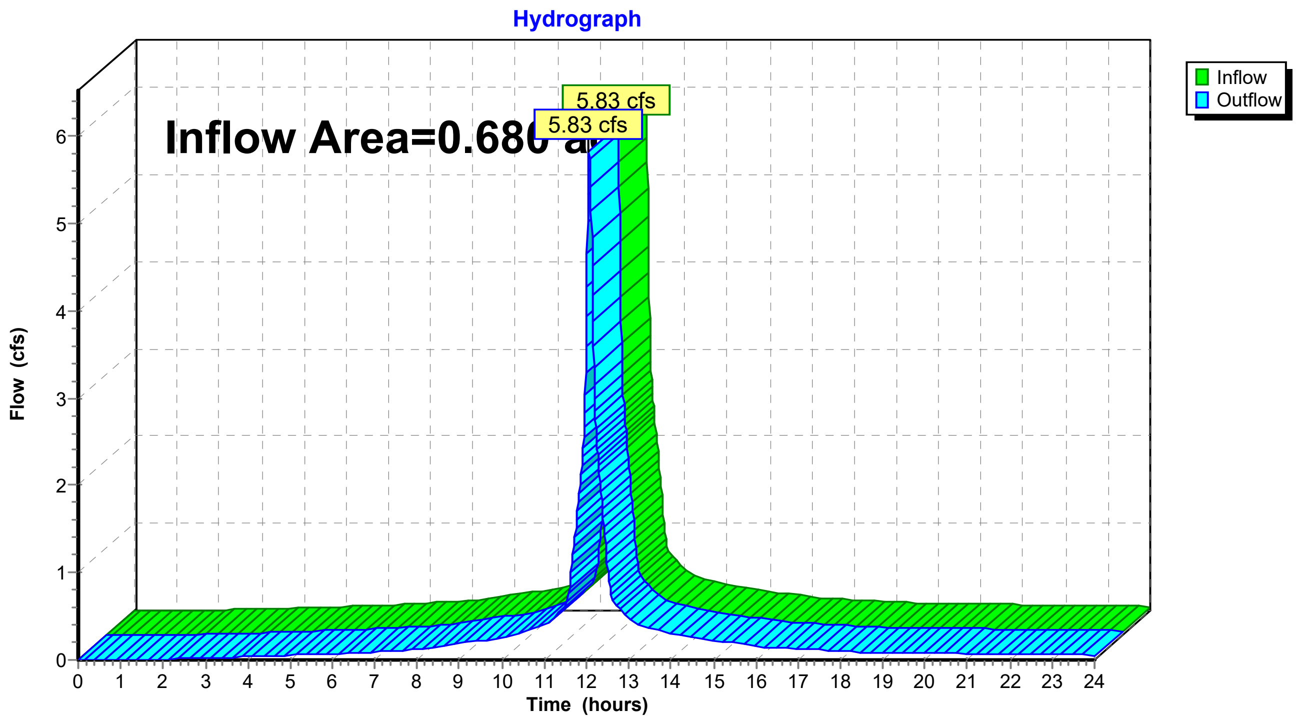
Summary for Reach AP2: AP2

[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)

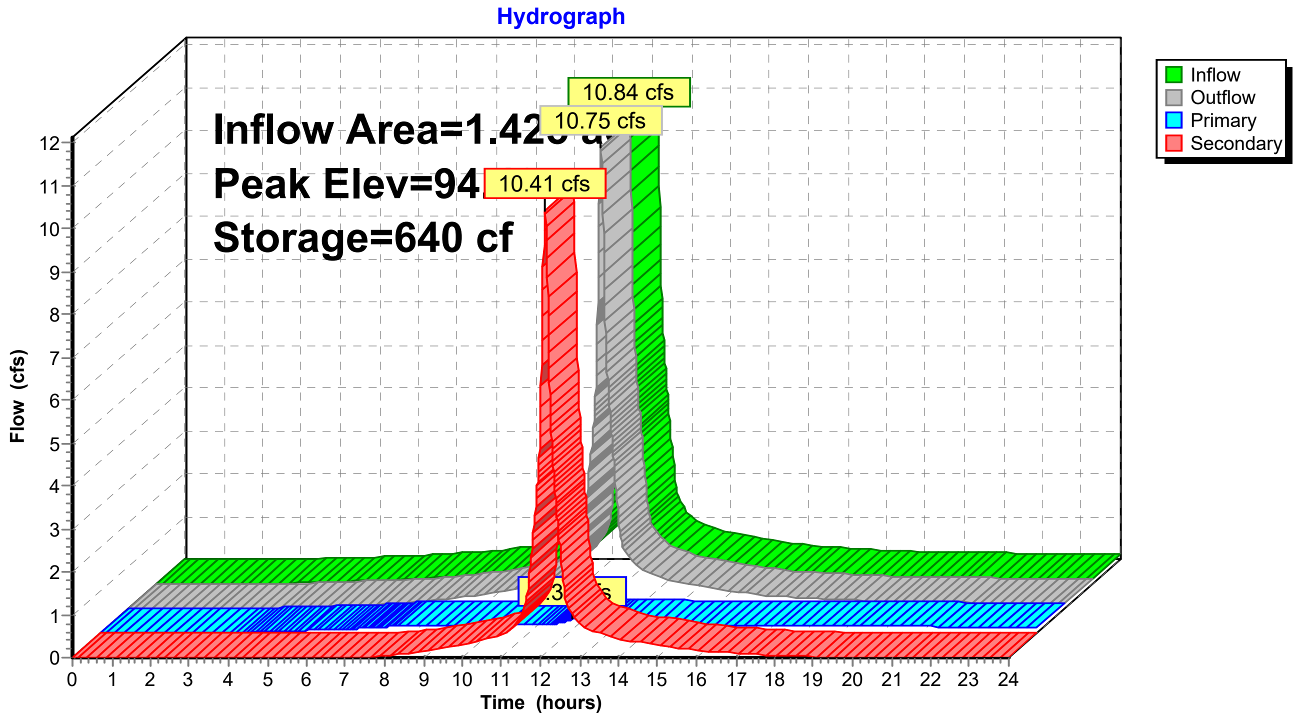
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.60	374	0	0
94.00	737	222	222
95.00	1,900	1,319	1,541

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=91.30' (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)

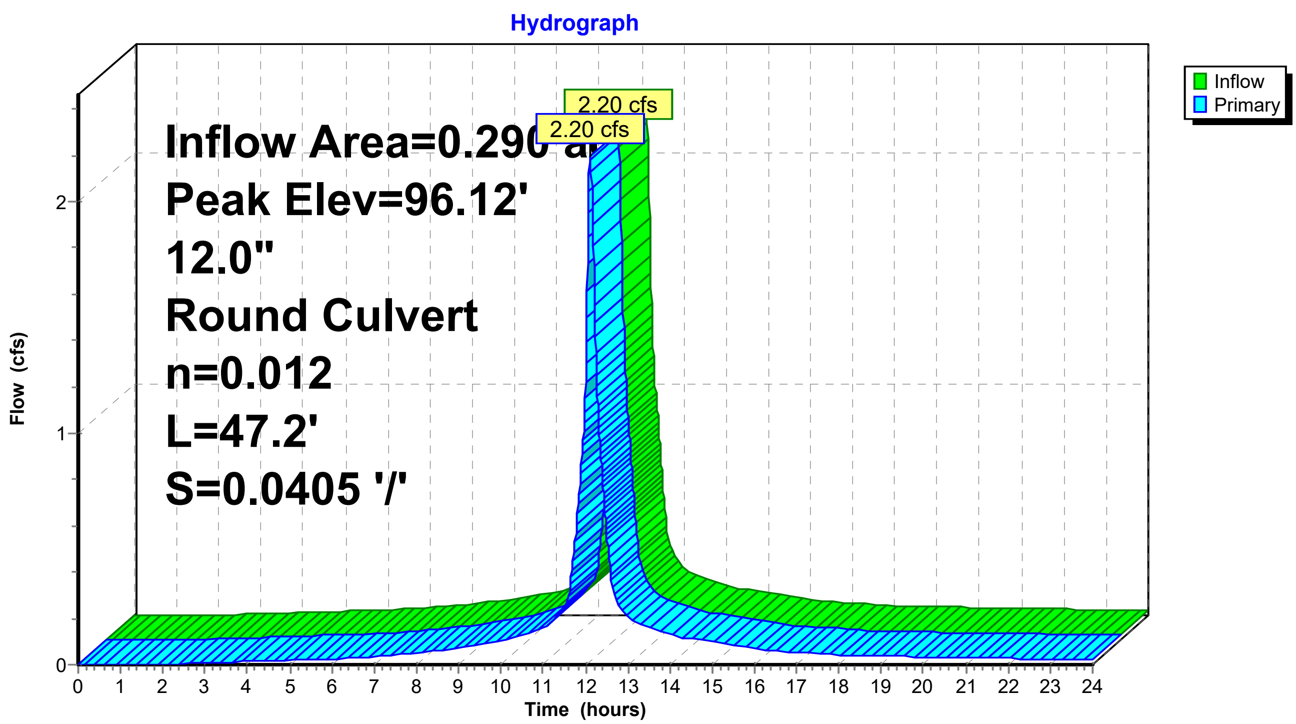
Inflow Area =	0.290 ac, 71.50% Impervious,	Inflow Depth > 7.71"	for 50 yr event	
Inflow =	2.20 cfs @	12.12 hrs, Volume=	0.187 af	
Outflow =	2.20 cfs @	12.12 hrs, Volume=	0.187 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.20 cfs @	12.12 hrs, Volume=	0.187 af	

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

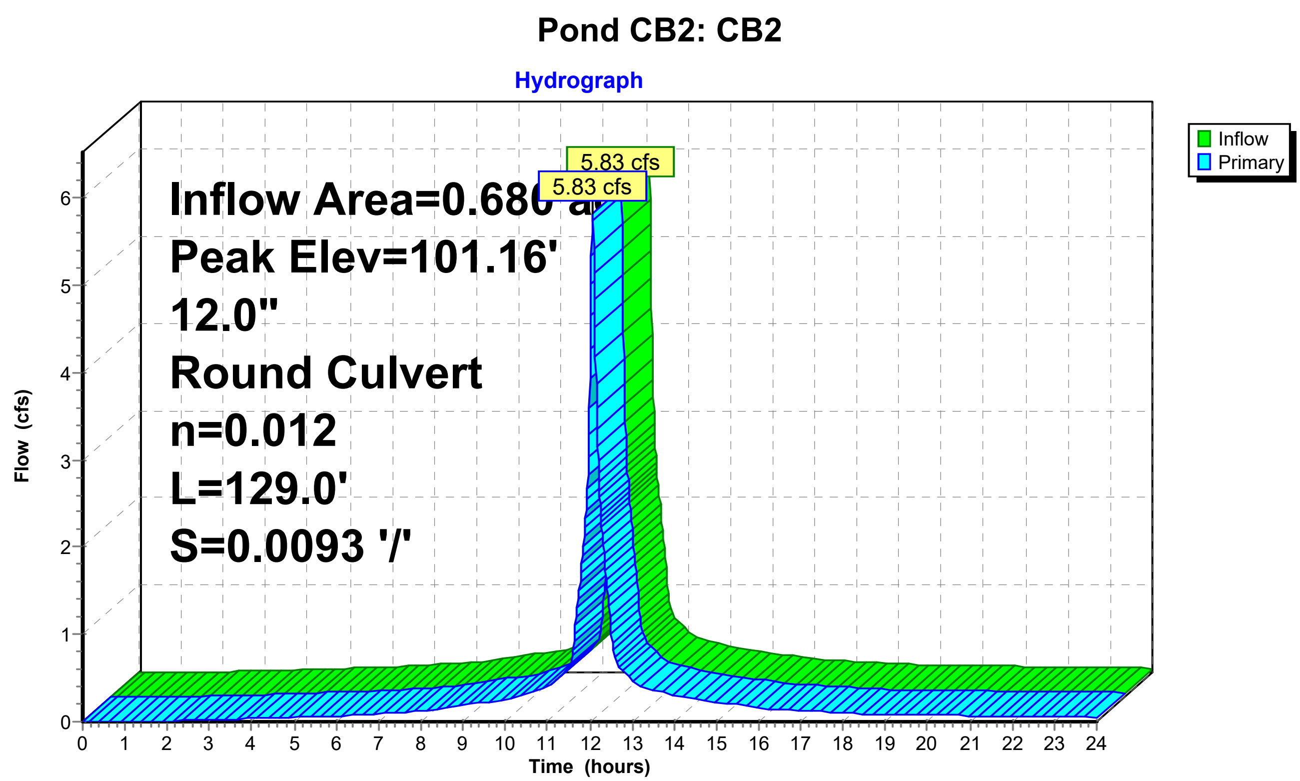
[57] Hint: Peaked at 101.16' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

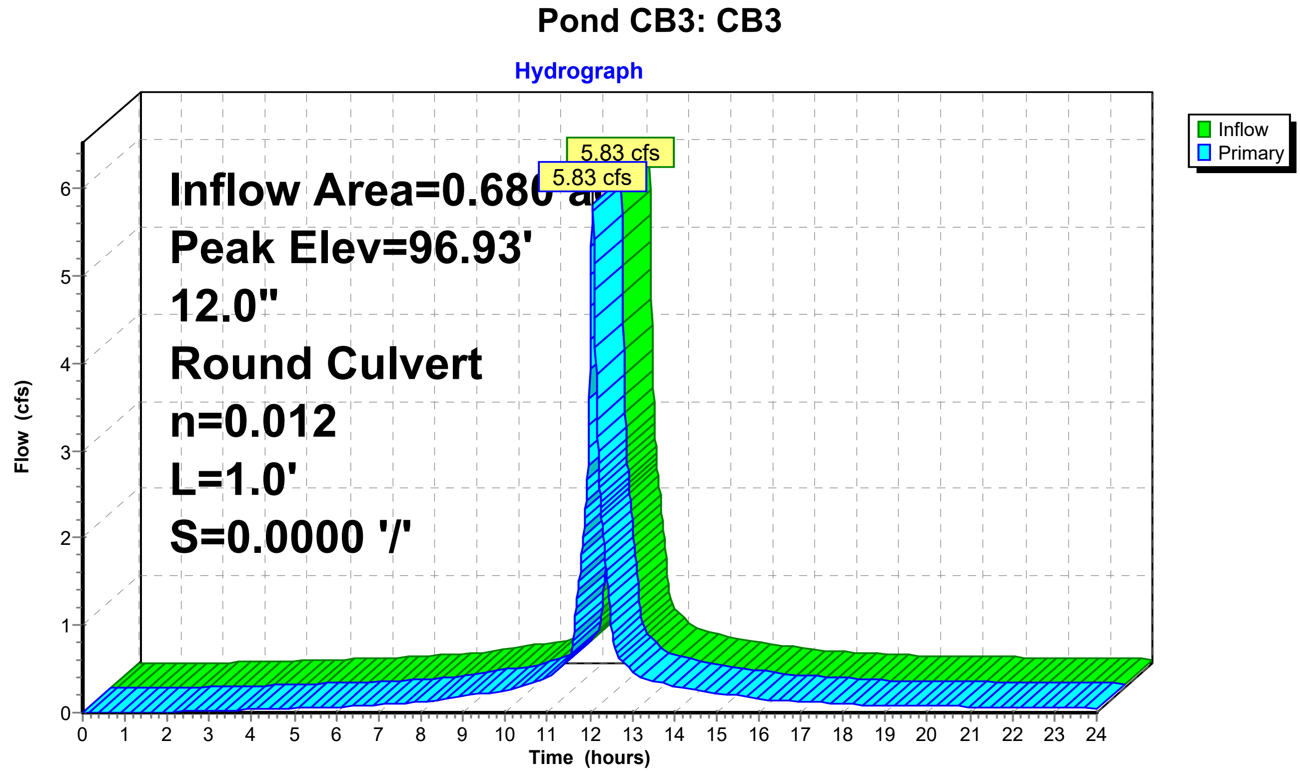
[57] Hint: Peaked at 96.93' (Flood elevation advised)

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)



Summary for Pond DMH1: DMH1

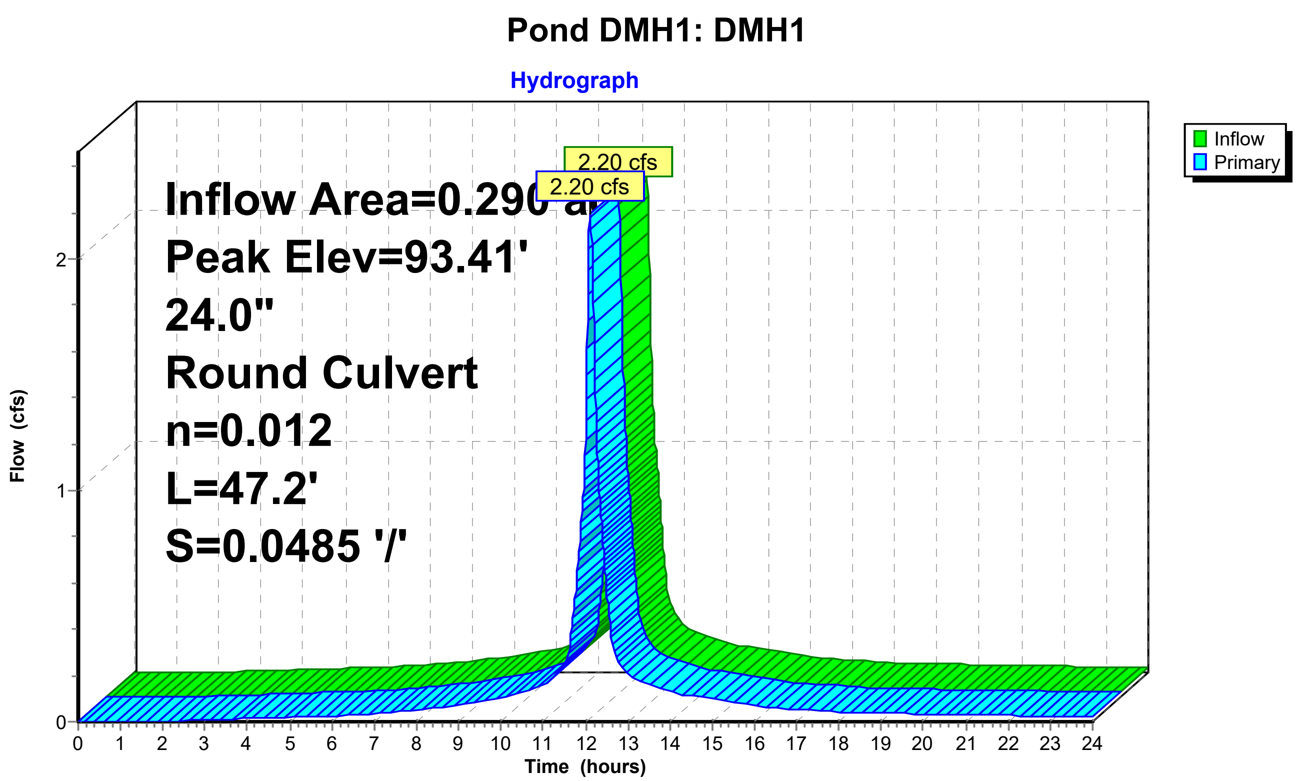
[57] Hint: Peaked at 93.41' (Flood elevation advised)

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=91.30' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.19 cfs @ 2.67 fps)



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.30' (Flood elevation advised)

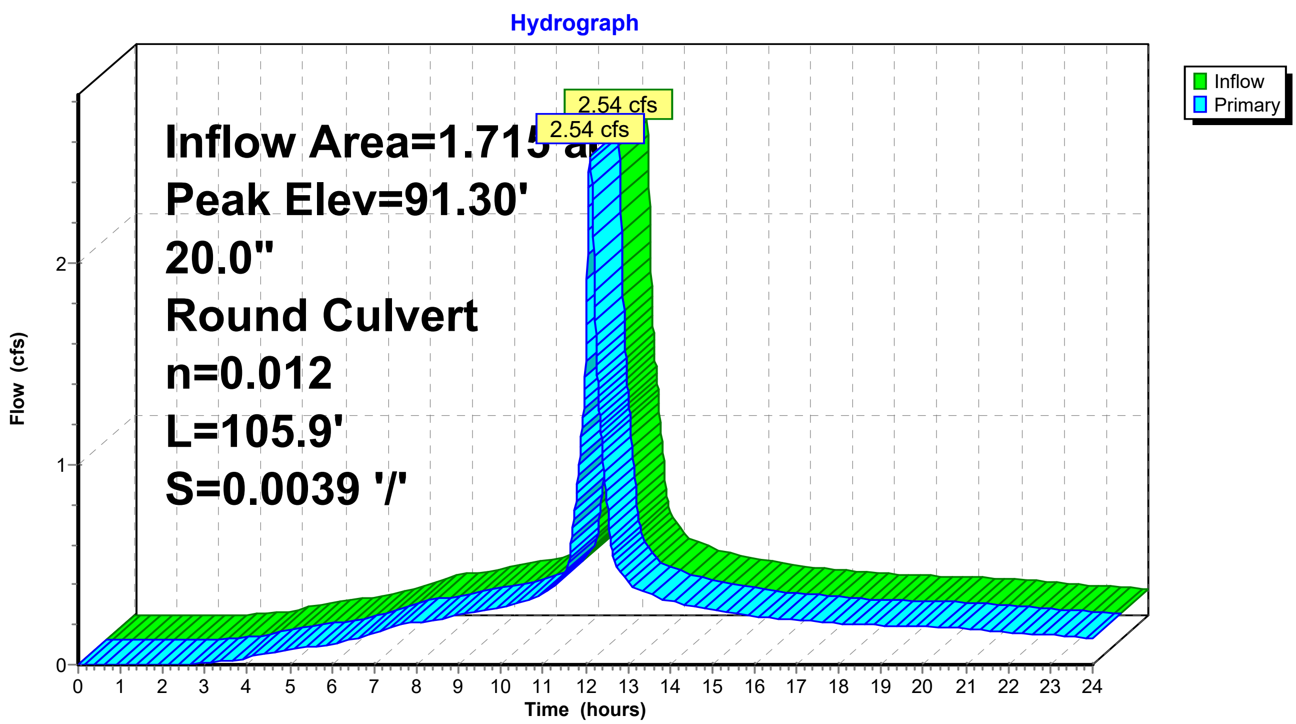
Inflow Area =	1.715 ac, 62.79% Impervious, Inflow Depth > 3.10" for 50 yr event				
Inflow =	2.54 cfs @	12.12 hrs,	Volume=	0.443 af	
Outflow =	2.54 cfs @	12.12 hrs,	Volume=	0.443 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.54 cfs @	12.12 hrs,	Volume=	0.443 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.30'@ 12.12 hrs

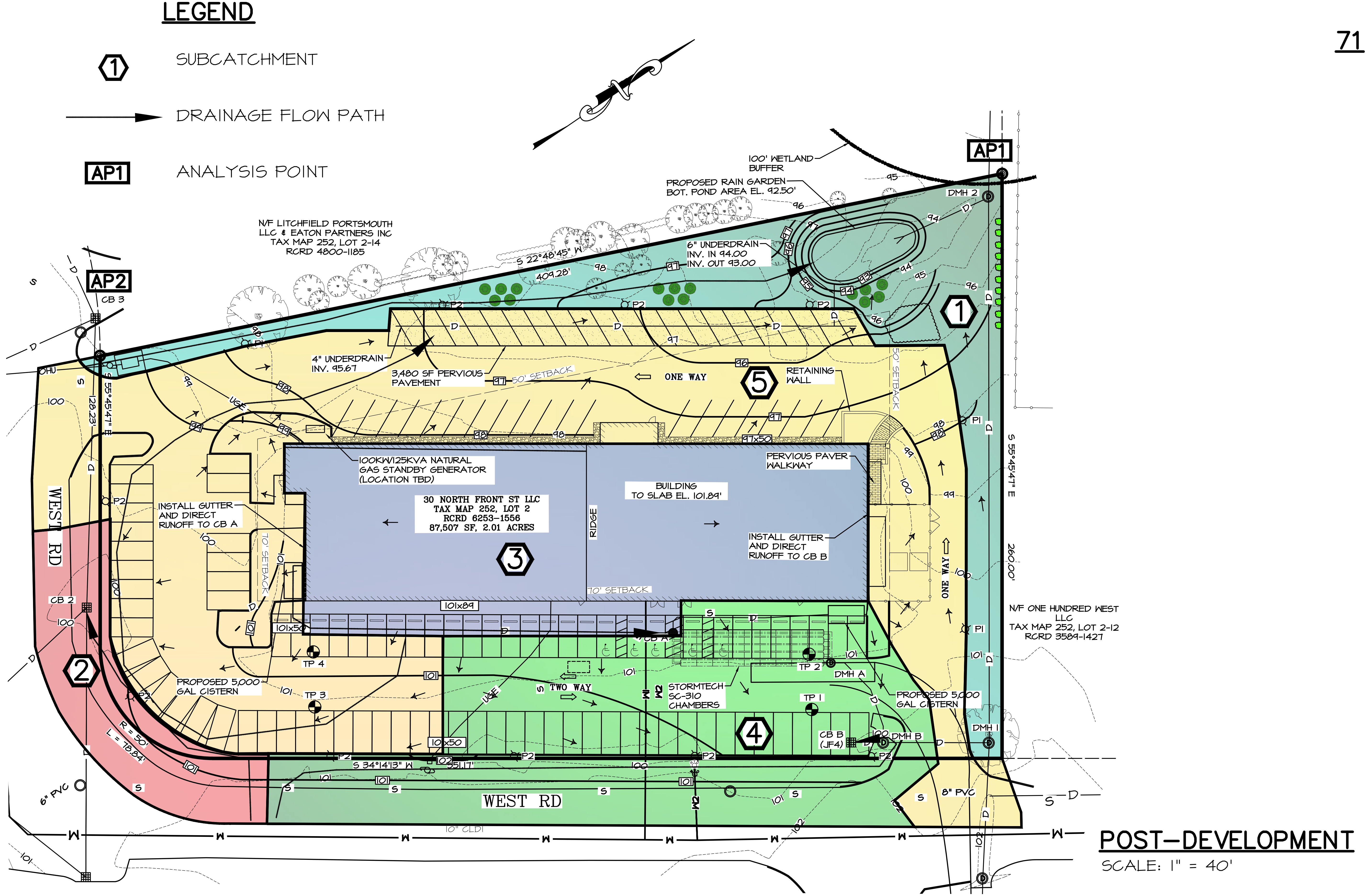
Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" Round Culvert** L= 105.9' Ke= 0.500 Inlet / Outlet Invert= 90.47' / 90.06' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 2.18 sf

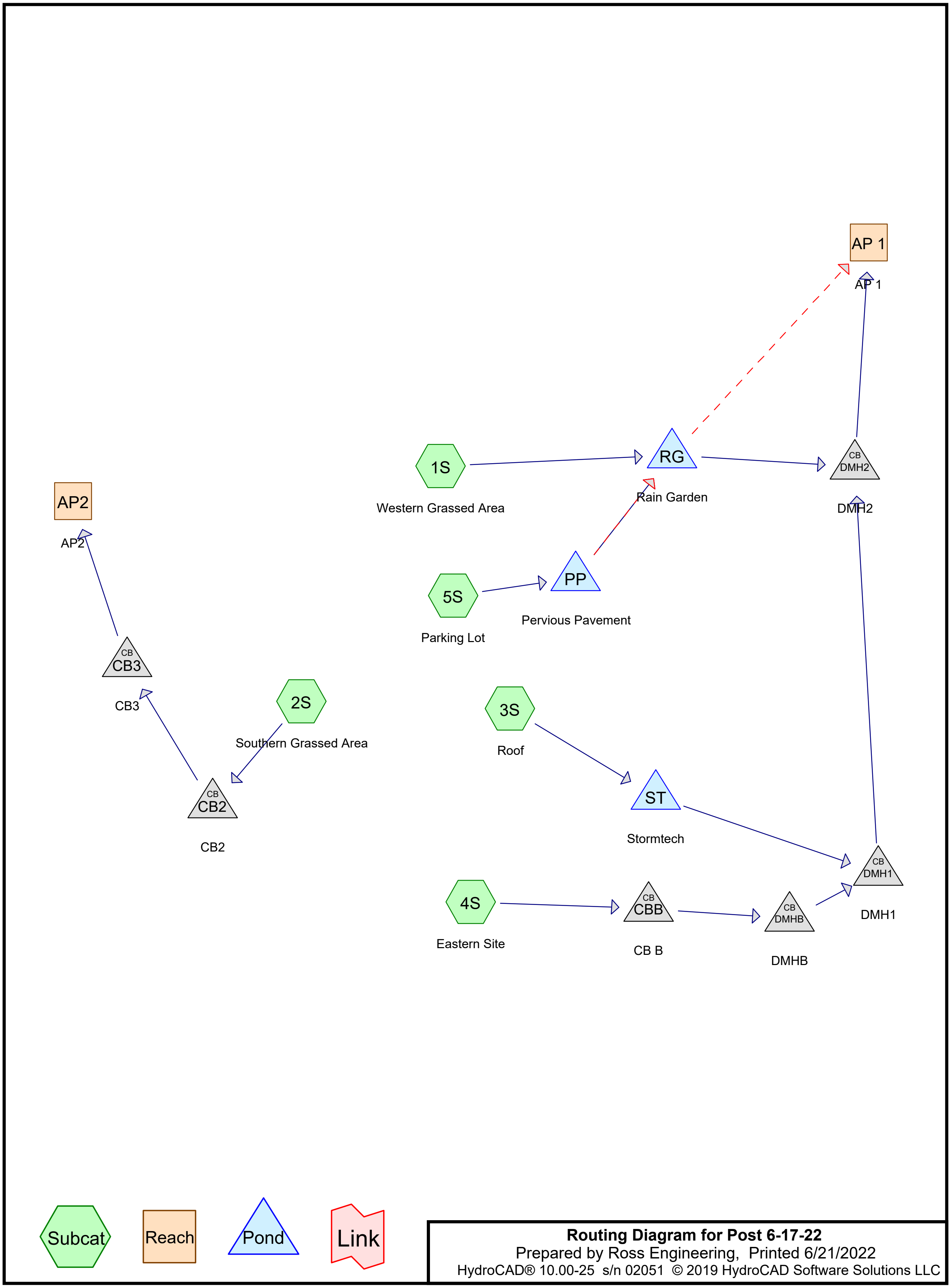
Primary OutFlow Max=2.53 cfs @ 12.12 hrs HW=91.30' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 2.53 cfs @ 3.42 fps)

Pond DMH2: DMH2



POST-DEVELOPMENT CALCULATIONS


LEGEND
SUBCATCHMENT
DRAINAGE FLOW PATH
ANALYSIS POINT
AP1
AP2
CB 3
100' WETLAND BUFFER
PROPOSED RAIN GARDEN BOT. POND AREA EL. 92.50'
N/F LITCHFIELD PORTSMOUTH LLC & EATON PARTNERS INC TAX MAP 252, LOT 2-14 RCRD 4800-1185
S 22°48'45" W 409.28'
6" UNDERDRAIN INV. IN 94.00 INV. OUT 93.00
DMH 2
4" UNDERDRAIN INV. 95.67
3,480 SF PERVIOUS PAVEMENT
50' SETBACK
ONE WAY
RETAINING WALL
S 55°45'47" E 128.23'
WEST RD
100KW/125KVA NATURAL GAS STANDBY GENERATOR (LOCATION TBD)
30 NORTH FRONT ST LLC TAX MAP 252, LOT 2 RCRD 6253-1556 87,507 SF, 2.01 ACRES
RIDGE
BUILDING TO SLAB EL. 101.89'
PERVIOUS PAVER WALKWAY
INSTALL GUTTER AND DIRECT RUNOFF TO CB A
INSTALL GUTTER AND DIRECT RUNOFF TO CB B
10' SETBACK
S 55°45'47" E 260.00'
N/F ONE HUNDRED WEST LLC TAX MAP 252, LOT 2-12 RCRD 3589-1427
CB 2
CB A
TP 4
TP 3
TP 2
TP 1
DMH A
DMH B
DMH 1
CB B (JF4)
PROPOSED 5,000 GAL CISTERN
TWO WAY
STORMTECH SC-310 CHAMBERS
R = 50'
L = 78.84'
S 34°14'13" W 351.17'
6" PVC
8" PVC
10" CLDI
WEST RD
POST-DEVELOPMENT
SCALE: 1" = 40'



Routing Diagram for Post 6-17-22
Prepared by Ross Engineering, Printed 6/21/2022
HydroCAD® 10.00-25 s/n 02051 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.532	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 5S)
0.003	98	Concrete (1S, 5S)
0.015	96	Gravel surface, HSG C (5S)
1.321	98	Paved roads w/curbs & sewers, HSG C (1S, 2S, 3S, 4S, 5S)
0.080	61	Pervious Pavement, HSG C (5S)
0.005	42	Pervious Pavers, HSG C (5S)
0.019	58	Rain Garden, HSG C (1S)
0.002	98	Retaining Wall & Stairs, HSG C (5S)
0.417	98	Roofs, HSG C (3S, 5S)
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
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	0.532	0.000	0.000	0.532	>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	0.015	0.000	0.000	0.015	Gravel surface	5S
0.000	0.000	1.321	0.000	0.000	1.321	Paved roads w/curbs & sewers	1S, 2S, 3S, 4S, 5S
0.000	0.000	0.080	0.000	0.000	0.080	Pervious Pavement	5S
0.000	0.000	0.005	0.000	0.000	0.005	Pervious Pavers	5S
0.000	0.000	0.019	0.000	0.000	0.019	Rain Garden	1S
0.000	0.000	0.002	0.000	0.000	0.002	Retaining Wall & Stairs	5S
0.000	0.000	0.417	0.000	0.000	0.417	Roofs	3S, 5S
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	CBB	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	20.0	0.0	0.0
6	DMHB	95.28	93.37	45.0	0.0424	0.012	24.0	0.0	0.0
7	PP	92.75	92.50	20.0	0.0125	0.012	15.0	0.0	0.0
8	RG	91.00	90.75	38.8	0.0064	0.010	12.0	0.0	0.0
9	ST	98.00	95.40	43.0	0.0605	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=14,438 sf 3.17% Impervious Runoff Depth>1.38"
Flow Length=316' Tc=7.5 min CN=74 Runoff=0.50 cfs 0.038 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=20,293 sf 100.00% Impervious Runoff Depth>3.47"
Tc=5.0 min CN=98 Runoff=1.74 cfs 0.135 af

Subcatchment4S: EasternSite Runoff Area=21,625 sf 79.90% Impervious Runoff Depth>2.93"
Flow Length=303' Tc=8.8 min CN=93 Runoff=1.49 cfs 0.121 af

Subcatchment5S: ParkingLot Runoff Area=42,327 sf 82.42% Impervious Runoff Depth>2.94"
Tc=5.0 min CN=93 Runoff=3.33 cfs 0.238 af

ReachAP 1: AP 1 Inflow=4.89 cfs 0.219 af
Outflow=4.89 cfs 0.219 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 CBB: CB B Peak Elev=96.20' Inflow=1.49 cfs 0.121 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=1.49 cfs 0.121 af

Pond DMH1: DMH1 Peak Elev=93.48' Inflow=2.74 cfs 0.159 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=2.74 cfs 0.159 af

Pond DMH2: DMH2 Peak Elev=91.68' Inflow=4.89 cfs 0.219 af
20.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=4.89 cfs 0.219 af

Pond DMHB: DMHB Peak Elev=95.78' Inflow=1.49 cfs 0.121 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=1.49 cfs 0.121 af

Pond PP: PerviousPavement Peak Elev=93.50' Storage=974 cf Inflow=3.33 cfs 0.238 af
Discarded=0.60 cfs 0.183 af Primary=2.04 cfs 0.054 af Secondary=0.00 cfs 0.000 af Outflow=2.65 cfs 0.238 af

Pond RG: Rain Garden Peak Elev=92.05' Storage=345 cf Inflow=2.53 cfs 0.093 af
Discarded=0.14 cfs 0.033 af Primary=2.26 cfs 0.060 af Secondary=0.00 cfs 0.000 af Outflow=2.40 cfs 0.093 af

Pond ST: Stormtech Peak Elev=98.59' Storage=644 cf Inflow=1.74 cfs 0.135 af
Discarded=0.18 cfs 0.097 af Primary=1.25 cfs 0.038 af Outflow=1.43 cfs 0.135 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.558 af Average Runoff Depth = 2.79"
27.16% Pervious = 0.650 ac 72.84% Impervious = 1.744 ac

Summary for Subcatchment 1S: Western Grassed Area

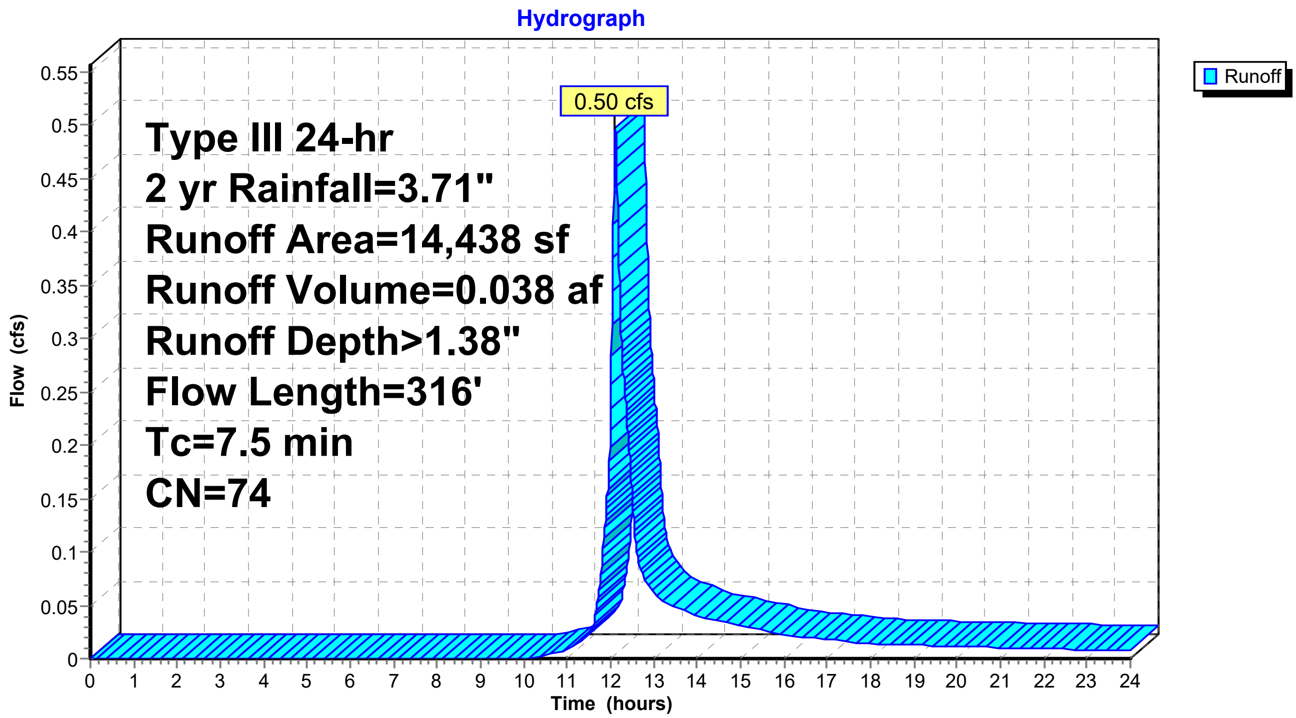
Runoff = 0.50 cfs @ 12.11 hrs, Volume= 0.038 af, Depth> 1.38"

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
	13,159	74	>75% Grass cover, Good, HSG C
	344	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
*	821	58	Rain Garden, HSG C
	14,438	74	Weighted Average
	13,980		96.83% Pervious Area
	458		3.17% 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

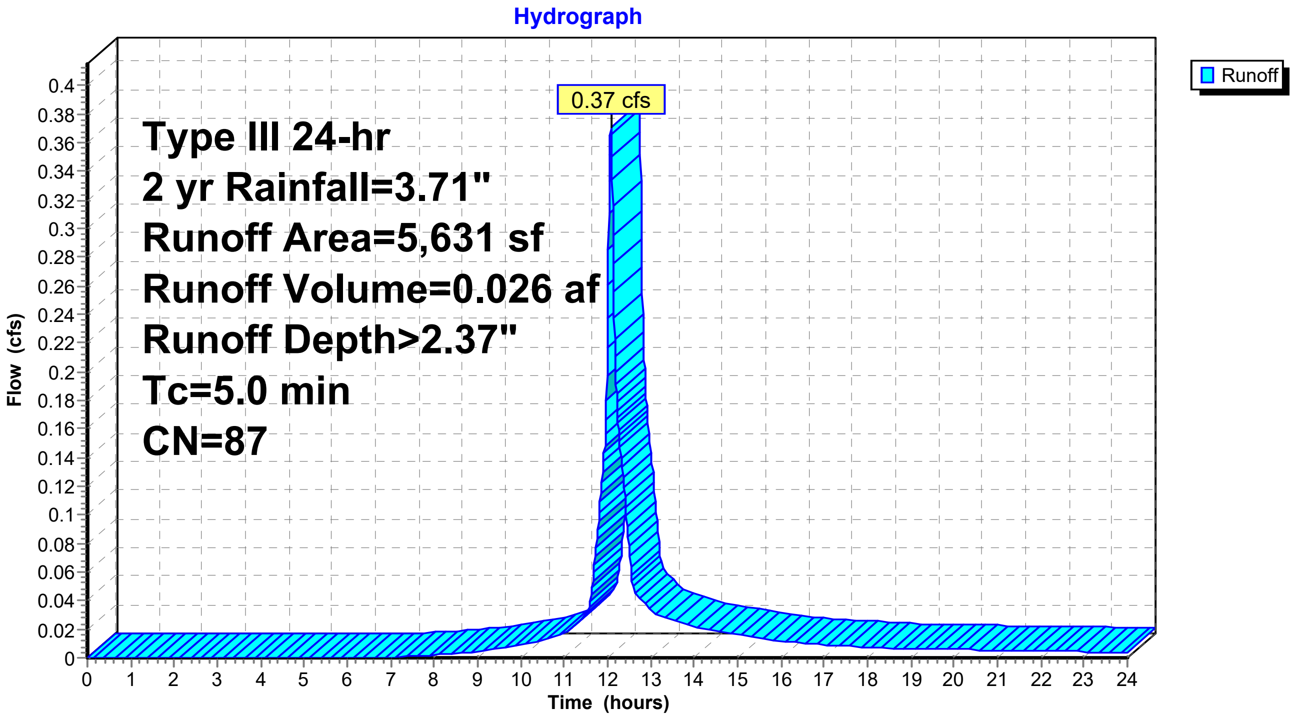
Runoff = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 2.37"

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

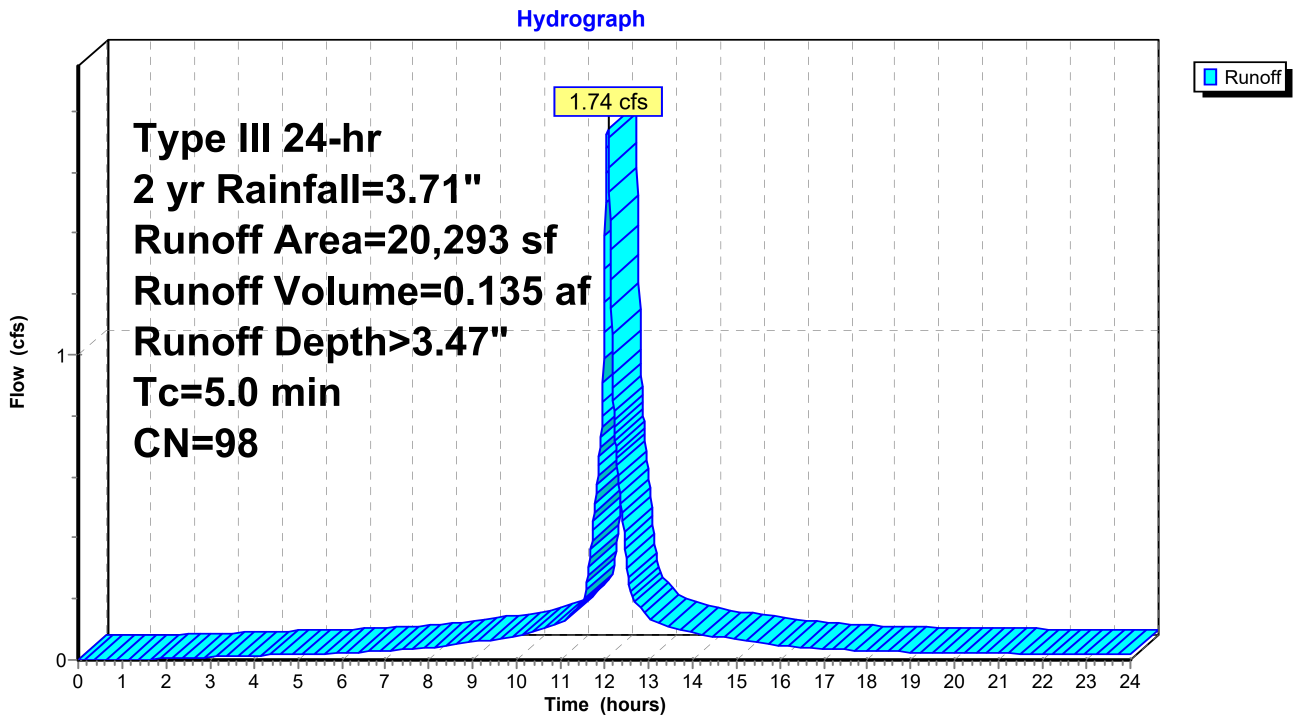
Runoff = 1.74 cfs @ 12.07 hrs, Volume= 0.135 af, Depth> 3.47"

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
2,612	98	Paved roads w/curbs & sewers, HSG C
17,681	98	Roofs, HSG C
20,293	98	Weighted Average
20,293		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

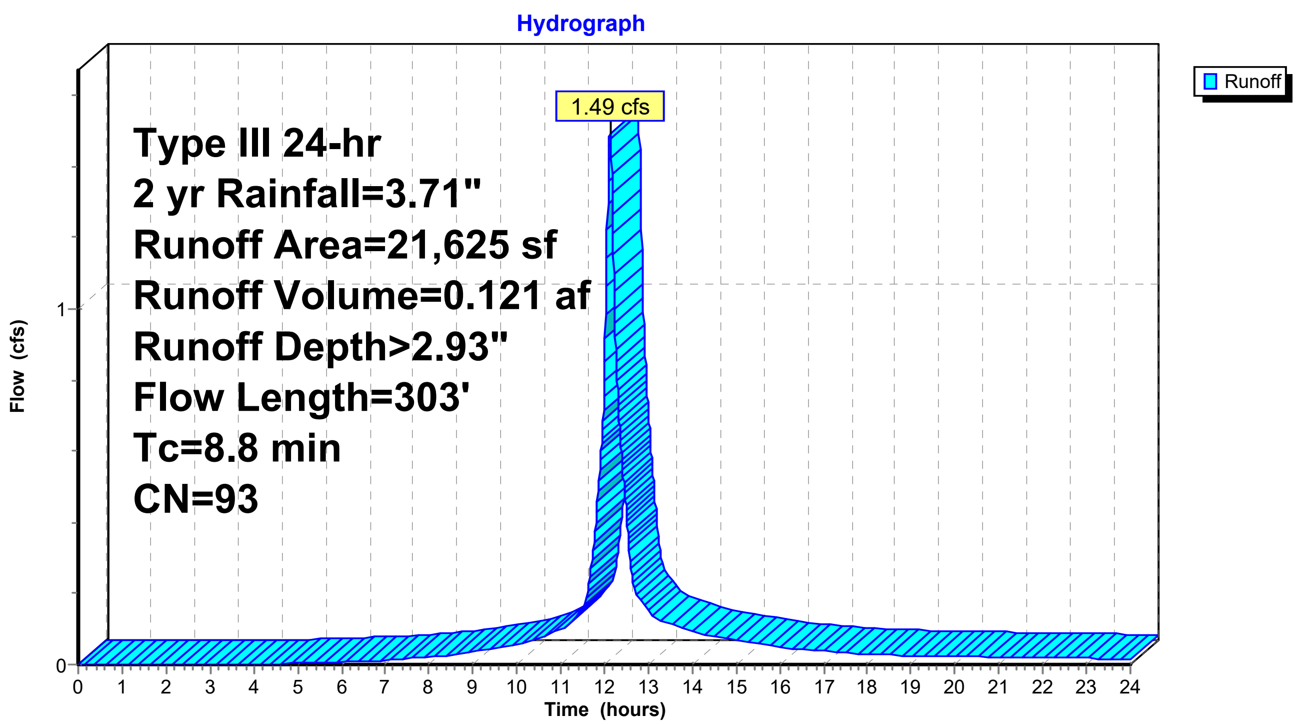
Runoff = 1.49 cfs @ 12.12 hrs, Volume= 0.121 af, Depth> 2.93"

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
4,347	74	>75% Grass cover, Good, HSG C
17,278	98	Paved roads w/curbs & sewers, HSG C
21,625	93	Weighted Average
4,347		20.10% Pervious Area
17,278		79.90% 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

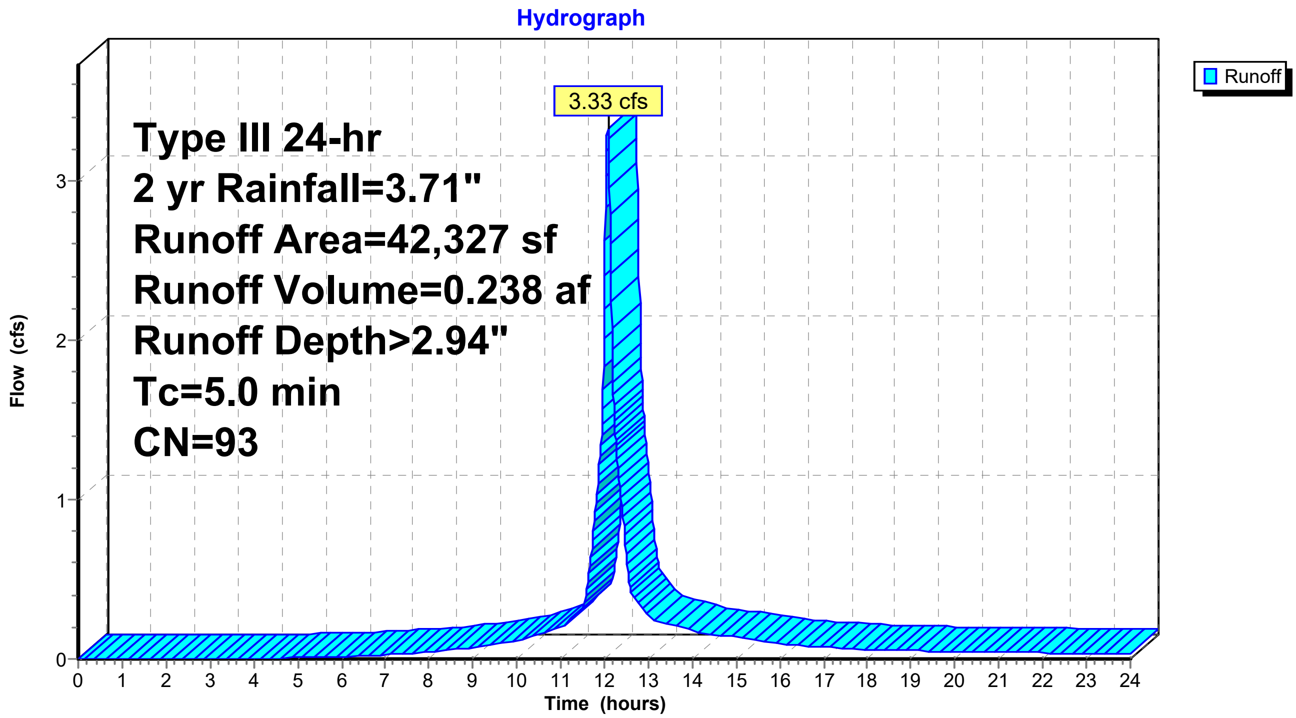
Runoff = 3.33 cfs @ 12.07 hrs, Volume= 0.238 af, Depth> 2.94"

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 2 yr Rainfall=3.71"

	Area (sf)	CN	Description
	3,085	74	>75% Grass cover, Good, HSG C
	34,264	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
*	3,480	61	Pervious Pavement, HSG C
	490	98	Roofs, HSG C
	643	96	Gravel surface, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	42,327	93	Weighted Average
	7,439		17.58% Pervious Area
	34,888		82.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



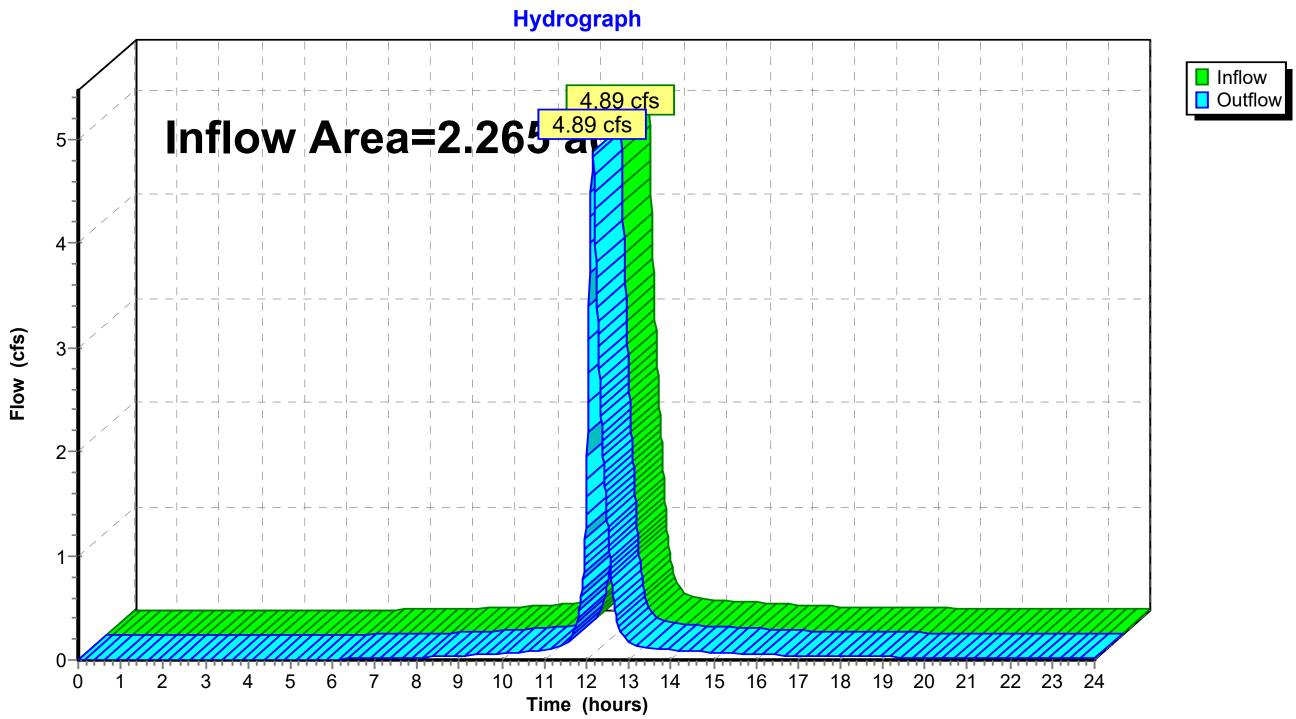
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.265 ac, 73.89% Impervious,	Inflow Depth > 1.16"	for 2 yr event	
Inflow =	4.89 cfs @ 12.14 hrs,	Volume=	0.219 af	
Outflow =	4.89 cfs @ 12.14 hrs,	Volume=	0.219 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



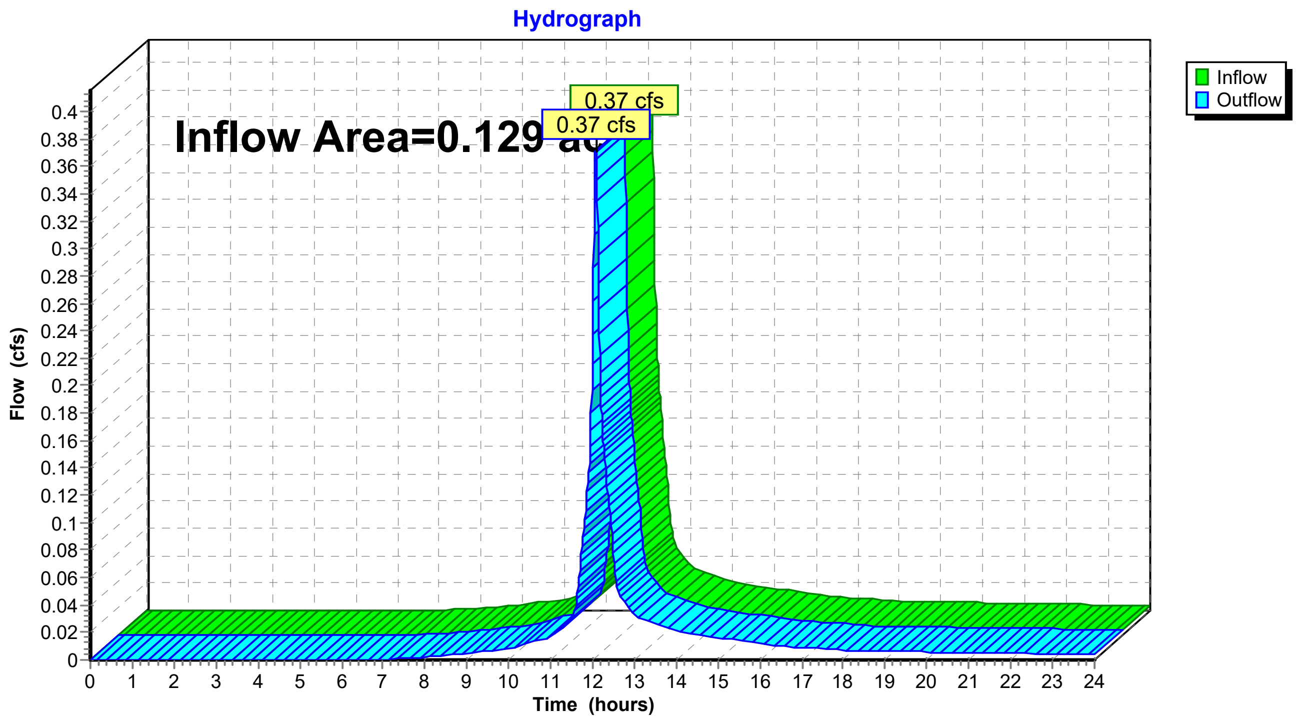
Summary for Reach AP2: AP2

[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

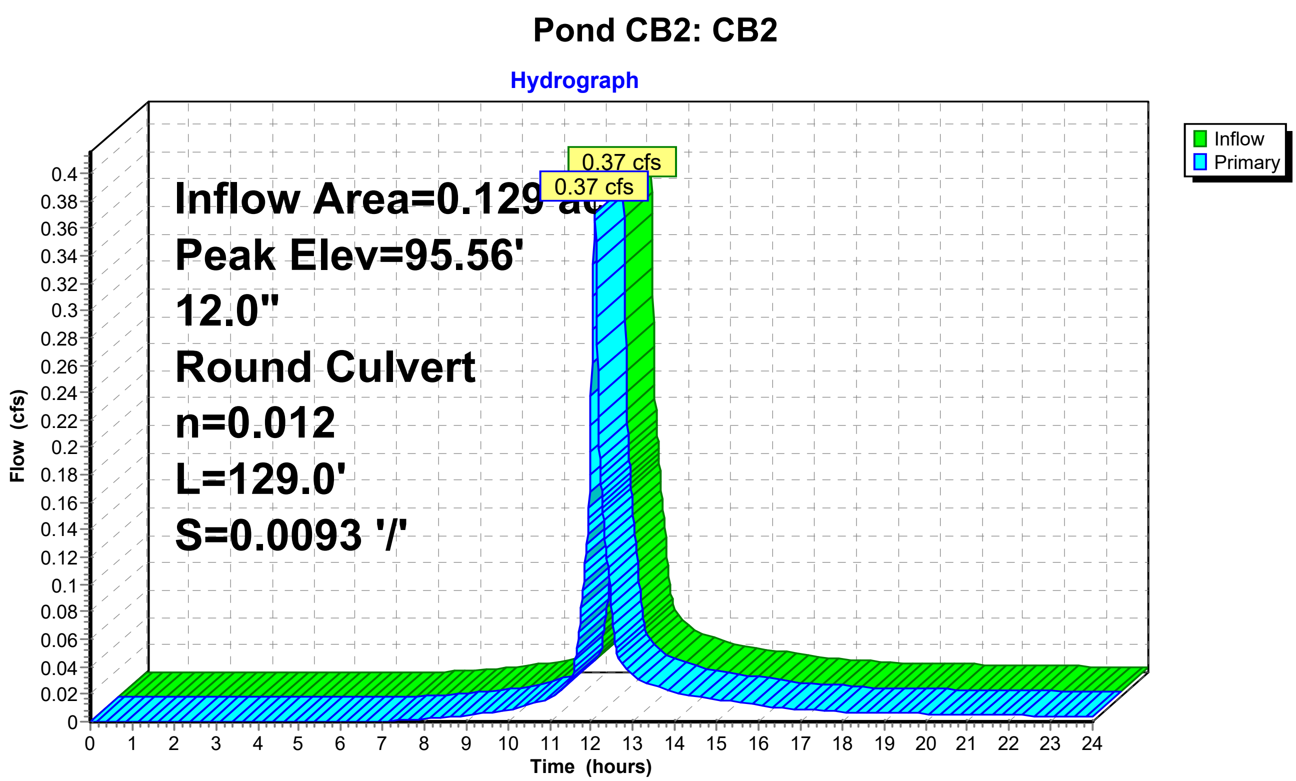
[57] Hint: Peaked at 95.56' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.44' (Flood elevation advised)

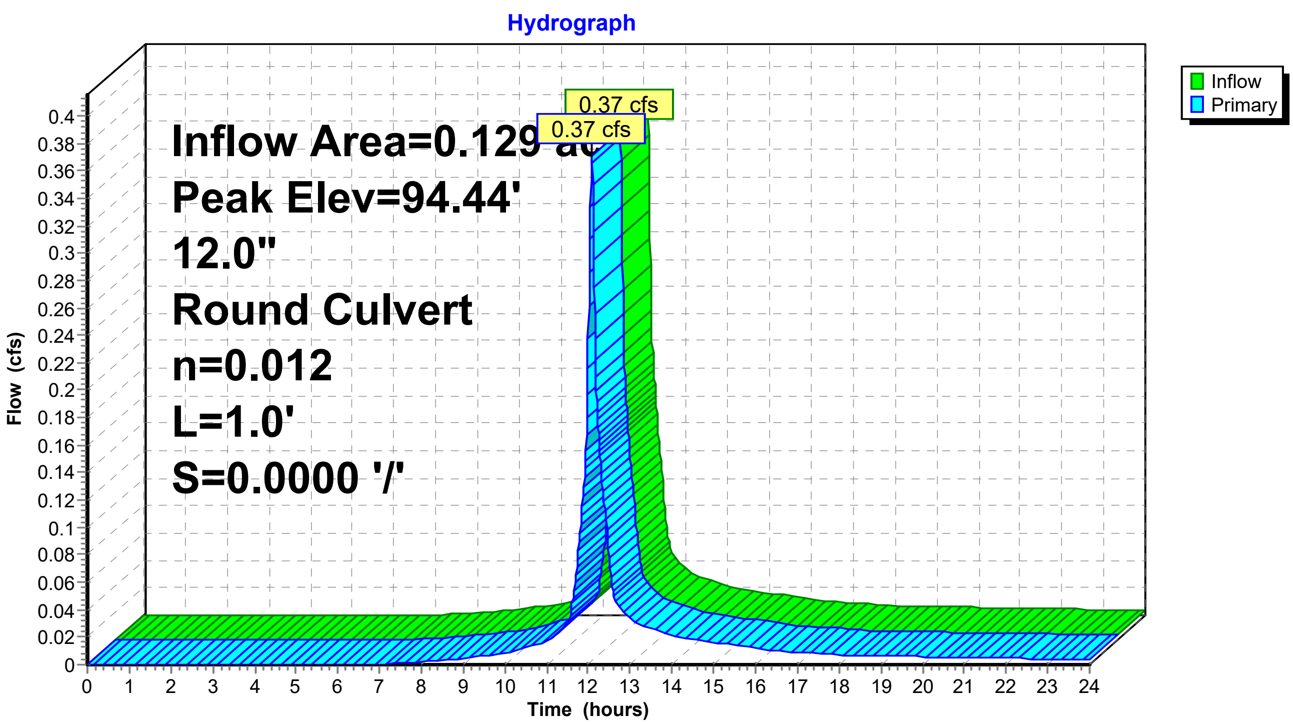
Inflow Area =	0.129 ac, 54.43% Impervious,	Inflow Depth > 2.37"	for 2 yr event	
Inflow =	0.37 cfs @	12.07 hrs, Volume=	0.026 af	
Outflow =	0.37 cfs @	12.07 hrs, Volume=	0.026 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.37 cfs @	12.07 hrs, Volume=	0.026 af	

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 CBB: CB B

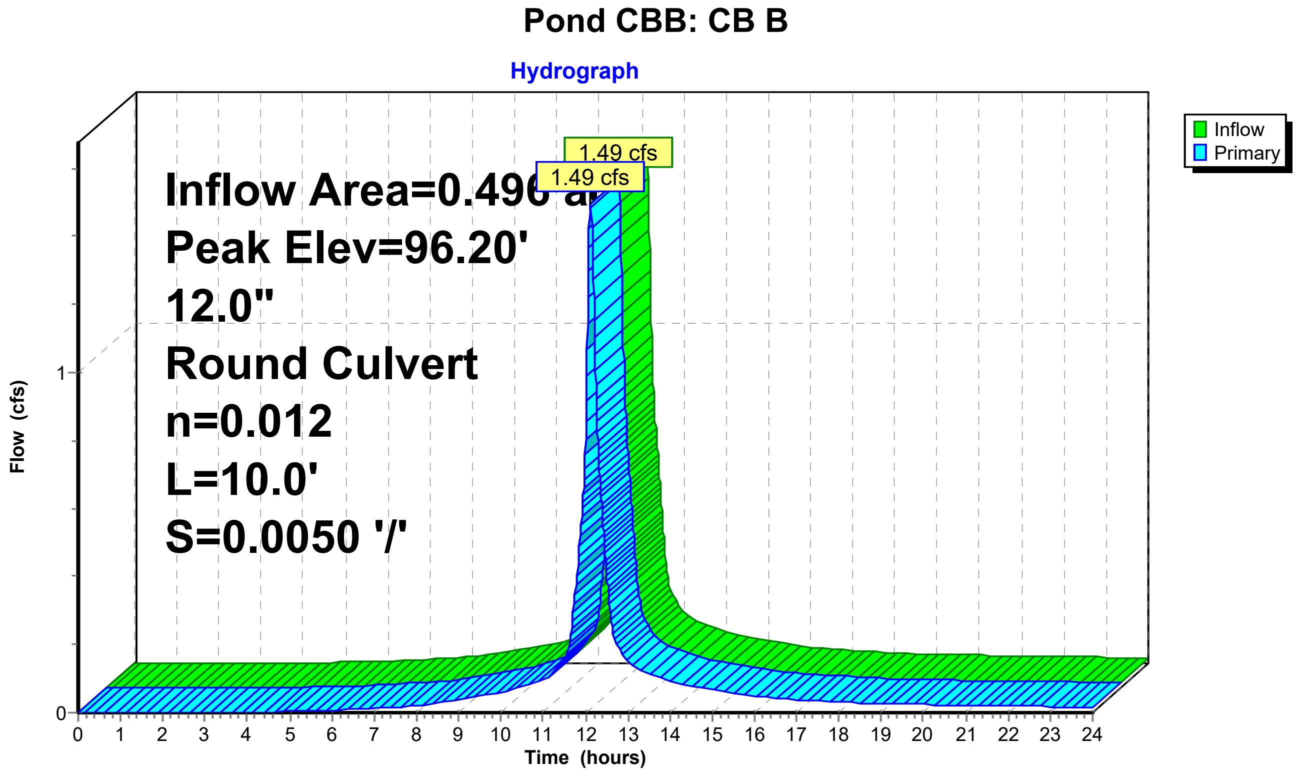
[57] Hint: Peaked at 96.20' (Flood elevation advised)

Inflow Area =	0.496 ac, 79.90% Impervious,	Inflow Depth > 2.93"	for 2 yr event	
Inflow =	1.49 cfs @	12.12 hrs, Volume=	0.121 af	
Outflow =	1.49 cfs @	12.12 hrs, Volume=	0.121 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.49 cfs @	12.12 hrs, Volume=	0.121 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.20'@ 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=1.49 cfs @ 12.12 hrs HW=96.20' TW=95.78' (Dynamic Tailwater)
└1=Culvert (Barrel Controls 1.49 cfs @ 3.04 fps)



Summary for Pond DMH1: DMH1

[57] Hint: Peaked at 93.48' (Flood elevation advised)

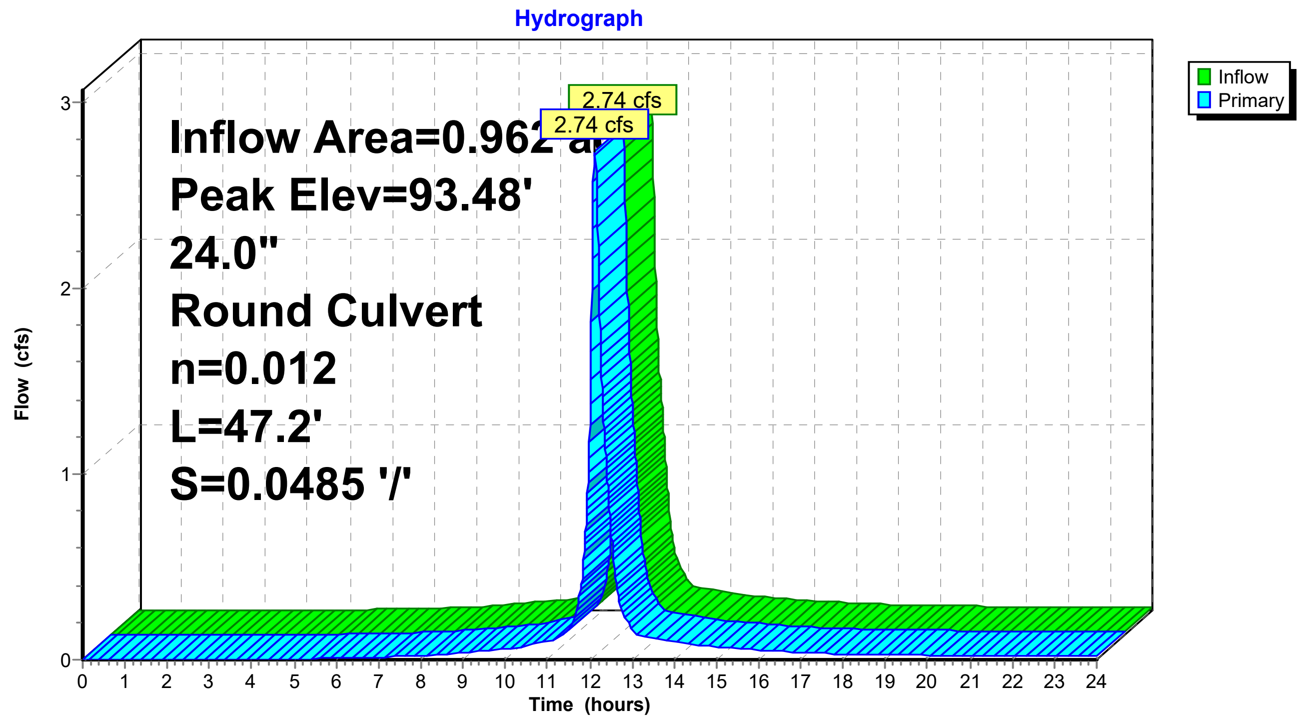
Inflow Area =	0.962 ac,	89.63% Impervious,	Inflow Depth > 1.98"	for 2 yr event	
Inflow =	2.74 cfs @	12.12 hrs,	Volume=	0.159 af	
Outflow =	2.74 cfs @	12.12 hrs,	Volume=	0.159 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.74 cfs @	12.12 hrs,	Volume=	0.159 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.48'@ 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=2.74 cfs @ 12.12 hrs HW=93.48' TW=91.65' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.74 cfs @ 2.83 fps)

Pond DMH1: DMH1



Summary for Pond DMH2: DMH2

[57] Hint: Peaked at 91.68' (Flood elevation advised)

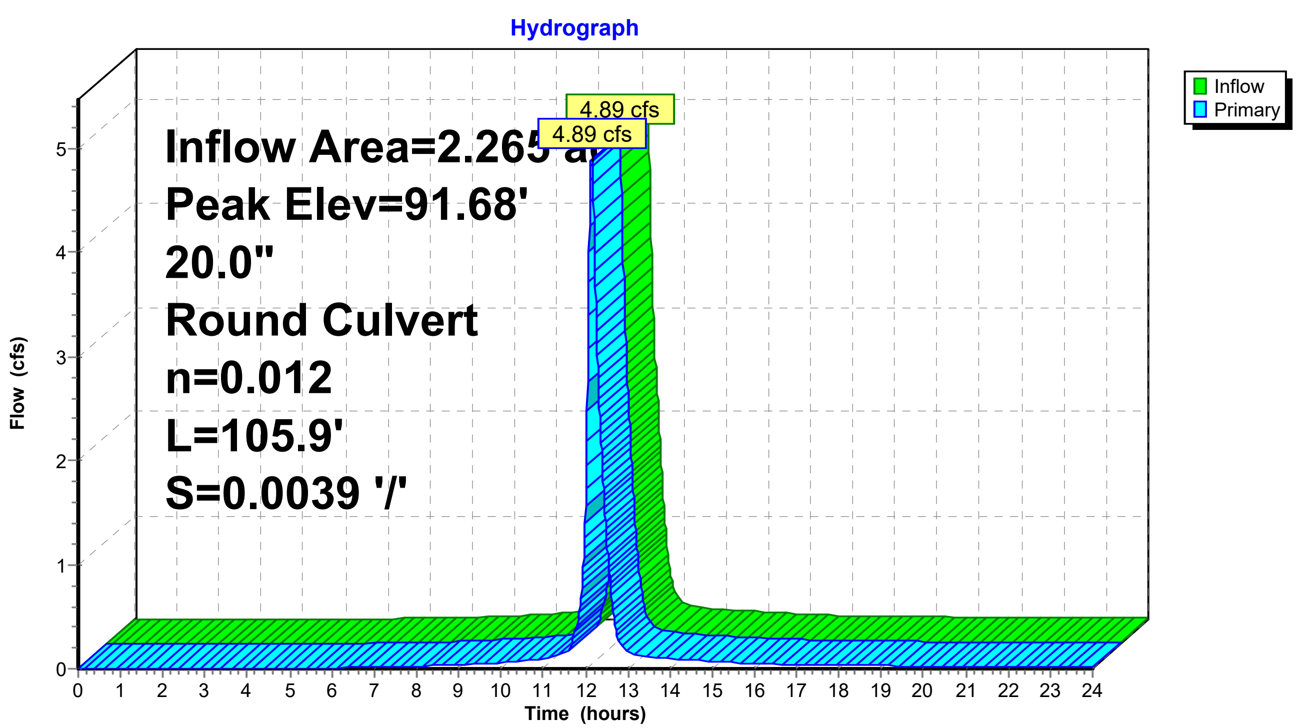
Inflow Area = 2.265 ac, 73.89% Impervious, Inflow Depth > 1.16" for 2 yr event
Inflow = 4.89 cfs @ 12.14 hrs, Volume= 0.219 af
Outflow = 4.89 cfs @ 12.14 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 4.89 cfs @ 12.14 hrs, Volume= 0.219 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 91.68'@ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=4.88 cfs @ 12.14 hrs HW=91.68' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.88 cfs @ 4.02 fps)

Pond DMH2: DMH2



Summary for Pond DMHB: DMHB

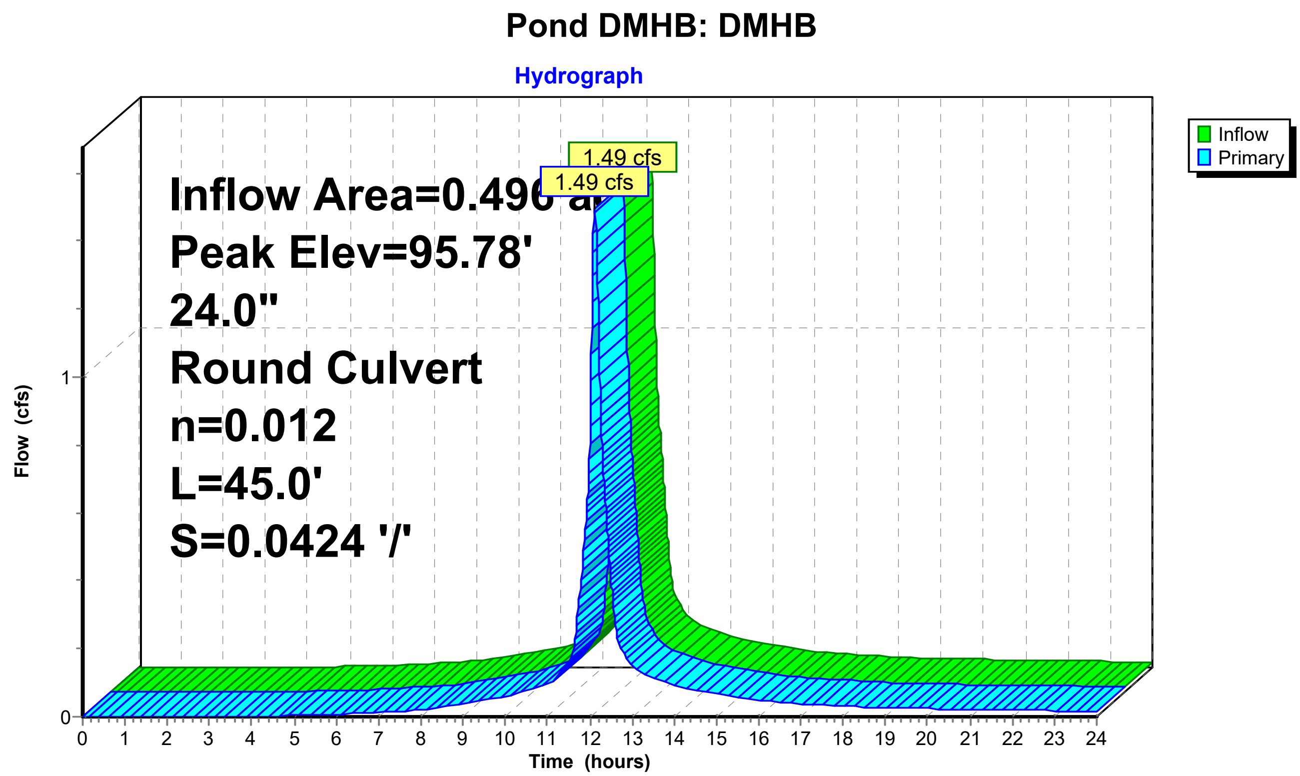
[57] Hint: Peaked at 95.78' (Flood elevation advised)

Inflow Area =	0.496 ac, 79.90% Impervious, Inflow Depth > 2.93" for 2 yr event				
Inflow =	1.49 cfs @	12.12 hrs,	Volume=	0.121 af	
Outflow =	1.49 cfs @	12.12 hrs,	Volume=	0.121 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.49 cfs @	12.12 hrs,	Volume=	0.121 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.78'@ 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=1.49 cfs @ 12.12 hrs HW=95.78' TW=93.48' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.49 cfs @ 2.41 fps)



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.972 ac, 82.42% Impervious, Inflow Depth > 2.94" for 2 yr event
Inflow = 3.33 cfs @ 12.07 hrs, Volume= 0.238 af
Outflow = 2.65 cfs @ 12.13 hrs, Volume= 0.238 af, Atten= 20%, Lag= 3.4 min
Discarded = 0.60 cfs @ 11.68 hrs, Volume= 0.183 af
Primary = 2.04 cfs @ 12.13 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= 0.01 hrs / 4
Peak Elev= 93.50'@ 12.13 hrs Surf.Area= 3,480 sf Storage= 974 cf

Plug-Flow detention time=3.0 min calculated for 0.238 af (100% of inflow)
Center-of-Mass det. time=3.0 min (789.2 - 786.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	1,705 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.75	3,480	0.0	0	0
92.76	3,480	40.0	14	14
93.42	3,480	40.0	919	933
93.43	3,480	15.0	5	938
93.67	3,480	15.0	125	1,063
93.68	3,480	5.0	2	1,065
94.33	3,480	5.0	113	1,178
94.34	3,480	30.0	10	1,188
94.67	3,480	30.0	345	1,533
94.68	3,480	15.0	5	1,538
95.00	3,480	15.0	167	1,705

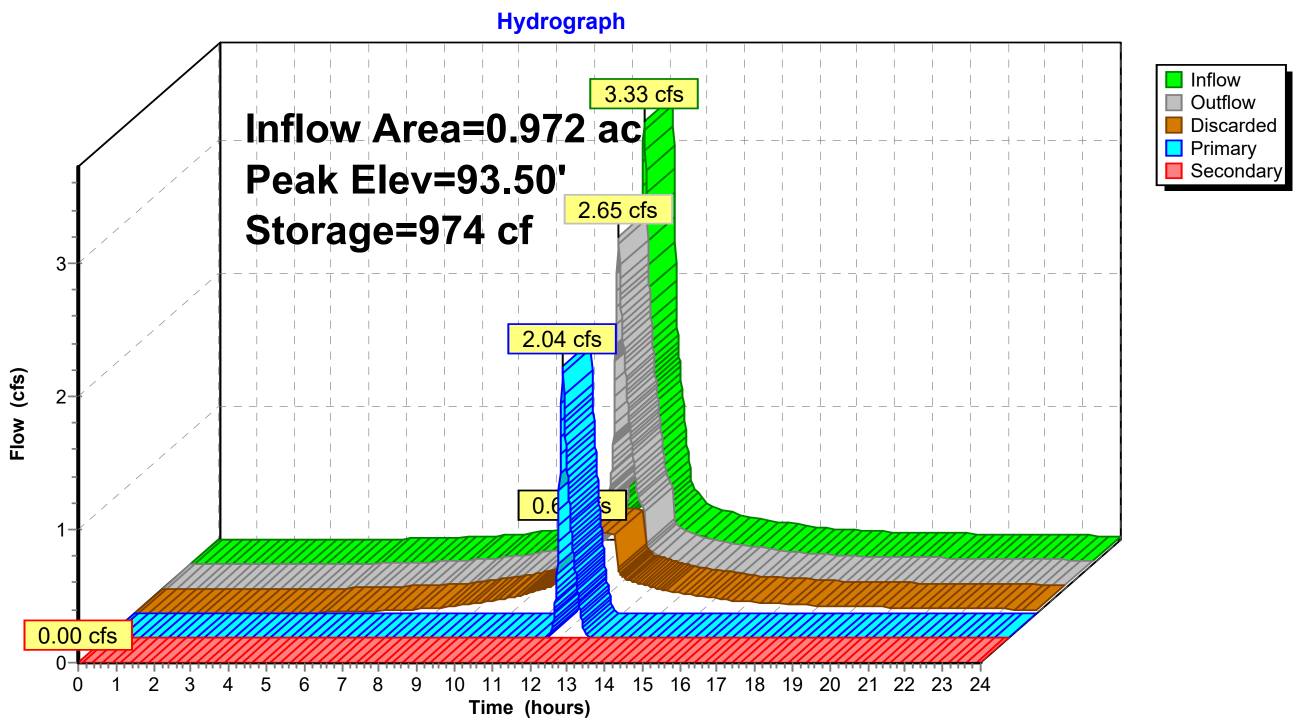
Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Secondary	94.90'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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	Discarded	92.75'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.60 cfs @ 11.68 hrs HW=92.76' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=2.04 cfs @ 12.13 hrs HW=93.50' TW=92.01' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.04 cfs @ 3.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.75' TW=90.99' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond RG: Rain Garden

Inflow Area = 1.303 ac, 62.27% Impervious, Inflow Depth > 0.85" for 2 yr event
Inflow = 2.53 cfs @ 12.13 hrs, Volume= 0.093 af
Outflow = 2.40 cfs @ 12.16 hrs, Volume= 0.093 af, Atten= 5%, Lag= 1.8 min
Discarded = 0.14 cfs @ 11.84 hrs, Volume= 0.033 af
Primary = 2.26 cfs @ 12.16 hrs, Volume= 0.060 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= 92.05'@ 12.15 hrs Surf.Area= 821 sf Storage= 345 cf

Plug-Flow detention time=2.2 min calculated for 0.093 af (100% of inflow)
Center-of-Mass det. time=2.2 min (785.1 - 783.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.99'	3,826 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.99	1	0.0	0	0
91.00	821	40.0	2	2
92.50	821	40.0	493	494
93.00	1,000	100.0	455	949
94.00	1,402	100.0	1,201	2,150
95.00	1,950	100.0	1,676	3,826

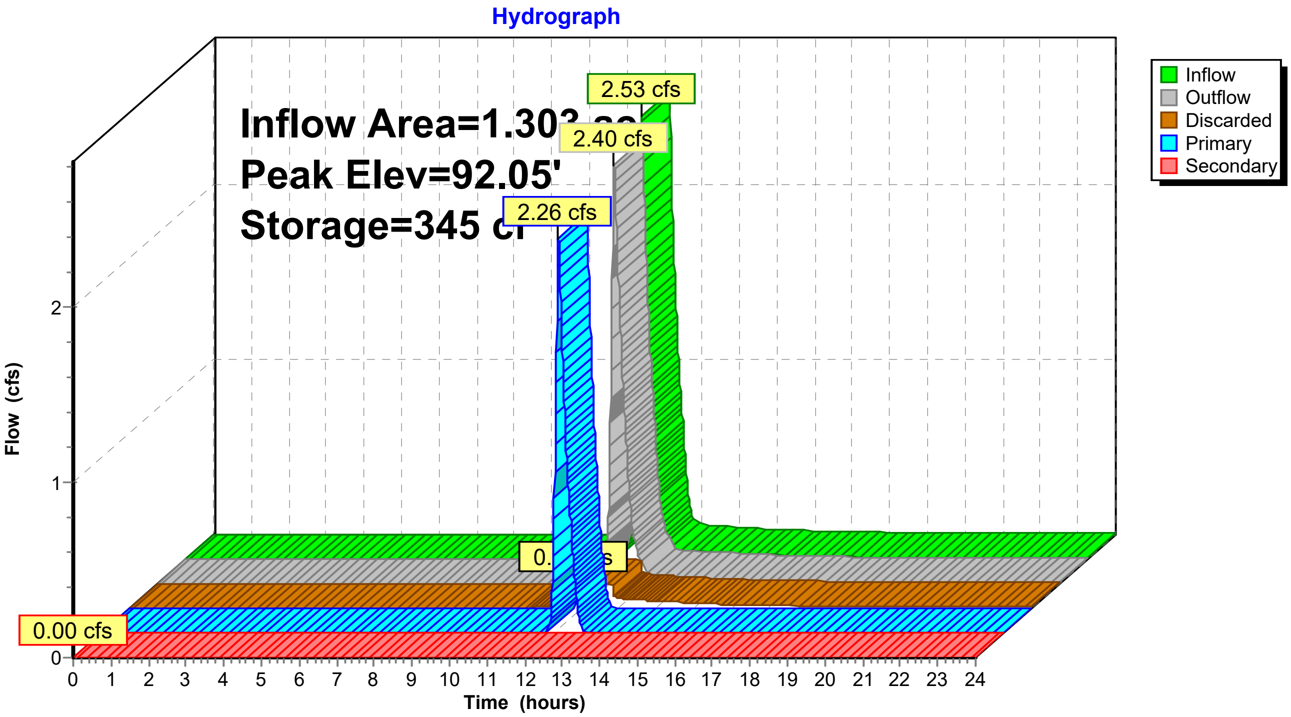
Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**12.0" Round Culvert** L= 38.8' Ke= 0.500 Inlet / Outlet Invert= 91.00' / 90.75' S= 0.0064 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 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	Discarded	90.99'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.14 cfs @ 11.84 hrs HW=91.00' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=2.25 cfs @ 12.16 hrs HW=92.04' TW=91.67' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.25 cfs @ 3.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.99' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG: Rain Garden



Summary for Pond ST: Stormtech

Inflow Area =	0.466 ac, 100.00% Impervious,	Inflow Depth > 3.47" for 2 yr event			
Inflow =	1.74 cfs @	12.07 hrs,	Volume=	0.135 af	
Outflow =	1.43 cfs @	12.12 hrs,	Volume=	0.135 af,	Atten= 18%, Lag= 3.1 min
Discarded =	0.18 cfs @	11.59 hrs,	Volume=	0.097 af	
Primary =	1.25 cfs @	12.12 hrs,	Volume=	0.038 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 98.59'@ 12.12 hrs Surf.Area= 1,056 sf Storage= 644 cf

Plug-Flow detention time=5.8 min calculated for 0.135 af (100% of inflow)
Center-of-Mass det. time=5.8 min (757.8 - 752.0)

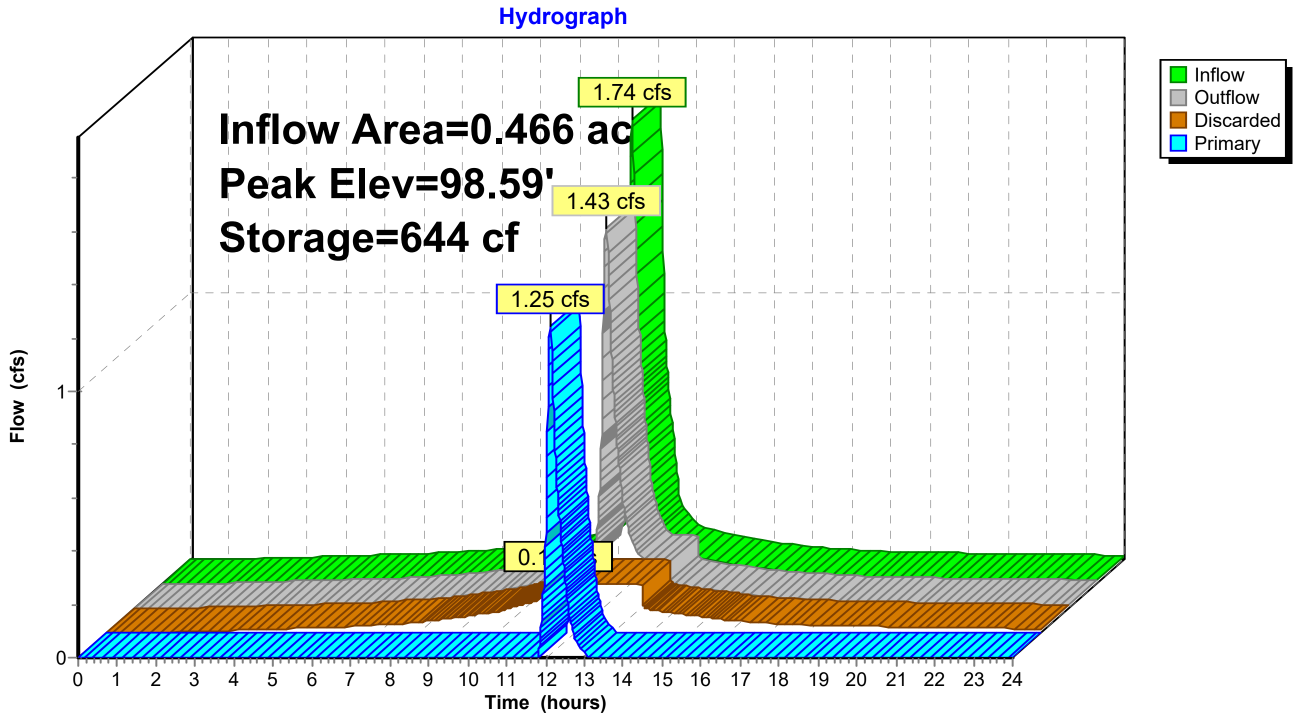
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	717 cf	**16.15'W x 65.36'L x 2.33'H Prismatoid** 2,459 cf Overall - 668 cf Embedded = 1,792 cf x 40.0% Voids
#2	98.08'	668 cf	**ADS_StormTech SC-310** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		1,385 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0605 '/' 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=0.18 cfs @ 11.59 hrs HW=97.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=1.24 cfs @ 12.12 hrs HW=98.59' TW=93.48' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.24 cfs @ 2.60 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=14,438 sf 3.17% Impervious Runoff Depth>2.88"
Flow Length=316' Tc=7.5 min CN=74 Runoff=1.06 cfs 0.080 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=20,293 sf 100.00% Impervious Runoff Depth>5.40"
Tc=5.0 min CN=98 Runoff=2.67 cfs 0.210 af

Subcatchment4S: EasternSite Runoff Area=21,625 sf 79.90% Impervious Runoff Depth>4.82"
Flow Length=303' Tc=8.8 min CN=93 Runoff=2.39 cfs 0.199 af

Subcatchment5S: ParkingLot Runoff Area=42,327 sf 82.42% Impervious Runoff Depth>4.82"
Tc=5.0 min CN=93 Runoff=5.31 cfs 0.391 af

ReachAP 1: AP 1 Inflow=8.09 cfs 0.418 af
Outflow=8.09 cfs 0.418 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 CBB: CB B Peak Elev=96.49' Inflow=2.39 cfs 0.199 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=2.39 cfs 0.199 af

Pond DMH1: DMH1 Peak Elev=93.70' Inflow=4.50 cfs 0.274 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=4.50 cfs 0.274 af

Pond DMH2: DMH2 Peak Elev=92.16' Inflow=8.09 cfs 0.418 af
20.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=8.09 cfs 0.418 af

Pond DMHB: DMHB Peak Elev=95.92' Inflow=2.39 cfs 0.199 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=2.39 cfs 0.199 af

Pond PP: PerviousPavement Peak Elev=94.05' Storage=1,129 cf Inflow=5.31 cfs 0.391 af
Discarded=0.60 cfs 0.270 af Primary=4.65 cfs 0.120 af Secondary=0.00 cfs 0.000 af Outflow=5.26 cfs 0.391 af

Pond RG: Rain Garden Peak Elev=93.13' Storage=1,085 cf Inflow=5.67 cfs 0.200 af
Discarded=0.18 cfs 0.055 af Primary=3.84 cfs 0.145 af Secondary=0.00 cfs 0.000 af Outflow=4.02 cfs 0.200 af

Pond ST: Stormtech Peak Elev=98.82' Storage=826 cf Inflow=2.67 cfs 0.210 af
Discarded=0.18 cfs 0.135 af Primary=2.12 cfs 0.074 af Outflow=2.30 cfs 0.210 af

Total Runoff Area = 2.395 ac Runoff Volume = 0.924 af Average Runoff Depth = 4.63"
27.16% Pervious = 0.650 ac 72.84% Impervious = 1.744 ac

Summary for Subcatchment 1S: Western Grassed Area

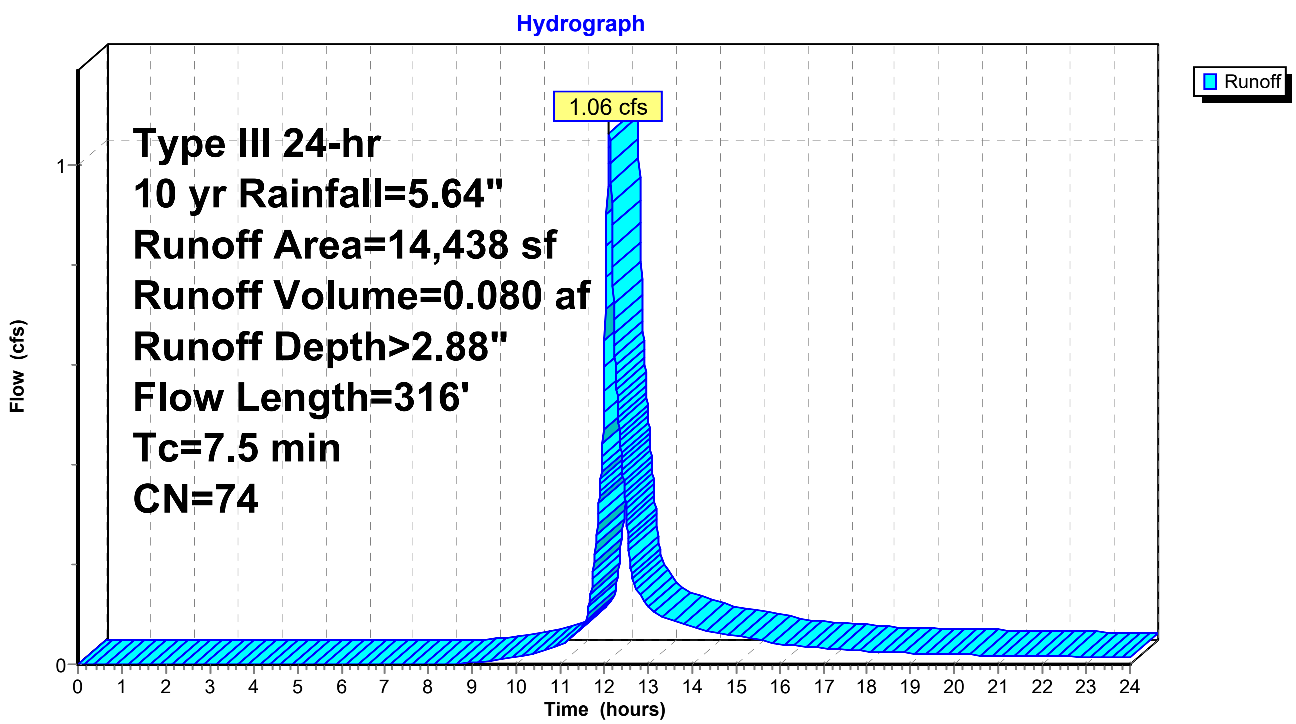
Runoff = 1.06 cfs @ 12.11 hrs, Volume= 0.080 af, Depth> 2.88"

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
	13,159	74	>75% Grass cover, Good, HSG C
	344	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
*	821	58	Rain Garden, HSG C
	14,438	74	Weighted Average
	13,980		96.83% Pervious Area
	458		3.17% 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

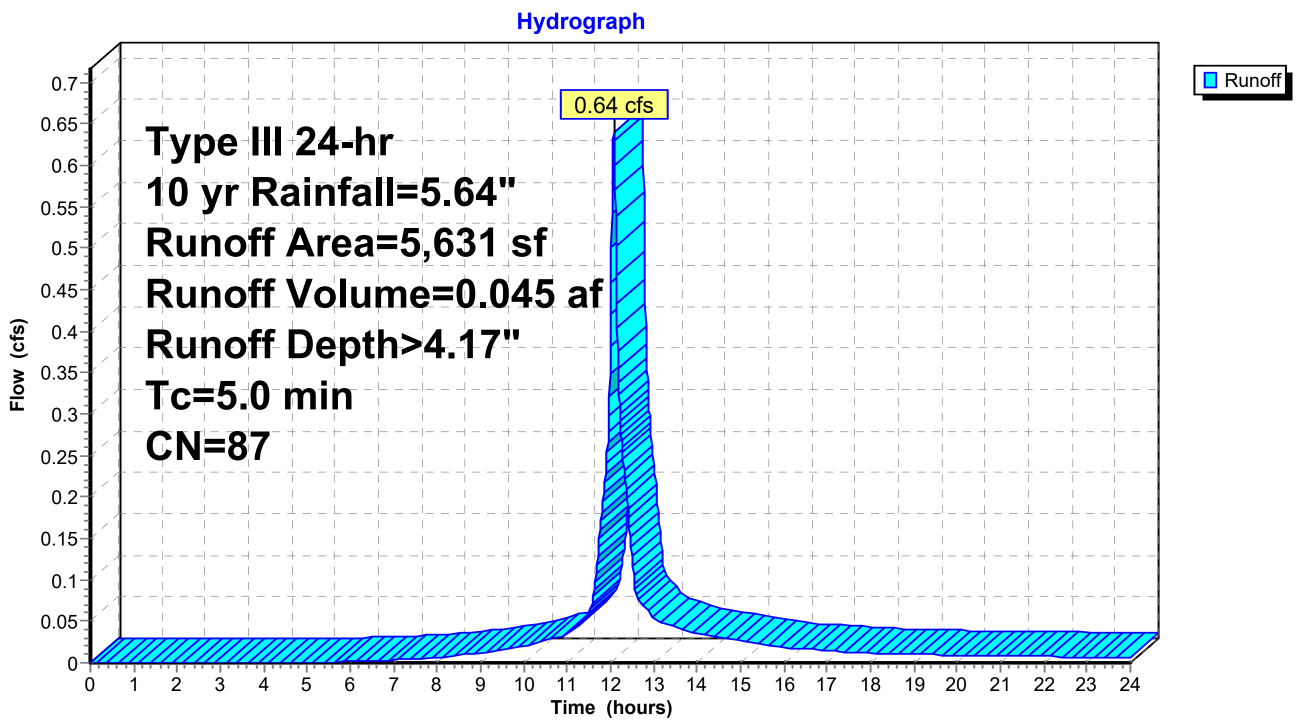
Runoff = 0.64 cfs @ 12.07 hrs, Volume= 0.045 af, Depth> 4.17"

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

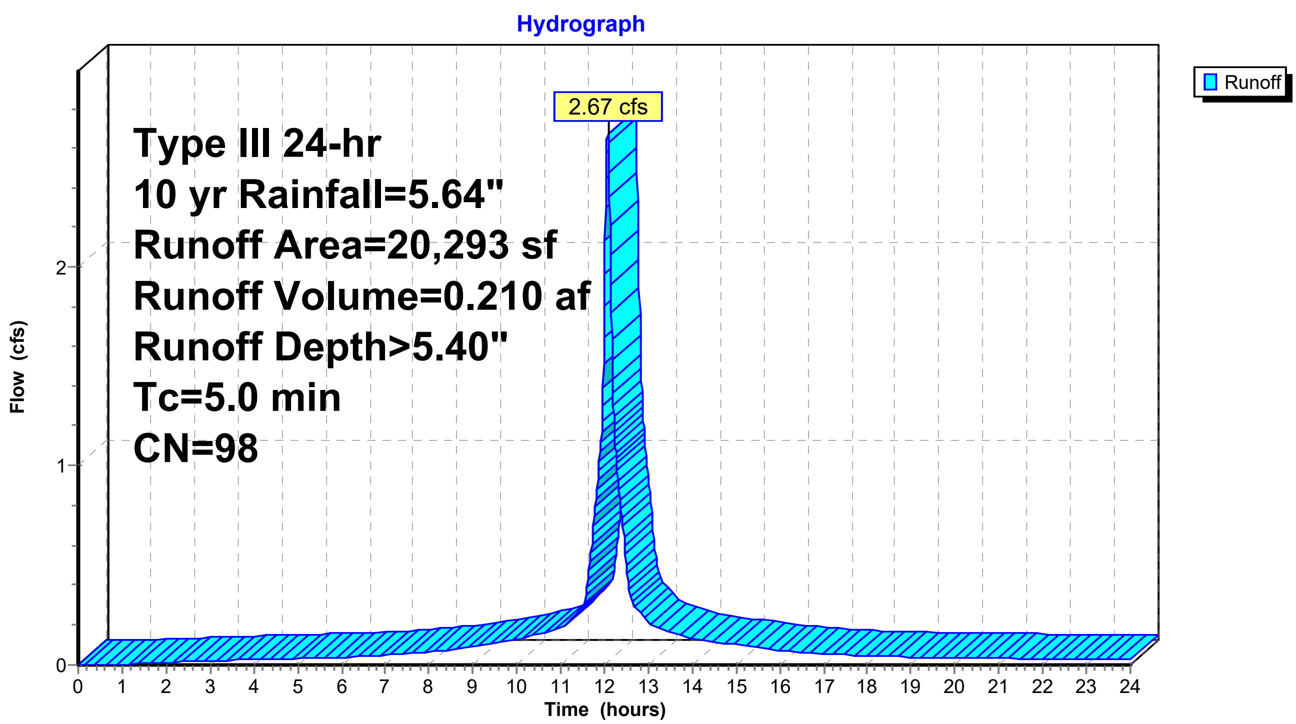
Runoff = 2.67 cfs @ 12.07 hrs, Volume= 0.210 af, Depth> 5.40"

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
2,612	98	Paved roads w/curbs & sewers, HSG C
17,681	98	Roofs, HSG C
20,293	98	Weighted Average
20,293		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

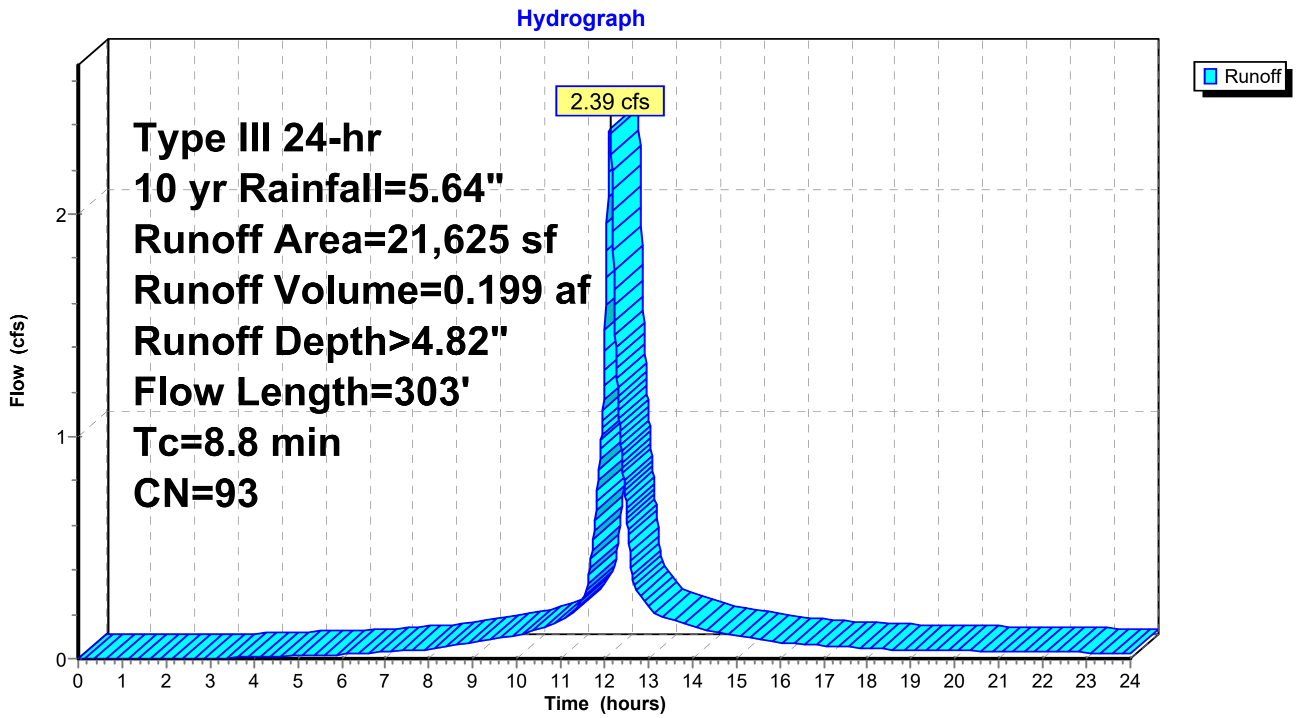
Runoff = 2.39 cfs @ 12.12 hrs, Volume= 0.199 af, Depth> 4.82"

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
4,347	74	>75% Grass cover, Good, HSG C
17,278	98	Paved roads w/curbs & sewers, HSG C
21,625	93	Weighted Average
4,347		20.10% Pervious Area
17,278		79.90% 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

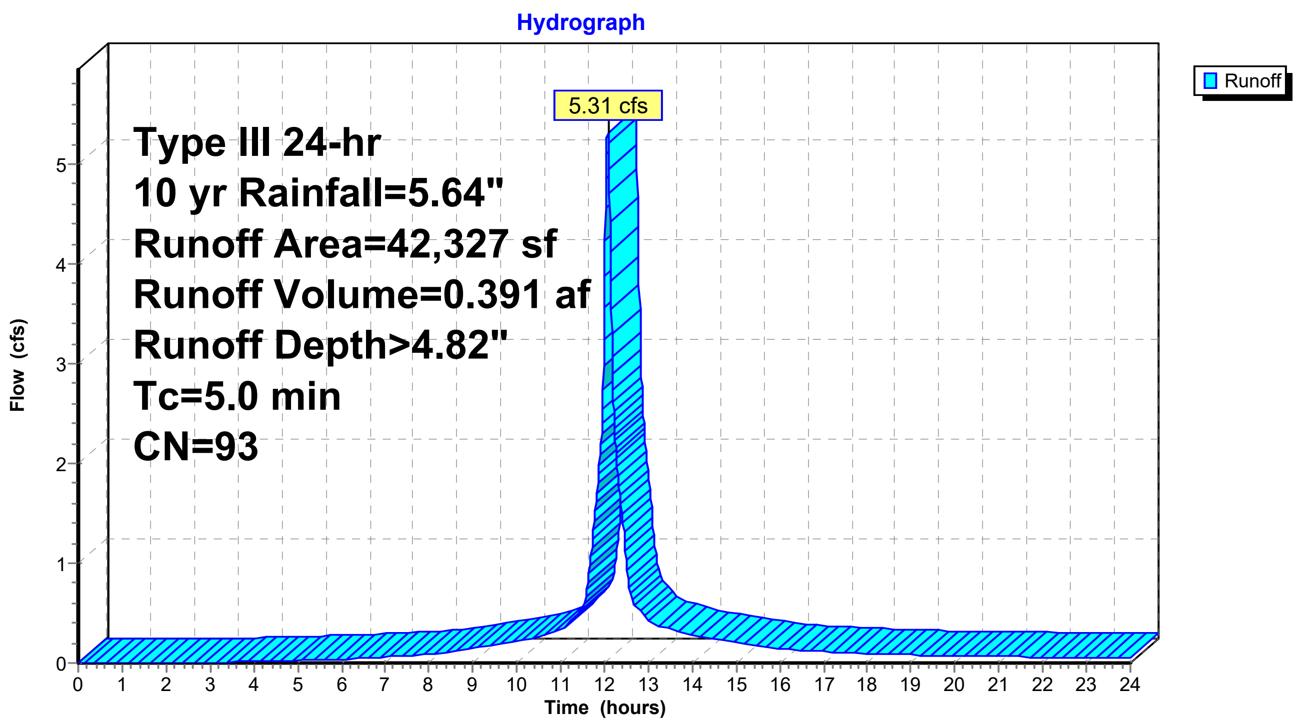
Runoff = 5.31 cfs @ 12.07 hrs, Volume= 0.391 af, Depth> 4.82"

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
	3,085	74	>75% Grass cover, Good, HSG C
	34,264	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
*	3,480	61	Pervious Pavement, HSG C
	490	98	Roofs, HSG C
	643	96	Gravel surface, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	42,327	93	Weighted Average
	7,439		17.58% Pervious Area
	34,888		82.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



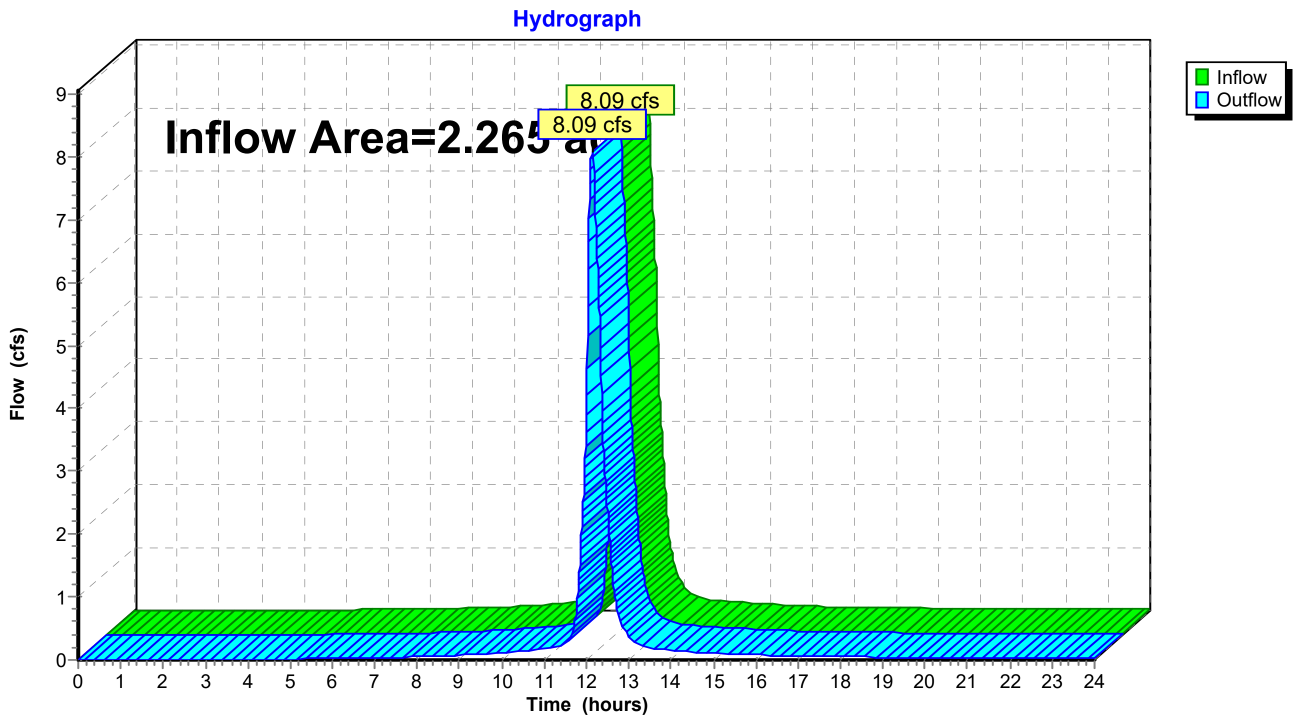
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.265 ac, 73.89% Impervious,	Inflow Depth > 2.22"	for 10 yr event
Inflow =	8.09 cfs @ 12.13 hrs,	Volume=	0.418 af
Outflow =	8.09 cfs @ 12.13 hrs,	Volume=	0.418 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

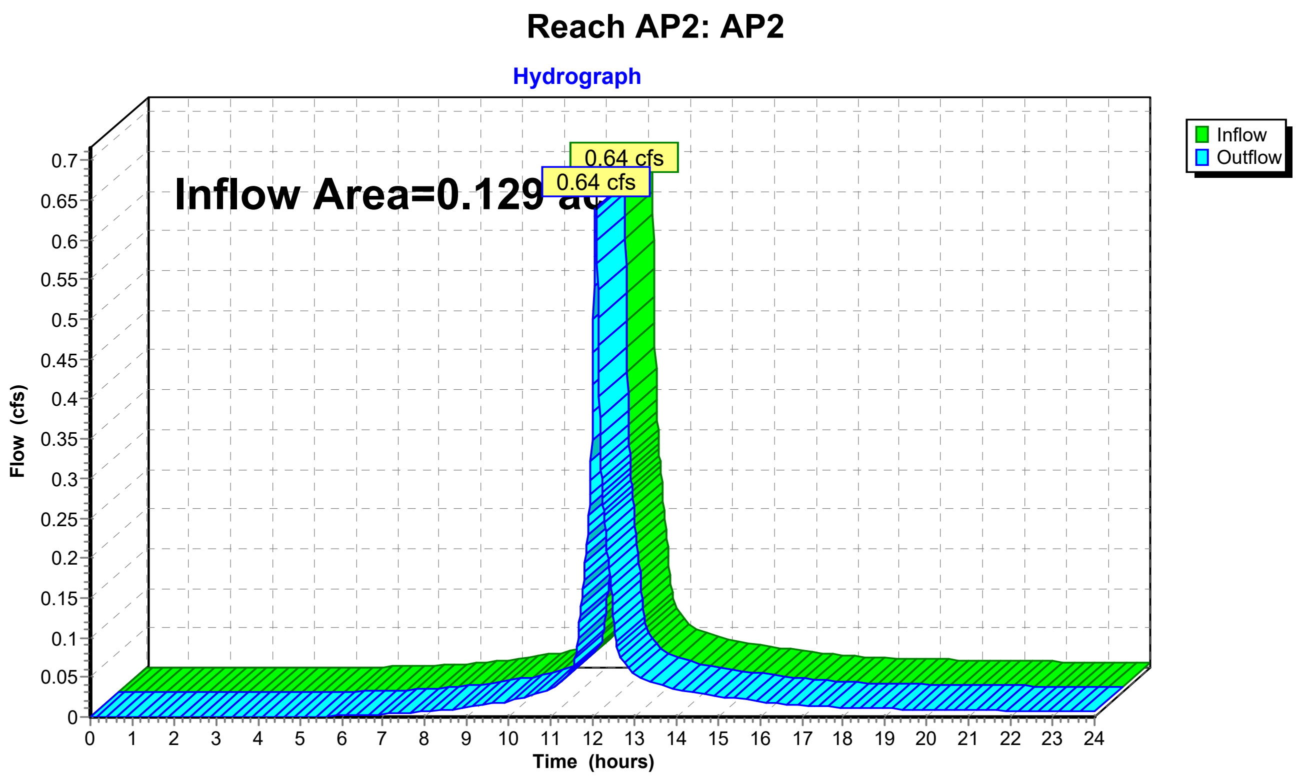


Summary for Reach AP2: AP2

[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



Summary for Pond CB2: CB2

[57] Hint: Peaked at 95.67' (Flood elevation advised)

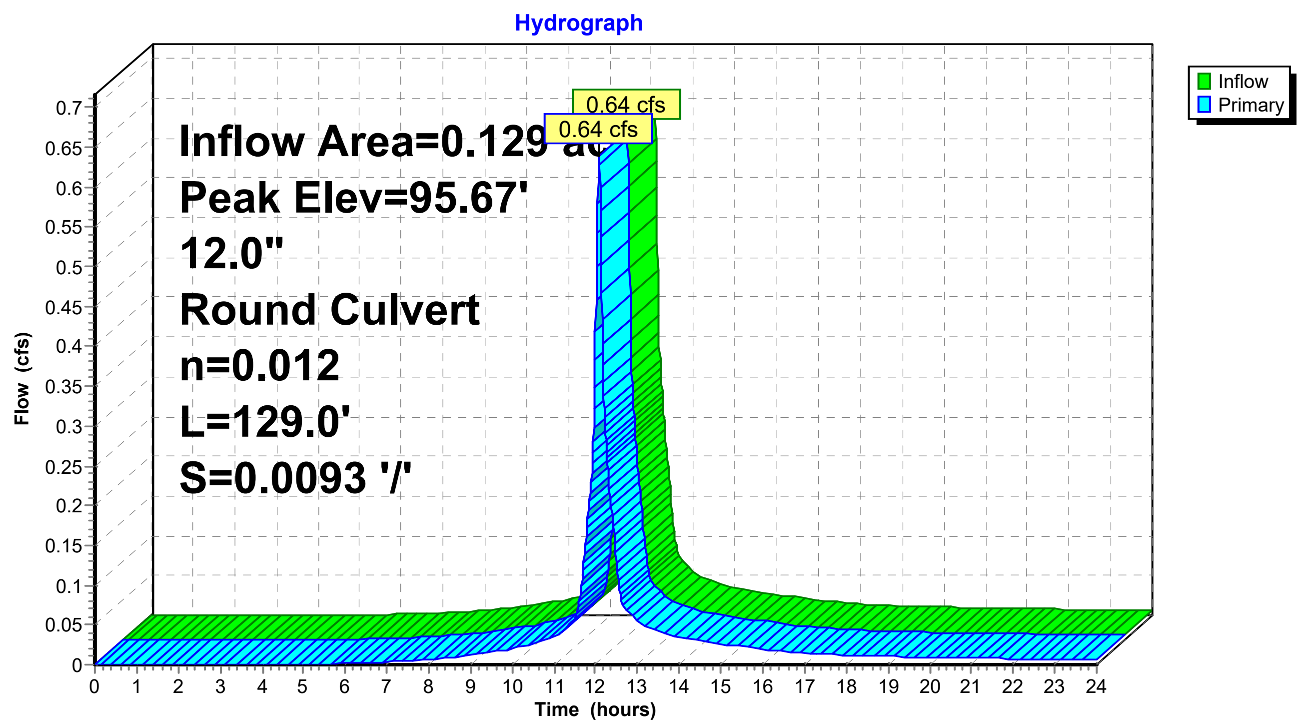
Inflow Area =	0.129 ac, 54.43% Impervious,	Inflow Depth > 4.17"	for 10 yr event	
Inflow =	0.64 cfs @	12.07 hrs, Volume=	0.045 af	
Outflow =	0.64 cfs @	12.07 hrs, Volume=	0.045 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.64 cfs @	12.07 hrs, Volume=	0.045 af	

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)

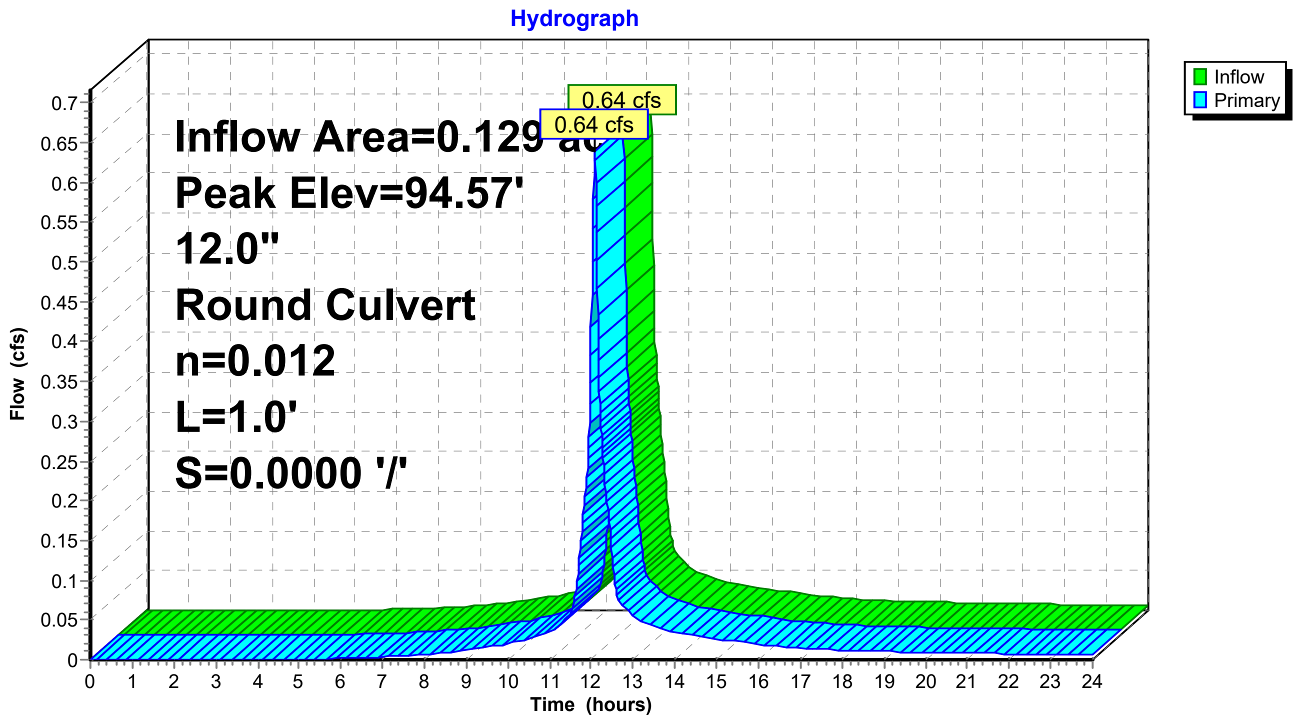
Inflow Area =	0.129 ac, 54.43% Impervious,	Inflow Depth > 4.17" for 10 yr event		
Inflow =	0.64 cfs @	12.07 hrs, Volume=	0.045 af	
Outflow =	0.64 cfs @	12.07 hrs, Volume=	0.045 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.64 cfs @	12.07 hrs, Volume=	0.045 af	

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 CBB: CB B

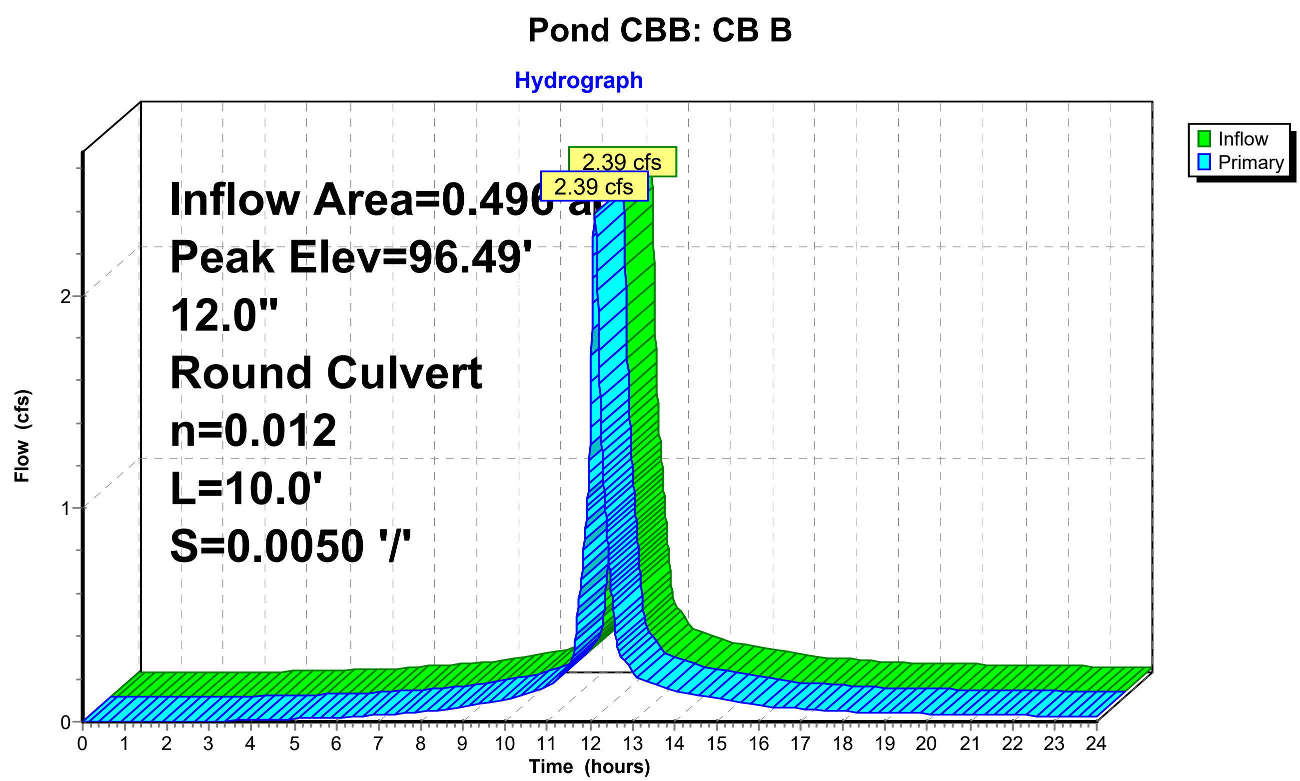
[57] Hint: Peaked at 96.49' (Flood elevation advised)

Inflow Area =	0.496 ac, 79.90% Impervious,	Inflow Depth > 4.82"	for 10 yr event	
Inflow =	2.39 cfs @	12.12 hrs, Volume=	0.199 af	
Outflow =	2.39 cfs @	12.12 hrs, Volume=	0.199 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.39 cfs @	12.12 hrs, Volume=	0.199 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.49'@ 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=2.39 cfs @ 12.12 hrs HW=96.49' TW=95.92' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 2.39 cfs @ 3.48 fps)



Summary for Pond DMH1: DMH1

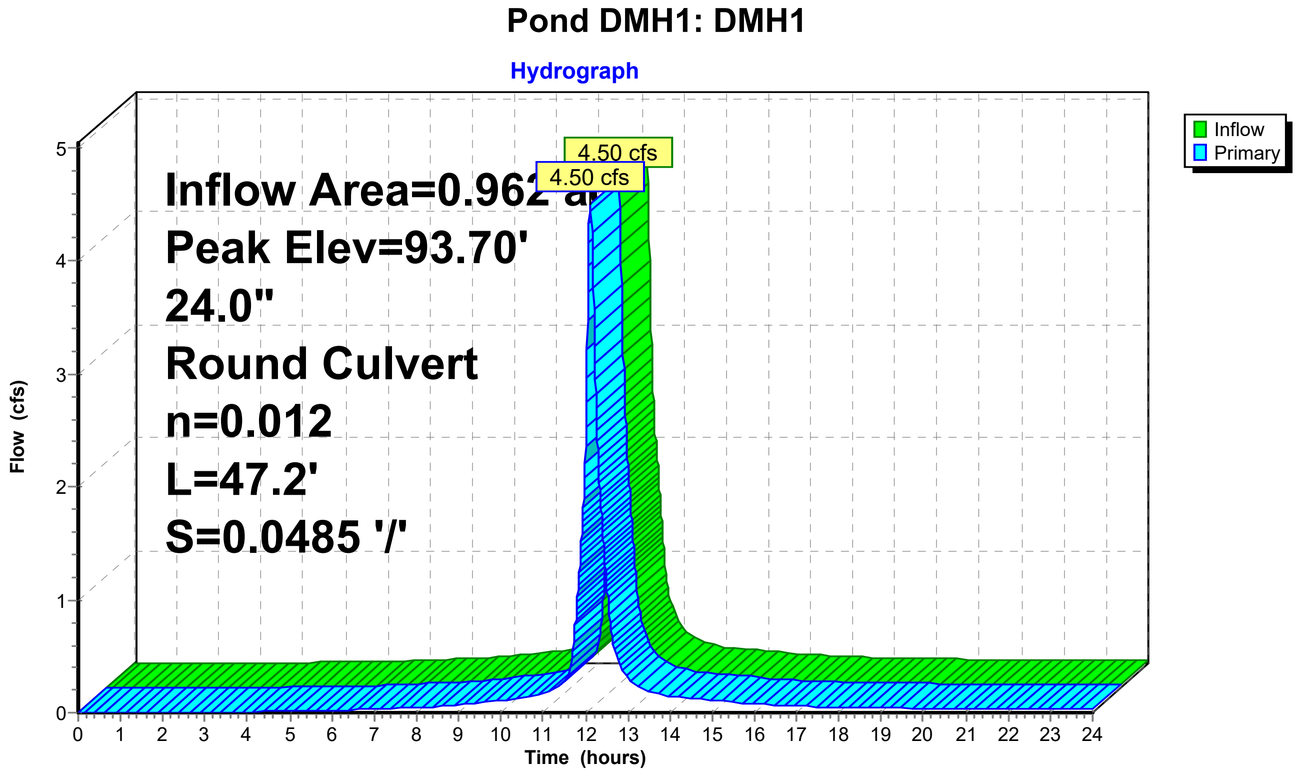
[57] Hint: Peaked at 93.70' (Flood elevation advised)

Inflow Area =	0.962 ac, 89.63% Impervious,	Inflow Depth > 3.41"	for 10 yr event	
Inflow =	4.50 cfs @	12.12 hrs, Volume=	0.274 af	
Outflow =	4.50 cfs @	12.12 hrs, Volume=	0.274 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.50 cfs @	12.12 hrs, Volume=	0.274 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.70'@ 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=4.50 cfs @ 12.12 hrs HW=93.70' TW=92.15' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.50 cfs @ 3.24 fps)



Summary for Pond DMH2: DMH2

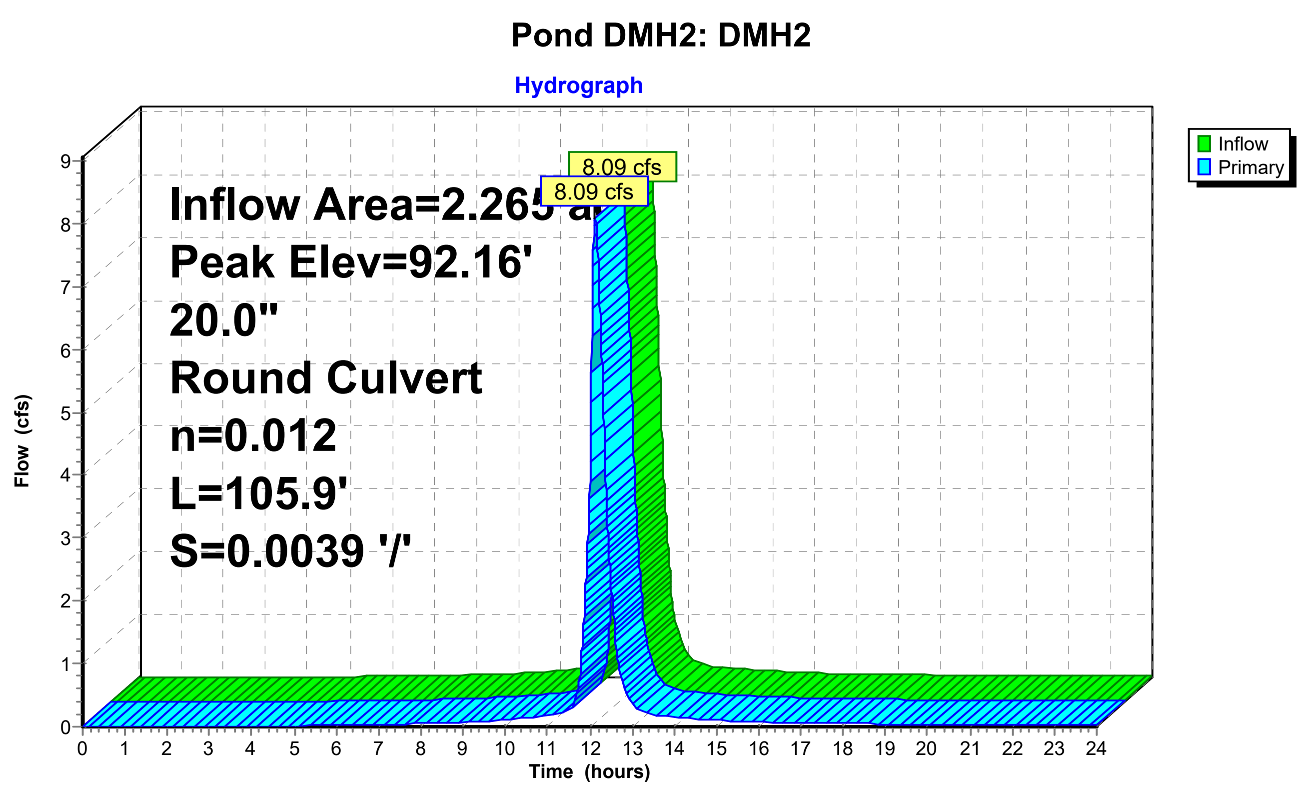
[57] Hint: Peaked at 92.16' (Flood elevation advised)

Inflow Area =	2.265 ac,	73.89% Impervious,	Inflow Depth > 2.22"	for 10 yr event	
Inflow =	8.09 cfs @	12.13 hrs,	Volume=	0.418 af	
Outflow =	8.09 cfs @	12.13 hrs,	Volume=	0.418 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.09 cfs @	12.13 hrs,	Volume=	0.418 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 92.16'@ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=8.08 cfs @ 12.13 hrs HW=92.16' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 8.08 cfs @ 4.53 fps)



Summary for Pond DMHB: DMHB

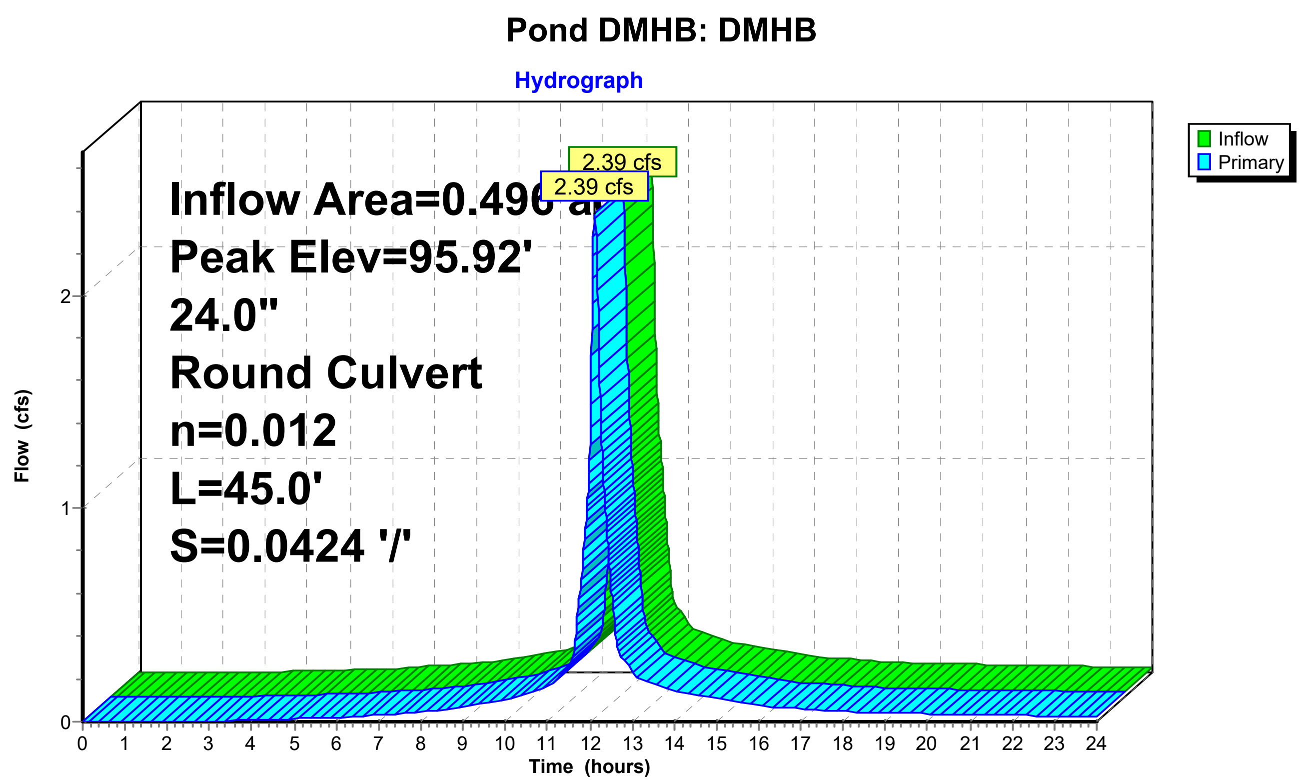
[57] Hint: Peaked at 95.92' (Flood elevation advised)

Inflow Area =	0.496 ac, 79.90% Impervious,	Inflow Depth > 4.82"	for 10 yr event	
Inflow =	2.39 cfs @	12.12 hrs, Volume=	0.199 af	
Outflow =	2.39 cfs @	12.12 hrs, Volume=	0.199 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.39 cfs @	12.12 hrs, Volume=	0.199 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 95.92'@ 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=2.39 cfs @ 12.12 hrs HW=95.92' TW=93.70' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.39 cfs @ 2.73 fps)



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.972 ac, 82.42% Impervious, Inflow Depth > 4.82" for 10 yr event
Inflow = 5.31 cfs @ 12.07 hrs, Volume= 0.391 af
Outflow = 5.26 cfs @ 12.08 hrs, Volume= 0.391 af, Atten= 1%, Lag= 0.7 min
Discarded = 0.60 cfs @ 11.57 hrs, Volume= 0.270 af
Primary = 4.65 cfs @ 12.08 hrs, Volume= 0.120 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= 94.05'@ 12.08 hrs Surf.Area= 3,480 sf Storage= 1,129 cf

Plug-Flow detention time=2.9 min calculated for 0.391 af (100% of inflow)
Center-of-Mass det. time=2.9 min (776.2 - 773.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	1,705 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.75	3,480	0.0	0	0
92.76	3,480	40.0	14	14
93.42	3,480	40.0	919	933
93.43	3,480	15.0	5	938
93.67	3,480	15.0	125	1,063
93.68	3,480	5.0	2	1,065
94.33	3,480	5.0	113	1,178
94.34	3,480	30.0	10	1,188
94.67	3,480	30.0	345	1,533
94.68	3,480	15.0	5	1,538
95.00	3,480	15.0	167	1,705

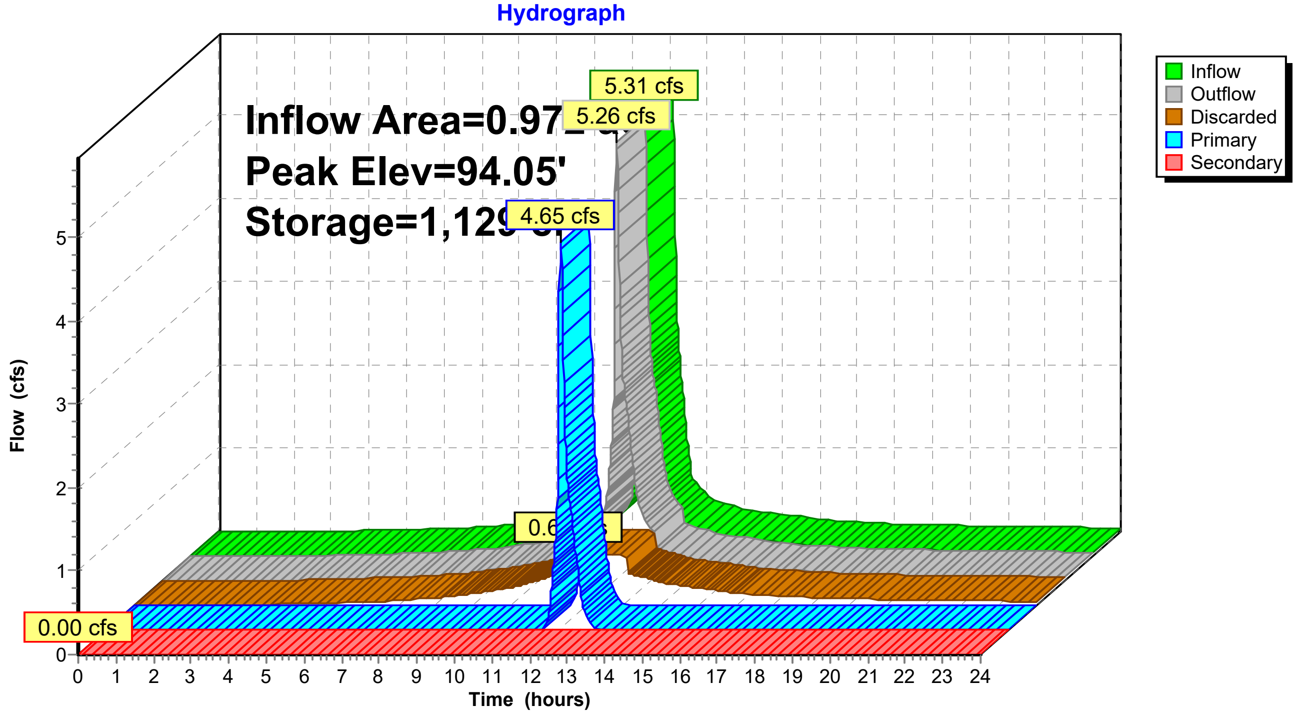
Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Secondary	94.90'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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	Discarded	92.75'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.60 cfs @ 11.57 hrs HW=92.76' (Free Discharge)
↑**3=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=4.64 cfs @ 12.08 hrs HW=94.05' TW=92.76' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 4.64 cfs @ 4.53 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.75' TW=90.99' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond RG: Rain Garden

Inflow Area = 1.303 ac, 62.27% Impervious, Inflow Depth > 1.84" for 10 yr event
Inflow = 5.67 cfs @ 12.09 hrs, Volume= 0.200 af
Outflow = 4.02 cfs @ 12.19 hrs, Volume= 0.200 af, Atten= 29%, Lag= 6.4 min
Discarded = 0.18 cfs @ 12.16 hrs, Volume= 0.055 af
Primary = 3.84 cfs @ 12.19 hrs, Volume= 0.145 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= 93.13'@ 12.16 hrs Surf.Area= 1,053 sf Storage= 1,085 cf

Plug-Flow detention time=2.7 min calculated for 0.200 af (100% of inflow)
Center-of-Mass det. time=2.7 min (774.5 - 771.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.99'	3,826 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.99	1	0.0	0	0
91.00	821	40.0	2	2
92.50	821	40.0	493	494
93.00	1,000	100.0	455	949
94.00	1,402	100.0	1,201	2,150
95.00	1,950	100.0	1,676	3,826

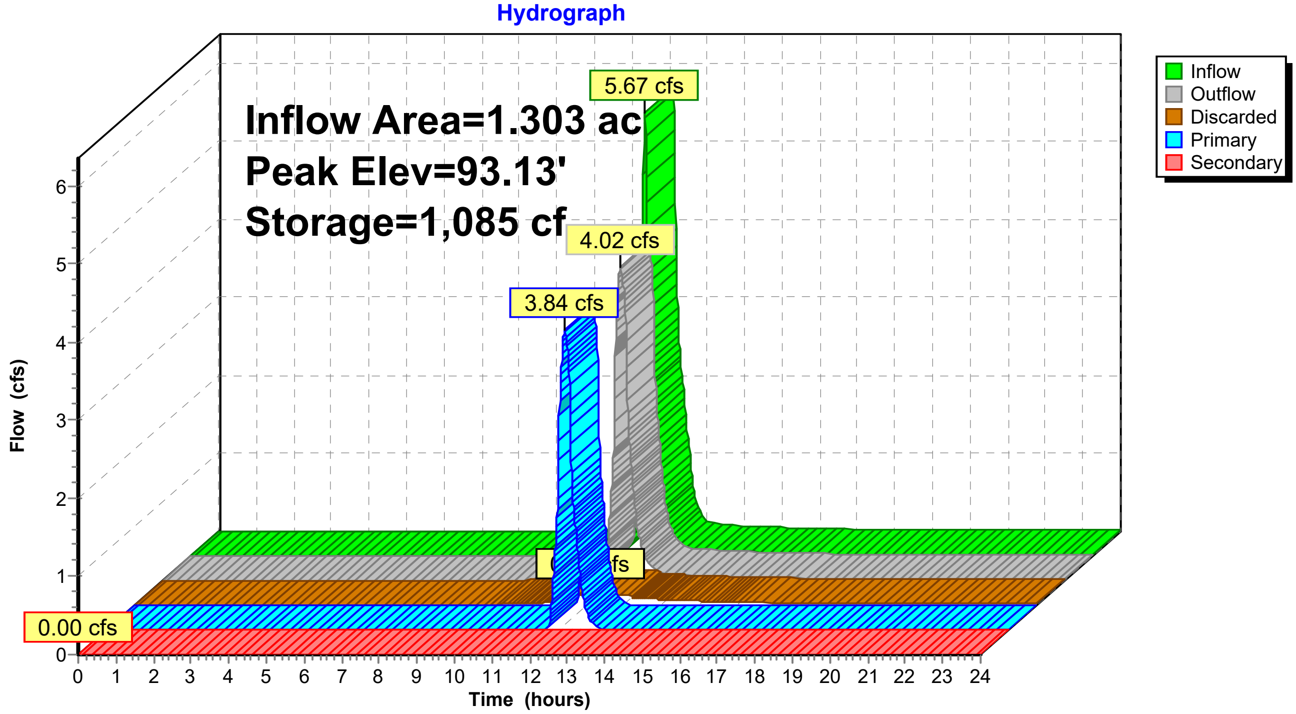
Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**12.0" Round Culvert** L= 38.8' Ke= 0.500 Inlet / Outlet Invert= 91.00' / 90.75' S= 0.0064 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 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	Discarded	90.99'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.18 cfs @ 12.16 hrs HW=93.13' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=3.84 cfs @ 12.19 hrs HW=93.08' TW=92.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.84 cfs @ 4.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.99' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG: Rain Garden



Summary for Pond ST: Stormtech

Inflow Area = 0.466 ac,100.00% Impervious, Inflow Depth > 5.40" for 10 yr event
Inflow = 2.67 cfs @ 12.07 hrs, Volume= 0.210 af
Outflow = 2.30 cfs @ 12.11 hrs, Volume= 0.210 af, Atten= 14%, Lag= 2.6 min
Discarded = 0.18 cfs @ 11.15 hrs, Volume= 0.135 af
Primary = 2.12 cfs @ 12.11 hrs, Volume= 0.074 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 98.82'@ 12.11 hrs Surf.Area= 1,056 sf Storage= 826 cf

Plug-Flow detention time=6.0 min calculated for 0.209 af (100% of inflow)
Center-of-Mass det. time=6.0 min (750.7 - 744.7)

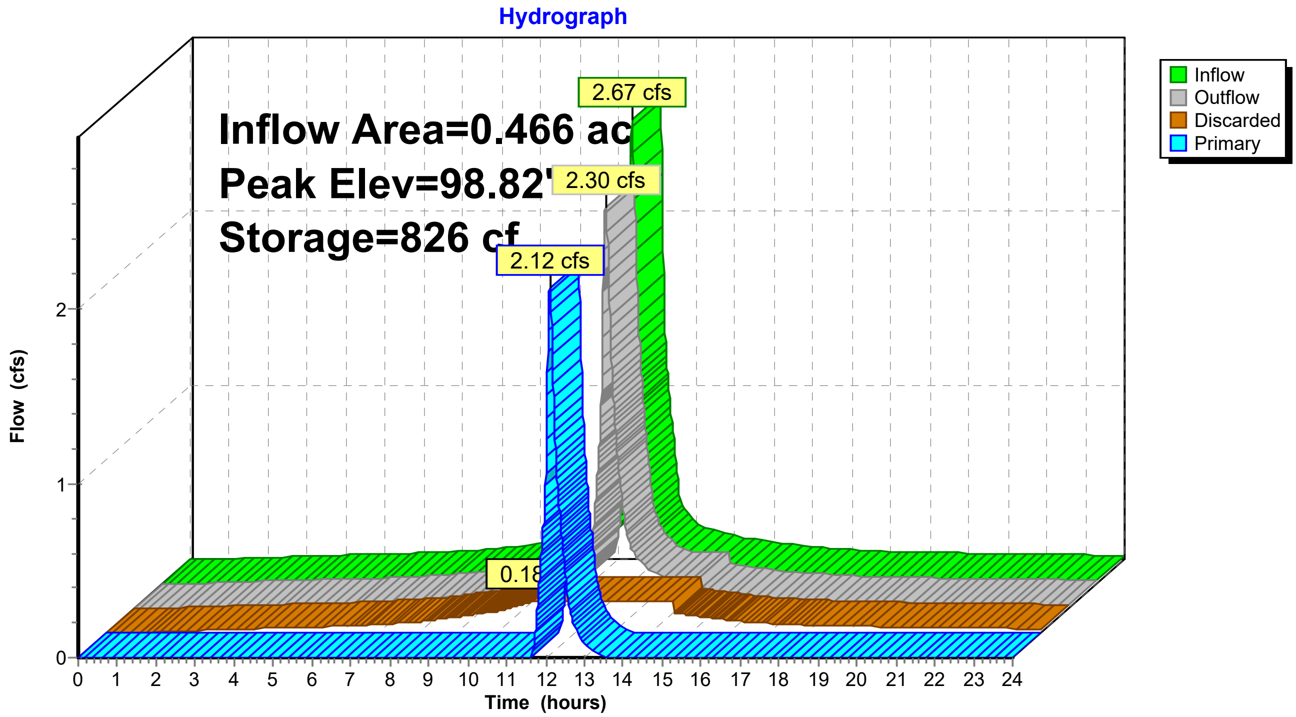
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	717 cf	**16.15'W x 65.36'L x 2.33'H Prismatoid**
			2,459 cf Overall - 668 cf Embedded = 1,792 cf x 40.0% Voids
#2	98.08'	668 cf	**ADS_StormTech SC-310** x 45 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall 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 5 rows
		1,385 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 43.0' Ke= 0.500
			Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0605 '/' 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=0.18 cfs @ 11.15 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=2.12 cfs @ 12.11 hrs HW=98.82' TW=93.70' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.12 cfs @ 3.08 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=14,438 sf 3.17% Impervious Runoff Depth>4.16"
Flow Length=316' Tc=7.5 min CN=74 Runoff=1.54 cfs 0.115 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=20,293 sf 100.00% Impervious Runoff Depth>6.90"
Tc=5.0 min CN=98 Runoff=3.38 cfs 0.268 af

Subcatchment4S: EasternSite Runoff Area=21,625 sf 79.90% Impervious Runoff Depth>6.30"
Flow Length=303' Tc=8.8 min CN=93 Runoff=3.07 cfs 0.261 af

Subcatchment5S: ParkingLot Runoff Area=42,327 sf 82.42% Impervious Runoff Depth>6.31"
Tc=5.0 min CN=93 Runoff=6.84 cfs 0.511 af

ReachAP 1: AP 1 Inflow=9.87 cfs 0.586 af
Outflow=9.87 cfs 0.586 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 CBB: CB B Peak Elev=96.77' Inflow=3.07 cfs 0.261 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=3.07 cfs 0.261 af

Pond DMH1: DMH1 Peak Elev=93.83' Inflow=5.78 cfs 0.368 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=5.78 cfs 0.368 af

Pond DMH2: DMH2 Peak Elev=92.50' Inflow=9.87 cfs 0.586 af
20.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=9.87 cfs 0.586 af

Pond DMHB: DMHB Peak Elev=96.02' Inflow=3.07 cfs 0.261 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=3.07 cfs 0.261 af

Pond PP: PerviousPavement Peak Elev=94.38' Storage=1,234 cf Inflow=6.84 cfs 0.511 af
Discarded=0.60 cfs 0.334 af Primary=5.85 cfs 0.176 af Secondary=0.00 cfs 0.000 af Outflow=6.45 cfs 0.511 af

Pond RG: Rain Garden Peak Elev=93.84' Storage=1,930 cf Inflow=7.34 cfs 0.291 af
Discarded=0.23 cfs 0.073 af Primary=4.64 cfs 0.218 af Secondary=0.00 cfs 0.000 af Outflow=4.86 cfs 0.291 af

Pond ST: Stormtech Peak Elev=99.01' Storage=961 cf Inflow=3.38 cfs 0.268 af
Discarded=0.18 cfs 0.161 af Primary=2.70 cfs 0.107 af Outflow=2.89 cfs 0.268 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.214 af Average Runoff Depth = 6.09"
27.16% Pervious = 0.650 ac 72.84% Impervious = 1.744 ac

Summary for Subcatchment 1S: Western Grassed Area

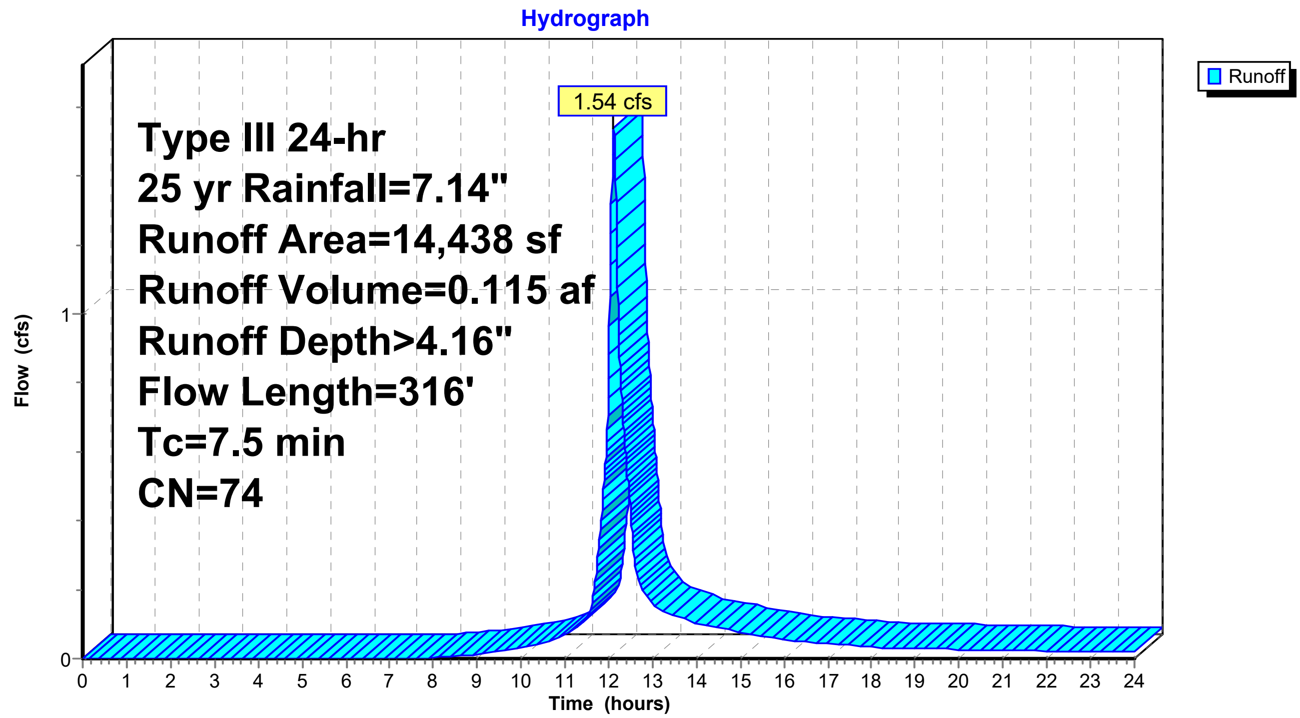
Runoff = 1.54 cfs @ 12.11 hrs, Volume= 0.115 af, Depth> 4.16"

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
	13,159	74	>75% Grass cover, Good, HSG C
	344	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
*	821	58	Rain Garden, HSG C
	14,438	74	Weighted Average
	13,980		96.83% Pervious Area
	458		3.17% 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

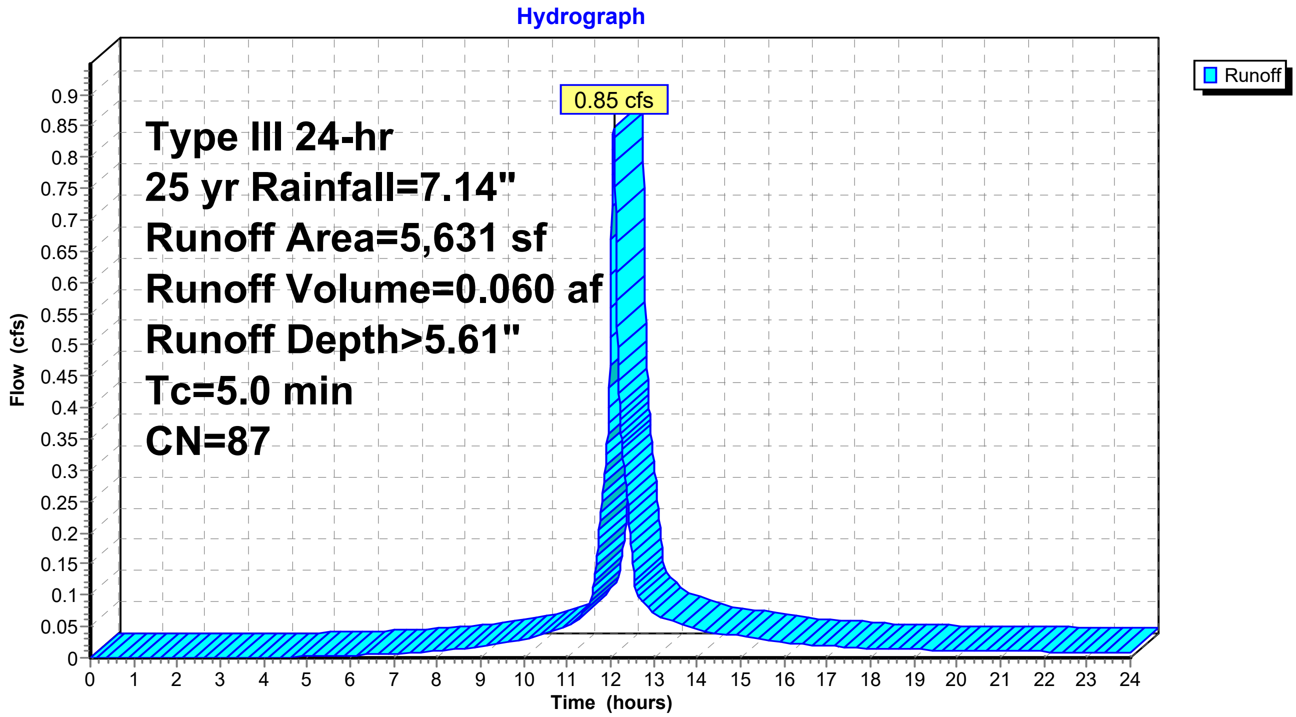
Runoff = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 5.61"

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

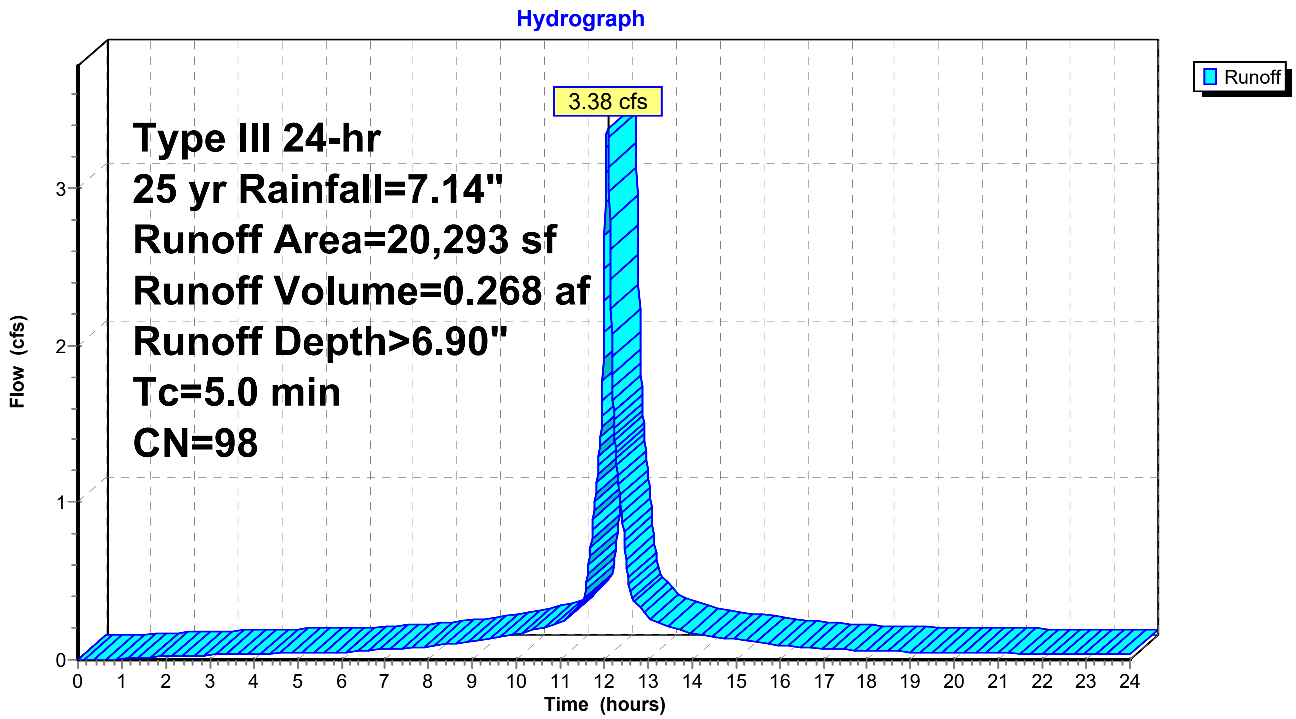
Runoff = 3.38 cfs @ 12.07 hrs, Volume= 0.268 af, Depth> 6.90"

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
2,612	98	Paved roads w/curbs & sewers, HSG C
17,681	98	Roofs, HSG C
20,293	98	Weighted Average
20,293		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

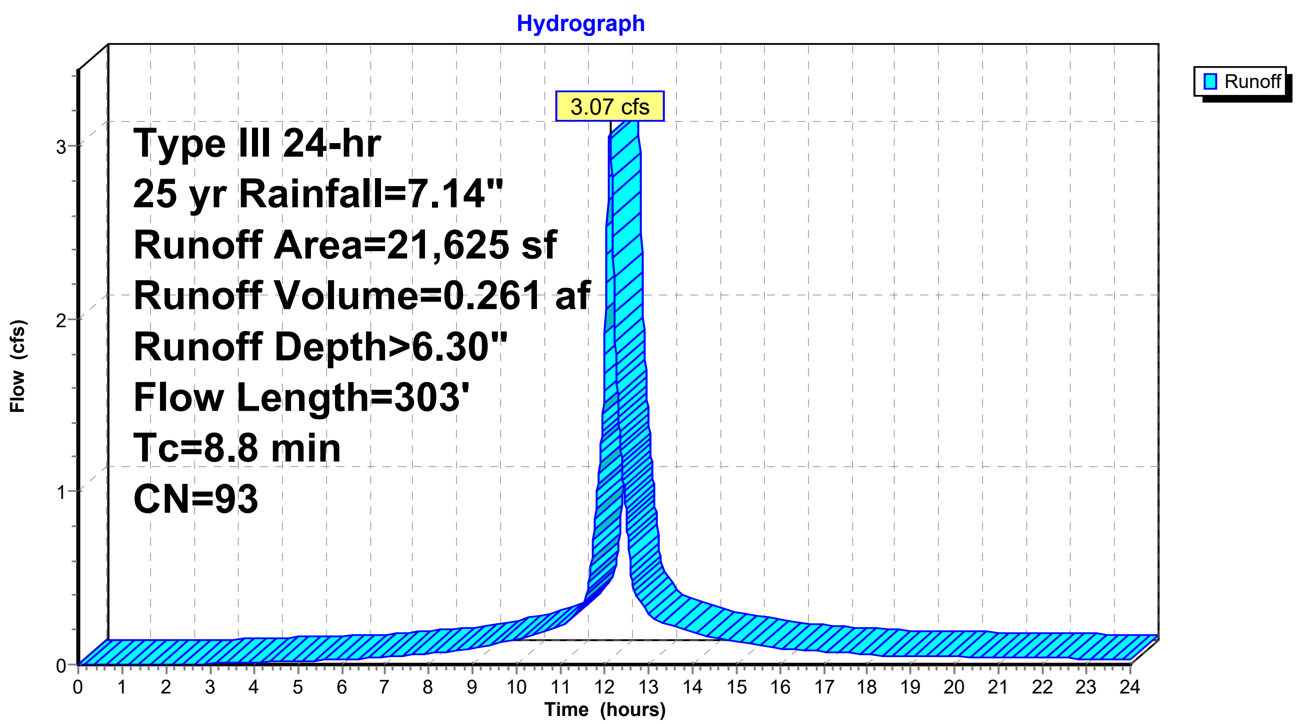
Runoff = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af, Depth> 6.30"

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
4,347	74	>75% Grass cover, Good, HSG C
17,278	98	Paved roads w/curbs & sewers, HSG C
21,625	93	Weighted Average
4,347		20.10% Pervious Area
17,278		79.90% 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

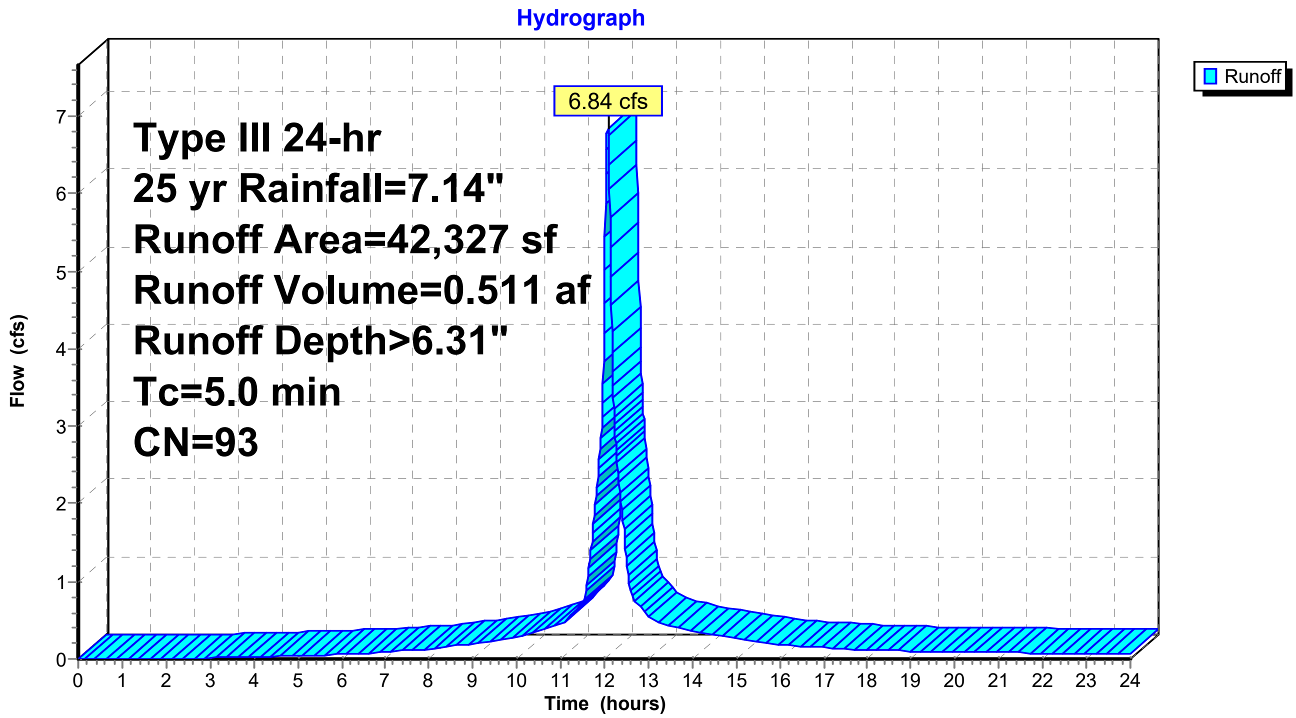
Runoff = 6.84 cfs @ 12.07 hrs, Volume= 0.511 af, Depth> 6.31"

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 25 yr Rainfall=7.14"

	Area (sf)	CN	Description
	3,085	74	>75% Grass cover, Good, HSG C
	34,264	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
*	3,480	61	Pervious Pavement, HSG C
	490	98	Roofs, HSG C
	643	96	Gravel surface, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	42,327	93	Weighted Average
	7,439		17.58% Pervious Area
	34,888		82.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot



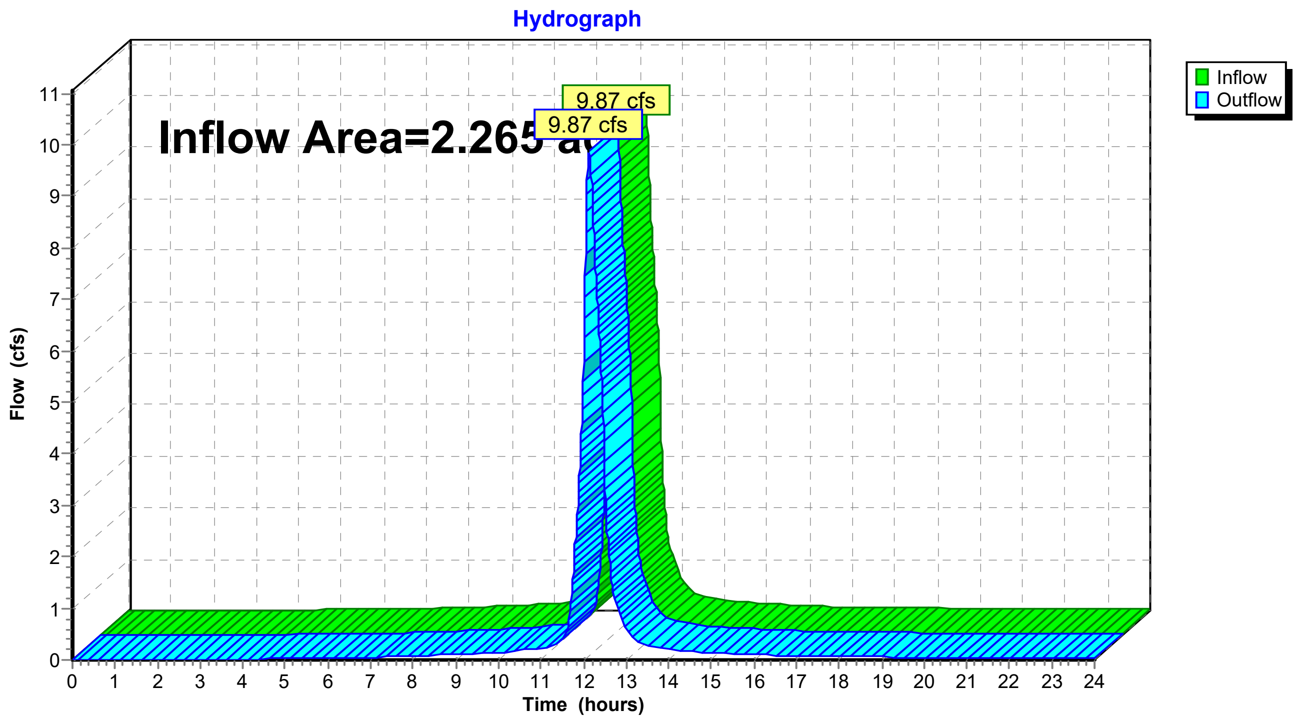
Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.265 ac, 73.89% Impervious, Inflow Depth > 3.10" for 25 yr event
Inflow = 9.87 cfs @ 12.14 hrs, Volume= 0.586 af
Outflow = 9.87 cfs @ 12.14 hrs, Volume= 0.586 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



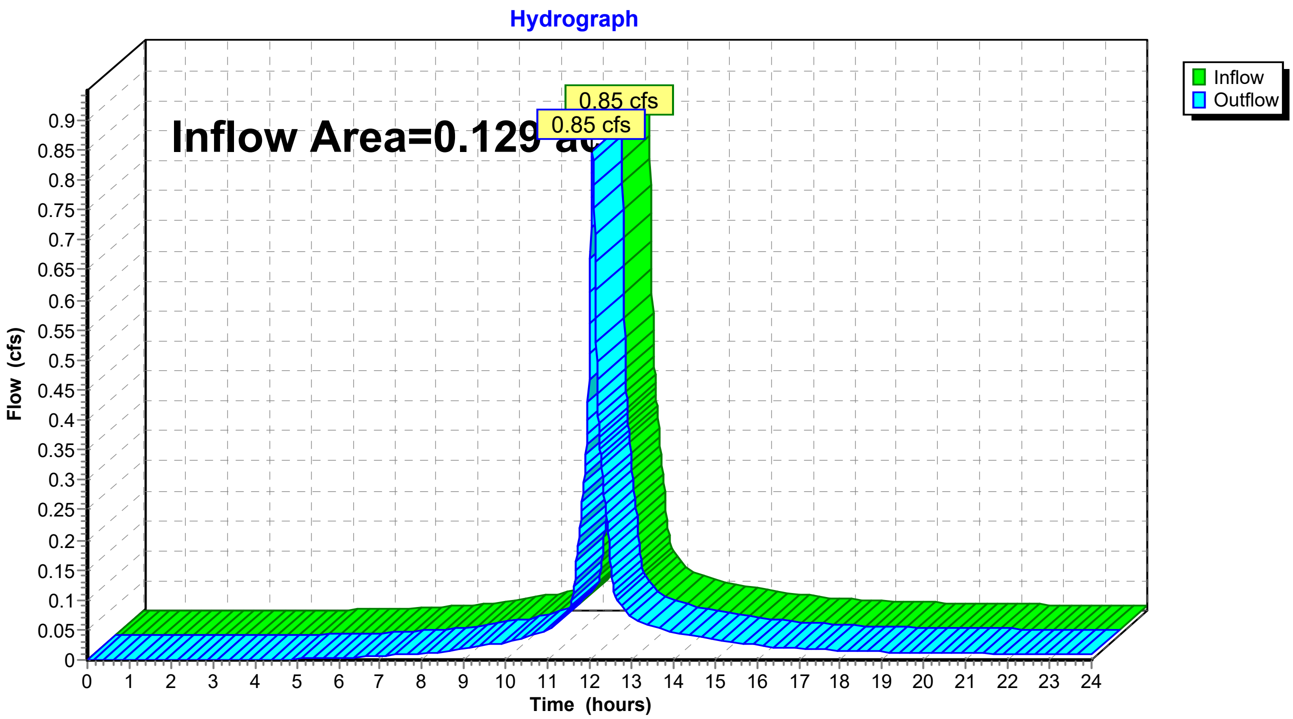
Summary for Reach AP2: AP2

[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

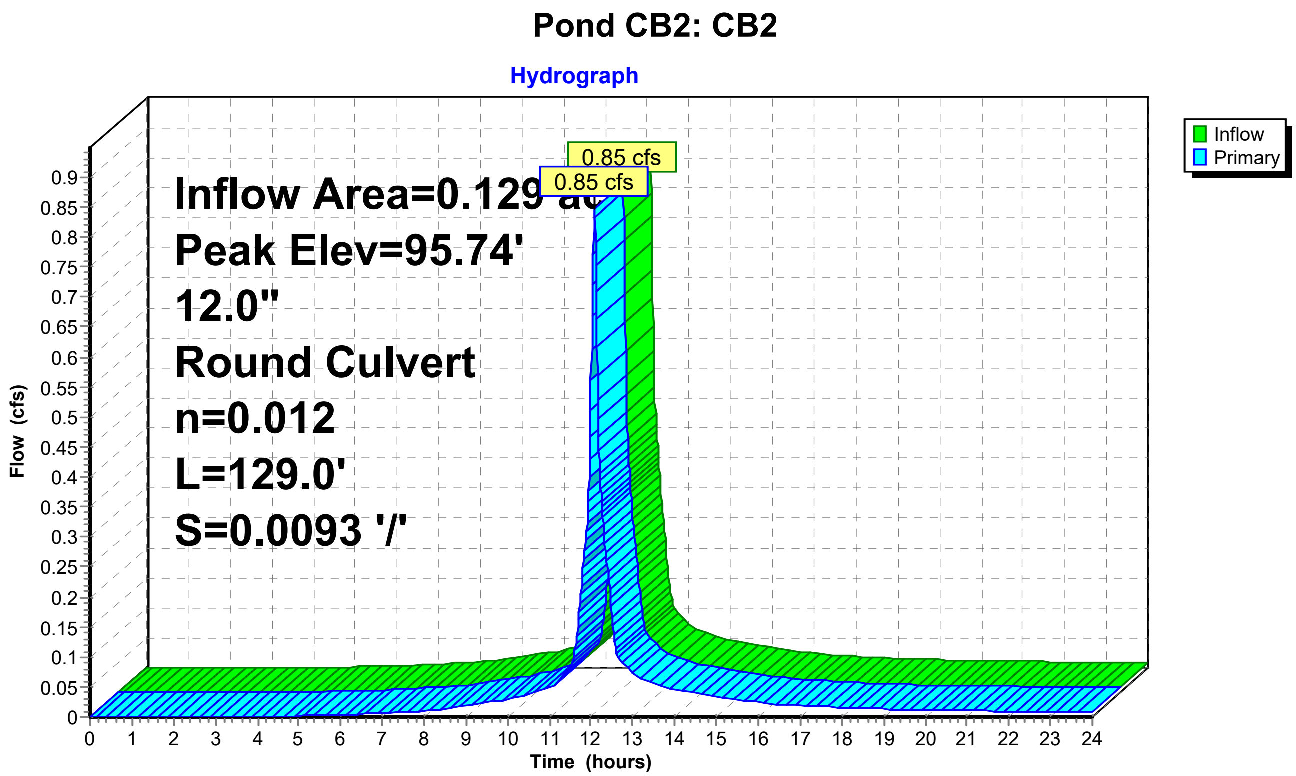
[57] Hint: Peaked at 95.74' (Flood elevation advised)

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)



Summary for Pond CB3: CB3

[57] Hint: Peaked at 94.65' (Flood elevation advised)

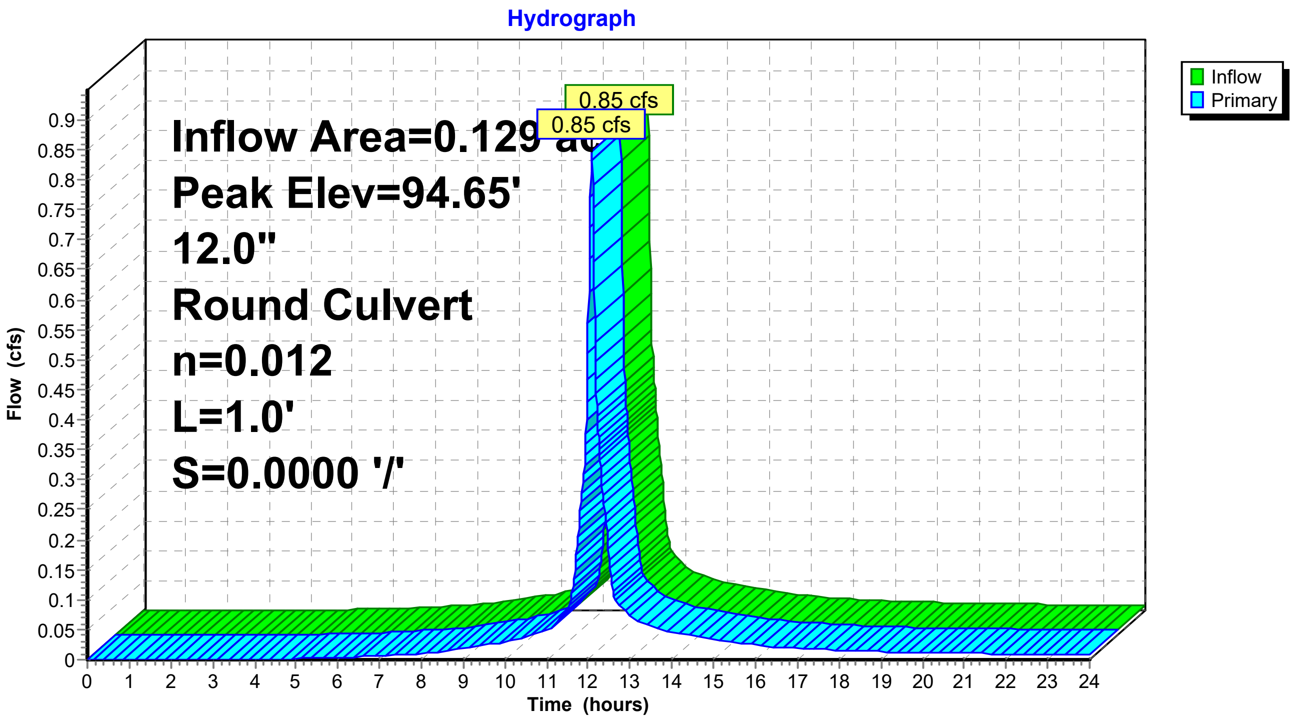
Inflow Area = 0.129 ac, 54.43% Impervious, Inflow Depth > 5.61" for 25 yr event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.85 cfs @ 12.07 hrs, Volume= 0.060 af

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 CBB: CB B

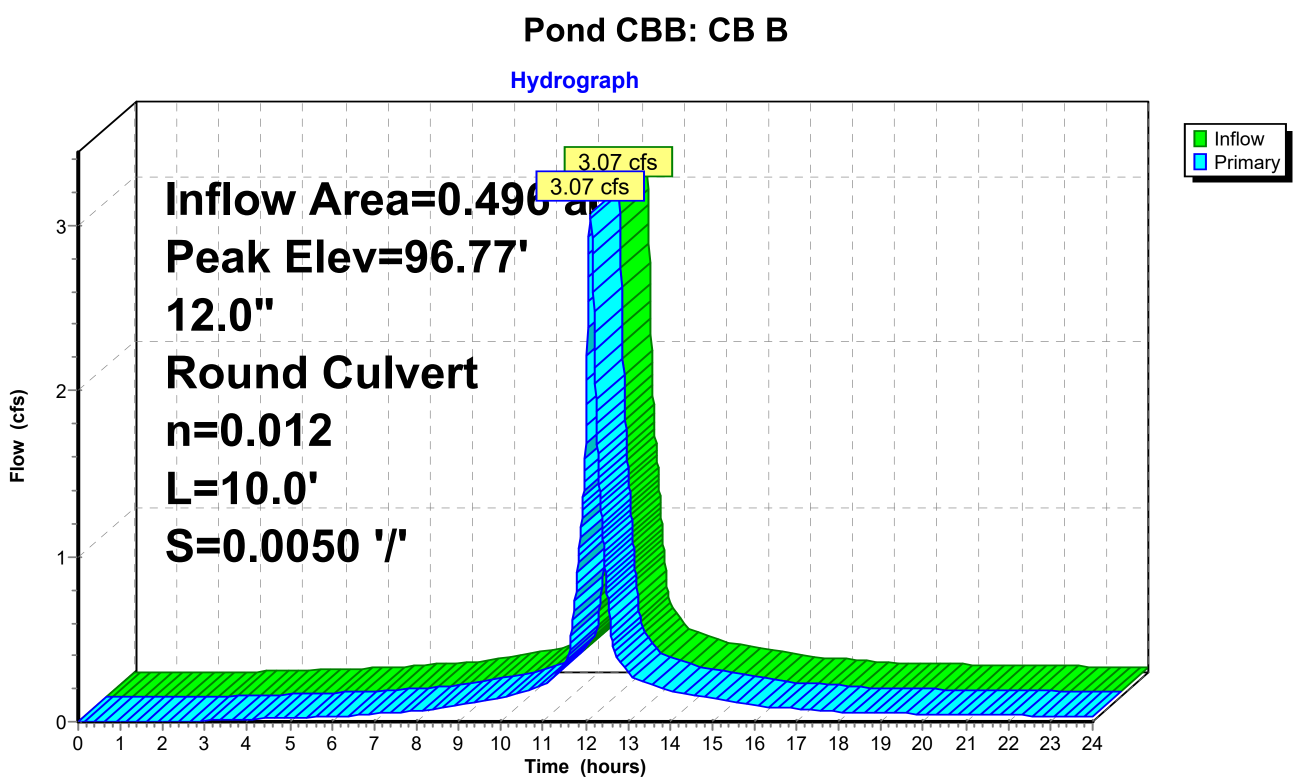
[57] Hint: Peaked at 96.77' (Flood elevation advised)

Inflow Area = 0.496 ac, 79.90% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af
Outflow = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.77'@ 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=3.07 cfs @ 12.12 hrs HW=96.77' TW=96.02' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.07 cfs @ 3.91 fps)



Summary for Pond DMH1: DMH1

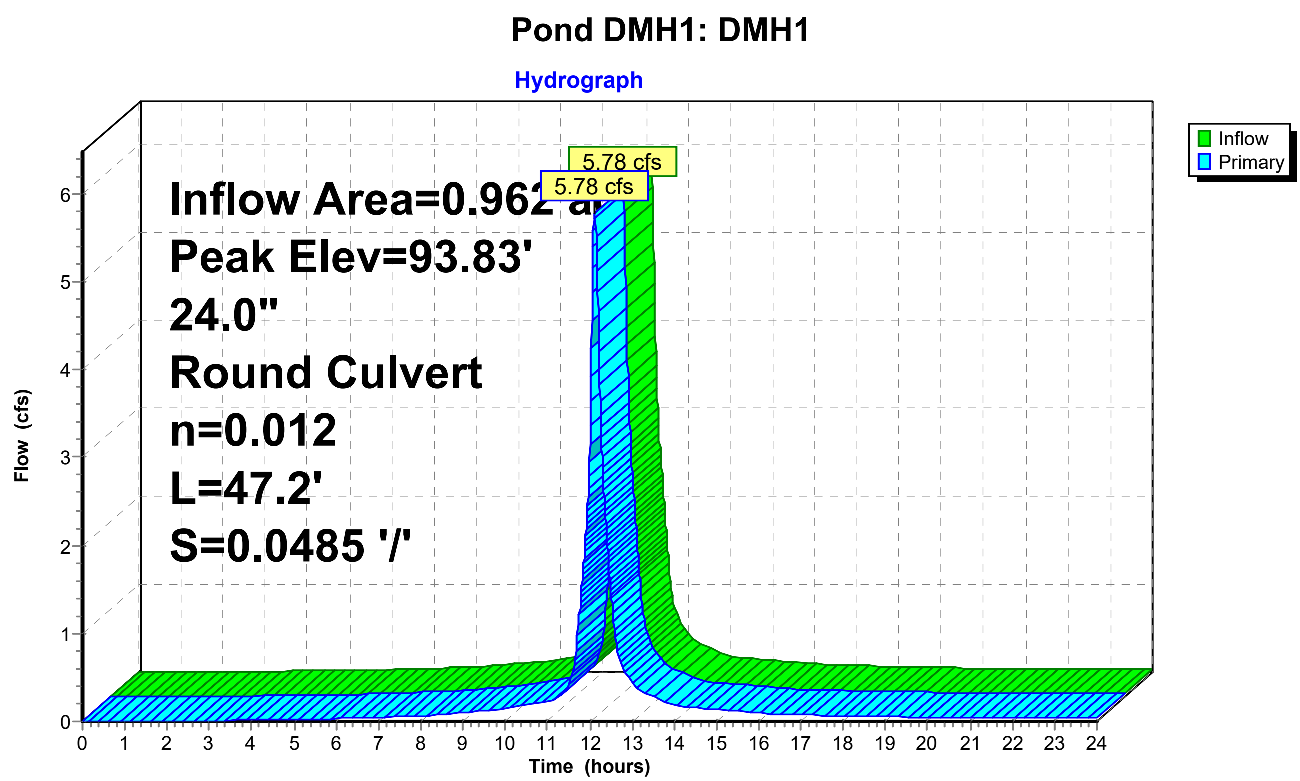
[57] Hint: Peaked at 93.83' (Flood elevation advised)

Inflow Area =	0.962 ac,	89.63% Impervious,	Inflow Depth > 4.59"	for 25 yr event	
Inflow =	5.78 cfs @	12.12 hrs,	Volume=	0.368 af	
Outflow =	5.78 cfs @	12.12 hrs,	Volume=	0.368 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.78 cfs @	12.12 hrs,	Volume=	0.368 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.83'@ 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=5.77 cfs @ 12.12 hrs HW=93.83' TW=92.48' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 5.77 cfs @ 3.48 fps)



Summary for Pond DMH2: DMH2

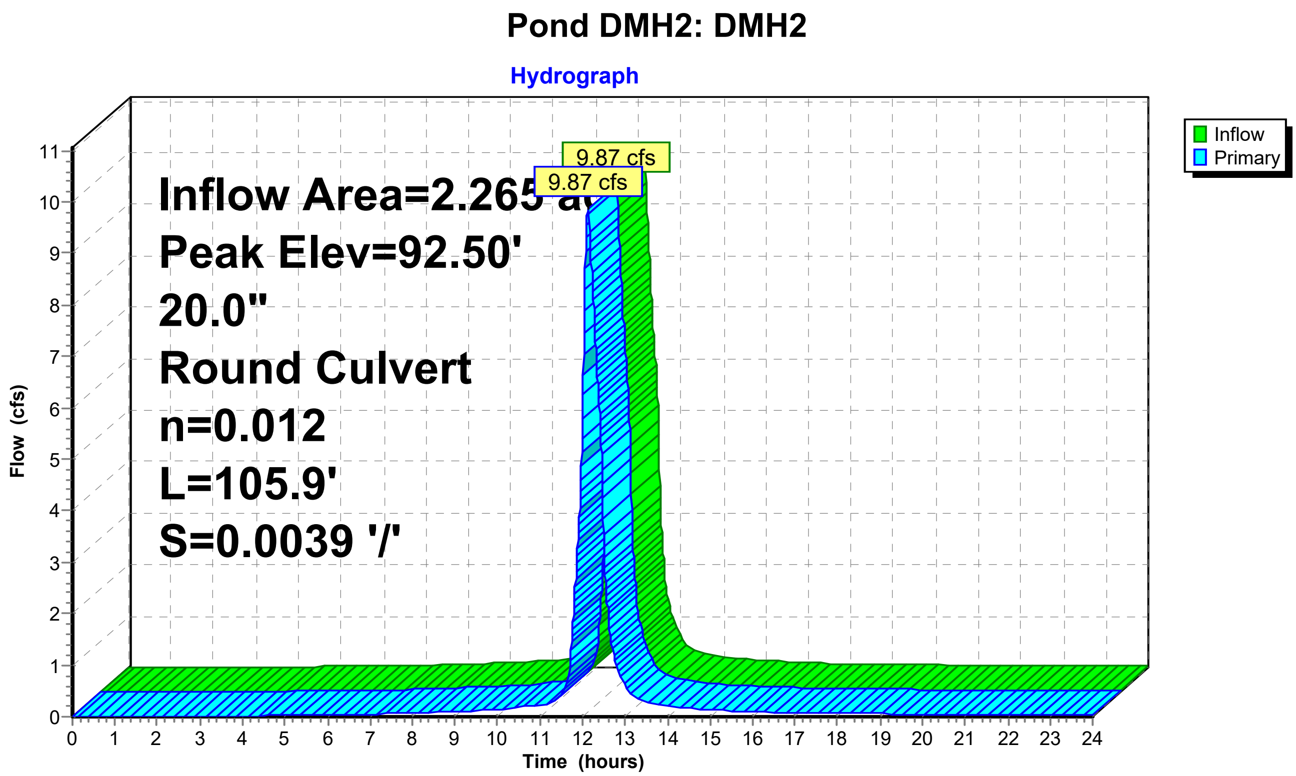
[57] Hint: Peaked at 92.50' (Flood elevation advised)

Inflow Area = 2.265 ac, 73.89% Impervious, Inflow Depth > 3.10" for 25 yr event
Inflow = 9.87 cfs @ 12.14 hrs, Volume= 0.586 af
Outflow = 9.87 cfs @ 12.14 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.0 min
Primary = 9.87 cfs @ 12.14 hrs, Volume= 0.586 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 92.50'@ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=9.87 cfs @ 12.14 hrs HW=92.50' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 9.87 cfs @ 4.72 fps)



Summary for Pond DMHB: DMHB

[57] Hint: Peaked at 96.02' (Flood elevation advised)

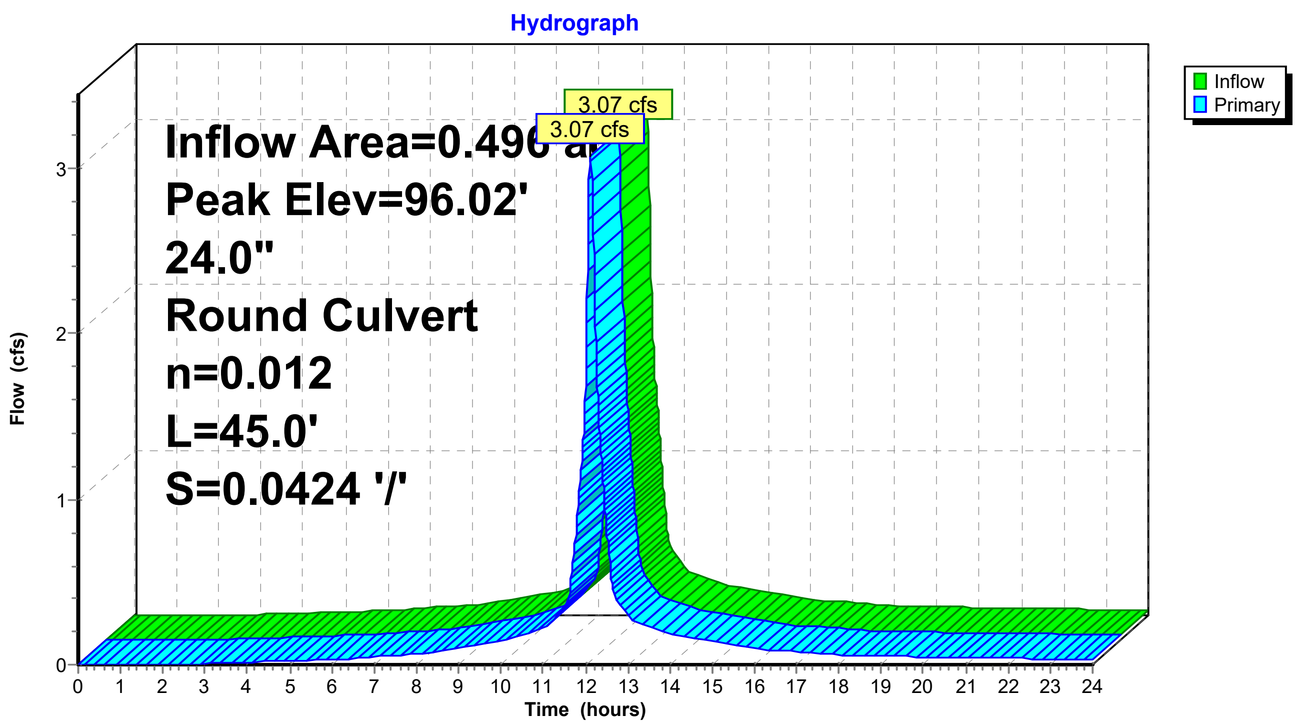
Inflow Area = 0.496 ac, 79.90% Impervious, Inflow Depth > 6.30" for 25 yr event
Inflow = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af
Outflow = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min
Primary = 3.07 cfs @ 12.12 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.02'@ 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=3.07 cfs @ 12.12 hrs HW=96.02' TW=93.83' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.07 cfs @ 2.92 fps)

Pond DMHB: DMHB



Summary for Pond PP: Pervious Pavement

Inflow Area = 0.972 ac, 82.42% Impervious, Inflow Depth > 6.31" for 25 yr event
Inflow = 6.84 cfs @ 12.07 hrs, Volume= 0.511 af
Outflow = 6.45 cfs @ 12.09 hrs, Volume= 0.511 af, Atten= 6%, Lag= 0.9 min
Discarded = 0.60 cfs @ 11.33 hrs, Volume= 0.334 af
Primary = 5.85 cfs @ 12.09 hrs, Volume= 0.176 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= 94.38'@ 12.12 hrs Surf.Area= 3,480 sf Storage= 1,234 cf

Plug-Flow detention time=2.9 min calculated for 0.510 af (100% of inflow)
Center-of-Mass det. time=2.9 min (769.7 - 766.9)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	1,705 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.75	3,480	0.0	0	0
92.76	3,480	40.0	14	14
93.42	3,480	40.0	919	933
93.43	3,480	15.0	5	938
93.67	3,480	15.0	125	1,063
93.68	3,480	5.0	2	1,065
94.33	3,480	5.0	113	1,178
94.34	3,480	30.0	10	1,188
94.67	3,480	30.0	345	1,533
94.68	3,480	15.0	5	1,538
95.00	3,480	15.0	167	1,705

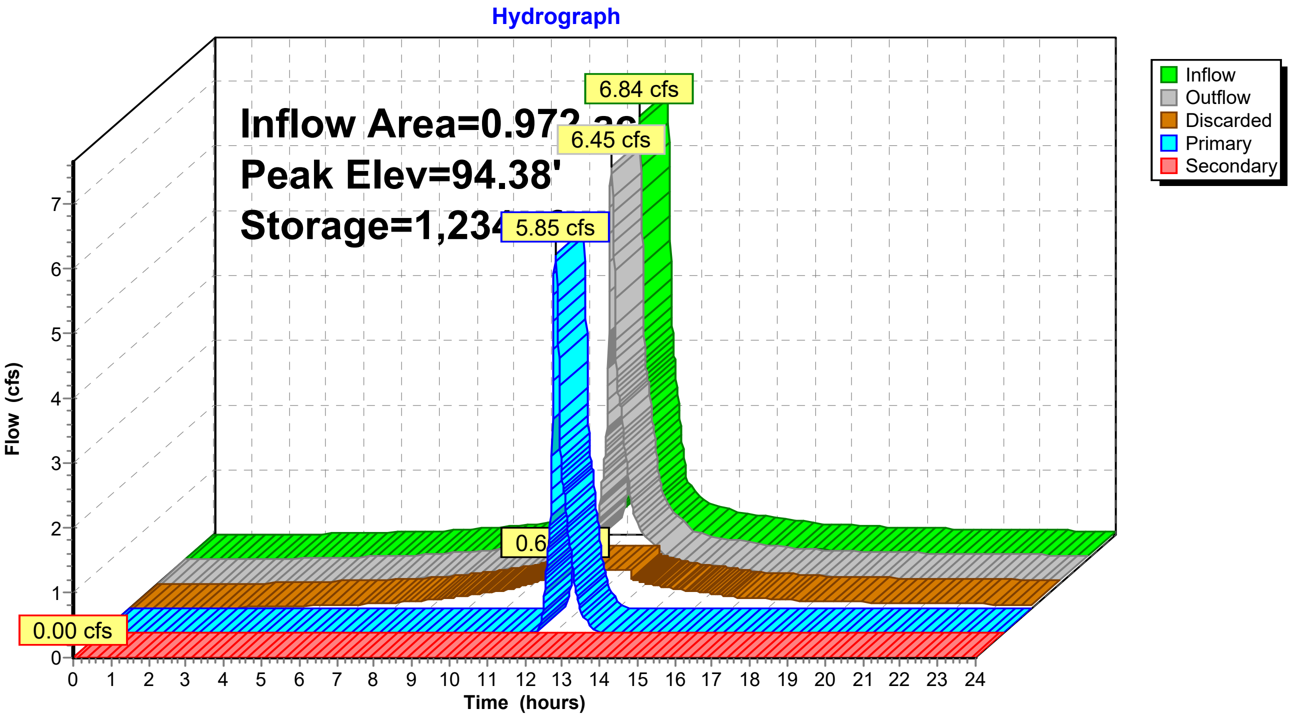
Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Secondary	94.90'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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	Discarded	92.75'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.60 cfs @ 11.33 hrs HW=92.76' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=5.82 cfs @ 12.09 hrs HW=94.37' TW=93.33' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 5.82 cfs @ 4.78 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.75' TW=90.99' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PP: Pervious Pavement



Summary for Pond RG: Rain Garden

Inflow Area = 1.303 ac, 62.27% Impervious, Inflow Depth > 2.68" for 25 yr event
Inflow = 7.34 cfs @ 12.09 hrs, Volume= 0.291 af
Outflow = 4.86 cfs @ 12.22 hrs, Volume= 0.291 af, Atten= 34%, Lag= 7.9 min
Discarded = 0.23 cfs @ 12.18 hrs, Volume= 0.073 af
Primary = 4.64 cfs @ 12.22 hrs, Volume= 0.218 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= 93.84'@ 12.18 hrs Surf.Area= 1,337 sf Storage= 1,930 cf

Plug-Flow detention time=3.6 min calculated for 0.291 af (100% of inflow)
Center-of-Mass det. time=3.6 min (770.6 - 767.1)

Volume	Invert	Avail.Storage	Storage Description
#1	90.99'	3,826 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.99	1	0.0	0	0
91.00	821	40.0	2	2
92.50	821	40.0	493	494
93.00	1,000	100.0	455	949
94.00	1,402	100.0	1,201	2,150
95.00	1,950	100.0	1,676	3,826

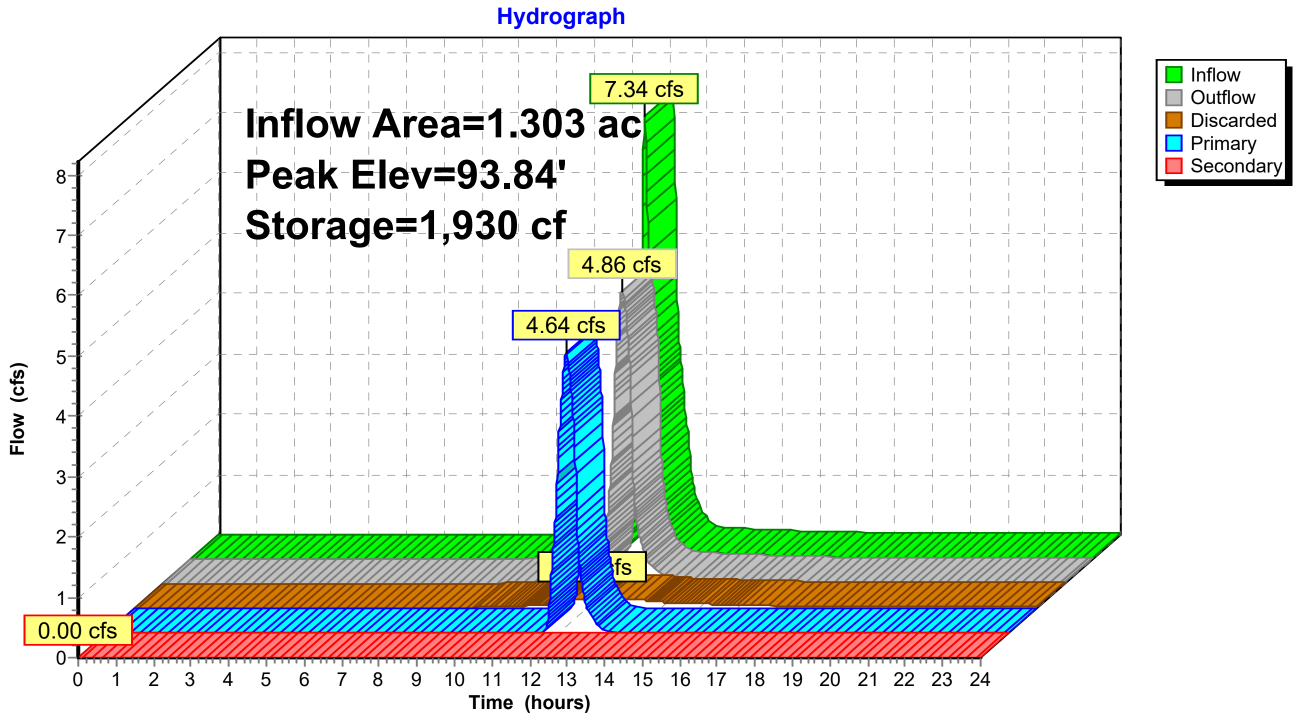
Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**12.0" Round Culvert** L= 38.8' Ke= 0.500 Inlet / Outlet Invert= 91.00' / 90.75' S= 0.0064 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 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	Discarded	90.99'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 12.18 hrs HW=93.84' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=4.64 cfs @ 12.22 hrs HW=93.75' TW=92.25' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.64 cfs @ 5.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.99' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG: Rain Garden



Summary for Pond ST: Stormtech

Inflow Area =	0.466 ac,100.00% Impervious,	Inflow Depth > 6.90"	for 25 yr event	
Inflow =	3.38 cfs @	12.07 hrs, Volume=	0.268 af	
Outflow =	2.89 cfs @	12.12 hrs, Volume=	0.268 af,	Atten= 15%, Lag= 2.7 min
Discarded =	0.18 cfs @	10.55 hrs, Volume=	0.161 af	
Primary =	2.70 cfs @	12.12 hrs, Volume=	0.107 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 99.01'@ 12.12 hrs Surf.Area= 1,056 sf Storage= 961 cf

Plug-Flow detention time=6.5 min calculated for 0.268 af (100% of inflow)
Center-of-Mass det. time=6.5 min (747.8 - 741.3)

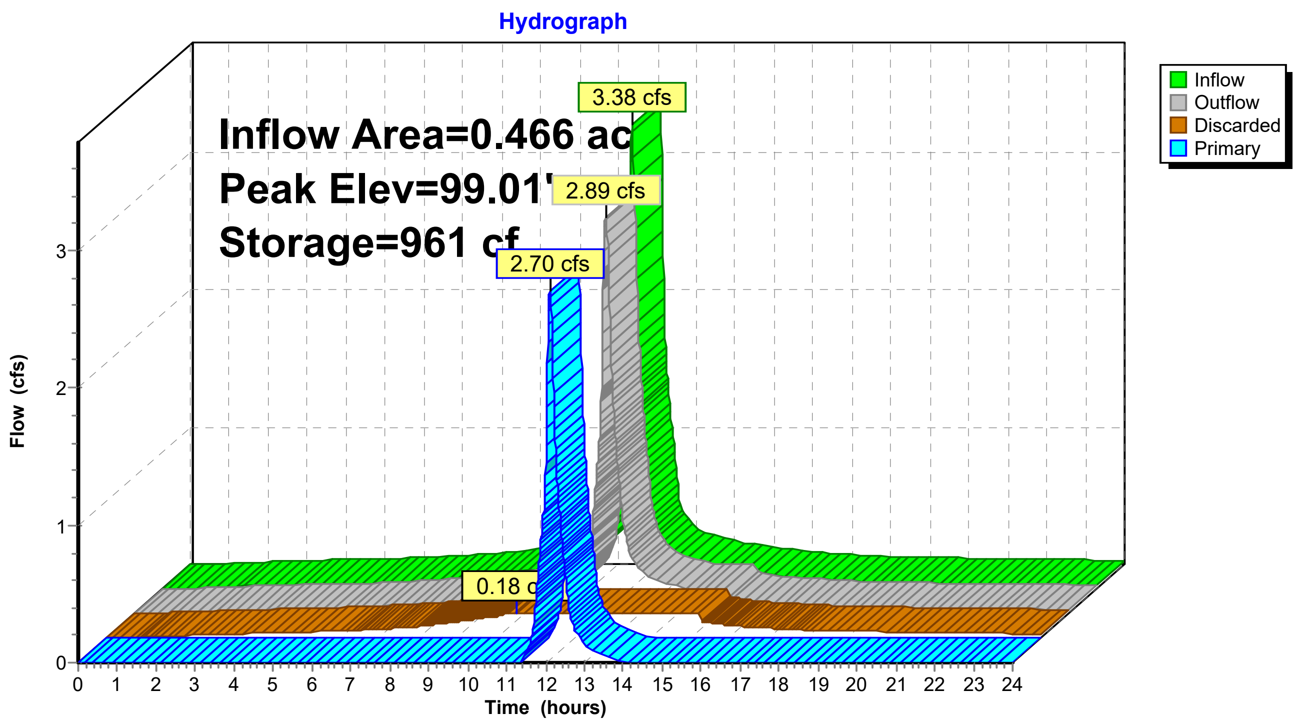
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	717 cf	**16.15'W x 65.36'L x 2.33'H Prismatoid** 2,459 cf Overall - 668 cf Embedded = 1,792 cf x 40.0% Voids
#2	98.08'	668 cf	**ADS_StormTech SC-310** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		1,385 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0605 '/' 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=0.18 cfs @ 10.55 hrs HW=97.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=2.70 cfs @ 12.12 hrs HW=99.01' TW=93.83' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.70 cfs @ 3.44 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=14,438 sf 3.17% Impervious Runoff Depth>5.42"
Flow Length=316' Tc=7.5 min CN=74 Runoff=1.99 cfs 0.150 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=20,293 sf 100.00% Impervious Runoff Depth>8.31"
Tc=5.0 min CN=98 Runoff=4.06 cfs 0.323 af

Subcatchment4S: EasternSite Runoff Area=21,625 sf 79.90% Impervious Runoff Depth>7.71"
Flow Length=303' Tc=8.8 min CN=93 Runoff=3.72 cfs 0.319 af

Subcatchment5S: ParkingLot Runoff Area=42,327 sf 82.42% Impervious Runoff Depth>7.71"
Tc=5.0 min CN=93 Runoff=8.28 cfs 0.625 af

ReachAP 1: AP 1 Inflow=11.08 cfs 0.754 af
Outflow=11.08 cfs 0.754 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 CBB: CB B Peak Elev=97.06' Inflow=3.72 cfs 0.319 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0050 '/' Outflow=3.72 cfs 0.319 af

Pond DMH1: DMH1 Peak Elev=93.96' Inflow=6.98 cfs 0.460 af
24.0" Round Culvert n=0.012 L=47.2' S=0.0485 '/' Outflow=6.98 cfs 0.460 af

Pond DMH2: DMH2 Peak Elev=92.90' Inflow=11.08 cfs 0.754 af
20.0" Round Culvert n=0.012 L=105.9' S=0.0039 '/' Outflow=11.08 cfs 0.754 af

Pond DMHB: DMHB Peak Elev=96.10' Inflow=3.72 cfs 0.319 af
24.0" Round Culvert n=0.012 L=45.0' S=0.0424 '/' Outflow=3.72 cfs 0.319 af

Pond PP: PerviousPavement Peak Elev=94.93' Storage=1,669 cf Inflow=8.28 cfs 0.625 af
Discarded=0.60 cfs 0.391 af Primary=6.07 cfs 0.233 af Secondary=0.30 cfs 0.001 af Outflow=6.67 cfs 0.625 af

Pond RG: Rain Garden Peak Elev=94.36' Storage=2,691 cf Inflow=7.82 cfs 0.383 af
Discarded=0.28 cfs 0.090 af Primary=5.23 cfs 0.293 af Secondary=0.00 cfs 0.000 af Outflow=5.50 cfs 0.383 af

Pond ST: Stormtech Peak Elev=99.25' Storage=1,098 cf Inflow=4.06 cfs 0.323 af
Discarded=0.18 cfs 0.181 af Primary=3.27 cfs 0.141 af Outflow=3.45 cfs 0.323 af

Total Runoff Area = 2.395 ac Runoff Volume = 1.491 af Average Runoff Depth = 7.47"
27.16% Pervious = 0.650 ac 72.84% Impervious = 1.744 ac

Summary for Subcatchment 1S: Western Grassed Area

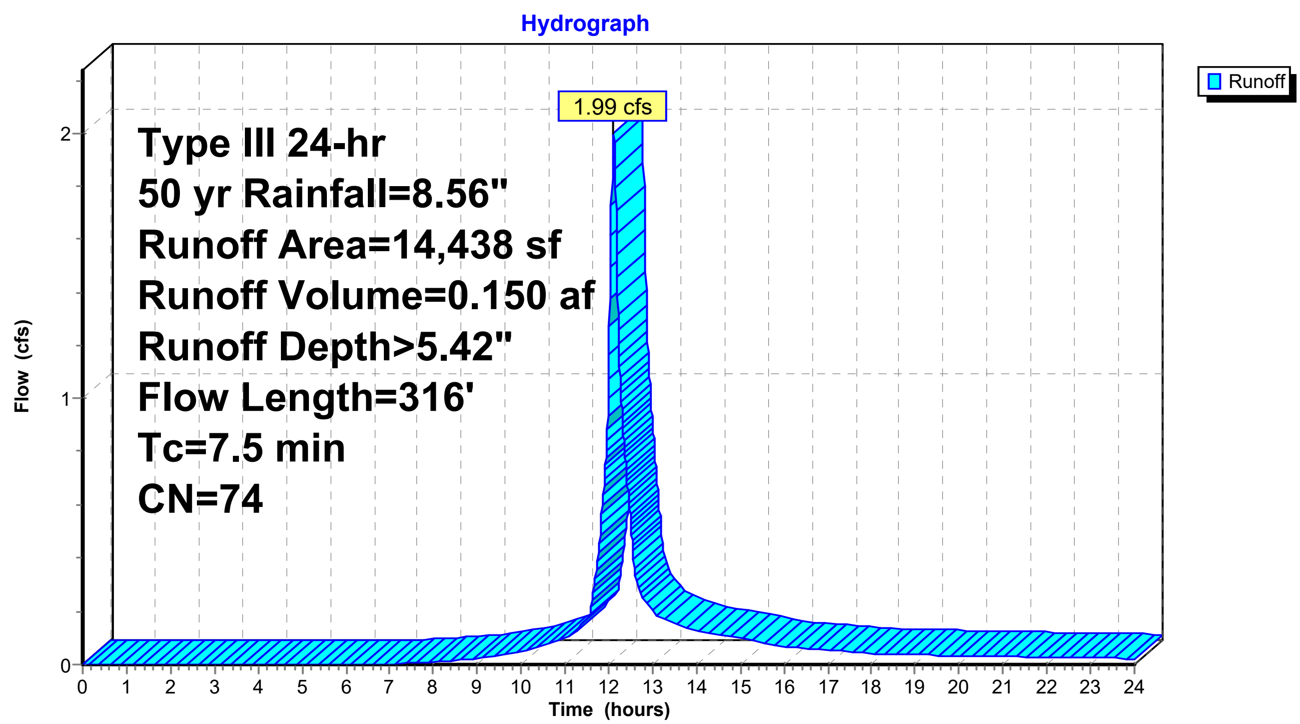
Runoff = 1.99 cfs @ 12.11 hrs, Volume= 0.150 af, Depth> 5.42"

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 50 yr Rainfall=8.56"

	Area (sf)	CN	Description
	13,159	74	>75% Grass cover, Good, HSG C
	344	98	Paved roads w/curbs & sewers, HSG C
*	114	98	Concrete
*	821	58	Rain Garden, HSG C
	14,438	74	Weighted Average
	13,980		96.83% Pervious Area
	458		3.17% 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

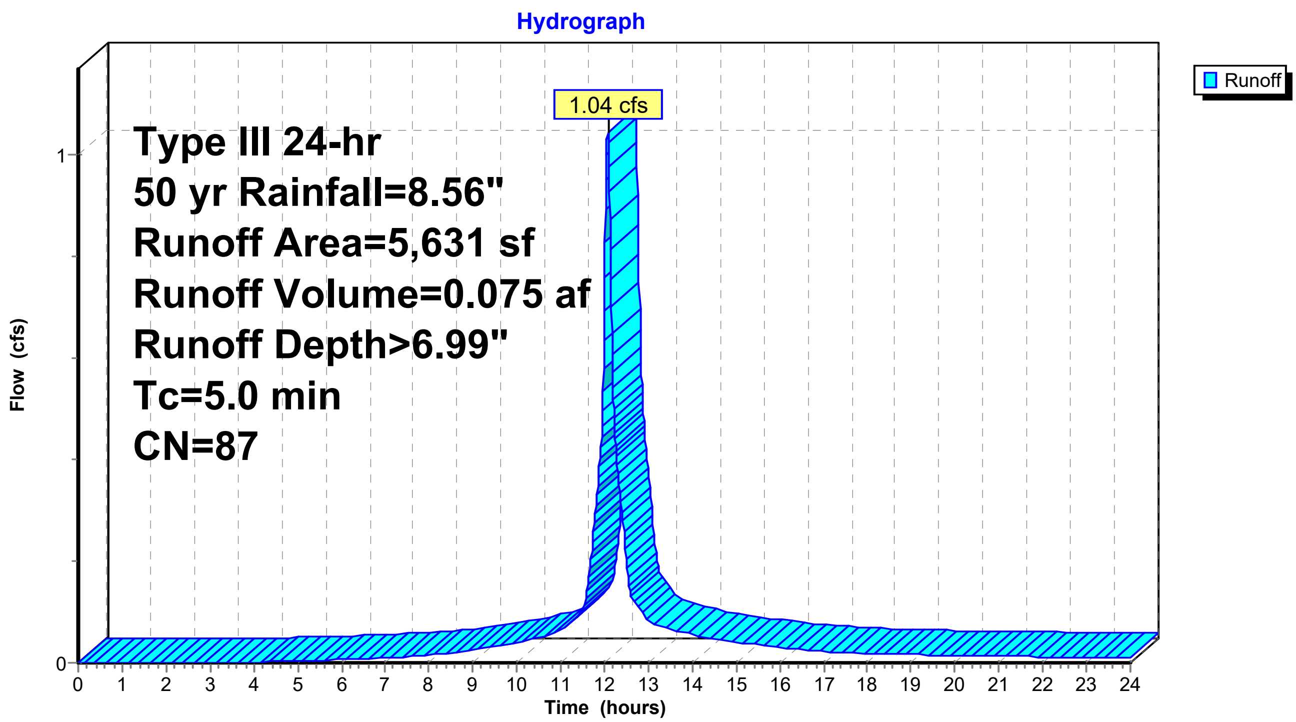
Runoff = 1.04 cfs @ 12.07 hrs, Volume= 0.075 af, Depth> 6.99"

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

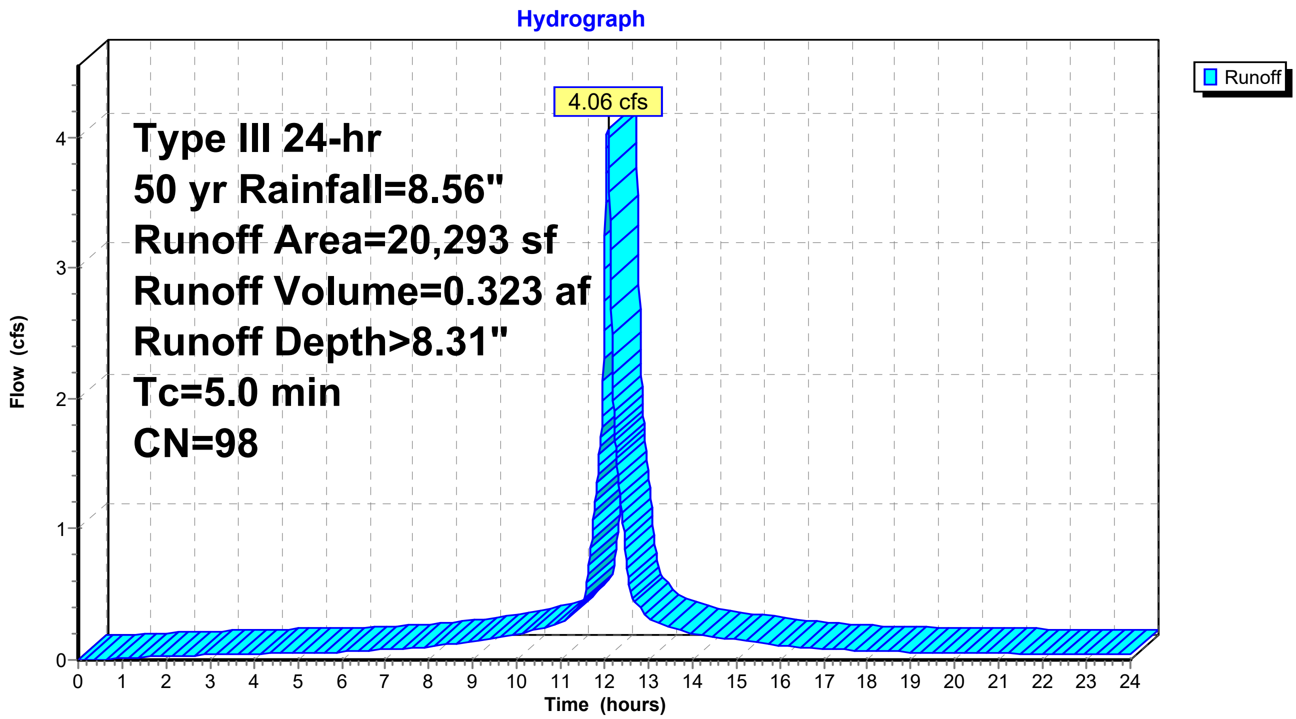
Runoff = 4.06 cfs @ 12.07 hrs, Volume= 0.323 af, Depth> 8.31"

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
2,612	98	Paved roads w/curbs & sewers, HSG C
17,681	98	Roofs, HSG C
20,293	98	Weighted Average
20,293		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

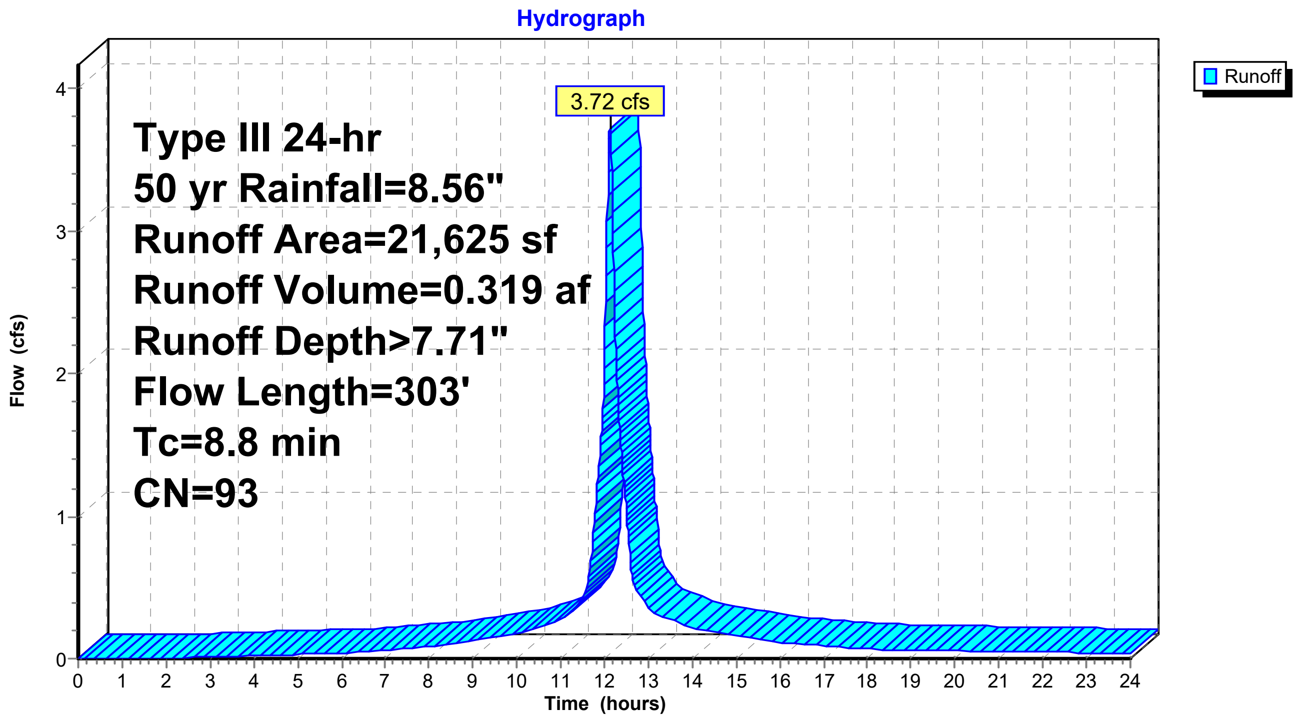
Runoff = 3.72 cfs @ 12.12 hrs, Volume= 0.319 af, Depth> 7.71"

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
4,347	74	>75% Grass cover, Good, HSG C
17,278	98	Paved roads w/curbs & sewers, HSG C
21,625	93	Weighted Average
4,347		20.10% Pervious Area
17,278		79.90% 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

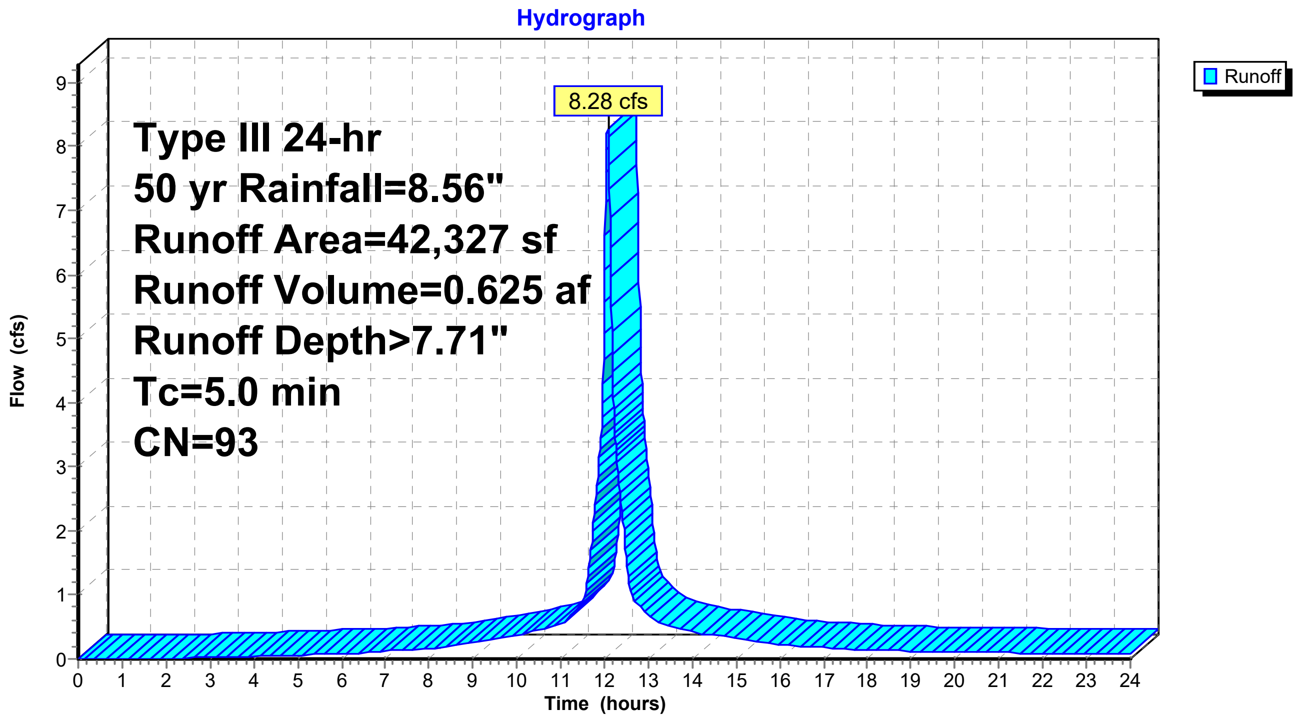
Runoff = 8.28 cfs @ 12.07 hrs, Volume= 0.625 af, Depth> 7.71"

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
	3,085	74	>75% Grass cover, Good, HSG C
	34,264	98	Paved roads w/curbs & sewers, HSG C
*	26	98	Concrete
*	231	42	Pervious Pavers, HSG C
*	3,480	61	Pervious Pavement, HSG C
	490	98	Roofs, HSG C
	643	96	Gravel surface, HSG C
*	108	98	Retaining Wall & Stairs, HSG C
	42,327	93	Weighted Average
	7,439		17.58% Pervious Area
	34,888		82.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Parking Lot

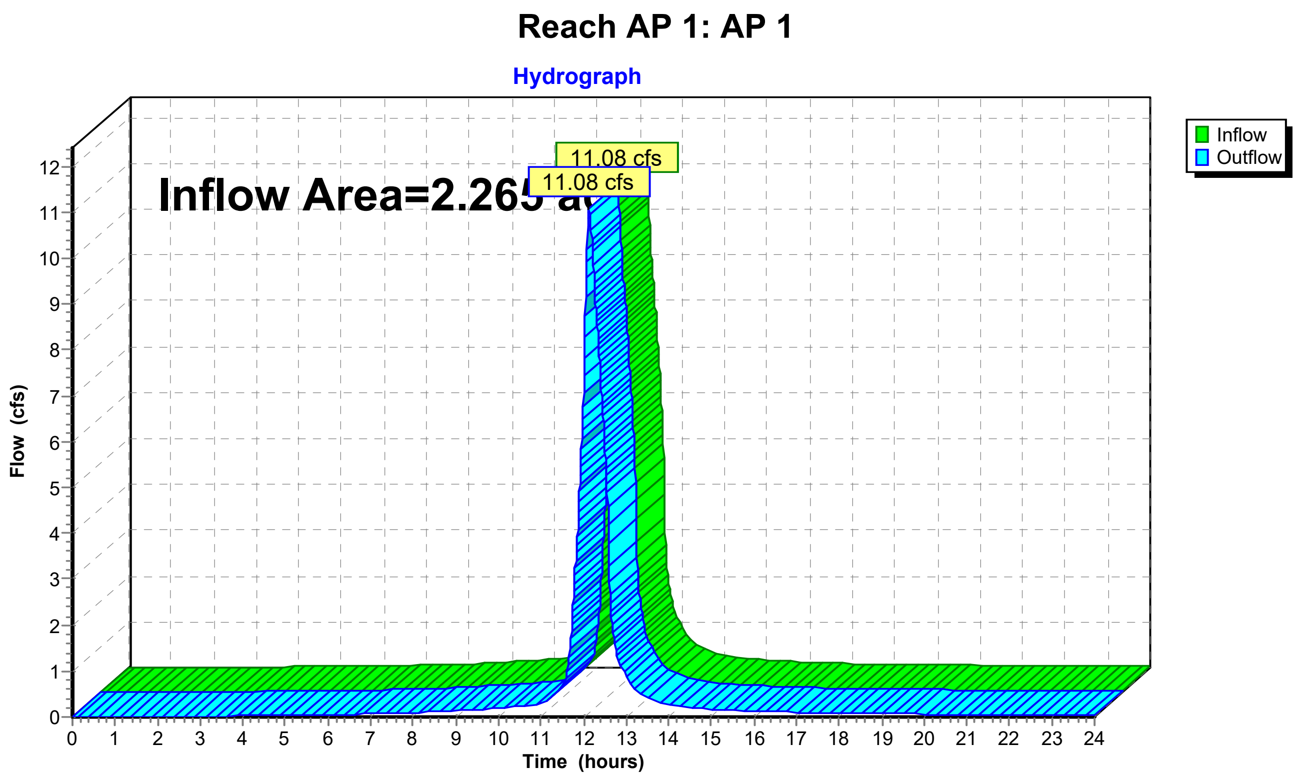


Summary for Reach AP 1: AP 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	2.265 ac, 73.89% Impervious,	Inflow Depth > 3.99"	for 50 yr event	
Inflow =	11.08 cfs @ 12.14 hrs,	Volume=	0.754 af	
Outflow =	11.08 cfs @ 12.14 hrs,	Volume=	0.754 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



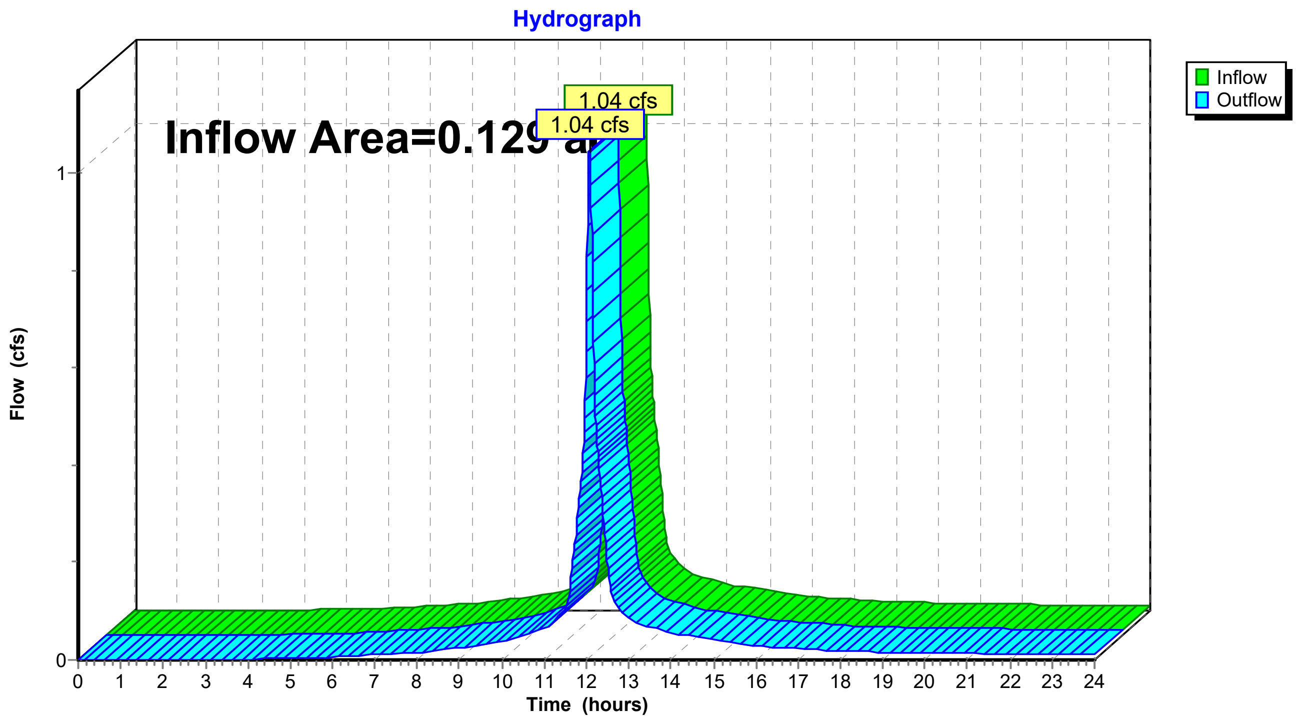
Summary for Reach AP2: AP2

[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)

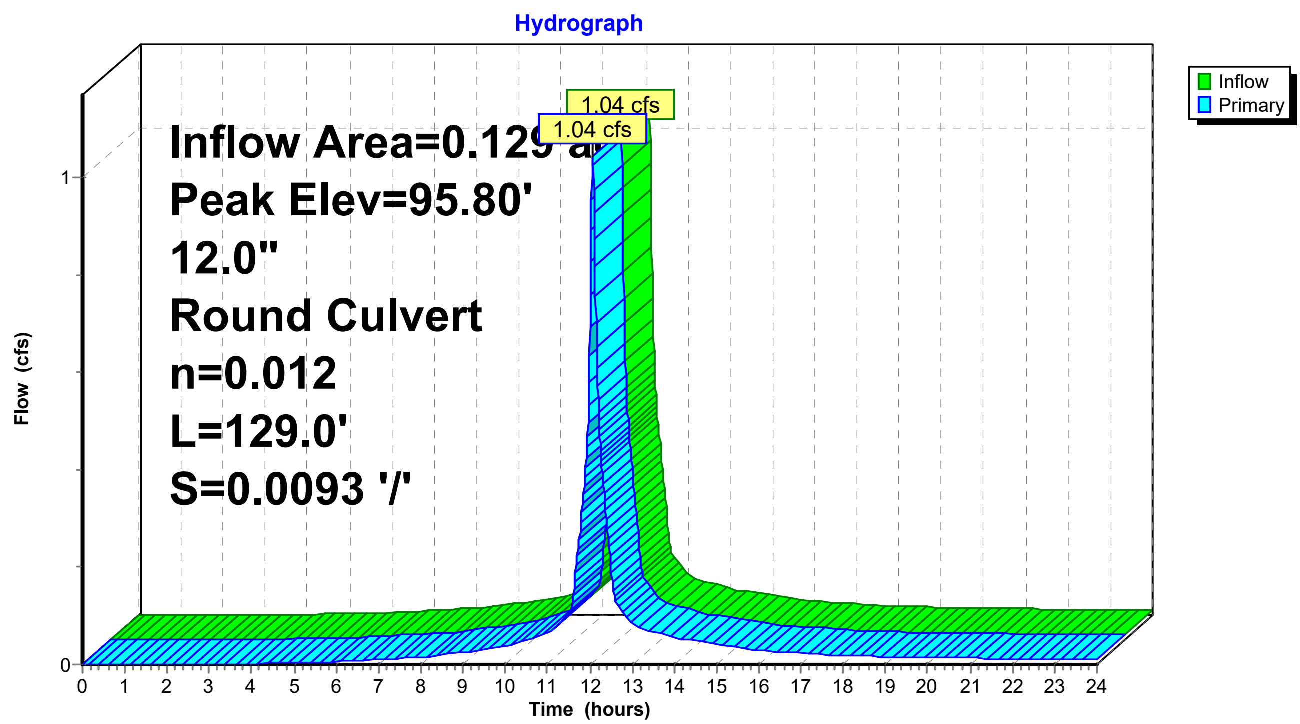
Inflow Area =	0.129 ac, 54.43% Impervious,	Inflow Depth > 6.99"	for 50 yr event	
Inflow =	1.04 cfs @	12.07 hrs, Volume=	0.075 af	
Outflow =	1.04 cfs @	12.07 hrs, Volume=	0.075 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.04 cfs @	12.07 hrs, Volume=	0.075 af	

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)

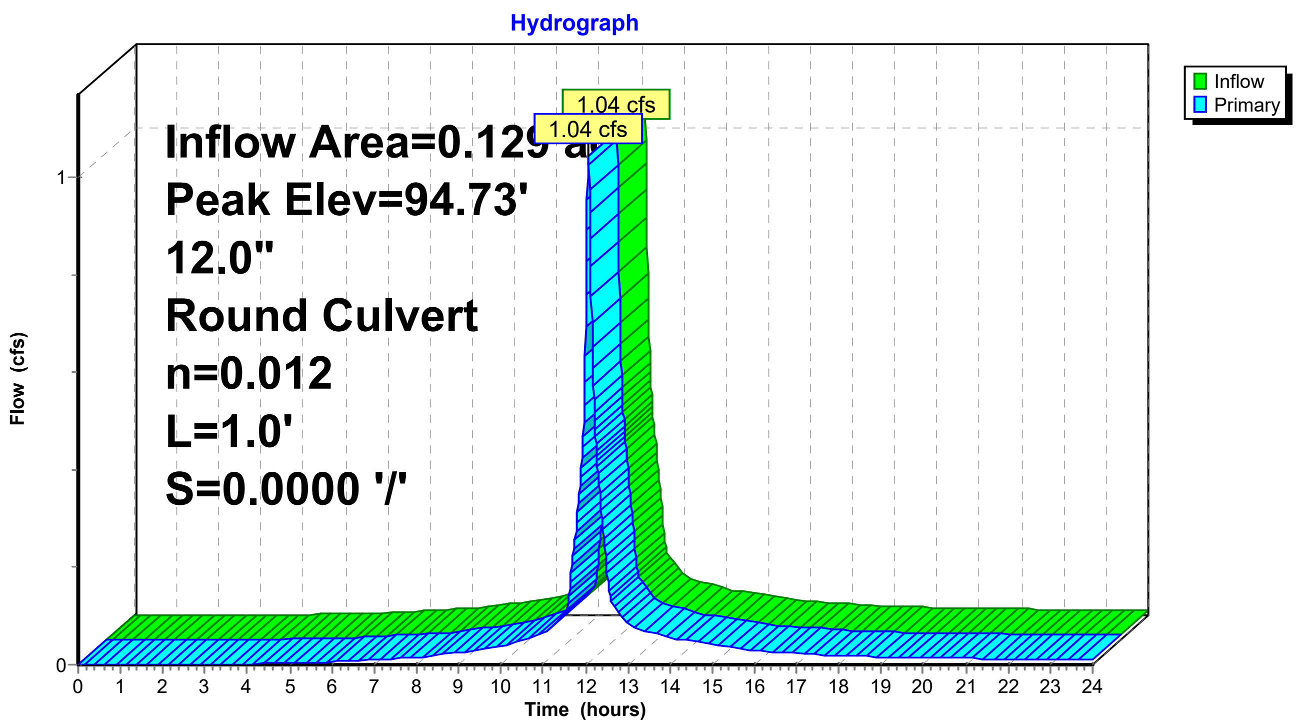
Inflow Area =	0.129 ac, 54.43% Impervious,	Inflow Depth > 6.99"	for 50 yr event
Inflow =	1.04 cfs @ 12.07 hrs,	Volume=	0.075 af
Outflow =	1.04 cfs @ 12.07 hrs,	Volume=	0.075 af, Atten= 0%, Lag= 0.0 min
Primary =	1.04 cfs @ 12.07 hrs,	Volume=	0.075 af

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 CBB: CB B

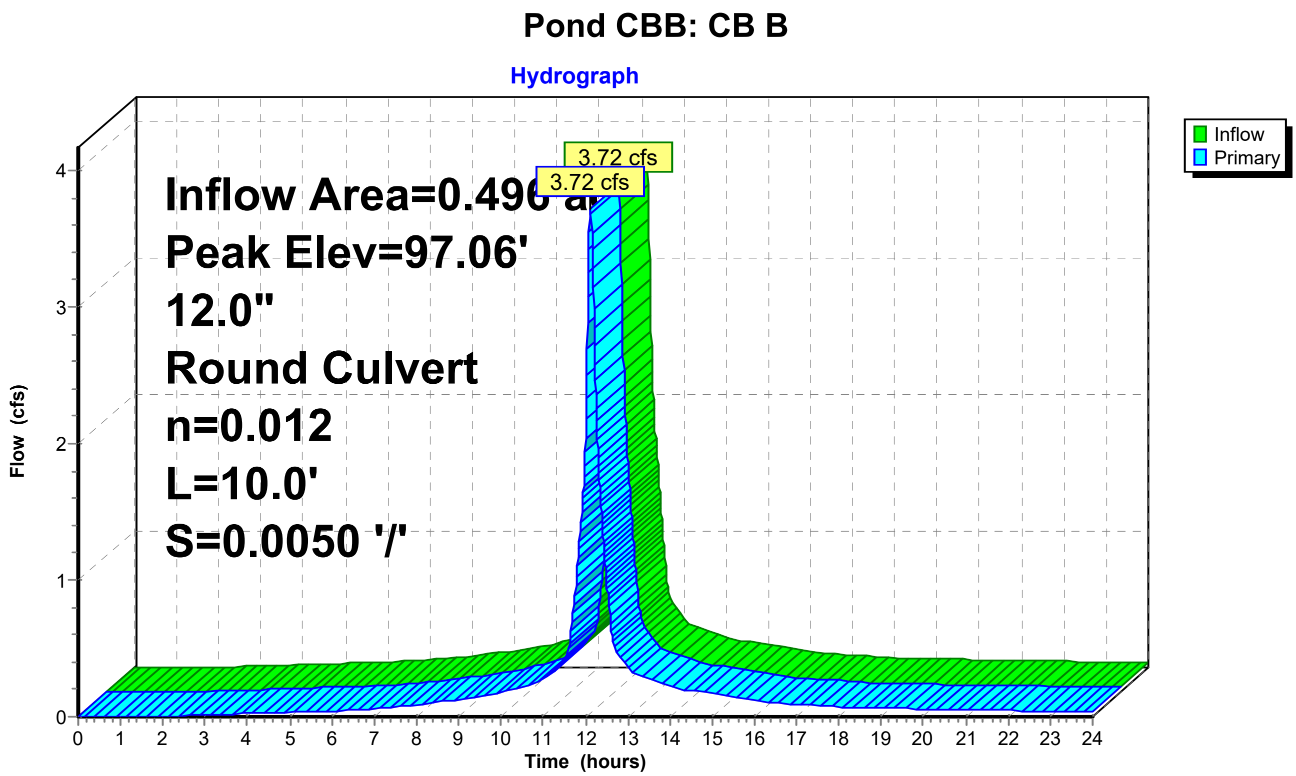
[57] Hint: Peaked at 97.06' (Flood elevation advised)

Inflow Area =	0.496 ac, 79.90% Impervious, Inflow Depth > 7.71" for 50 yr event			
Inflow =	3.72 cfs @	12.12 hrs,	Volume=	0.319 af
Outflow =	3.72 cfs @	12.12 hrs,	Volume=	0.319 af, Atten= 0%, Lag= 0.0 min
Primary =	3.72 cfs @	12.12 hrs,	Volume=	0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 97.06'@ 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=3.72 cfs @ 12.12 hrs HW=97.06' TW=96.10' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.72 cfs @ 4.73 fps)



Summary for Pond DMH1: DMH1

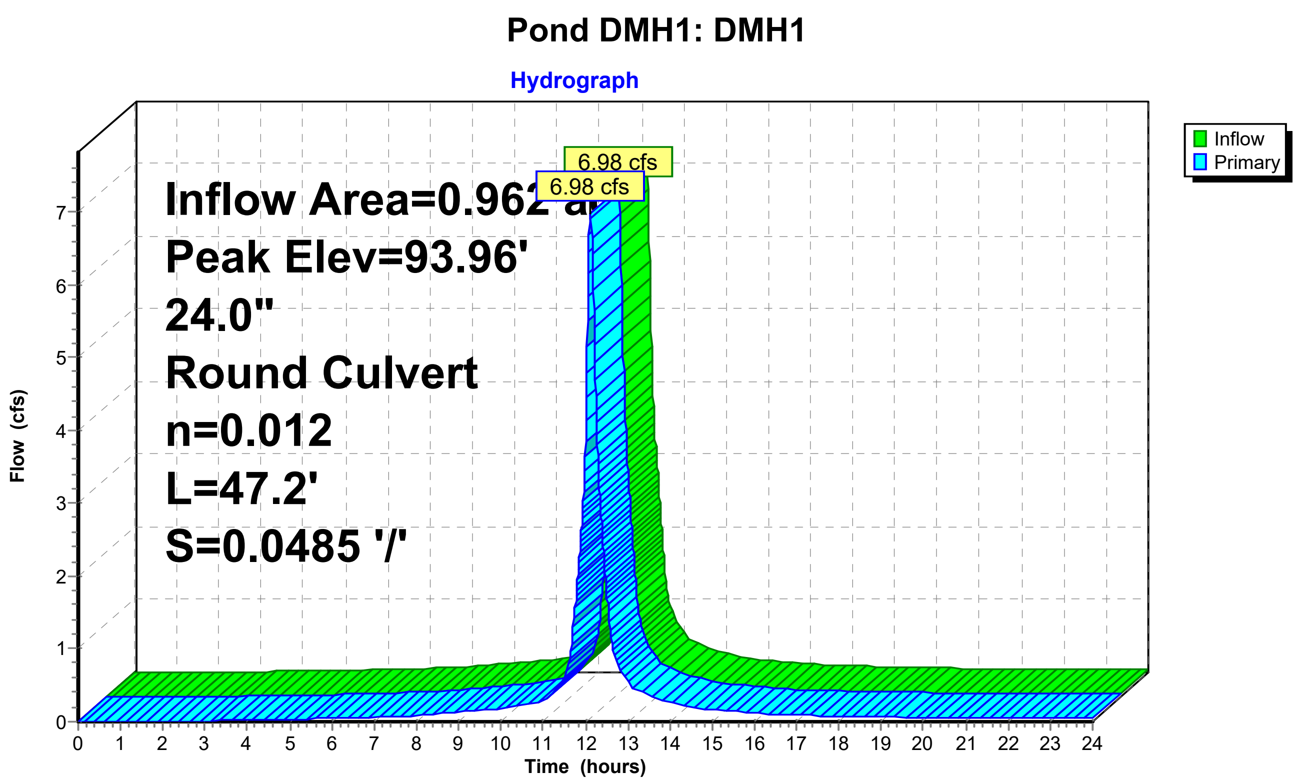
[57] Hint: Peaked at 93.96' (Flood elevation advised)

Inflow Area =	0.962 ac, 89.63% Impervious,	Inflow Depth > 5.74"	for 50 yr event	
Inflow =	6.98 cfs @	12.12 hrs, Volume=	0.460 af	
Outflow =	6.98 cfs @	12.12 hrs, Volume=	0.460 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.98 cfs @	12.12 hrs, Volume=	0.460 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 93.96'@ 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=6.98 cfs @ 12.12 hrs HW=93.95' TW=92.88' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 6.98 cfs @ 3.67 fps)



Summary for Pond DMH2: DMH2

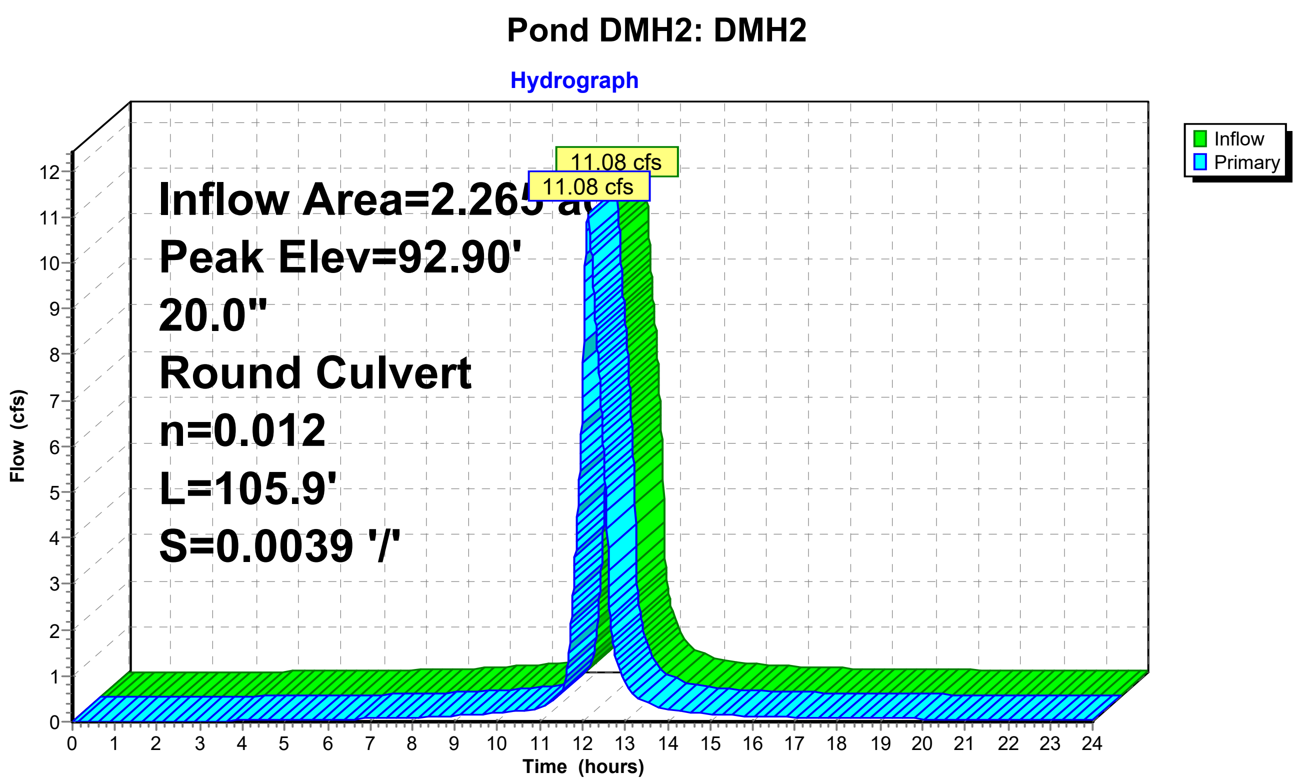
[57] Hint: Peaked at 92.90' (Flood elevation advised)

Inflow Area =	2.265 ac, 73.89% Impervious, Inflow Depth > 3.99" for 50 yr event		
Inflow =	11.08 cfs @ 12.14 hrs,	Volume=	0.754 af
Outflow =	11.08 cfs @ 12.14 hrs,	Volume=	0.754 af, Atten= 0%, Lag= 0.0 min
Primary =	11.08 cfs @ 12.14 hrs,	Volume=	0.754 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 92.90'@ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	90.47'	**20.0" 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= 2.18 sf

Primary OutFlow Max=11.07 cfs @ 12.14 hrs HW=92.90' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 11.07 cfs @ 5.07 fps)



Summary for Pond DMHB: DMHB

[57] Hint: Peaked at 96.10' (Flood elevation advised)

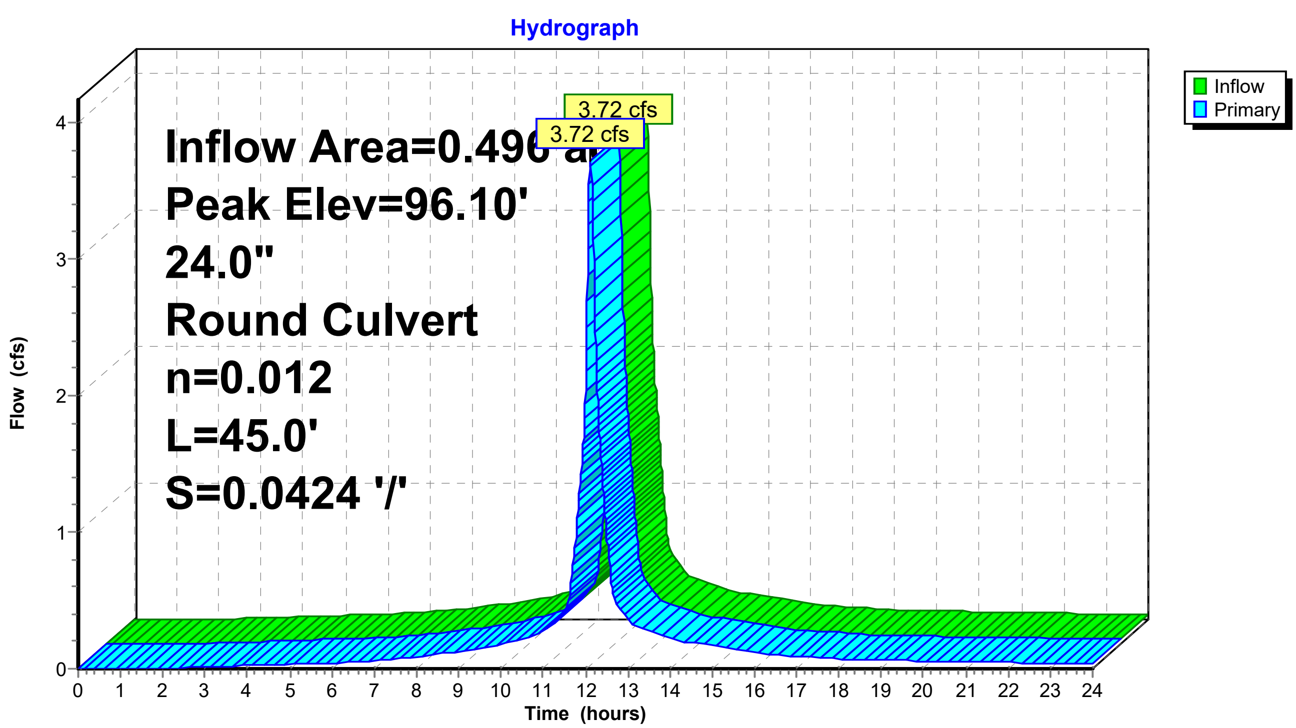
Inflow Area = 0.496 ac, 79.90% Impervious, Inflow Depth > 7.71" for 50 yr event
Inflow = 3.72 cfs @ 12.12 hrs, Volume= 0.319 af
Outflow = 3.72 cfs @ 12.12 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min
Primary = 3.72 cfs @ 12.12 hrs, Volume= 0.319 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 96.10'@ 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=3.72 cfs @ 12.12 hrs HW=96.10' TW=93.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.72 cfs @ 3.08 fps)

Pond DMHB: DMHB



Summary for Pond PP: Pervious Pavement

Inflow Area =	0.972 ac, 82.42% Impervious,	Inflow Depth > 7.71" for 50 yr event		
Inflow =	8.28 cfs @	12.07 hrs, Volume=	0.625 af	
Outflow =	6.67 cfs @	12.06 hrs, Volume=	0.625 af,	Atten= 19%, Lag= 0.0 min
Discarded =	0.60 cfs @	11.14 hrs, Volume=	0.391 af	
Primary =	6.07 cfs @	12.06 hrs, Volume=	0.233 af	
Secondary =	0.30 cfs @	12.14 hrs, Volume=	0.001 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 94.93'@ 12.14 hrs Surf.Area= 3,480 sf Storage= 1,669 cf

Plug-Flow detention time=3.2 min calculated for 0.625 af (100% of inflow)
Center-of-Mass det. time=3.1 min (765.4 - 762.3)

Volume	Invert	Avail.Storage	Storage Description
#1	92.75'	1,705 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.75	3,480	0.0	0	0
92.76	3,480	40.0	14	14
93.42	3,480	40.0	919	933
93.43	3,480	15.0	5	938
93.67	3,480	15.0	125	1,063
93.68	3,480	5.0	2	1,065
94.33	3,480	5.0	113	1,178
94.34	3,480	30.0	10	1,188
94.67	3,480	30.0	345	1,533
94.68	3,480	15.0	5	1,538
95.00	3,480	15.0	167	1,705

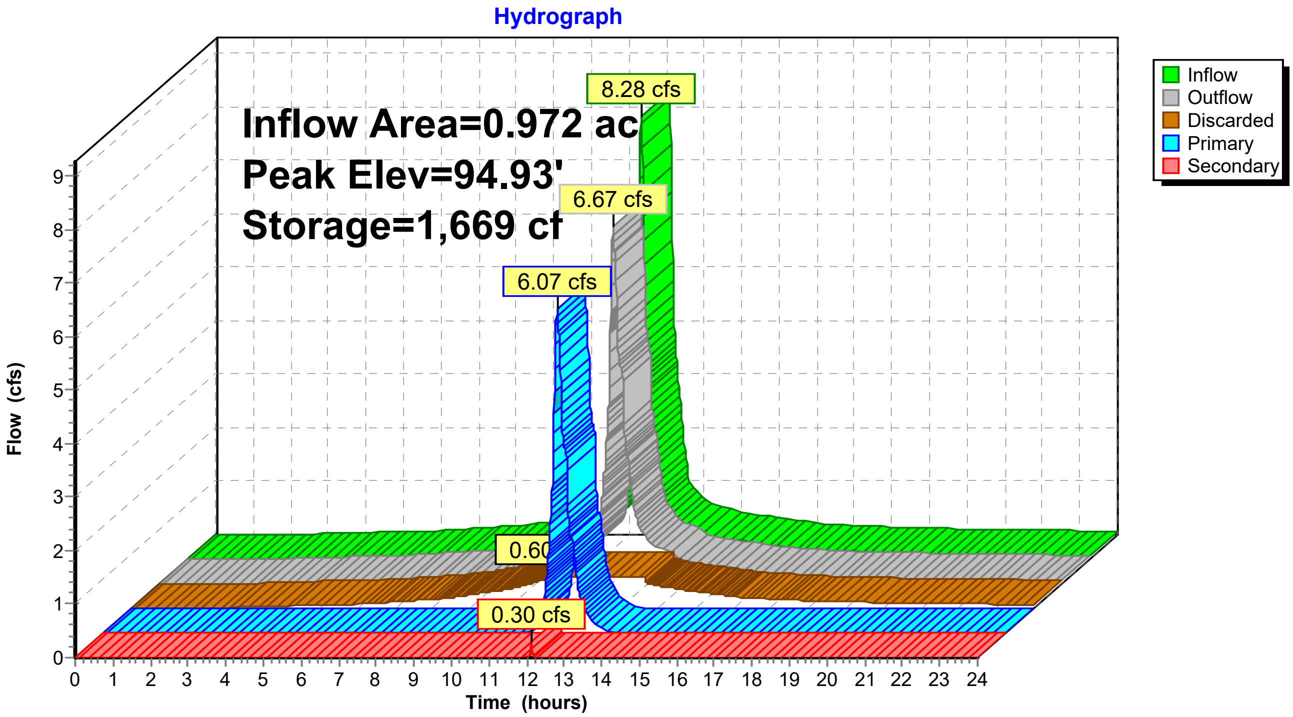
Device	Routing	Invert	Outlet Devices
#1	Primary	92.75'	**15.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 92.75' / 92.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Secondary	94.90'	**20.0' long x 1.0' breadth Broad-Crested Rectangular Weir** 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	Discarded	92.75'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.60 cfs @ 11.14 hrs HW=92.76' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.60 cfs)

Primary OutFlow Max=6.07 cfs @ 12.06 hrs HW=94.48' TW=93.42' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.07 cfs @ 4.95 fps)

Secondary OutFlow Max=0.28 cfs @ 12.14 hrs HW=94.93' TW=94.16' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.47 fps)

Pond PP: Pervious Pavement



Summary for Pond RG: Rain Garden

Inflow Area = 1.303 ac, 62.27% Impervious, Inflow Depth > 3.53" for 50 yr event
Inflow = 7.82 cfs @ 12.06 hrs, Volume= 0.383 af
Outflow = 5.50 cfs @ 12.28 hrs, Volume= 0.383 af, Atten= 30%, Lag= 12.8 min
Discarded = 0.28 cfs @ 12.20 hrs, Volume= 0.090 af
Primary = 5.23 cfs @ 12.28 hrs, Volume= 0.293 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= 94.36'@ 12.20 hrs Surf.Area= 1,599 sf Storage= 2,691 cf

Plug-Flow detention time=4.5 min calculated for 0.383 af (100% of inflow)
Center-of-Mass det. time=4.5 min (768.5 - 764.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.99'	3,826 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.99	1	0.0	0	0
91.00	821	40.0	2	2
92.50	821	40.0	493	494
93.00	1,000	100.0	455	949
94.00	1,402	100.0	1,201	2,150
95.00	1,950	100.0	1,676	3,826

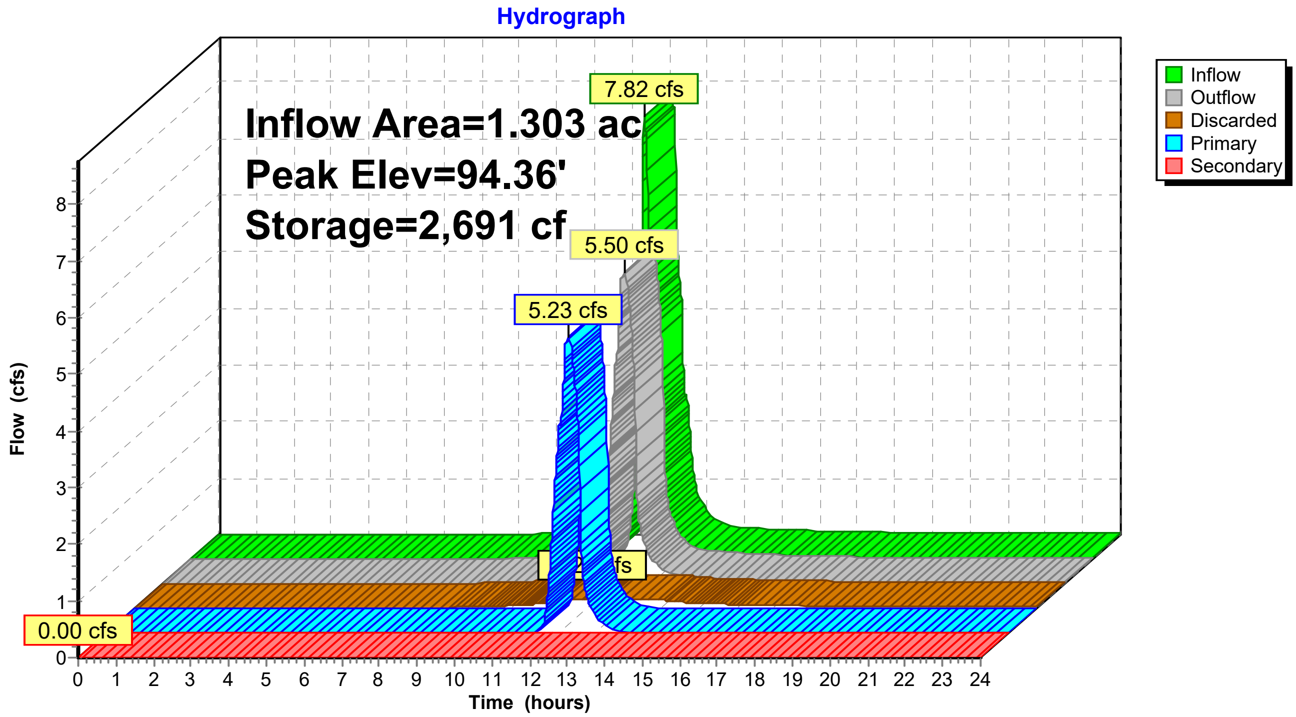
Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**12.0" Round Culvert** L= 38.8' Ke= 0.500 Inlet / Outlet Invert= 91.00' / 90.75' S= 0.0064 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	94.90'	**10.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 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	Discarded	90.99'	**7.500 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.28 cfs @ 12.20 hrs HW=94.36' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=5.23 cfs @ 12.28 hrs HW=94.23' TW=92.32' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.23 cfs @ 6.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.99' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG: Rain Garden



Summary for Pond ST: Stormtech

Inflow Area =	0.466 ac, 100.00% Impervious,	Inflow Depth > 8.31" for 50 yr event		
Inflow =	4.06 cfs @	12.07 hrs, Volume=	0.323 af	
Outflow =	3.45 cfs @	12.12 hrs, Volume=	0.323 af,	Atten= 15%, Lag= 2.8 min
Discarded =	0.18 cfs @	10.10 hrs, Volume=	0.181 af	
Primary =	3.27 cfs @	12.12 hrs, Volume=	0.141 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 99.25' @ 12.12 hrs Surf.Area= 1,056 sf Storage= 1,098 cf

Plug-Flow detention time=7.0 min calculated for 0.323 af (100% of inflow)
Center-of-Mass det. time=6.9 min (745.9 - 739.0)

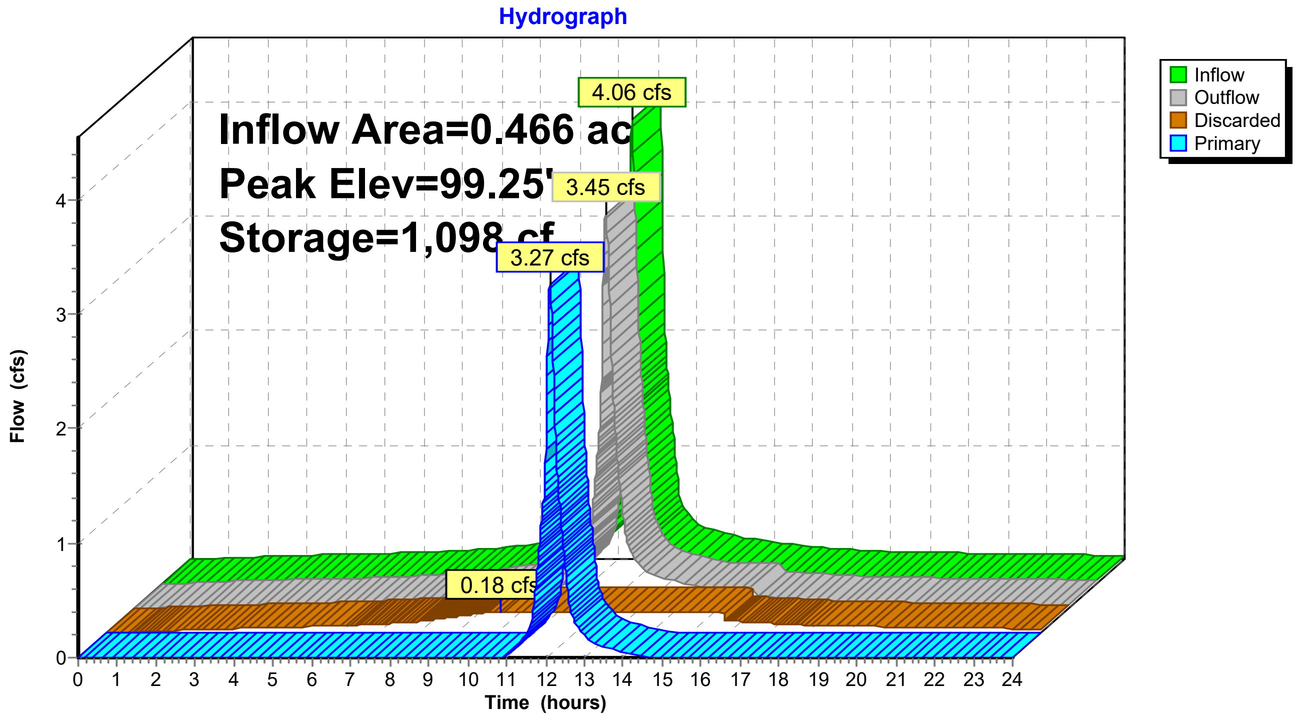
Volume	Invert	Avail.Storage	Storage Description
#1	97.58'	717 cf	**16.15'W x 65.36'L x 2.33'H Prismatoid** 2,459 cf Overall - 668 cf Embedded = 1,792 cf x 40.0% Voids
#2	98.08'	668 cf	**ADS_StormTech SC-310** x 45 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 5 rows
		1,385 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	98.00'	**12.0" Round Culvert** L= 43.0' Ke= 0.500 Inlet / Outlet Invert= 98.00' / 95.40' S= 0.0605 '/' 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=0.18 cfs @ 10.10 hrs HW=97.60' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=3.26 cfs @ 12.12 hrs HW=99.24' TW=93.95' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.26 cfs @ 4.15 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**

Powered by ACIS
Northeast Regional Climate Center

Appendix - B

Soil Information

Map Scale: 1:860 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 40, 80, 160, 240

N

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%**

SL635 SOLANA SERIES

LED

EPA	7 YEAR WARRANTY	LUMEN RANGE	LIFE SPAN	UL LISTED	CLICK FOR FAQ's	IP RATING
.5 (ft^2) WEIGHT 17 LBS	7	2,820 to 14,020	L70 MINIMUM 100,000 HOURS	UL	FAQ	IP 66

JOB NAME

FIXTURE TYPE

MEMO

BUILD A PART NUMBER

ORDERING EXAMPLE: 1-U01-SL635-12L40T3-MDL18-SV1-FHD-BLOC/RSA14A500-D1-SL900-5/UGMT

Mounting Config.	Fixture	LED	CCT	Type	Driver	Lens	Optional Control Receptacle	Option Control	Option Motion Sensor	Option Fuse	Option House Side Shield	Pole See Pole Spec Sheets	Finish

Mounting Configuration[1]

•1-U01S •1-U02 •2-U03
•1-U01 •2-U02 •1-U04
•2-U01 •1-U03 •2-U04

[1] See arm spec sheets for more information.

Fixture

• SL635

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**[2] (120V-277V, 80mA)
• **MDH008**[2] (347V-480V, 80mA)

[2] 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)

• **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

[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

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 SL635 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 arms, 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 LEDs. 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 LEDs 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 LEDs 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 LEDs 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.

See next page

SternbergLighting
ESTABLISHED 1923

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
contactus@sternberglighting.com
www.sternberglighting.com

SL635 SOLANA SERIES

LED

It shall have overload, overheat and short circuit 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.

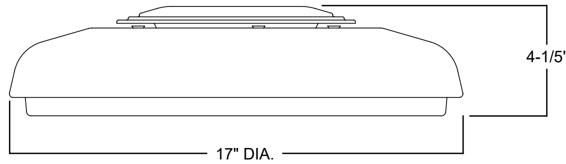
Warranty

Seven-year limited warranty. See product and finish warranty guide for details.

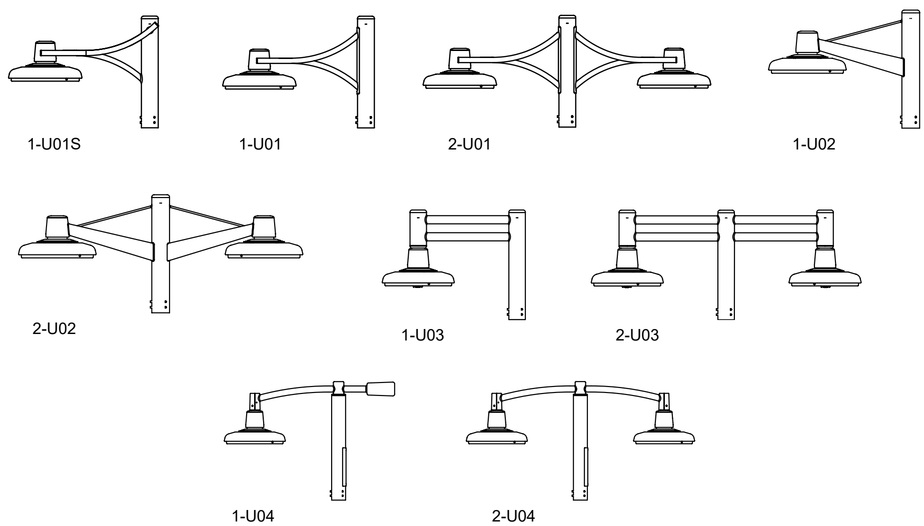
Finish

Refer to website for details.

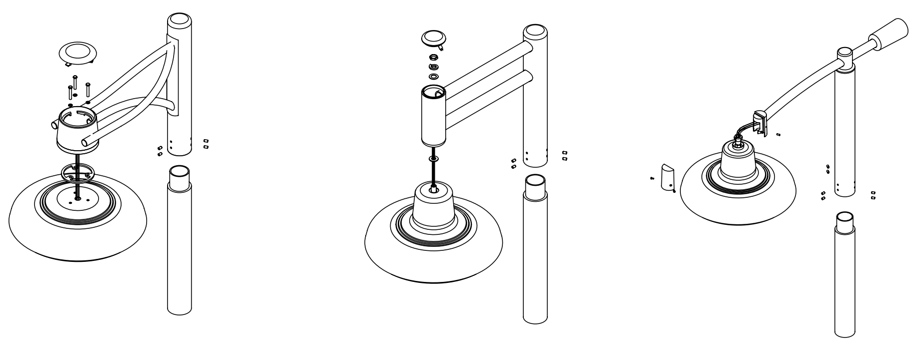
Fixtures



Mounting Configurations



Mounting Details



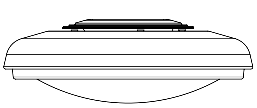
TYPICAL INSTALLATION
U01, U01S, AND U02 ARMS

INSTALLATION U03 ARMS

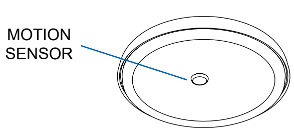
INSTALLATION U04 ARMS

NOTE: MOUNTING HARDWARE SUPPLIED BY STERNBERG

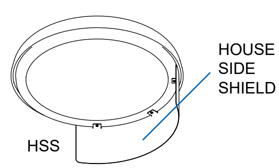
Options



Sag Lens



MOT1/MOT2



HSS

NOTE:
FOR **R** AND **PEC**
CONSULT FACTORY FOR
LOCATION

SternbergLighting
ESTABLISHED 1923

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
contactus@sternberglighting.com
www.sternberglighting.com

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

800-621-3376
555 Lawrence Ave., Roselle, IL 60172
contactus@sternberglighting.com
www.sternberglighting.com

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

June 21, 2022

Portsmouth Technical Advisory Committee
Attn: Peter Stith, Principal Planner
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Lot Line Adjustment & Site Plan Application
212, 214 & 216 Woodbury Avenue, Portsmouth, NH
Tax Map 175, Lots 1, 2, 3
JBE Project No. 21254

Dear Mr. Stith,

Jones & Beach Engineers, Inc., respectfully submits a Lot Line Adjustment and Site Plan Application on behalf of the applicant, Tuck Realty Corporation. The intent of this application is to keep the existing structures on Lots 2 & 3 and reduce their lot sizes. The existing dilapidated structure on Lot 1 will be removed and this lot will be consolidated with the back land of Lots 2 & 3. This consolidated parcel (Lot 1) will then have an 8-unit condominium development proposed consisting of four (4) single family and 2 duplex structures. Access will be from Boyd Street for condominium parcel.

The following items are provided in support of this Application:

1. Lot Line Adjustment & Site Plan Application (submitted online).
2. Letters of Authorization.
3. Current Deeds.
4. Test Pits.
5. Green Building Statement Letter.
6. One (1) Drainage Analysis.
7. One (1) 11x17 Architectural Plan.
8. One (1) Full Size Plan Set Folded.

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, Tuck Realty Corporation (via email)
Wendy Welton, Art Form Architect (via email)
Tim Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC (via email)
Kevin Baum, Hoefle, Phoenix, Gormley & Roberts, PLLC (via email)

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: Tuck Realty Corp. Date Submitted: 6/21/22

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

Site Address: 212, 214 & 216 Woodbury Avenue Map: 175 Lot: 1, 2, & 3

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)**		
☒	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
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**		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)**		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)**		N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**		N/A
☒	List of reference plans. **(2.5.3.1H)**		N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**		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)**		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)**	N/A, none onsite	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**		N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**		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)**		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	
☒	**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 Drawings	
☒	**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	
☒	**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 Notes	
☒	**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	
☒	**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.	Utility Plan	

☒	**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.	Utility Plan	
☒	**8. Solid Waste Facilities: (2.5.4.3H)**	Site Plan Notes	
	• The size, type and location of solid waste facilities.		
☒	**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.	Drainage report	
☒	**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	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**		
☒	**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.		
☒	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.		
☐	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	N/A	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**		
☐	**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 Plan	
☐	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)**	Plans & Drainage Report	
☒	Inspection and Maintenance Plan **(7.6.5)**	Drainage Report	

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)**	Site Plan Notes	
☒	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)**	Drainage Report	
☐	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)**	Site Plan Notes	
☒	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 Notes	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 Notes	N/A

Applicant's Signature: ______________ **Date:** 6/21/22

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: Frederick J. Bailey & Joyce S. Nelson Date Submitted: June 21, 2022

Applicant: Tuck Realty Corp.

Phone Number: 603-778-6894 E-mail: turnerporterjr@gmail.com

Site Address 1: 212 Woodbury Avenue Map: 175 Lot: 2, 3

Site Address 2: 214 & 216 Woodbury Avenue Map: 175 Lot: 2, 3

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☑	Completed Application form. **(III.C.2-3)**		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)**		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)**	Plan Set	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions Plan	☑ 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)**	Existing Conditions & Utility Plan	☑ 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)**	Plan & Profile Sheet	☑ Preliminary Plat ☑ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	N/A	☑ 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)**	Existing Conditions, Grading & Drainage Plans	☑ 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)**	Site Plan	☐ 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	☐ Preliminary Plat ☑ Final Plat	
✓	Location of all permanent monuments. **(Section V.12)**	Lot Line Adjustment Plan	☐ 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		
☐	**2. Lots: (VI.2)**		
✓	a. Lot Arrangement		
✓	b. Lot sizes		
☐	c. Commercial and Industrial Lots		
☐	**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		
✓	**4. Curbing: (VI.4)**		
✓	**5. Driveways: (VI.5)**		
✓	**6. Drainage Improvements: (VI.6)**		
✓	**7. Municipal Water Service: (VI.7)**		
✓	**8. Municipal Sewer Service: (VI.8)**		
☐	**9. Installation of Utilities: (VI.9)**		
✓	a. All Districts		
✓	b. Indicator Tape		
☐	**10. On-Site Water Supply: (VI.10)**	N/A	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	N/A	
☐	**12. Open Space: (VI.12)**	N/A	
☐	a. Natural Features		
☐	b. Buffer Strips		
☐	c. Parks		
☐	d. Tree Planting		
☐	**13. Flood Hazard Areas: (VI.13)**	N/A	
☐	a. Permits		
☐	b. Minimization of Flood Damage		
☐	c. Elevation and Flood-Proofing Records		
☐	d. Alteration of Watercourses		
✓	**14. Erosion and Sedimentation Control (VI.14)**		

☑	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)**		
☑	**17. Benchmarks: (VI.17)**		
☑	**18. House Numbers (VI.18)**		

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	Complied	
☑	**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	Complied	
☑	**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	Complied	
☑	**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	Complied	

Applicant's/Representative's Signature: ______________ **Date:** June 21, 2022

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

FEE SCHEDULE
Planning Department
Effective 07/01/21 – 06/30/22

PLANNING BOARD

Subdivision:

Subdivision
- Residential ....$500.00 plus $200.00 per lot
- Non-Residential ....$700.00 plus $300.00 per lot

Subdivision Amendment:
- Administrative approval $200.00
- TAC or Planning Board approval $500.00

Lot line revision/verification..........................$250.00 $250.00

Lot Line Revision Amendment
- Administrative approval $100.00
- TAC or Planning Board approval $150.00

Lot Consolidation – No Subdivision $175.00

Restoration of Involuntarily Merged Lots $250.00

Preliminary Conceptual Consultation..........$200.00

Design Review $500.00

Site Plan Review:

All developments...$500.00 $500.00
plus $5.00 per $1,000 of site costs only
plus $10.00 per 1,000 s.f. of site development area $1,780.00

Total fee not to exceed (cap) $15,000.00

Site Plan Minor Amendment:
- Administrative approval $200.00
- Administrative approval after work has been done..........................$500.00
- TAC or Planning Board approval $800.00

Preliminary Conceptual Consultation..........$200.00

Total $2,530.00

Design Review $500.00

Wetlands Conditional Use Permit:

Area of disturbance in wetland or wetland buffer:
- Up to 250 sq. ft. $100.00
- Up to 1,000 sq. ft....................................$500.00
- Greater than 1,000 sq. ft. $1,000.00

Conditional Use Permit (Non-Wetland)

Conditional Use Permit (Non-Wetland).......$200.00

BOARD OF ADJUSTMENT

Residential Applications
- 1-2 dwelling units $150.00
- 3 and over .... $250.00 plus $50.00 for each unit over 4
- Total fee not to exceed (cap) $3,000.00

Residential accessory structure only $50.00

Non-Residential Applications... $300.00 plus $5.00 per $1,000 of valuation of new construction

Total fee not to exceed (cap) $3,000.00

Signs.. $200.00

Appeal of Administrative Decision $50.00

HISTORIC DISTRICT COMMISSION

Work Session (prior to application for approval)......... $200.00 per work session

Residential Applications
- 1 dwelling unit $100.00
- 2 dwelling units $100.00
- 3 dwelling units $250.00
- 4 dwelling units and over .... $400.00 plus $100.00 for each unit over 4
- Total fee not to exceed (cap) $5,000.00

Accessory structure, mechanical equipment
or replacement of doors/windows only.................. $100.00

Non-Residential Applications .... $500.00 plus $5.00 per $1,000 of valuation of new construction

Total fee not to exceed (cap) $5,000.00

Accessory structure, mechanical equipment or replacement of doors/windows only.................. $100.00

Signs $100.00

Amendment to Certificate of Approval:

Administrative approval $100.00

Administrative approval after work has been done...... $500.00

Commission approval $800.00

ZONING PERMITS

Certificate of conformity $50.00

Letter of interpretation.. $100.00

Letter of Authorization

We, Frederick Bailey & Joyce Nelson, owners of property located at 212, 214 & 216 Woodbury Avenue & 6 Boyd in Portsmouth, NH, known as Tax Map 175, Lots 1, 2, 3 & 13 do hereby authorize Jones & Beach Engineers, Inc. ("JBE"), Garrepy Planning Consultants, LLC ("GPC"), and Hoefle, Phoenix, Gormley & Roberts, PLLC ("HPGR") to act on its behalf concerning the previously mentioned property.

I hereby appoint JBE, GPC and HPGR as agents to act on our behalf in the Planning Board and Zoning Board application process, to include any required signatures.

Frederick Bailey

Fred J Bailey

As Partner and, Individually

1/5/22
Date

Joyce Nelson

Joyce S. Nelson

As Partner and, Individually

1/05/22
Date

Letter of Authorization

I, Turner Porter, Tuck Realty Corporation, PO Box 190, Exeter, NH 03833, developer of property known as Tax Map 175, Lots 1, 2, 3, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcels are located on 212, 214 & 216 Woodbury 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.

Susan Porter
Witness

Turner Porter
Tuck Realty Corporation

1/5/22
Date

DEED

KNOW ALL MEN BY THESE PRESENTS that we, Seron E. Nelson and Peter A. Nelson, both of 19 Buckingham Drive, Bow, NH 03304 for nominal (less than $1.00) consideration paid, do hereby release and disclaim any and all claim to or interest in and do hereby give and grant to the other parties of interest, to wit, Frederick J. Bailey III of 27 Kirriemuir, Stratham, NH and Joyce S. Nelson of 19 Buckingham Drive, Bow, NH with QUIT-CLAIM COVENANTS, the following undivided interest in the following described tract of land, to wit:

All of the Grantors estate's right, title and interest in and to eight certain tracts of land with the buildings thereon situated in Portsmouth, County of Rockingham, State of New Hampshire, bounded and described as follow:

TRACTS I, III, V, VI, AND VII.

Beginning at land of the State of New Hampshire at a concrete post in the ground which is a New Hampshire Highway Bound situated at the northeasterly corner of the premises hereby conveyed, which bound is also located at the northwesterly corner of land of Spectrum Enterprises, Inc.; thence turning and running S 14 degrees 15' E along land of Spectrum Enterprises, Inc., a distance of two hundred sixty-seven and 40/100 (267.40) feet to a drill hole in a boulder at other land formerly of Colony Motor Hotel, Inc.; thence turning and running S 14 degrees 08' E along land formerly of Colony Motor Hotel, Inc., a distance of ninety-six and 14/100 (96.14) feet to a corner of other land formerly of Colony Motor Hotel, Inc.; thence turning and running N 82 degrees 49' W along other land formerly of Colony Motor Hotel, Inc. a distance of one hundred twelve and no/100 (112.00) feet to the northeast corner of such other land formerly of Colony Motor Hotel, Inc. (There is also included in the aforesaid tract the right to use so much, if any, of the area owned by the grantor south of such line as is now occupied by the pool or cooling tower now located on the aforesaid tract); thence turning and running S 14 degrees 08' E along such other land formerly of Colony Motor Hotel, Inc. a distance of one hundred fifty and no/100 (150.00) feet to the northerly sideline of Boyd Road at the southeasterly corner of the premises hereby conveyed; thence turning and running N 82 degrees 49' W along the northerly sideline of the said Boyd Road a distance of two hundred ninety-eight and no/100 (298.00) feet to a point in such sideline; thence turning and running N 84 degrees 25' 10" W still along the northerly sideline of Boyd Road a distance of one hundred seven and 39/100 (107.39) feet to an iron pipe set in the ground at land of the State of New Hampshire; thence turning and running N 13 degrees 10'55" E along land of the State of New Hampshire a distance of twenty-four and 88/100 (24.88) feet to and iron pipe set in the ground; thence turning and running N 20 degrees 19' 40" E still along land of the State of New Hampshire a distance of two hundred seventy-two and 92/100 (272.92) feet to an iron pipe set in the ground; thence turning and running N 43 degrees 09' 40" E still along land of the State of New Hampshire a distance of seventy-seven and 61/100 (77.61) feet to an iron pipe set in the ground; thence turning and running N 67 degrees 00'10" E still along land of the State of New Hampshire a distance of two

DEED

hundred fifty-four and 38/100 (254.38) feet to the New Hampshire Highway Bound at the place of beginning.

The foregoing described premises include (as Tract VII) the whole of the premises conveyed by the State of New Hampshire to Colony Motor Hotel, Inc. by deed dated November 12, 1975, and recorded in the Rockingham County Registry of Deeds, Book 2247, Page 0552; (as Tract VI) the whole of the premises conveyed by Parkwood, Inc. to Colony Motor Hotel, Inc. by deed dated February 6, 1973, and recorded in the Rockingham County Registry of Deeds, Book 2196, Page 1564; the whole of Tract I (original motel lot) and Tract III (original adjunct to pool lot), and Tract V (triangular lot at corner of State land) as conveyed by Frederick J Bailey and Seron W. Bailey to Colony Motor Hotel, Inc. by deed dated June 30, 1976, and recorded in the Rockingham County Registry of Deeds, Book 2261, Page 0479, together with all grantor's right, title and interest in and to rights of way, easements, options, etc., as set forth on the last page of said Baileys to Colony deed in Book 2261, Page 0479.

There is expressly excepted and reserved to the State of New Hampshire as to the tract adjacent to the Portsmouth Traffic Circle the rights by said State reserved to itself in said deed by the State of New Hampshire to Colony Motor Hotel, Inc. dated November 12, 1975 recorded in said Rockingham County Registry of Deeds, Book 2247, Page 0552 in the following terms as therein set forth, namely:

"There is expressly excepted and reserved to the grantor herein all rights of access, light, air and view, appurtenant to the parcel herein conveyed, over, from and to US Route 1 By-Pass and the Woodbury Avenue Ramp along the first four (4) described courses with the exception of two (2) points of access, as presently existing along the fourth described course at the new right of way line established by this conveyance, said two (2) points of access being as shown on the plan herein above referred to.

Attached hereto is a copy of the relevant portion of the plan referred to above."

Former easement reserved by deed of Parkwood, Inc. to Colony Motor Hotel, Inc. dated February 6, 1973, recorded in Rockingham County Registry of Deeds, Book 2196, Page 1564, reserving easement to Frederick J. Bailey and Seron W. Bailey over strip of land 20 feet in width along southerly side of restaurant property, having since become meaningless, was terminated by conveyance of such easement in total by said Frederick J. Bailey and Seron W. Bailey by deed to Colony Motor Hotel, Inc. dated July 24, 1981, recorded on July 29, 1981, in said Rockingham Deeds, Book 2394, Page 1324.

TRACT II.

A certain parcel of land with the buildings thereon, situate in said Portsmouth, and County of Rockingham and State of New Hampshire, on the northerly side of Boyd Road, so -called, and bounded and described as follows:

DEED

Beginning on said Road at the southwesterly corner of land formerly owned by one Taccetta at a stake in the ground and thence running in a northerly direction in part by said land formerly of said Taccetta and in part by Tract IV in this deed one hundred and fifty (150) feet to a stake in the ground at land formerly of Joseph Cohen, (now Tract III in this deed); thence turning and running in a generally westerly direction by said land (Tract III herein) one hundred and twelve (112) feet to a stake in the ground; thence turning and running still by land formerly of said Hazel E. Wood (Tract I in this deed) in a generally southerly direction one hundred and fifty (150) feet to said Boyd Road to a stake in the ground; thence turning and running by said Boyd Road in a generally easterly direction one hundred and twelve (112) feet to said stake in the ground at said southwesterly corner of said land formerly of said Taccetta to the place begun at.

Tract II above described being the same premises as Tract II conveyed by deed of Frederick J. Bailey and Seron W. Bailey dated June 30, 1976, recorded Rockingham County Registry of Deeds, Book 2261, Page 0479.

TRACT IV.

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Woodbury Avenue, in said Portsmouth, and County of Rockingham and State of New Hampshire, and more particularly bounded and described as follows:

Beginning at the northeasterly side of the premises herein described at the southeast corner of land now or formerly of Priscilla Hamilton; thence running by said Woodbury Avenue, S 21 degrees 30' E, 85.0 feet, to land formerly of Vincent Taccetta, Jr.; thence turning and running by said Taccetta, Jr. land S 68 degrees 30' W, 99.2 feet to a point at said Taccetta Jr., land; thence turning and running still by said Taccetta, Jr. land S 85 degrees 23' W, 203.8 feet to land formerly of Parkwood, Inc., (now Tract II in this deed), thence turning and running by said land (Tracts II and III in this deed and other land formerly of Colony Motor Hotel, Inc.) N 14 degrees 50' W, 86.5 feet to land formerly of said Hamilton; thence turning and running by said Hamilton land, N 80 degrees 24' E, 290.4 feet to Woodbury Avenue and the point of the beginning.

Reserving and excepting from the above described premises a strip of land along the southerly side thereof conveyed to Vincent Taccetta, Jr. et al by deed dated June 21, 1966, recorded in the Rockingham County Registry of Deeds, Book 1833, Page 435.

Tract IV being the same premises as Tract IV conveyed by deed of Frederick J. Bailey and Seron W. Bailey, dated June 30, 1976, and recorded in the Rockingham County Registry of Deeds, Book 2261, Page 0479.

DEED

The foregoing premises all being that portion of the same premises conveyed by deed of Colony Motor Hotel, Inc. dated December 15, 1986, recorded in the Rockingham County Registry of Deeds, Book 2652, Page 550.

The foregoing premises all being conveyed to by deed of Frederick J. Bailey and Frederick J. Bailey III as co-executors Estate of Seron W. Bailey dated January 1, 1987, recorded in the Rockingham County Registry of Deeds, Book , Page and by Frederick J. Bailey, Frederick J. Bailey III, and Joyce S. Nelson as Trustees of Seron W. Bailey Trust A by Deed dated December 31, 1989 and recorded in Book 2823 Page 1009.

The premises hereby conveyed, namely Tracts I-VII inclusive, are also conveyed subject to any and all existing rights or easements or record with respect to poles, wires or other facilities of public utilities and to any and all existing access, view and other rights and easements of the State of New Hampshire and/or others for highway or right of way purposes.

TRACT VIII.

Beginning at the intersection of the Easterly Sideline of said By-Pass and the Southerly sideline of Boyd Road; thence running Easterly by said Road Forty-five (45) feet, more or less, to the Westerly sideline of a proposed street known as Center Street; thence turning and running Southeasterly by said proposed street Two Hundred Forty-nine (249) feet to the Northerly sideline of a proposed street known as Garden Street; thence continuing in a straight line across said Garden Street Fifty (50) feet and continuing further in a straight line Fifty (50) feet to land now, or formerly of, one Regan; thence turning and running Westerly by land of said Regan and land of another Two Hundred (200) feet, more or less, to the Easterly sideline of said By-Pass One Hundred (100) feet, more or less, to land of Harry E. Yoken, et. al or Darley Realty Company; thence continuing in a general Northeasterly direction Three Hundred Nine (309) feet, more or less, by the Easterly sideline of said By-Pass to the point of beginning; subject , however, to such rights, if any, as the public or adjoining owners may have in that portion of Garden and Inland Street , so called, included in the above description, and meaning and intending to convey all right of the grantor in Center Street, Garden Street, and Inland Street as shown on Plan of Land belonging to Frank Jones, recorded in Rockingham County Records, Book 584, Page 481, and also shown on Plan of Spadea Lots, Garden and Center Streets, Portsmouth, New Hampshire, by John W. Durgin, C. E. , recorded in Rockingham Records, Plat 53, page 10, excepting, however, from the above description a parcel of land one hundred twenty (120) feet in length and twenty-five (25) feet in depth extending from the Northerly sideline of Garden Street Northeasterly along the Easterly sideline of said By-Pass, all as shown on said Plan.

To have and to hold the same, with all the rights, privileges, and appurtenances thereunto appertaining unto and to the use of the said Frederick J. Bailey III, and Joyce S. Nelson, and their successors and assigns forever.

DEED

Either statutory minimum or no Documentary Stamps are required, as this is a release and disclaimer of an interest. Non contractual transfer.

IN WITNESS WHEREOF Seron E. Nelson and Peter A. Nelson have affixed their hands under seal this 27th day of December, 2002.

In the presence of:

Sheila Castellez-Cook

Seron E. Nelson

Sheila Castellez-Cook

Peter A. Nelson

STATE OF NEW HAMPSHIRE
ROCKINGHAM, SS.

December 27, 2002

Personally appeared the above named, Seron E. Nelson and acknowledges the foregoing instrument be of her free act and deed.

Before me,

Jane H. Dodge
Notary Public

JANE H. DODGE, Notary Public
My Commission Expires September

JANE H. DODGE NOTARY PUBLIC NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
ROCKINGHAM, SS.

December 27, 2002

Personally appeared the above named Peter A. Nelson and acknowledges the foregoing instrument to of his free act and deed.

Before me,

Jane H. Dodge
Notary Public

JANE H. DODGE, Notary Public
My Commission Expires September 25, 2007

JANE H. DODGE NOTARY PUBLIC NEW HAMPSHIRE

WARRANTY DEED

We, Mitchell A. Hyder, Edward A. Hyder, Henry K. Hyder, Jr., A. Robert McGuire, and Henry K. Hyder III, all as Trustee's of the Mitchell A. Hyder and Edward A. Hyder Irrevocable Trust of 1993, of One Raynes Avenue, Portsmouth, Rockingham County, New Hampshire

FOR CONSIDERATION PAID GRANT TO Frederick J. Bailey, III and Joyce S. Nelson with a mailing address of 27 Kirriemuir Road, Stratham, New Hampshire 03885, as tenants in partnership in accordance with the Bailey Nelson Partnership.

085503

with **Warranty Covenants**

A certain tract or parcel of land, with the buildings thereon, situate in Portsmouth, County of Rockingham and State of New Hampshire, and more particularly bounded and described as follows:

Beginning on the Westerly side of Woodbury Avenue at the Northeasterly corner of land now or formerly of James and Mary Verna; thence running S 68° 30' W, by said Verna land, ninety-nine and two-tenths (99.2) feet, more or less, to other land of said Verna; thence N 21° 30' W by said Verna land, ten (10) feet, thence S 68° 30' W by said Verna land, seventy-two (72) feet, thence S 80° 24' W, by said Verna land in part, and by land of John F. and Gloria C. Collins in part sixty-eight and three-tenths (68.3) feet; thence N 84° 6' N by said Collins land, seventy-four and five-tenths (74.5) feet to land formerly of Edward C. Berry; thence by said Berry land in part and by land of Parkwood, Inc. in part, N 14° 50' W, eighty-six and five-tenths (86.5) feet to land formerly of Vincent Taccetta; thence by land formerly of Vincent Taccetta, N 85° 23' E. one hundred sixteen and nine-tenths (116.9) feet; thence still by land formerly of Vincent Taccetta, N 70° 23' 30" W, one hundred eighty-two and four-tenths (182.4) feet to Woodbury Avenue; thence S 21° 30' E, by said Woodbury Avenue, one hundred four and four-tenths (104.4) feet to the point of beginning.

2005 NOV 18 AM 8:08

Being parcel No. 6 as described in Deed at Registry of Deeds in Book 3005, Page 1883 dated August 31, 1993.

Executed as a sealed instrument this 16 day of Nov. 2005.

MITCHELL A. HYDER
EDWARD A. HYDER
IRREVOCABLE TRUST OF 1993

Mitchell A. Hyder

Mitchell A. Hyder, Trustee

Edward A. Hyder

Edward A. Hyder, Trustee

A. Robert McGuire, Jr.

A. Robert McGuire, Jr. Trustee

Henry K. Hyder, III, Trustee

Henry K. Hyder, Jr., Trustee

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION
REAL ESTATE TRANSFER TAX
6 THOUSAND 7 HUNDRED AND 50 DOLLARS
111805 751521 $6750.00

State of New Hampshire
~~THE COMMONWEALTH OF MASSACHUSETTS~~

Rockingham
ESS~~EX~~, ss November 16 2005

On this 16 day of November 2005, before me, the undersigned notary public, personally appeared Henry K. Hyder III proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose,

Susan Covey
Notary Public
My Commission Expires:

Susan Covey
NOTARY PUBLIC
New Hampshire
My Commission Expires

State of New Hampshire
~~THE COMMONWEALTH OF MASSACHUSETTS~~

Rockingham
~~ESSEX~~, ss NOV 16, 2005

On this 16th day of NOV. 2005, before me, the undersigned notary public, personally appeared Henry K. Hyder, Jr., proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose,

Pamela J. Starkey
Notary Public
My Commission Expires:

PAMELA J. STARKEY, Commissioner of Deeds
My Commission Expires August

State of New Hampshire
County of Rockingham

On this the 16th day of November, 2005, before me, Michael Sanderell, the undersigned officer, personally appeared Mitchell A. Hyder, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

MICHAEL A. SANDERELL
MY COMMISSION EXPIRES APR. 21, 2009
NOTARY PUBLIC
NEW HAMPSHIRE

Michael A Sanderell
Notary Public
My Commission Expires: 4/21/09

State of New Hampshire
County of Rockingham

On this the 16 day of November, 2005, before me, the undersigned officer, personally appeared Edward A. Hyder, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

MICHAEL A. SANDERELL
MY COMMISSION EXPIRES APR. 21, 2009
NOTARY PUBLIC
NEW HAMPSHIRE

Michael A Sanderell
Notary Public
My Commission Expires: 4/21/09

State of New Hampshire
County of Rockingham

On this the 16 day of November, 2005, before me, the undersigned officer, personally appeared A. Robert McGuire, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.

In witness whereof I hereunto set my hand and official seal.

Michael A Sanderell
Notary Public
My Commission Expires: 4/21/09

c:\documents\hyder\edward\214 woodbury road, portsmouth to bailey\deed.doc

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, that JOSEPH M. VERNA, married, of 347 Meadow Road, Portsmouth, Rockingham County, New Hampshire, and GLORIA C. COLLINS, an unremarried widow, of 6 Boyd Road, Portsmouth, New Hampshire,

for consideration paid, grants to FREDERICK J. BAILEY, III, and JOYCE NELSON, of 27 Kirriemuir Road, Stratham, Rockingham County, New Hampshire, as tenants in partnership in accordance with the Bailey Nelson Partnership, with WARRANTY COVENANTS, the following described premises:

A certain tract or parcel of land with the buildings thereon situate in Portsmouth, County of Rockingham, State of New Hampshire, being shown as Lot 1 on a plan entitled "Lot Line Adjustment Plan for John & Gloria Collins in Portsmouth, NH" dated October 27, 1988, Scale 1"=20', prepared by Seacoast Engineering Associates, Inc., recorded at the Rockingham County Registry of Deeds as Plan D#18914, and being more particularly bounded and described as follows:

Beginning on Woodbury Avenue at land now or formerly of Margaret H. Taccetta, and running by said Woodbury Avenue South 21°30"East 141.9 feet to a point; thence by a curve whose radius is 12.97 feet, Southerly and Westerly to a point on Boyd Road; thence by said last named road North 86°8'West 240.56 feet to land now or formerly of John F. and Gloria C. Collins; thence turning and running North 01°16'23" West, by land now or formerly of said Collins, a distance of 74.00 feet to a point; thence turning and running North 80°24'02" East, by land now or formerly of Hyder Management, a distance of 36.83 feet to a point; thence turning and running North 68°30'00" East, by land now or formerly of said Hyder Management a distance of 72.00 feet to a point; thence turning and running South 21°30'01" East by land of said Hyder Management, a distance of 10.0 feet to a point; thence turning and running North 68°30'00"East, a distance of 99.20 feet to the point of beginning.

Together with a right of way for all purposes to and from said conveyed premises and Woodbury Avenue over adjoining land now or formerly of Margaret H. Taccetta ten feet wide and carrying that width back 99.2 feet from said Avenue; and subject to a similar right of way, as appurtenant to said land of Margaret H. Taccetta over the land conveyed, to and from said premises now or formerly of said Margaret H. Taccetta and said Woodbury Avenue, adjoining the aforementioned right of way and similarly ten feet wide and carrying that width back 99.2 feet form said Avenue; the two rights of way together constituting a strip of land 20 feet wide and 99.2 feet deep, over which the two adjoining properties have mutual rights of way. Being a part of the premises described in the deed from Guisseppe Vincini to Croce Taccetta, dated October, 5, 1923, and recording in the Rockingham County Registry of Deeds in Book 781, Page 24.

SUBJECT TO all plans, easements, covenants and restrictions of record, if any.

The is not homestead property of the Grantors and the Grantors release all other interest in the property.

Meaning and intending to describe and convey the same premises conveyed by Corrective Quitclaim Deed to Christine V. Harris, having a life estate, and remainder interest of Joseph M. Verna, and Gloria C. Collins, from Christine V. Harris, Trustee under the Trust created under the Will of James Verna, dated September 15, 2006, and recorded contemporaneously with this deed at the Rockingham County Registry of Deeds.

IN WITNESS WHEREOF, signed this 15th day of September, 2006.

Joseph M. Verna
JOSEPH M. VERNA

Gloria C. Collins
GLORIA C. COLLINS

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

Personally appeared this 15th day of September, 2006, the above-named Joseph M. Verna and Gloria C. Collins, acknowledged the foregoing instrument to be their voluntary act and deed. Before me,

Victoria Lynn Knight
Notary Public
My commission expires: 03/31/

VICTORIA ... KNIGHT NOTARY PUBLIC NEW HAMPSHIRE

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project: 212 Woodbury Ave, Portsmouth
Client: Tuck Realty Corp.
GES Project No. 2021308
MM/DD/YY Staff 3-18-2022 JPG

Test Pit No. 1
ESHWT: 21"
Termination @ 43"
Refusal: None
Obs. Water: 40"

2" gravel at surface.

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–21"	10YR 4/6	FSL	GR	FR	NONE
21–43"	2.5Y 5/2	FSL	PL	FI	30%, Distinct

Test Pit No. 2
ESHWT: 30"
Termination @ 51"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–30"	10YR 4/6	FSL	GR	FR	NONE
30–51"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

Test Pit No. 3
ESHWT: 27"
Termination @ 45"
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–27"	10YR 4/6	FSL	GR	FR	NONE
27–45"	2.5Y 5/3	FSL	PL	FI	20%, Distinct

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

Test Pit No. 4
ESHWT: 15"
Termination @ 41"
Refusal: None - boulder
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–8"	10YR 3/2	FSL	GR	FR	NONE
8–15"	2.5Y 5/4	FSL	GR	FR	NONE
15–41"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 5
ESHWT: 27"
Termination @ 50"
Refusal: None - stony
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–12"	10YR 3/2	FSL	GR	FR	NONE
12–27"	10YR 4/6	FSL	GR	FR	NONE
27–50"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 6
ESHWT: 26"
Termination @ 45"
Refusal: None
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–10"	10YR 3/2	FSL	GR	FR	NONE
10–26"	10YR 5/6	FSL	GR	FR	NONE
26–45"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

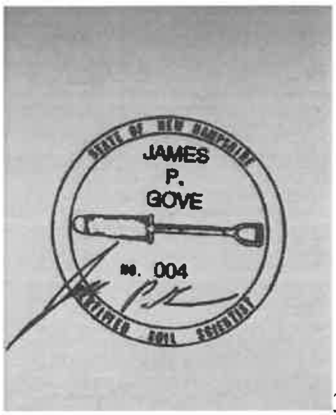
Test Pit No. 7
ESHWT: 26"
Termination @ 40"
Refusal: None
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–26"	10YR 4/6	FSL	GR	FR	NONE
26–40"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Legend:

FSL = fine sandy loam
GR = granular
FR = friable
PL = platy
FI = firm

Soil Colors at Munsell.



3-22-2022

Art Form Architecture, Inc.

PO Box 535,44 Lafayette Road, North Hampton, NH 03862 Wendy@ArtForm.us (603) 431-9559 Phone

June 10, 2022

City of Portsmouth
Planning Department
Attn: Peter Stith, Principal Planner
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

RE: Grapevine Run, 212-216 Woodbury Ave, Portsmouth NH

Dear Mr. Stith

The residential units proposed for the project referenced above are being designed to meet or exceed the applicable green building standards as set forth in the 2015 set of iCodes adopted by the State of New Hampshire along with associated amendments codified by the City of Portsmouth.

We have identified the following areas where components of these buildings can exceed code.

- Low maintenance exterior materials, reducing both replacement of the materials, and of chemicals needed to maintain them.
- Air quality and energy cost considerations on the mechanical systems, such as whole house ventilation, programmable thermostats, and high efficiency hot water, heat and cooling equipment.
- High efficiency lighting.
- Energy Star appliances.
- We've already designed with a relatively modest window area by modern standards.
- Designing for modern life is a green move in and of itself. The four bedrooms plus a study in these units was not done with the assumption that large families will live in downtown condos with minimal private yards. It was done assuming that the smallest front bedroom would also be used as a home office, allowing both parents to work from home. With this location enabling walking to all shopping and other amenities, we had in mind to minimize car use

Assemblies and systems for the units will be specified during the Building Permit application phase. Where some of these items are permitted separately from the architectural drawings, our client has committed to these same measures.

Sincerely,

Wendy Welton, RA
President

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559

Dear Builders and Home Buyers,

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on www.artform.us to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Art Form Architecture ("Art Form") requires that our Drawings be built substantially as designed. Art Form will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Art Form. It is recommended that you have your Drawing updated by Art Form prior to attaching any Drawing to any builder agreement. Art Form shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

Facade Changes:

- To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Art Form.
- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:

- Structural changes always require the express written consent of Art Form
- If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559

Tarquin

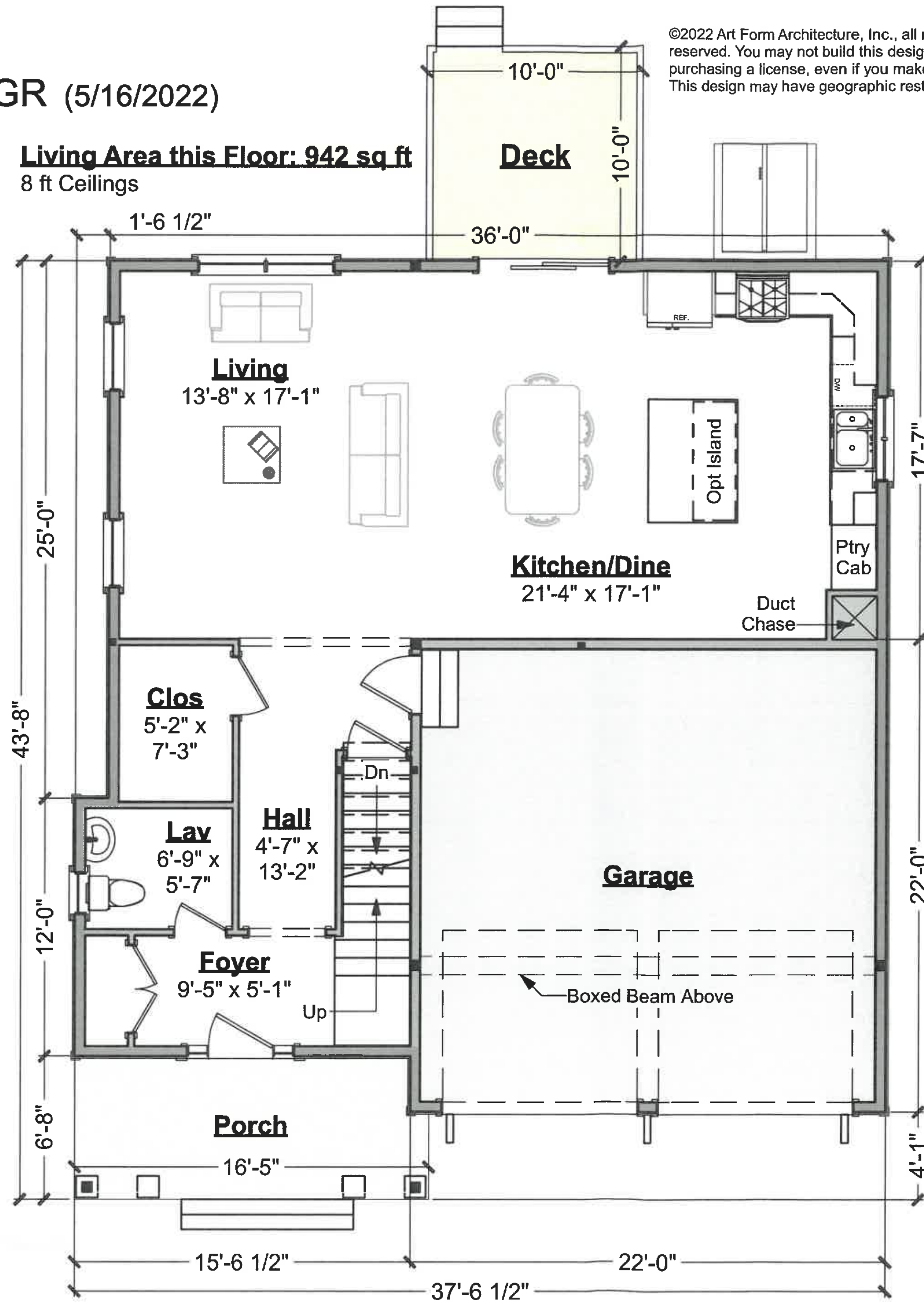
1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559

Living Area this Floor: 942 sq ft

8 ft Ceilings



First Floor Plan

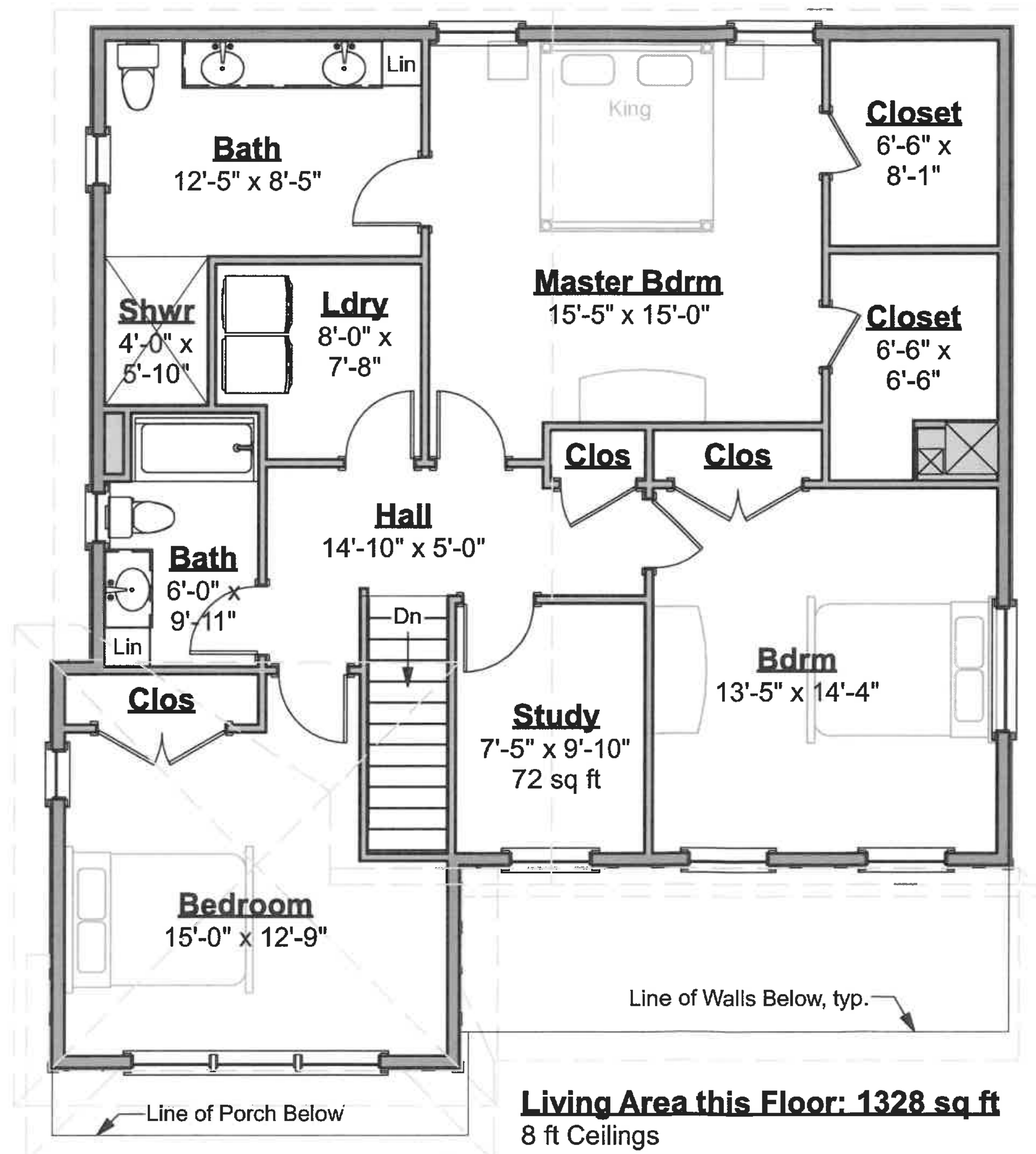
Scale: 1/8" = 1'-0"

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559



Living Area this Floor: 1328 sq ft

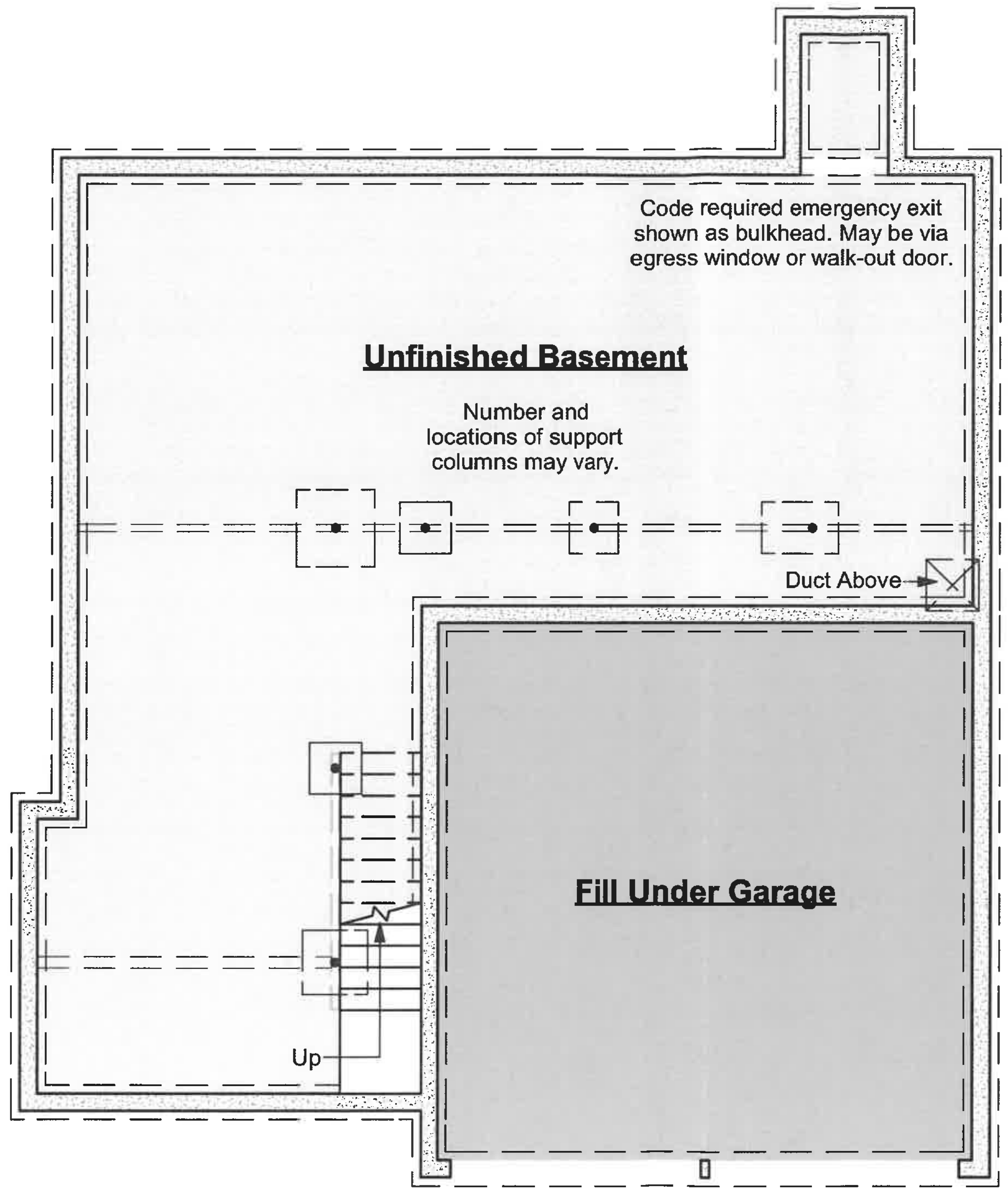
8 ft Ceilings

Second Floor Plan

Scale: 1/8" = 1'-0"

Tarquin
1108.124 GR (5/16/2022)

Art Form Architecture, Inc.
603-431-9559



Foundation Plan
Scale: 1/8" = 1'-0"

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559

Front Elevation

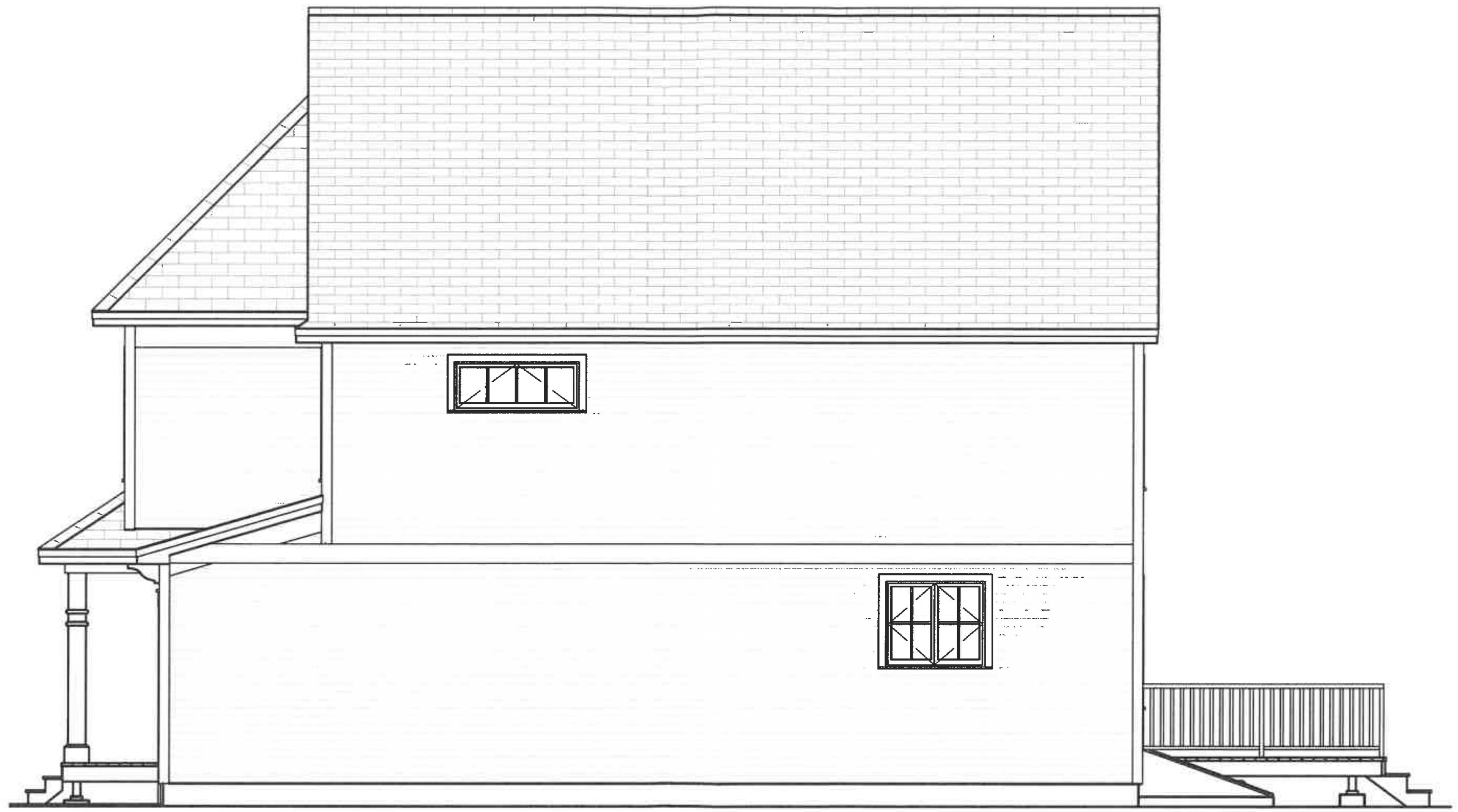
Scale: 1/8" = 1'-0"

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

603-431-9559



Right Elevation

Scale: 1/8" = 1'-0"

Tarquin

1108.124 GR (5/16/2022)

Art Form Architecture, Inc.

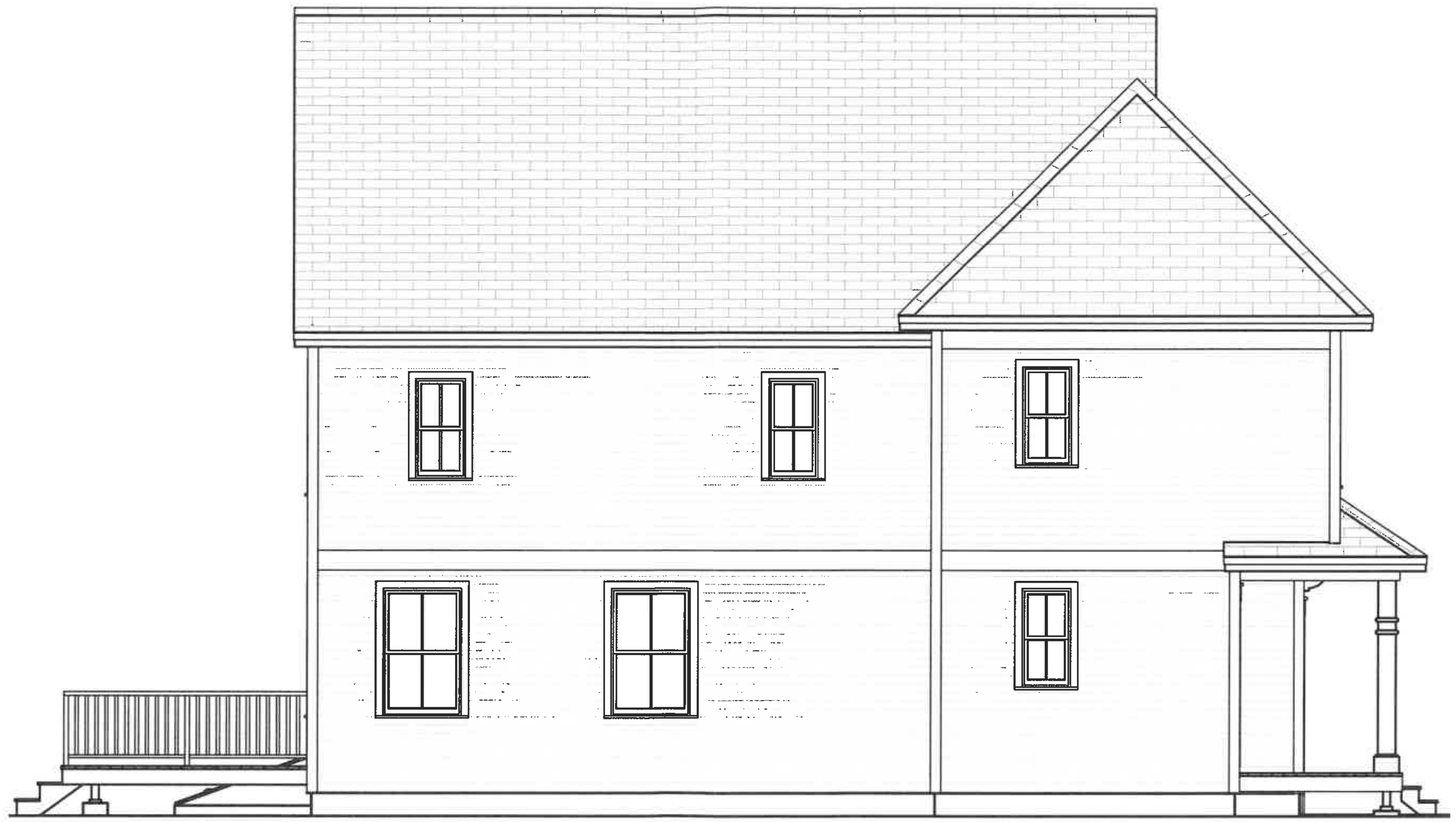
603-431-9559

Rear Elevation

Scale: 1/8" = 1'-0"

Tarquin
1108.124 GR (5/16/2022)

Art Form Architecture, Inc.
603-431-9559



Left Elevation
Scale: 1/8" = 1'-0"

Matthias Duplex

1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.

603-431-9559

Dear Builders and Home Buyers,

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings'). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on www.artform.us to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Art Form Architecture ("Art Form") requires that our Drawings be built substantially as designed. Art Form will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Art Form. It is recommended that you have your Drawing updated by Art Form prior to attaching any Drawing to any builder agreement. Art Form shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

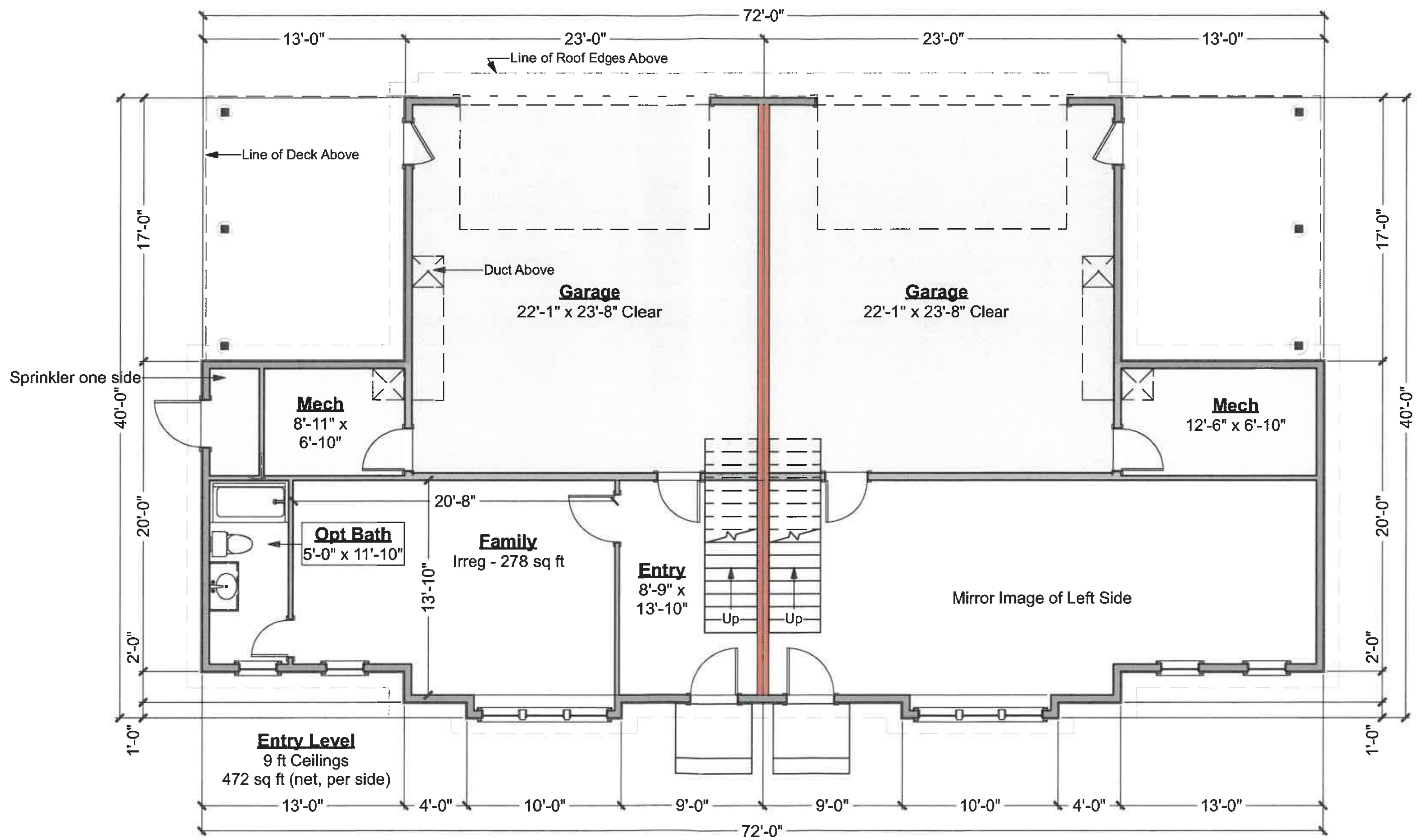
Facade Changes:
- To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Art Form.
- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:
- Structural changes always require the express written consent of Art Form
- If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

Matthias Duplex
1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.
603-431-9559

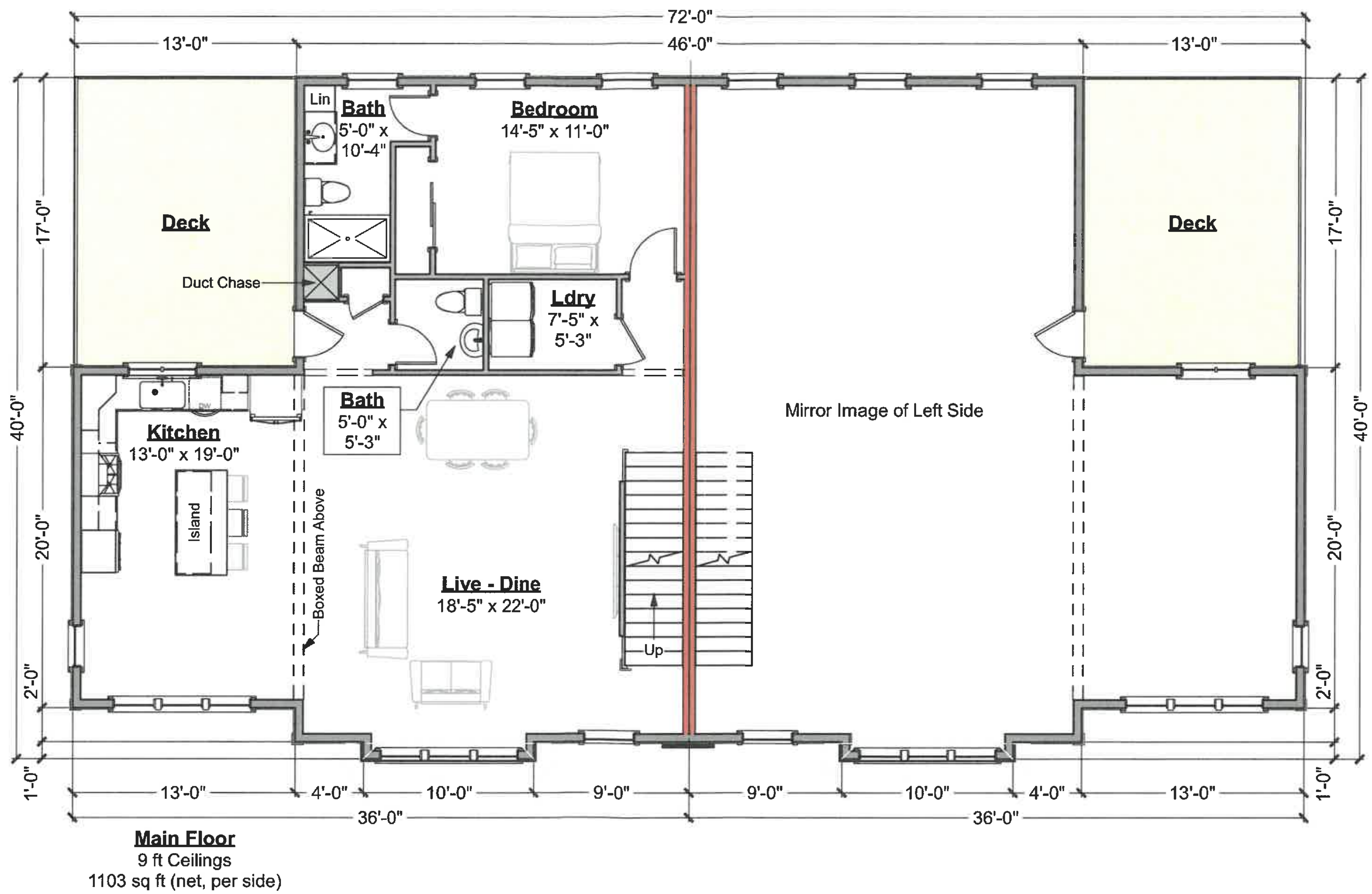


First Floor Plan
Scale: 1/8" = 1'-0"

Matthias Duplex
1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.
603-431-9559

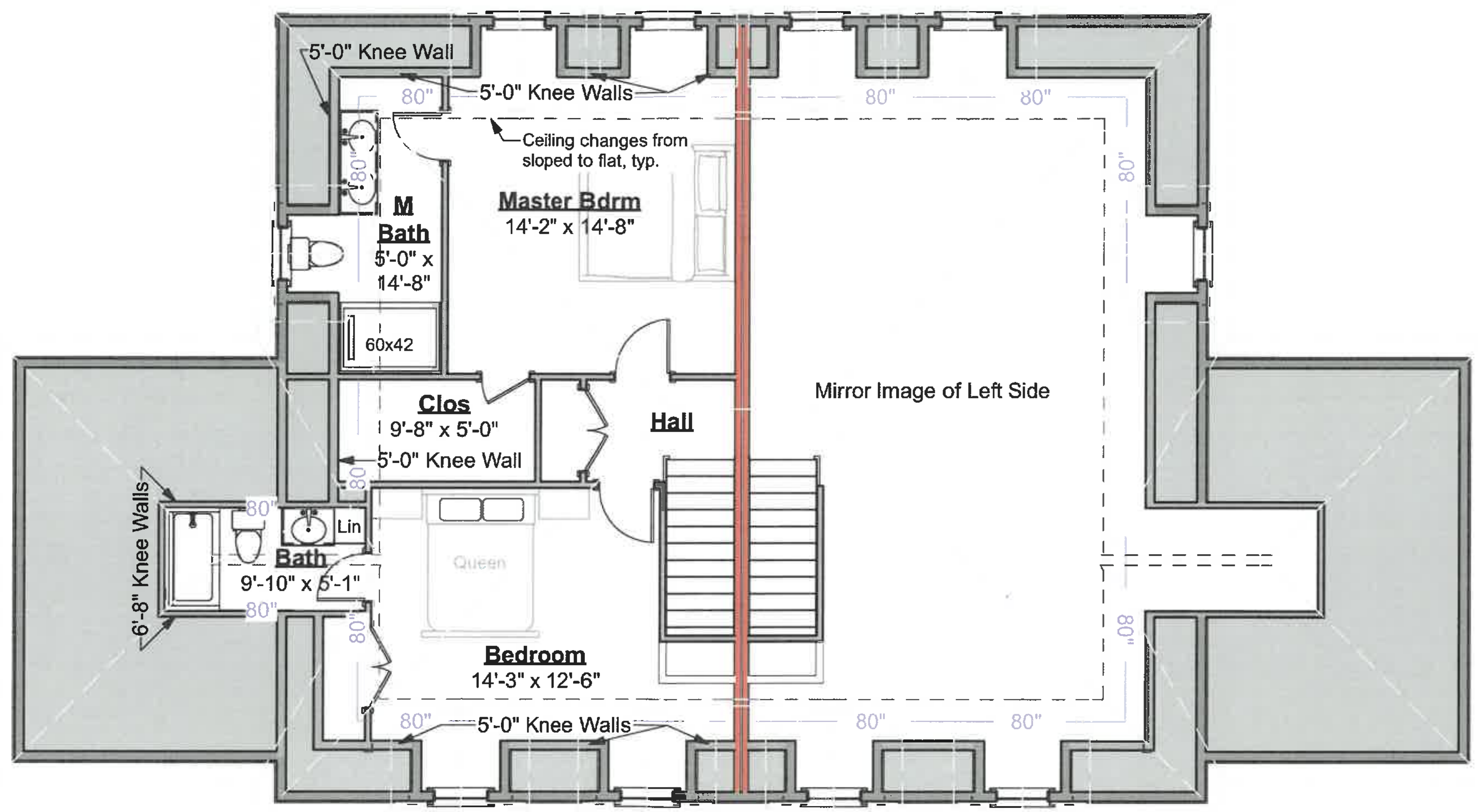


Second Floor Plan
Scale: 1/8" = 1'-0"

Matthias Duplex
1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.
603-431-9559



Top Floor
9 ft Ceilings
742 sq ft (net, per side)

Third Floor Plan
Scale: 1/8" = 1'-0"

Matthias Duplex

1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.

603-431-9559

Front

Right

Elevations

Scale: 1/8" = 1'-0"

Matthias Duplex
1107.224 (5/13/2022)

NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

Art Form Architecture, Inc.
603-431-9559

Rear

Left

Elevations

Scale: 1/8" = 1'-0"

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

"Grapevine Run"
212, 214, & 216 Woodbury Ave.
Portsmouth, NH 03801
Tax Map 175, Lots 1, 2, & 3

Prepared for:

Tuck Realty Corp.
ATTN: Turner Porter
P.O. Box 190
Exeter, NH 03833

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
June 21, 2022
JBE Project No. 21254

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

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. Roadway and driveways
    b. Vegetation and landscaping
    c. Bioretention systems
    d. Stone Drip Edge
    e. Subsurface Stone Infiltration Areas
    f. Culverts
    g. Rip-Rap Outlet Protection Aprons

2. Maintenance of permanent measures shall follow the following schedule:

    a. Normal winter roadway maintenance including plowing and snow removal. Road sweeping at the end of every winter, preferably at the start of the spring rain season.

    b. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately. **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.

    c. Bioretention Systems:

        - Visually inspect monthly and repair erosion. Use small stones to stabilize erosion along drainage paths.
        - Check the pH once a year if grass is not surviving. Apply an alkaline product, such as limestone, if needed.
        - Re-seed any bare areas by hand as needed.
        - Immediately after the completion of cell construction, water grass for 14 consecutive days unless there is sufficient natural rainfall.
        - Once a month (more frequently in the summer), residents are encouraged to visually inspect vegetation for disease or pest problems and treat as required.

- During times of extended drought, look for physical features of stress. Water in the early morning as needed.
- Weed regularly, if needed.
- After rainstorms, inspect the cell and make sure that drainage paths are clear and that ponding water dissipates over 4-6 hours. (Water may pond for longer times during the winter and early spring.)
- Twice annually, inspect the outlet control structures to ensure that they are not clogged and correct any clogging found as needed.
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHOULD NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

d. Stone Drip Edge:

A stone drip edge is behind Units 3 & 4 to collect roof runoff into a pipe in order to direct it into a subsurface stone infiltration bed. This practice shall be lined and is not intended for infiltration. The following recommendations will help assure that the roof drip edges are maintained to preserve its effectiveness.

In the spring and fall, visually inspect the area around the edges and repair any erosion. Use small stones to stabilize erosion along drainage paths. Inspect stone area to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones.

e. Subsurface Stone Infiltration Beds:

The following recommendations will help assure that the stone areas are maintained to preserve their effectiveness. These are located between Units 4 and the road, and between Units 5&6.

In the spring and fall, visually inspect the area around these underground systems and repair any erosion. Use small stones to stabilize erosion along drainage paths. Twice a year open the cleanout and check for signs of debris, sediment build-up, or standing water. If more than 12" of sediment is observed, plug the outlet and flush the system thoroughly. Pump water into system until at least 1" of standing water covers the system bottom. Capture sediment-laden water for proper disposal according to local state, and EPA regulation. **If the practice cannot be remediated as noted, it shall be replaced, and the City of Portsmouth shall be notified that the system has failed.**

f. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly.

g. Rock riprap should be **inspected annually** in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. If the riprap is adjacent to a stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits.

See attached sample forms as a guideline.

Any inquiries in regards to the design, function, and/or maintenance of any one of the above-mentioned facilities or tasks shall be directed to the project engineer:

Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885

T#: (603) 772-4746
F#: (603) 772-0227

Commitment to maintenance requirements

I agree to complete and/or observe all of the required maintenance practices and their respective schedules as outlined above.

____

Signature

____

Print Name

____

Title

____

Date

Annual Operations and Maintenance Report

The Condominium Association, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. The Association shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form.

Construction Activity	**Date of Inspection**	**Who Inspected**	**Findings of Inspector**
Roadway and Driveways			
Vegetation and Landscaping			
Bioretention			
Stone Drip Edge			
Subsurface Stone Infiltration Beds			

Culvert Outlet and Rip-Rap Outlet Protection Apron			
Other (please note):			

Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of leaves from the system and bypass structure. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Mulch and/or vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then biannually.
Check to insure the filter surface remains well draining after storm event. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 15% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
Check for animal burrows and short circuiting in the system **Remedy**: Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted.	
Check to insure the filter bed does not contain more than 2 inches accumulated material **Remedy**: Remove sediment as necessary. If 2 inches or more of filter bed has been removed, replace media with either mulch or a (50% sand, 20% woodchips, 20% compost, 10% soil) mixture.	
During extended periods without rainfall, inspect plants for signs of distress. **Remedy**: Plants should be watered until established (typical only for first few months) or as needed thereafter.	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy**: Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	Annually
Check for robust vegetation coverage throughout the system. **Remedy**: If at least 50% vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
Check for dead or dying plants, and general long term plant health. **Remedy**: This vegetation should be cut and removed from the system. If woody vegetation is present, care should be taken to remove dead or decaying plant Material. Separation of Herbaceous vegetation rootstock should occur when overcrowding is observed.	As needed

1/15/2011, University of New Hampshire Stormwater Center

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location: Inspector:
Date: Time: Site Conditions:
Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Initial Inspection After Planting and Mulching			
Plants are stable, roots not exposed	**S**	**U**	
Surface is at design level, typically 4" below overpass	**S**	**U**	
Overflow bypass / inlet (if available) is functional	**S**	**U**	
2. Debris Cleanup (2 times a year minimum, Spring & Fall)			
Litter, leaves, and dead vegetation removed from the system	**S**	**U**	
Prune perennial vegetation	**S**	**U**	
3. Standing Water (1 time a year, After large storm events)			
No evidence of standing water after 72 hours	**S**	**U**	
4. Short Circuiting & Erosion (1 time a year, After large storm events)			
No evidence of animal burrows or other holes	**S**	**U**	
No evidence of erosion	**S**	**U**	
5. Drought Conditions (As needed)			
Water plants as needed	**S**	**U**	
Dead or dying plants			
6. Overflow Bypass / Inlet Inspection (1 time a year, After large storm events)			
No evidence of blockage or accumulated leaves	**S**	**U**	
Good condition, no need for repair	**S**	**U**	
7. Vegetation Coverage (once a year)			
50% coverage established throughout system by first year	**S**	**U**	
Robust coverage by year 2 or later	**S**	**U**	
8. Mulch Depth (if applicable)(once every 2 years)			
Mulch at original design depth after tilling or replacement	**S**	**U**	
9. Vegetation Health (once every 3 years)			
Dead or decaying plants removed from the system	**S**	**U**	
10. Tree Pruning (once every 3 years)			
Prune dead, diseased, or crossing branches	**S**	**U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	

DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

Grapevine Run
212, 214, & 216 Woodbury Ave.
Portsmouth, NH 03801
Tax Map 175, Lots 1, 2, & 3

Prepared for:

Tuck Realty Corp
ATTN: Turner Porter
P.O. Box 190
Exeter, NH 03833

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746

June 21, 2022
JBE Project No. 21254

EXECUTIVE SUMMARY

Tuck Realty Corp proposes to construct eight (8) residential condominium units along a 338' proposed private driveway on a 1.38-acre parcel of land (after lot line adjustment) located at 212, 214, & 216 Woodbury Avenue in Portsmouth, NH, with access from Boyd Rd. In the existing condition, Lots 1-3 each contain a single-family residence with a paved driveway, and there is a detached garage on Lot 1. The house, garage, driveway, and other site features on Lot 1 are to be removed to make available land for the proposed development.

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 (3.21"), 10 Year – 24 Hour (4.87"), 25 Year – 24 Hour (6.17"), and 50 Year – 24 Hour (7.39") 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). 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	1.64	1.46	3.05	2.61	4.18	3.53	5.24	4.38
Analysis Point #2	0.10	0.10	0.19	0.19	0.26	0.26	0.34	0.34
Analysis Point #3	0.69	0.19	1.80	1.25	2.69	2.07	3.55	3.46
Analysis Point #4	0.17	0.14	0.37	0.29	0.54	0.41	0.69	0.52

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	0.157	0.124	0.292	0.225	0.404	0.307	0.512	0.386
Analysis Point #2	0.007	0.007	0.014	0.014	0.020	0.020	0.026	0.026
Analysis Point #3	0.086	0.033	0.192	0.153	0.286	0.260	0.379	0.368
Analysis Point #4	0.014	0.012	0.029	0.023	0.042	0.032	0.055	0.041

The subject parcels are located in the General Residence A (GRA) Zoning District. The subject parcels currently consist of the aforementioned single-family residences with associated driveways, sheds, and a detached garage, all of which is proposed to be demolished. The topography of the site as well as a stretch of Woodbury Ave. and Boyd Rd. that is considered in this analysis define five (5) subcatchments, which drain to four (4) analysis points. Subcatchments 1S-4S drain directly toward their respective analysis points while subcatchment 5S drains toward a depression on Lot 3 which, when it overflows, drains toward Analysis Point 3.

The proposed site development consists of the aforementioned eight (8) condominium units with associated paved private driveways and individual driveways coming off of it. 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 eight (8) 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 consists of a bioretention system for treatment and detention of road and roof water, as well as two subsurface stone areas for infiltration of roof water from Units 3-6. 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. All runoff from proposed paved areas and some of the runoff from proposed roofs will be treated, while some of the runoff from the proposed roofs will be infiltrated directly to groundwater via the aforementioned stone beds and a small section of proposed roof simply allowed to runoff. Residential roof runoff is considered by NHDES to be clean water.

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.

TABLE OF CONTENTS

Executive Summary

1.0 Rainfall Characteristics

2.0 Existing Conditions Analysis

3.0 Proposed Conditions Analysis

4.0 Conclusion

Appendix I Existing Conditions Analysis

2 Year - 24 Hour Summary
10 Year - 24 Hour Complete
25 Year - 24 Hour Summary
50 Year - 24 Hour Complete

Appendix II Proposed Conditions Analysis

2 Year - 24 Hour Summary
10 Year - 24 Hour Complete
25 Year - 24 Hour Summary
50 Year - 24 Hour Complete

Appendix III Test Pit Logs
Appendix IV Professional Soil Classification Exhibit
Appendix V NRCS Soil Map
Appendix VI Extreme Precipitation Estimates
Appendix VII Rip Rap Calculations
Appendix VIII BMP Worksheet
Appendix IX Pre- and Post-Construction Watershed Plans

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 (3.21"), 10 Year – 24 Hour (4.87"), 25 Year – 24 Hour (6.17"), and 50 Year – 24 Hour (7.39") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC).

The peak rates and volumes of runoff will be reduced from the existing condition and stormwater treatment will exceed requirements in the proposed condition, thereby minimizing any potential for a negative impact on abutting properties or downstream waterbodies.

2.0 EXISTING CONDITIONS ANALYSIS

The three existing single-family residential properties each feature a single-family house with a paved driveway, and Lot 1 also includes a detached garage. Otherwise the undeveloped areas of the three parcels are covered by both woods and grass, and no wetlands were observed on site. The abutting properties are residentially used properties as well as two hotel sites.

In the existing condition, the topography of the subject parcel as well as a stretch of Woodbury Ave. and Boyd Rd. that was considered is such that the study area is split into 5 Subcatchments draining toward 4 analysis points.

Analysis Point 1 is a catch basin just off of Woodbury Ave along the driveway leading to the house on Lot 2, which receives runoff from part of the study area in both the existing and proposed condition. This is near the northeast area of the study area. Analysis Point 2 represents a slope adjacent to what appears to be a single-family residence that is apparently in the southeastern corner of Tax Map 175, Lot 11 per Portsmouth tax maps, abutting Boyd Rd. This analysis point receives a small amount of runoff from a section of the study area in the existing and proposed conditions. Analysis Point 3 represents a catch basin in the parking lot on Tax Map 174, Lot 11, which is home to a hotel, and receives a fair amount of runoff from the site in both the existing and proposed conditions. Finally, Analysis Point 4 represents the Boyd Rd. drainage system. This receives a small amount of runoff from the study area in both the existing and proposed conditions, mostly from abutting Tax Map 175, Lot 13, although it is modelled because a small part of the subcatchment draining toward this Analysis Point is on the subject property and therefore is affected by this development.

Subcatchments 1S-4S drain directly toward Analysis Points AP1-AP4, while Subcatchment 5S drains toward a shallow depression in which water puddles during large storm events and then overflows toward Analysis Point AP3. Peak rates and volumes of runoff are reduced in the proposed condition during all analyzed storm events.

The existing soil type for the entire subject parcel is 29B – Woodbridge Fine Sandy Loam, as classified by a Certified Soil Scientist. This soil type is classified by Hydrologic Soil Group "C". According to "Ksat Values for New Hampshire Soils" sponsored by the Society of Soil Scientists of Northern New England SSSNNE Special Publication No. 5, this soil type has a saturated hydraulic conductivity (Ksat) of 0.6-2.0 in/hr in the B Horizon and a Ksat of 0.0-0.6 in/hr in the C horizon.

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 eight (8) condominium units with associated paved private driveway as well as stormwater management features divide the same study area from the existing conditions analysis into eight (8) subcatchments, all still draining toward the same analysis points.

Subcatchments 1S-4S drain directly toward corresponding Analysis Points AP1-AP4, and Subcatchment 5S drains toward the offsite depression modelled as 1P in which water puddles and eventually overflows toward Analysis Point AP3; so far identical to the existing conditions analysis routing. Subcatchment 6S represents the watershed of the proposed bioretention system in the rear of the site that is modelled as Pond 2P. Subcatchments 7S and 8S represent roof areas that drain toward subsurface stone infiltration beds modelled as Ponds 4P and 5P, respectively, with the runoff from Subcatchment 7S falling on to lined stone drip edge 3P so that water will enter an underdrain to be carried into the stone infiltration bed, where a gutter and downspout system would not be feasible due to the shape of the proposed roof.

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.

The Ksat values stated at the end of the Existing Conditions Analysis were used to determine the design infiltration rates of each stormwater practice. Because infiltration is being proposed into the B horizon, the lowest Ksat in the B horizon was used for design and then divided by a factor of safety of 2 to determine the design infiltration rate. Therefore, the infiltration rate used for design was 0.6/2 = 0.3 in/hr. This was used to design both the stone infiltration beds and the bioretention system and is a conservative estimate.

The seasonal high water table (SHWT) beneath each infiltration and filtration practice was determined based off nearby test pits. The SHWT depth from the test pit was subtracted from the highest existing ground elevation within the footprint of the practice. For the subsurface stone infiltration bed next to Units 3 & 4, Test Pit 5 was used, where SHWT was found at 27" below ground and the highest existing ground elevation was slightly below 56.3. Therefore, the groundwater elevation used for design was 56.3 - 27/12 = 54.05. For the subsurface stone infiltration bed next to Units 5 & 6, Test Pit 2 was used, where SHWT was found at 27". Highest existing ground elevation within this footprint of this practice is 53.3 so the groundwater elevation modelled is 51.05. Finally, Test Pit 1 is located within the footprint of the proposed bioretention system. SHWT on this test pit was found at a depth of 21". Where the filter course and infiltration component is located in an area where the highest existing ground elevation is 48.0, the modelled groundwater elevation is 46.25. For all three infiltration systems, all storage is above the SHWT and the bioretention system is designed so that the bottom of the filter course is at least 1' above the SHWT.

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, Runoff from all impervious surfaces with the exception of roofs is being directed toward the proposed bioretention system in the north side of the site. 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 utilized and the Water Quality Volume is retained and treated.

5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, and properties 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, bioretention systems, subsurface stone infiltration beds, and rip rap outlet protection as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. The peak rate and volumes of runoff will be reduced toward all analysis points in the post-construction condition. 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 <u>not</u> require a NHDES Alteration of Terrain Permit.

Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

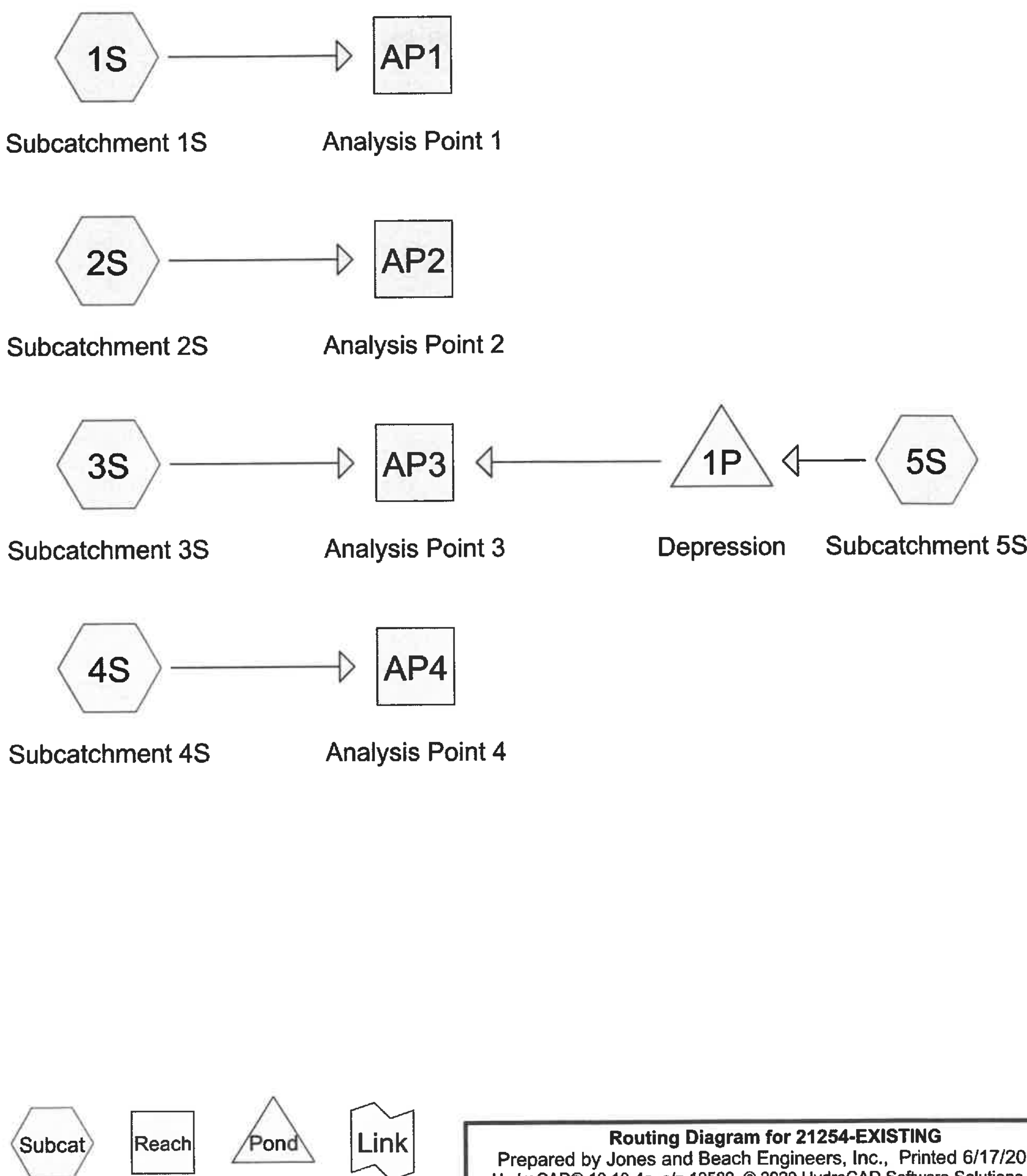
Daniel Meditz

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 21254-EXISTING
Prepared by Jones and Beach Engineers, Inc., Printed 6/17/2022
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.259	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S)
0.378	98	Paved parking, HSG C (1S, 3S, 4S)
0.174	98	Roofs, HSG C (1S, 2S, 3S, 4S, 5S)
0.575	70	Woods, Good, HSG C (2S, 3S, 4S, 5S)
2.386	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.386	HSG C	1S, 2S, 3S, 4S, 5S
0.000	HSG D	
0.000	Other	
2.386		**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=48,638 sf 40.32% Impervious Runoff Depth>1.69"
Flow Length=286' Tc=15.6 min CN=84 Runoff=1.64 cfs 0.157 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>1.47"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.10 cfs 0.007 af

Subcatchment3S: Subcatchment3S Runoff Area=42,602 sf 4.16% Impervious Runoff Depth>0.98"
Flow Length=264' Tc=21.1 min CN=73 Runoff=0.69 cfs 0.080 af

Subcatchment4S: Subcatchment4S Runoff Area=6,087 sf 19.53% Impervious Runoff Depth>1.22"
Flow Length=55' Slope=0.0500 '/' Tc=8.6 min CN=77 Runoff=0.17 cfs 0.014 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>1.22"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.10 cfs 0.009 af

Reach AP1: Analysis Point 1 Inflow=1.64 cfs 0.157 af
Outflow=1.64 cfs 0.157 af

Reach AP2: Analysis Point 2 Inflow=0.10 cfs 0.007 af
Outflow=0.10 cfs 0.007 af

Reach AP3: Analysis Point 3 Inflow=0.69 cfs 0.086 af
Outflow=0.69 cfs 0.086 af

Reach AP4: Analysis Point 4 Inflow=0.17 cfs 0.014 af
Outflow=0.17 cfs 0.014 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.10 cfs 0.009 af
Outflow=0.04 cfs 0.005 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.268 af Average Runoff Depth = 1.35"
76.88% Pervious = 1.834 ac 23.12% Impervious = 0.552 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=48,638 sf 40.32% Impervious Runoff Depth>3.14"
Flow Length=286' Tc=15.6 min CN=84 Runoff=3.05 cfs 0.292 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>2.87"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.19 cfs 0.014 af

Subcatchment3S: Subcatchment3S Runoff Area=42,602 sf 4.16% Impervious Runoff Depth>2.17"
Flow Length=264' Tc=21.1 min CN=73 Runoff=1.62 cfs 0.177 af

Subcatchment4S: Subcatchment4S Runoff Area=6,087 sf 19.53% Impervious Runoff Depth>2.51"
Flow Length=55' Slope=0.0500 '/' Tc=8.6 min CN=77 Runoff=0.37 cfs 0.029 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>2.51"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.22 cfs 0.019 af

Reach AP1: Analysis Point 1 Inflow=3.05 cfs 0.292 af
Outflow=3.05 cfs 0.292 af

Reach AP2: Analysis Point 2 Inflow=0.19 cfs 0.014 af
Outflow=0.19 cfs 0.014 af

Reach AP3: Analysis Point 3 Inflow=1.80 cfs 0.192 af
Outflow=1.80 cfs 0.192 af

Reach AP4: Analysis Point 4 Inflow=0.37 cfs 0.029 af
Outflow=0.37 cfs 0.029 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.22 cfs 0.019 af
Outflow=0.21 cfs 0.015 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.532 af Average Runoff Depth = 2.68"
76.88% Pervious = 1.834 ac 23.12% Impervious = 0.552 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.05 cfs @ 12.21 hrs, Volume= 0.292 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 Rainfall=4.87"

Area (sf)	CN	Description
15,721	98	Paved parking, HSG C
3,890	98	Roofs, HSG C
29,027	74	>75% Grass cover, Good, HSG C
48,638	84	Weighted Average
29,027		59.68% Pervious Area
19,611		40.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	28	0.0110	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.9	72	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	80	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	66	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	18	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.6	286	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af, Depth> 2.87"

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 Rainfall=4.87"

Area (sf)	CN	Description
1,378	74	>75% Grass cover, Good, HSG C
864	98	Roofs, HSG C
388	70	Woods, Good, HSG C
2,630	81	Weighted Average
1,766		67.15% Pervious Area
864		32.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0210	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.2	16	0.0900	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	13	0.1900	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
7.7	76	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.62 cfs @ 12.30 hrs, Volume= 0.177 af, Depth> 2.17"

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 Rainfall=4.87"

Area (sf)	CN	Description
1,471	98	Roofs, HSG C
300	98	Paved parking, HSG C
20,182	74	>75% Grass cover, Good, HSG C
20,649	70	Woods, Good, HSG C
42,602	73	Weighted Average
40,831		95.84% Pervious Area
1,771		4.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	26	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
15.7	74	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.3	80	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	84	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.1	264	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.37 cfs @ 12.12 hrs, Volume= 0.029 af, Depth> 2.51"

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 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
1,925	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
2,973	70	Woods, Good, HSG C
6,087	77	Weighted Average
4,898		80.47% Pervious Area
1,189		19.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
8.0	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.6	55	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.22 cfs @ 12.17 hrs, Volume= 0.019 af, Depth> 2.51"

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 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.6	40	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.2	67	Total			

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.117 ac, 40.32% Impervious, Inflow Depth > 3.14" for 10 Yr 24 Hr event
Inflow = 3.05 cfs @ 12.21 hrs, Volume= 0.292 af
Outflow = 3.05 cfs @ 12.21 hrs, Volume= 0.292 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: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.060 ac, 32.85% Impervious, Inflow Depth > 2.87" for 10 Yr 24 Hr event
Inflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 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: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.069 ac, 5.09% Impervious, Inflow Depth > 2.16" for 10 Yr 24 Hr event
Inflow = 1.80 cfs @ 12.29 hrs, Volume= 0.192 af
Outflow = 1.80 cfs @ 12.29 hrs, Volume= 0.192 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: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.140 ac, 19.53% Impervious, Inflow Depth > 2.51" for 10 Yr 24 Hr event
Inflow = 0.37 cfs @ 12.12 hrs, Volume= 0.029 af
Outflow = 0.37 cfs @ 12.12 hrs, Volume= 0.029 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: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.51" for 10 Yr 24 Hr event
Inflow = 0.22 cfs @ 12.17 hrs, Volume= 0.019 af
Outflow = 0.21 cfs @ 12.20 hrs, Volume= 0.015 af, Atten= 2%, Lag= 1.8 min
Primary = 0.21 cfs @ 12.20 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 12.10 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 113.8 min calculated for 0.015 af (80% of inflow)
Center-of-Mass det. time= 37.4 min (872.7 - 835.3)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 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)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' 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=0.02 cfs @ 12.20 hrs HW=51.31' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.25 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=48,638 sf 40.32% Impervious Runoff Depth>4.35"
Flow Length=286' Tc=15.6 min CN=84 Runoff=4.18 cfs 0.404 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>4.03"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.26 cfs 0.020 af

Subcatchment3S: Subcatchment3S Runoff Area=42,602 sf 4.16% Impervious Runoff Depth>3.22"
Flow Length=264' Tc=21.1 min CN=73 Runoff=2.43 cfs 0.262 af

Subcatchment4S: Subcatchment4S Runoff Area=6,087 sf 19.53% Impervious Runoff Depth>3.62"
Flow Length=55' Slope=0.0500 '/' Tc=8.6 min CN=77 Runoff=0.54 cfs 0.042 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>3.62"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.31 cfs 0.027 af

Reach AP1: Analysis Point 1 Inflow=4.18 cfs 0.404 af
Outflow=4.18 cfs 0.404 af

Reach AP2: Analysis Point 2 Inflow=0.26 cfs 0.020 af
Outflow=0.26 cfs 0.020 af

Reach AP3: Analysis Point 3 Inflow=2.69 cfs 0.286 af
Outflow=2.69 cfs 0.286 af

Reach AP4: Analysis Point 4 Inflow=0.54 cfs 0.042 af
Outflow=0.54 cfs 0.042 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.31 cfs 0.027 af
Outflow=0.31 cfs 0.024 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.756 af Average Runoff Depth = 3.80"
76.88% Pervious = 1.834 ac 23.12% Impervious = 0.552 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=48,638 sf 40.32% Impervious Runoff Depth>5.50"
Flow Length=286' Tc=15.6 min CN=84 Runoff=5.24 cfs 0.512 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>5.16"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.34 cfs 0.026 af

Subcatchment3S: Subcatchment3S Runoff Area=42,602 sf 4.16% Impervious Runoff Depth>4.26"
Flow Length=264' Tc=21.1 min CN=73 Runoff=3.22 cfs 0.347 af

Subcatchment4S: Subcatchment4S Runoff Area=6,087 sf 19.53% Impervious Runoff Depth>4.71"
Flow Length=55' Slope=0.0500 '/' Tc=8.6 min CN=77 Runoff=0.69 cfs 0.055 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>4.71"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.41 cfs 0.036 af

Reach AP1: Analysis Point 1 Inflow=5.24 cfs 0.512 af
Outflow=5.24 cfs 0.512 af

Reach AP2: Analysis Point 2 Inflow=0.34 cfs 0.026 af
Outflow=0.34 cfs 0.026 af

Reach AP3: Analysis Point 3 Inflow=3.55 cfs 0.379 af
Outflow=3.55 cfs 0.379 af

Reach AP4: Analysis Point 4 Inflow=0.69 cfs 0.055 af
Outflow=0.69 cfs 0.055 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.41 cfs 0.036 af
Outflow=0.40 cfs 0.032 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.975 af Average Runoff Depth = 4.90"
76.88% Pervious = 1.834 ac 23.12% Impervious = 0.552 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 5.24 cfs @ 12.21 hrs, Volume= 0.512 af, Depth> 5.50"

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 Rainfall=7.39"

Area (sf)	CN	Description
15,721	98	Paved parking, HSG C
3,890	98	Roofs, HSG C
29,027	74	>75% Grass cover, Good, HSG C
48,638	84	Weighted Average
29,027		59.68% Pervious Area
19,611		40.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	28	0.0110	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
7.9	72	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	80	0.0150	0.86		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.6	66	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	18	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.6	286	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.026 af, Depth> 5.16"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,378	74	>75% Grass cover, Good, HSG C
864	98	Roofs, HSG C
388	70	Woods, Good, HSG C
2,630	81	Weighted Average
1,766		67.15% Pervious Area
864		32.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0210	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.2	16	0.0900	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	13	0.1900	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
7.7	76	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 3.22 cfs @ 12.29 hrs, Volume= 0.347 af, Depth> 4.26"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,471	98	Roofs, HSG C
300	98	Paved parking, HSG C
20,182	74	>75% Grass cover, Good, HSG C
20,649	70	Woods, Good, HSG C
42,602	73	Weighted Average
40,831		95.84% Pervious Area
1,771		4.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	26	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
15.7	74	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.3	80	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	84	0.0770	1.39		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.1	264	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.69 cfs @ 12.12 hrs, Volume= 0.055 af, Depth> 4.71"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,925	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
2,973	70	Woods, Good, HSG C
6,087	77	Weighted Average
4,898		80.47% Pervious Area
1,189		19.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	5	0.0500	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
8.0	50	0.0500	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.6	55	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.41 cfs @ 12.17 hrs, Volume= 0.036 af, Depth> 4.71"

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 Rainfall=7.39"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.6	40	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.2	67	Total			

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.117 ac, 40.32% Impervious, Inflow Depth > 5.50" for 50 Yr 24 Hr event
Inflow = 5.24 cfs @ 12.21 hrs, Volume= 0.512 af
Outflow = 5.24 cfs @ 12.21 hrs, Volume= 0.512 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: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

```
Inflow Area =     0.060 ac, 32.85% Impervious, Inflow Depth >  5.16"   for 50 Yr 24 Hr event
Inflow      =     0.34 cfs @  12.11 hrs, Volume=       0.026 af
Outflow     =     0.34 cfs @  12.11 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= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

```
Inflow Area =     1.069 ac,  5.09% Impervious, Inflow Depth >  4.25"   for 50 Yr 24 Hr event
Inflow      =     3.55 cfs @  12.28 hrs, Volume=       0.379 af
Outflow     =     3.55 cfs @  12.28 hrs, Volume=       0.379 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: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

```
Inflow Area =     0.140 ac, 19.53% Impervious, Inflow Depth >  4.71"   for 50 Yr 24 Hr event
Inflow      =     0.69 cfs @  12.12 hrs, Volume=       0.055 af
Outflow     =     0.69 cfs @  12.12 hrs, Volume=       0.055 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: Depression

```
Inflow Area =     0.091 ac, 15.05% Impervious, Inflow Depth >  4.71"   for 50 Yr 24 Hr event
Inflow      =     0.41 cfs @  12.17 hrs, Volume=       0.036 af
Outflow     =     0.40 cfs @  12.20 hrs, Volume=       0.032 af, Atten= 2%, Lag= 1.8 min
Primary     =     0.40 cfs @  12.20 hrs, Volume=       0.032 af
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 11.60 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 73.6 min calculated for 0.032 af (89% of inflow)
Center-of-Mass det. time= 24.7 min (842.0 - 817.4)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 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)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

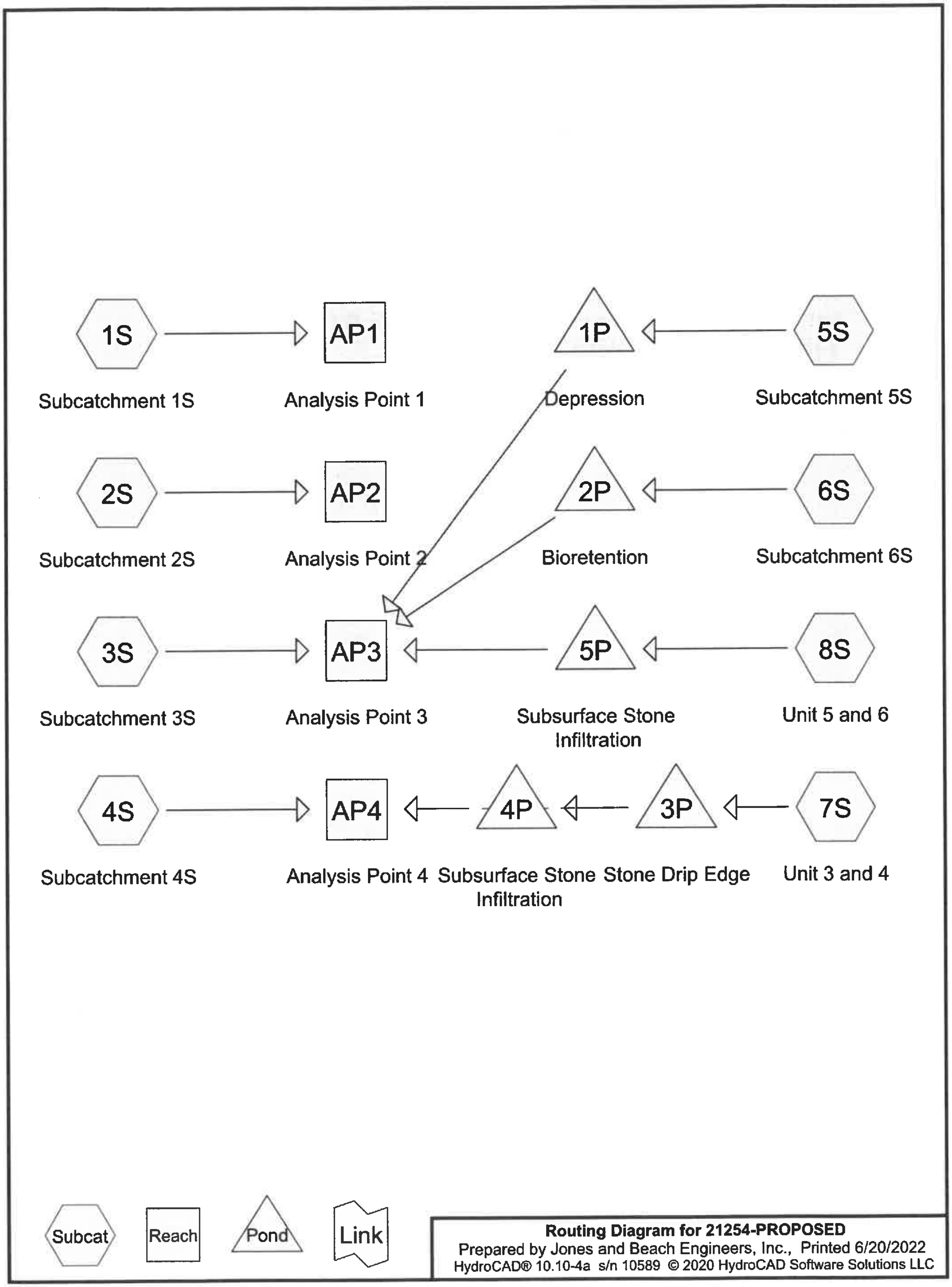
Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.20 hrs HW=51.31' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.25 fps)

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Routing Diagram for 21254-PROPOSED
Prepared by Jones and Beach Engineers, Inc., Printed 6/20/2022
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.192	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S)
0.632	98	Paved parking, HSG C (1S, 4S, 6S)
0.405	98	Roofs, HSG C (1S, 2S, 4S, 5S, 6S, 7S, 8S)
0.006	98	Water Surface, HSG C (7S)
0.152	70	Woods, Good, HSG C (2S, 3S, 4S, 5S, 6S)
2.386	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
2.386	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S
0.000	HSG D	
0.000	Other	
2.386		**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=35,185 sf 50.22% Impervious Runoff Depth>1.84"
Flow Length=221' Tc=11.3 min CN=86 Runoff=1.46 cfs 0.124 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>1.47"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.10 cfs 0.007 af

Subcatchment3S: Subcatchment3S Runoff Area=7,680 sf 0.00% Impervious Runoff Depth>0.98"
Flow Length=187' Tc=27.5 min CN=73 Runoff=0.11 cfs 0.014 af

Subcatchment4S: Subcatchment4S Runoff Area=4,280 sf 27.78% Impervious Runoff Depth>1.41"
Flow Length=47' Slope=0.0250 '/' Tc=8.7 min CN=80 Runoff=0.14 cfs 0.012 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>1.22"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.10 cfs 0.009 af

Subcatchment6S: Subcatchment6S Runoff Area=47,740 sf 47.41% Impervious Runoff Depth>1.76"
Flow Length=165' Tc=19.0 min CN=85 Runoff=1.56 cfs 0.161 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

Subcatchment8S: Unit 5 and 6 Runoff Area=1,214 sf 100.00% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

Reach AP1: Analysis Point 1 Inflow=1.46 cfs 0.124 af
Outflow=1.46 cfs 0.124 af

Reach AP2: Analysis Point 2 Inflow=0.10 cfs 0.007 af
Outflow=0.10 cfs 0.007 af

Reach AP3: Analysis Point 3 Inflow=0.19 cfs 0.033 af
Outflow=0.19 cfs 0.033 af

Reach AP4: Analysis Point 4 Inflow=0.14 cfs 0.012 af
Outflow=0.14 cfs 0.012 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.10 cfs 0.009 af
Outflow=0.04 cfs 0.005 af

Pond 2P: Bioretention Peak Elev=49.89' Storage=3,184 cf Inflow=1.56 cfs 0.161 af
Discarded=0.18 cfs 0.136 af Primary=0.12 cfs 0.013 af Outflow=0.30 cfs 0.149 af

Pond 3P: Stone Drip Edge Peak Elev=54.79' Storage=20 cf Inflow=0.09 cfs 0.007 af
Primary=0.08 cfs 0.007 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.007 af

Pond 4P: Subsurface Stone Infiltration Peak Elev=54.62' Storage=0.002 af Inflow=0.08 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 5P: Subsurface Stone Infiltration Peak Elev=51.73' Storage=0.002 af Inflow=0.08 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.341 af Average Runoff Depth = 1.72"
56.31% Pervious = 1.344 ac 43.69% Impervious = 1.042 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=35,185 sf 50.22% Impervious Runoff Depth>3.34"
Flow Length=221' Tc=11.3 min CN=86 Runoff=2.61 cfs 0.225 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>2.87"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.19 cfs 0.014 af

Subcatchment3S: Subcatchment3S Runoff Area=7,680 sf 0.00% Impervious Runoff Depth>2.17"
Flow Length=187' Tc=27.5 min CN=73 Runoff=0.26 cfs 0.032 af

Subcatchment4S: Subcatchment4S Runoff Area=4,280 sf 27.78% Impervious Runoff Depth>2.78"
Flow Length=47' Slope=0.0250 '/' Tc=8.7 min CN=80 Runoff=0.29 cfs 0.023 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>2.51"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.22 cfs 0.019 af

Subcatchment6S: Subcatchment6S Runoff Area=47,740 sf 47.41% Impervious Runoff Depth>3.24"
Flow Length=165' Tc=19.0 min CN=85 Runoff=2.85 cfs 0.296 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

Subcatchment8S: Unit 5 and 6 Runoff Area=1,214 sf 100.00% Impervious Runoff Depth>4.63"
Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

Reach AP1: Analysis Point 1 Inflow=2.61 cfs 0.225 af
Outflow=2.61 cfs 0.225 af

Reach AP2: Analysis Point 2 Inflow=0.19 cfs 0.014 af
Outflow=0.19 cfs 0.014 af

Reach AP3: Analysis Point 3 Inflow=1.25 cfs 0.153 af
Outflow=1.25 cfs 0.153 af

Reach AP4: Analysis Point 4 Inflow=0.29 cfs 0.023 af
Outflow=0.29 cfs 0.023 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.22 cfs 0.019 af
Outflow=0.21 cfs 0.015 af

Pond 2P: Bioretention Peak Elev=50.36' Storage=4,949 cf Inflow=2.85 cfs 0.296 af
Discarded=0.20 cfs 0.172 af Primary=0.97 cfs 0.106 af Outflow=1.17 cfs 0.278 af

Pond 3P: Stone Drip Edge Peak Elev=54.85' Storage=26 cf Inflow=0.13 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 4P: Subsurface Stone Infiltration Peak Elev=54.85' Storage=0.004 af Inflow=0.12 cfs 0.011 af
Discarded=0.02 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.011 af

Pond 5P: Subsurface Stone Infiltration Peak Elev=52.07' Storage=0.004 af Inflow=0.13 cfs 0.011 af
Discarded=0.02 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.011 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.630 af Average Runoff Depth = 3.17"
56.31% Pervious = 1.344 ac 43.69% Impervious = 1.042 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.61 cfs @ 12.16 hrs, Volume= 0.225 af, Depth> 3.34"

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 Rainfall=4.87"

Area (sf)	CN	Description
14,892	98	Paved parking, HSG C
2,779	98	Roofs, HSG C
17,514	74	>75% Grass cover, Good, HSG C
35,185	86	Weighted Average
17,514		49.78% Pervious Area
17,671		50.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0220	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.3	15	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	84	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.3	221	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af, Depth> 2.87"

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 Rainfall=4.87"

Area (sf)	CN	Description
1,378	74	>75% Grass cover, Good, HSG C
864	98	Roofs, HSG C
388	70	Woods, Good, HSG C
2,630	81	Weighted Average
1,766		67.15% Pervious Area
864		32.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0210	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.2	16	0.0900	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	13	0.1900	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
7.7	76	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.26 cfs @ 12.40 hrs, Volume= 0.032 af, Depth> 2.17"

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 Rainfall=4.87"

Area (sf)	CN	Description
5,048	74	>75% Grass cover, Good, HSG C
2,632	70	Woods, Good, HSG C
7,680	73	Weighted Average
7,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	100	0.0100	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.6	33	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.5	187	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.29 cfs @ 12.12 hrs, Volume= 0.023 af, Depth> 2.78"

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 Rainfall=4.87"

Area (sf)	CN	Description
1,971	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
1,120	70	Woods, Good, HSG C
4,280	80	Weighted Average
3,091		72.22% Pervious Area
1,189		27.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	20	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
6.4	27	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.7	47	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.22 cfs @ 12.17 hrs, Volume= 0.019 af, Depth> 2.51"

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 10 Yr 24 Hr Rainfall=4.87"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.6	40	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.2	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 2.85 cfs @ 12.26 hrs, Volume= 0.296 af, Depth> 3.24"

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 Rainfall=4.87"

Area (sf)	CN	Description
12,180	98	Paved parking, HSG C
10,455	98	Roofs, HSG C
23,663	74	>75% Grass cover, Good, HSG C
1,442	70	Woods, Good, HSG C
47,740	85	Weighted Average
25,105		52.59% Pervious Area
22,635		47.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	22	0.0450	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
15.5	78	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	65	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.0	165	Total			

Summary for Subcatchment 7S: Unit 3 and 4

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.63"

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 Rainfall=4.87"

Area (sf)	CN	Description
984	98	Roofs, HSG C
248	98	Water Surface, HSG C
1,232	98	Weighted Average
1,232		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 8S: Unit 5 and 6

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.63"

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 Rainfall=4.87"

Area (sf)	CN	Description
1,214	98	Roofs, HSG C
1,214		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.808 ac, 50.22% Impervious, Inflow Depth > 3.34" for 10 Yr 24 Hr event
Inflow = 2.61 cfs @ 12.16 hrs, Volume= 0.225 af
Outflow = 2.61 cfs @ 12.16 hrs, Volume= 0.225 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: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.060 ac, 32.85% Impervious, Inflow Depth > 2.87" for 10 Yr 24 Hr event
Inflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 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: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.391 ac, 40.34% Impervious, Inflow Depth > 1.32" for 10 Yr 24 Hr event
Inflow = 1.25 cfs @ 12.54 hrs, Volume= 0.153 af
Outflow = 1.25 cfs @ 12.54 hrs, Volume= 0.153 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: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.127 ac, 43.92% Impervious, Inflow Depth > 2.16" for 10 Yr 24 Hr event
Inflow = 0.29 cfs @ 12.12 hrs, Volume= 0.023 af
Outflow = 0.29 cfs @ 12.12 hrs, Volume= 0.023 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: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 2.51" for 10 Yr 24 Hr event
Inflow = 0.22 cfs @ 12.17 hrs, Volume= 0.019 af
Outflow = 0.21 cfs @ 12.20 hrs, Volume= 0.015 af, Atten= 2%, Lag= 1.8 min
Primary = 0.21 cfs @ 12.20 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 12.10 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 113.8 min calculated for 0.015 af (80% of inflow)
Center-of-Mass det. time= 37.4 min (872.7 - 835.3)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 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)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' 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=0.02 cfs @ 12.20 hrs HW=51.31' TW=0.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.25 fps)

Summary for Pond 2P: Bioretention

Inflow Area = 1.096 ac, 47.41% Impervious, Inflow Depth > 3.24" for 10 Yr 24 Hr event
Inflow = 2.85 cfs @ 12.26 hrs, Volume= 0.296 af
Outflow = 1.17 cfs @ 12.65 hrs, Volume= 0.278 af, Atten= 59%, Lag= 23.7 min
Discarded = 0.20 cfs @ 12.65 hrs, Volume= 0.172 af
Primary = 0.97 cfs @ 12.65 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.36' @ 12.65 hrs Surf.Area= 3,928 sf Storage= 4,949 cf

Plug-Flow detention time= 142.2 min calculated for 0.277 af (94% of inflow)
Center-of-Mass det. time= 110.8 min (929.4 - 818.6)

Volume	Invert	Avail.Storage	Storage Description
#1	46.49'	7,660 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.49	1,543	151.0	0.0	0	0	1,543
46.50	1,543	151.0	40.0	6	6	1,545
47.49	1,543	151.0	40.0	611	617	1,694
47.50	1,543	151.0	15.0	2	620	1,696
48.99	1,543	151.0	15.0	345	964	1,921
49.00	1,543	151.0	100.0	15	980	1,922
49.50	2,633	205.0	100.0	1,032	2,012	3,454
50.00	3,645	258.0	100.0	1,563	3,574	5,411
51.00	4,450	276.0	100.0	4,041	7,615	6,221
51.01	4,450	276.0	100.0	44	7,660	6,223

Device	Routing	Invert	Outlet Devices
#1	Primary	46.40'	**8.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.40' / 46.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	49.70'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	51.00'	**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
#5	Discarded	46.49'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.25' Phase-In= 0.01'

Discarded OutFlow Max=0.20 cfs @ 12.65 hrs HW=50.36' (Free Discharge)
└─**5=Exfiltration** (Controls 0.20 cfs)

Primary OutFlow Max=0.97 cfs @ 12.65 hrs HW=50.36' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.97 cfs of 2.53 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 0.97 cfs @ 2.77 fps)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 3P: Stone Drip Edge

Inflow Area =	0.028 ac,100.00% Impervious,	Inflow Depth > 4.63"	for 10 Yr 24 Hr event
Inflow =	0.13 cfs @	12.09 hrs, Volume=	0.011 af
Outflow =	0.12 cfs @	12.12 hrs, Volume=	0.011 af, Atten= 5%, Lag= 1.7 min
Primary =	0.12 cfs @	12.12 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= 54.85' @ 12.54 hrs Surf.Area= 248 sf Storage= 26 cf

Plug-Flow detention time= 16.5 min calculated for 0.011 af (99% of inflow)
Center-of-Mass det. time= 12.1 min (760.1 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	54.59'	142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.59	248	0.0	0	0
54.60	248	40.0	1	1
55.00	248	40.0	40	41
56.00	248	40.0	99	140
56.01	248	100.0	2	142

Device	Routing	Invert	Outlet Devices
#1	Primary	54.60'	**6.0" Round Culvert** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.60' / 54.50' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	54.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	56.00'	**72.0' 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 @ 12.12 hrs HW=54.84' TW=54.62' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.12 cfs @ 1.31 fps)
└**2=Orifice/Grate** (Passes 0.12 cfs of 0.15 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.59' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 4P: Subsurface Stone Infiltration

Inflow Area =	0.028 ac,100.00% Impervious,	Inflow Depth > 4.60"	for 10 Yr 24 Hr event
Inflow =	0.12 cfs @	12.12 hrs, Volume=	0.011 af
Outflow =	0.02 cfs @	12.56 hrs, Volume=	0.011 af, Atten= 82%, Lag= 26.6 min
Discarded =	0.02 cfs @	12.56 hrs, Volume=	0.011 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= 54.85' @ 12.56 hrs Surf.Area= 0.014 ac Storage= 0.004 af

Plug-Flow detention time= 75.7 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 74.6 min (834.7 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	54.20'	0.006 af	**20.00'W x 30.00'L x 1.01'H Prismatoid** 0.014 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	54.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 54.05' Phase-In= 0.01'
#2	Primary	55.20'	**40.0' 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 @ 12.56 hrs HW=54.85' (Free Discharge)
└**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.20' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: Subsurface Stone Infiltration

Inflow Area = 0.028 ac,100.00% Impervious, Inflow Depth > 4.63" for 10 Yr 24 Hr event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.02 cfs @ 12.54 hrs, Volume= 0.011 af, Atten= 82%, Lag= 27.0 min
Discarded = 0.02 cfs @ 12.54 hrs, Volume= 0.011 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= 52.07' @ 12.54 hrs Surf.Area= 0.011 ac Storage= 0.004 af

Plug-Flow detention time= 81.8 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 80.7 min (828.7 - 748.0)

Volume	Invert	Avail.Storage	Storage Description
#1	51.20'	0.006 af	**11.00'W x 45.00'L x 1.41'H Prismatoid** 0.016 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.05' Phase-In= 0.01'
#2	Primary	52.60'	**45.0' 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 @ 12.54 hrs HW=52.07' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.20' TW=0.00' (Dynamic Tailwater)
↑—**2=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=35,185 sf 50.22% Impervious Runoff Depth>4.56"
Flow Length=221' Tc=11.3 min CN=86 Runoff=3.53 cfs 0.307 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>4.03"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.26 cfs 0.020 af

Subcatchment3S: Subcatchment3S Runoff Area=7,680 sf 0.00% Impervious Runoff Depth>3.21"
Flow Length=187' Tc=27.5 min CN=73 Runoff=0.39 cfs 0.047 af

Subcatchment4S: Subcatchment4S Runoff Area=4,280 sf 27.78% Impervious Runoff Depth>3.93"
Flow Length=47' Slope=0.0250 '/' Tc=8.7 min CN=80 Runoff=0.41 cfs 0.032 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>3.62"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.31 cfs 0.027 af

Subcatchment6S: Subcatchment6S Runoff Area=47,740 sf 47.41% Impervious Runoff Depth>4.45"
Flow Length=165' Tc=19.0 min CN=85 Runoff=3.88 cfs 0.406 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment8S: Unit 5 and 6 Runoff Area=1,214 sf 100.00% Impervious Runoff Depth>5.93"
Tc=6.0 min CN=98 Runoff=0.16 cfs 0.014 af

Reach AP1: Analysis Point 1 Inflow=3.53 cfs 0.307 af
Outflow=3.53 cfs 0.307 af

Reach AP2: Analysis Point 2 Inflow=0.26 cfs 0.020 af
Outflow=0.26 cfs 0.020 af

Reach AP3: Analysis Point 3 Inflow=2.07 cfs 0.260 af
Outflow=2.07 cfs 0.260 af

Reach AP4: Analysis Point 4 Inflow=0.41 cfs 0.032 af
Outflow=0.41 cfs 0.032 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.31 cfs 0.027 af
Outflow=0.31 cfs 0.024 af

Pond 2P: Bioretention Peak Elev=50.73' Storage=6,440 cf Inflow=3.88 cfs 0.406 af
Discarded=0.22 cfs 0.191 af Primary=1.66 cfs 0.189 af Outflow=1.88 cfs 0.381 af

Pond 3P: Stone Drip Edge Peak Elev=55.02' Storage=42 cf Inflow=0.17 cfs 0.014 af
Primary=0.15 cfs 0.014 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.014 af

Pond 4P: Subsurface Stone Infiltration Peak Elev=55.01' Storage=0.004 af Inflow=0.15 cfs 0.014 af
Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

Pond 5P: Subsurface Stone Infiltration Peak Elev=52.34' Storage=0.005 af Inflow=0.16 cfs 0.014 af
Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

Total Runoff Area = 2.386 ac Runoff Volume = 0.868 af Average Runoff Depth = 4.37"
56.31% Pervious = 1.344 ac 43.69% Impervious = 1.042 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=35,185 sf 50.22% Impervious Runoff Depth>5.73"
Flow Length=221' Tc=11.3 min CN=86 Runoff=4.38 cfs 0.386 af

Subcatchment2S: Subcatchment2S Runoff Area=2,630 sf 32.85% Impervious Runoff Depth>5.16"
Flow Length=76' Tc=7.7 min CN=81 Runoff=0.34 cfs 0.026 af

Subcatchment3S: Subcatchment3S Runoff Area=7,680 sf 0.00% Impervious Runoff Depth>4.25"
Flow Length=187' Tc=27.5 min CN=73 Runoff=0.52 cfs 0.062 af

Subcatchment4S: Subcatchment4S Runoff Area=4,280 sf 27.78% Impervious Runoff Depth>5.05"
Flow Length=47' Slope=0.0250 '/' Tc=8.7 min CN=80 Runoff=0.52 cfs 0.041 af

Subcatchment5S: Subcatchment5S Runoff Area=3,966 sf 15.05% Impervious Runoff Depth>4.71"
Flow Length=67' Tc=12.2 min CN=77 Runoff=0.41 cfs 0.036 af

Subcatchment6S: Subcatchment6S Runoff Area=47,740 sf 47.41% Impervious Runoff Depth>5.61"
Flow Length=165' Tc=19.0 min CN=85 Runoff=4.84 cfs 0.512 af

Subcatchment7S: Unit 3 and 4 Runoff Area=1,232 sf 100.00% Impervious Runoff Depth>7.15"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Subcatchment8S: Unit 5 and 6 Runoff Area=1,214 sf 100.00% Impervious Runoff Depth>7.15"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

Reach AP1: Analysis Point 1 Inflow=4.38 cfs 0.386 af
Outflow=4.38 cfs 0.386 af

Reach AP2: Analysis Point 2 Inflow=0.34 cfs 0.026 af
Outflow=0.34 cfs 0.026 af

Reach AP3: Analysis Point 3 Inflow=3.46 cfs 0.368 af
Outflow=3.46 cfs 0.368 af

Reach AP4: Analysis Point 4 Inflow=0.52 cfs 0.041 af
Outflow=0.52 cfs 0.041 af

Pond 1P: Depression Peak Elev=51.31' Storage=167 cf Inflow=0.41 cfs 0.036 af
Outflow=0.40 cfs 0.032 af

Pond 2P: Bioretention Peak Elev=50.89' Storage=7,153 cf Inflow=4.84 cfs 0.512 af
Discarded=0.23 cfs 0.205 af Primary=2.71 cfs 0.273 af Outflow=2.94 cfs 0.479 af

Pond 3P: Stone Drip Edge Peak Elev=55.18' Storage=58 cf Inflow=0.20 cfs 0.017 af
Primary=0.16 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.017 af

Pond 4P: Subsurface Stone Infiltration Peak Elev=55.17' Storage=0.005 af Inflow=0.16 cfs 0.017 af
Discarded=0.03 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.017 af

Pond 5P: Subsurface Stone Infiltration Peak Elev=52.60' Storage=0.006 af Inflow=0.20 cfs 0.017 af
Discarded=0.04 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.017 af

Total Runoff Area = 2.386 ac Runoff Volume = 1.097 af Average Runoff Depth = 5.52"
56.31% Pervious = 1.344 ac 43.69% Impervious = 1.042 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 4.38 cfs @ 12.15 hrs, Volume= 0.386 af, Depth> 5.73"

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 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
14,892	98	Paved parking, HSG C
2,779	98	Roofs, HSG C
17,514	74	>75% Grass cover, Good, HSG C
35,185	86	Weighted Average
17,514		49.78% Pervious Area
17,671		50.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0220	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
0.3	15	0.0167	0.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	22	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	84	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.3	221	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.026 af, Depth> 5.16"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,378	74	>75% Grass cover, Good, HSG C
864	98	Roofs, HSG C
388	70	Woods, Good, HSG C
2,630	81	Weighted Average
1,766		67.15% Pervious Area
864		32.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	47	0.0210	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.2	16	0.0900	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
1.6	13	0.1900	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
7.7	76	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 0.52 cfs @ 12.38 hrs, Volume= 0.062 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 50 Yr 24 Hr Rainfall=7.39"

Area (sf)	CN	Description
5,048	74	>75% Grass cover, Good, HSG C
2,632	70	Woods, Good, HSG C
7,680	73	Weighted Average
7,680		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	100	0.0100	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.6	33	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	54	0.0740	1.90		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
27.5	187	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.52 cfs @ 12.12 hrs, Volume= 0.041 af, Depth> 5.05"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,971	74	>75% Grass cover, Good, HSG C
453	98	Paved parking, HSG C
736	98	Roofs, HSG C
1,120	70	Woods, Good, HSG C
4,280	80	Weighted Average
3,091		72.22% Pervious Area
1,189		27.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	20	0.0250	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
6.4	27	0.0250	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
8.7	47	Total			

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 0.41 cfs @ 12.17 hrs, Volume= 0.036 af, Depth> 4.71"

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 Rainfall=7.39"

Area (sf)	CN	Description
597	98	Roofs, HSG C
2,345	74	>75% Grass cover, Good, HSG C
1,024	70	Woods, Good, HSG C
3,966	77	Weighted Average
3,369		84.95% Pervious Area
597		15.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	20	0.0200	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
9.6	40	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
0.1	7	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.2	67	Total			

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 4.84 cfs @ 12.25 hrs, Volume= 0.512 af, Depth> 5.61"

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 Rainfall=7.39"

Area (sf)	CN	Description
12,180	98	Paved parking, HSG C
10,455	98	Roofs, HSG C
23,663	74	>75% Grass cover, Good, HSG C
1,442	70	Woods, Good, HSG C
47,740	85	Weighted Average
25,105		52.59% Pervious Area
22,635		47.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	22	0.0450	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.70"
15.5	78	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	65	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.0	165	Total			

Summary for Subcatchment 7S: Unit 3 and 4

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 7.15"

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 Rainfall=7.39"

Area (sf)	CN	Description
984	98	Roofs, HSG C
248	98	Water Surface, HSG C
1,232	98	Weighted Average
1,232		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 8S: Unit 5 and 6

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 7.15"

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 Rainfall=7.39"

Area (sf)	CN	Description
1,214	98	Roofs, HSG C
1,214		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach AP1: Analysis Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.808 ac, 50.22% Impervious, Inflow Depth > 5.73" for 50 Yr 24 Hr event
Inflow = 4.38 cfs @ 12.15 hrs, Volume= 0.386 af
Outflow = 4.38 cfs @ 12.15 hrs, Volume= 0.386 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: Analysis Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.060 ac, 32.85% Impervious, Inflow Depth > 5.16" for 50 Yr 24 Hr event
Inflow = 0.34 cfs @ 12.11 hrs, Volume= 0.026 af
Outflow = 0.34 cfs @ 12.11 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= 0.05 hrs / 3

Summary for Reach AP3: Analysis Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.391 ac, 40.34% Impervious, Inflow Depth > 3.17" for 50 Yr 24 Hr event
Inflow = 3.46 cfs @ 12.35 hrs, Volume= 0.368 af
Outflow = 3.46 cfs @ 12.35 hrs, Volume= 0.368 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: Analysis Point 4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.127 ac, 43.92% Impervious, Inflow Depth > 3.92" for 50 Yr 24 Hr event
Inflow = 0.52 cfs @ 12.12 hrs, Volume= 0.041 af
Outflow = 0.52 cfs @ 12.12 hrs, Volume= 0.041 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: Depression

Inflow Area = 0.091 ac, 15.05% Impervious, Inflow Depth > 4.71" for 50 Yr 24 Hr event
Inflow = 0.41 cfs @ 12.17 hrs, Volume= 0.036 af
Outflow = 0.40 cfs @ 12.20 hrs, Volume= 0.032 af, Atten= 2%, Lag= 1.8 min
Primary = 0.40 cfs @ 12.20 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 51.31' @ 11.60 hrs Surf.Area= 593 sf Storage= 167 cf

Plug-Flow detention time= 73.6 min calculated for 0.032 af (89% of inflow)
Center-of-Mass det. time= 24.7 min (842.0 - 817.4)

Volume	Invert	Avail.Storage	Storage Description
#1	50.50'	167 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)
50.50	45	30.0	0	0	45
51.00	177	68.0	52	52	342
51.30	593	121.0	109	161	1,140
51.31	593	121.0	6	167	1,141

Device	Routing	Invert	Outlet Devices
#0	Primary	51.31'	**Automatic Storage Overflow** (Discharged without head)
#1	Primary	51.30'	**8.0' 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=0.02 cfs @ 12.20 hrs HW=51.31' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.25 fps)

Summary for Pond 2P: Bioretention

Inflow Area = 1.096 ac, 47.41% Impervious, Inflow Depth > 5.61" for 50 Yr 24 Hr event
Inflow = 4.84 cfs @ 12.25 hrs, Volume= 0.512 af
Outflow = 2.94 cfs @ 12.51 hrs, Volume= 0.479 af, Atten= 39%, Lag= 15.1 min
Discarded = 0.23 cfs @ 12.51 hrs, Volume= 0.205 af
Primary = 2.71 cfs @ 12.51 hrs, Volume= 0.273 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.89' @ 12.51 hrs Surf.Area= 4,362 sf Storage= 7,153 cf

Plug-Flow detention time= 107.7 min calculated for 0.478 af (93% of inflow)
Center-of-Mass det. time= 73.4 min (876.7 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	46.49'	7,660 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.49	1,543	151.0	0.0	0	0	1,543
46.50	1,543	151.0	40.0	6	6	1,545
47.49	1,543	151.0	40.0	611	617	1,694
47.50	1,543	151.0	15.0	2	620	1,696
48.99	1,543	151.0	15.0	345	964	1,921
49.00	1,543	151.0	100.0	15	980	1,922
49.50	2,633	205.0	100.0	1,032	2,012	3,454
50.00	3,645	258.0	100.0	1,563	3,574	5,411
51.00	4,450	276.0	100.0	4,041	7,615	6,221
51.01	4,450	276.0	100.0	44	7,660	6,223

Device	Routing	Invert	Outlet Devices
#1	Primary	46.40'	**8.0" Round Culvert** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.40' / 46.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	49.70'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	50.70'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	51.00'	**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
#5	Discarded	46.49'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 46.25' Phase-In= 0.01'

Discarded OutFlow Max=0.23 cfs @ 12.51 hrs HW=50.89' (Free Discharge)
└5=**Exfiltration** (Controls 0.23 cfs)

Primary OutFlow Max=2.71 cfs @ 12.51 hrs HW=50.89' TW=0.00' (Dynamic Tailwater)
├1=**Culvert** (Inlet Controls 2.71 cfs @ 7.75 fps)
│ ├2=**Orifice/Grate** (Passes < 1.56 cfs potential flow)
│ └3=**Orifice/Grate** (Passes < 4.47 cfs potential flow)
└4=**Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 3P: Stone Drip Edge

Inflow Area =	0.028 ac,100.00% Impervious,	Inflow Depth > 7.15"	for 50 Yr 24 Hr event	
Inflow =	0.20 cfs @	12.09 hrs, Volume=	0.017 af	
Outflow =	0.16 cfs @	12.10 hrs, Volume=	0.017 af,	Atten= 18%, Lag= 0.6 min
Primary =	0.16 cfs @	12.10 hrs, Volume=	0.017 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= 55.18' @ 12.57 hrs Surf.Area= 248 sf Storage= 58 cf

Plug-Flow detention time= 19.8 min calculated for 0.017 af (99% of inflow)
Center-of-Mass det. time= 16.4 min (758.2 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	54.59'	142 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
54.59	248	0.0	0	0
54.60	248	40.0	1	1
55.00	248	40.0	40	41
56.00	248	40.0	99	140
56.01	248	100.0	2	142

Device	Routing	Invert	Outlet Devices
#1	Primary	54.60'	**6.0" Round Culvert** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.60' / 54.50' S= 0.0250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	54.60'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	56.00'	**72.0' 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=0.16 cfs @ 12.10 hrs HW=54.95' TW=54.86' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.16 cfs @ 1.11 fps)
↑—**2=Orifice/Grate** (Passes 0.16 cfs of 0.20 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.59' TW=0.00' (Dynamic Tailwater)
↑—**3=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 4P: Subsurface Stone Infiltration

Inflow Area =	0.028 ac,100.00% Impervious, Inflow Depth > 7.11"		for 50 Yr 24 Hr event
Inflow =	0.16 cfs @	12.10 hrs, Volume=	0.017 af
Outflow =	0.03 cfs @	12.57 hrs, Volume=	0.017 af, Atten= 81%, Lag= 28.3 min
Discarded =	0.03 cfs @	12.57 hrs, Volume=	0.017 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= 55.17' @ 12.57 hrs Surf.Area= 0.014 ac Storage= 0.005 af

Plug-Flow detention time= 89.6 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 88.6 min (846.9 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1	54.20'	0.006 af	**20.00'W x 30.00'L x 1.01'H Prismatoid** 0.014 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	54.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 54.05' Phase-In= 0.01'
#2	Primary	55.20'	**40.0' 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 @ 12.57 hrs HW=55.17' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=54.20' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: Subsurface Stone Infiltration

Inflow Area =	0.028 ac,100.00% Impervious,	Inflow Depth > 7.15"	for 50 Yr 24 Hr event	
Inflow =	0.20 cfs @	12.09 hrs, Volume=	0.017 af	
Outflow =	0.04 cfs @	12.54 hrs, Volume=	0.017 af,	Atten= 82%, Lag= 27.1 min
Discarded =	0.04 cfs @	12.54 hrs, Volume=	0.017 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= 52.60' @ 12.54 hrs Surf.Area= 0.011 ac Storage= 0.006 af

Plug-Flow detention time= 95.4 min calculated for 0.017 af (100% of inflow)
Center-of-Mass det. time= 94.4 min (836.3 - 741.8)

Volume	Invert	Avail.Storage	Storage Description
#1	51.20'	0.006 af	**11.00'W x 45.00'L x 1.41'H Prismatoid** 0.016 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.20'	**0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 51.05' Phase-In= 0.01'
#2	Primary	52.60'	**45.0' 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 @ 12.54 hrs HW=52.60' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=51.20' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

APPENDIX III

Test Pit Logs

GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project: 212 Woodbury Ave, Portsmouth
Client: Tuck Realty Corp.
GES Project No. 2021307
MM/DD/YY Staff 3-18-2022 JPG

Test Pit No. 1
ESHWT: 21”
Termination @ 43”
Refusal: None
Obs. Water: 40”

2” gravel at surface.

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9”	10YR 3/2	FSL	GR	FR	NONE
9–21”	10YR 4/6	FSL	GR	FR	NONE
21–43”	2.5Y 5/2	FSL	PL	FI	30%, Distinct

Test Pit No. 2
ESHWT: 30”
Termination @ 51”
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9”	10YR 3/2	FSL	GR	FR	NONE
9–30”	10YR 4/6	FSL	GR	FR	NONE
30–51”	2.5Y 5/3	FSL	PL	FI	20%, Distinct

Test Pit No. 3
ESHWT: 27”
Termination @ 45”
Refusal: None
Obs. Water: None

NRCS : Woodbridge

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9”	10YR 3/2	FSL	GR	FR	NONE
9–27”	10YR 4/6	FSL	GR	FR	NONE
27–45”	2.5Y 5/3	FSL	PL	FI	20%, Distinct

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

Test Pit No. 4
ESHWT: 15"
Termination @ 41"
Refusal: None - boulder
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–8"	10YR 3/2	FSL	GR	FR	NONE
8–15"	2.5Y 5/4	FSL	GR	FR	NONE
15–41"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 5
ESHWT: 27"
Termination @ 50"
Refusal: None - stony
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–12"	10YR 3/2	FSL	GR	FR	NONE
12–27"	10YR 4/6	FSL	GR	FR	NONE
27–50"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Test Pit No. 6
ESHWT: 26"
Termination @ 45"
Refusal: None
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–10"	10YR 3/2	FSL	GR	FR	NONE
10–26"	10YR 5/6	FSL	GR	FR	NONE
26–45"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

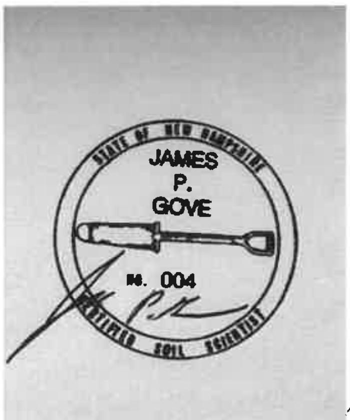
Test Pit No. 7
ESHWT: 26"
Termination @ 40"
Refusal: None
NRCS : Woodbridge
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	Redox; Quantity/Contrast
0–9"	10YR 3/2	FSL	GR	FR	NONE
9–26"	10YR 4/6	FSL	GR	FR	NONE
26–40"	2.5Y 5/3	FSL	PL	FI	10%, Distinct

Legend:

FSL = fine sandy loam
GR = granular
FR = friable
PL = platy
FI = firm

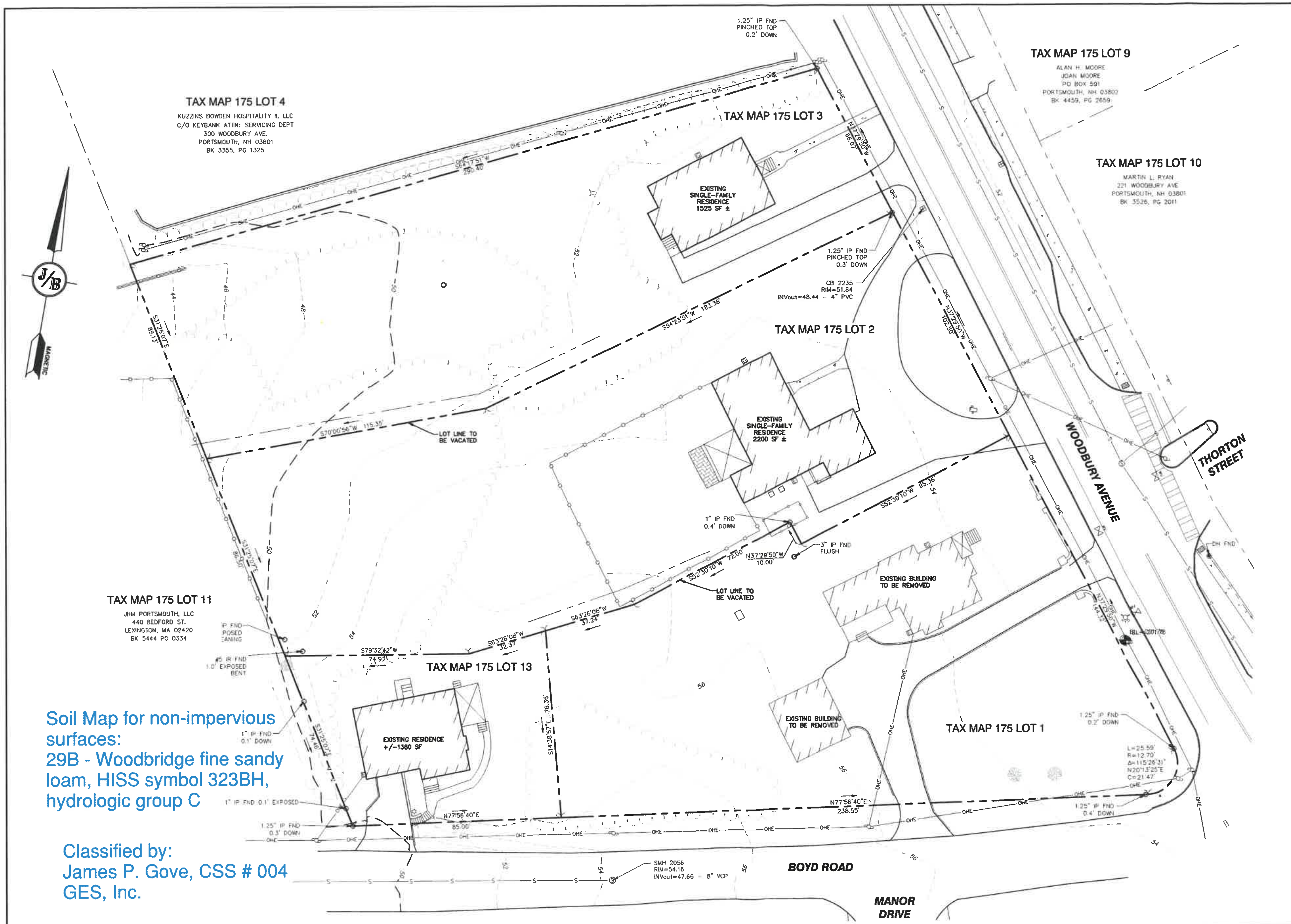
Soil Colors at Munsell.



3-22-2022

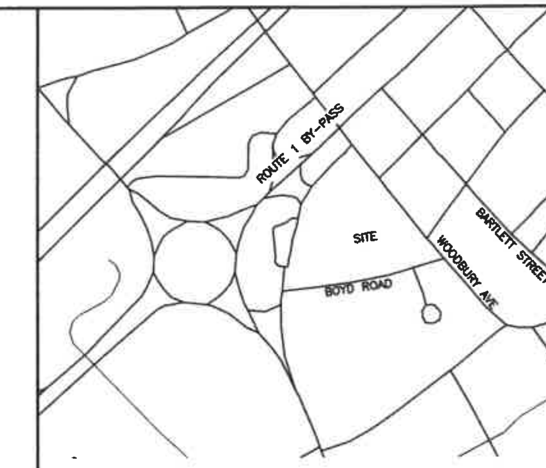
APPENDIX IV

Professional Soil Classification Exhibit



Soil Map for non-impervious surfaces:
29B - Woodbridge fine sandy loam, HISS symbol 323BH, hydrologic group C

Classified by:
James P. Gove, CSS # 004
GES, Inc.



LOCUS SCALE: 1"=500'

EXISTING CONDITIONS NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING FEATURES LOCATED ON CITY OF PORTSMOUTH TAX MAP 175, LOTS 1, 2, 3, & 13.
2. 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 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 1-888-DIG-SAFE (1-888-344-7233).
3. NO WETLANDS WERE OBSERVED WITHIN 100' OF THE PROPERTY BOUNDARY. SEE LETTER FROM GOVE ENVIRONMENTAL SERVICES, INC.
4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56

COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2

PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3

DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4

KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2969

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3, & 13

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
94,373 SQ. FT.
2.17 ACRES

Design: JAC	Draft: AJB	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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
1	3/21/22	REVISED PER CLIENT	DJM
0	1/5/22	ISSUED FOR REVIEW	AJB

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: "GRAPEVINE RUN" PORTSMOUTH, NH 03801
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON, 4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345
LOT 13: BK 5500 PG 334

DRAWING No.
C1
SHEET 1 OF 2
JBE PROJECT NO. 21254

APPENDIX V

NRCS Soil Map

Soil Map—Rockingham County, New Hampshire
(Grapevine Run)

Map Scale: 1:995 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 10 20 40 60

Feet: 0 45 90 180 270

N

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
799	Urban land-Canton complex, 3 to 15 percent slopes	2.4	100.0%
Totals for Area of Interest		**2.4**	**100.0%**

APPENDIX VI

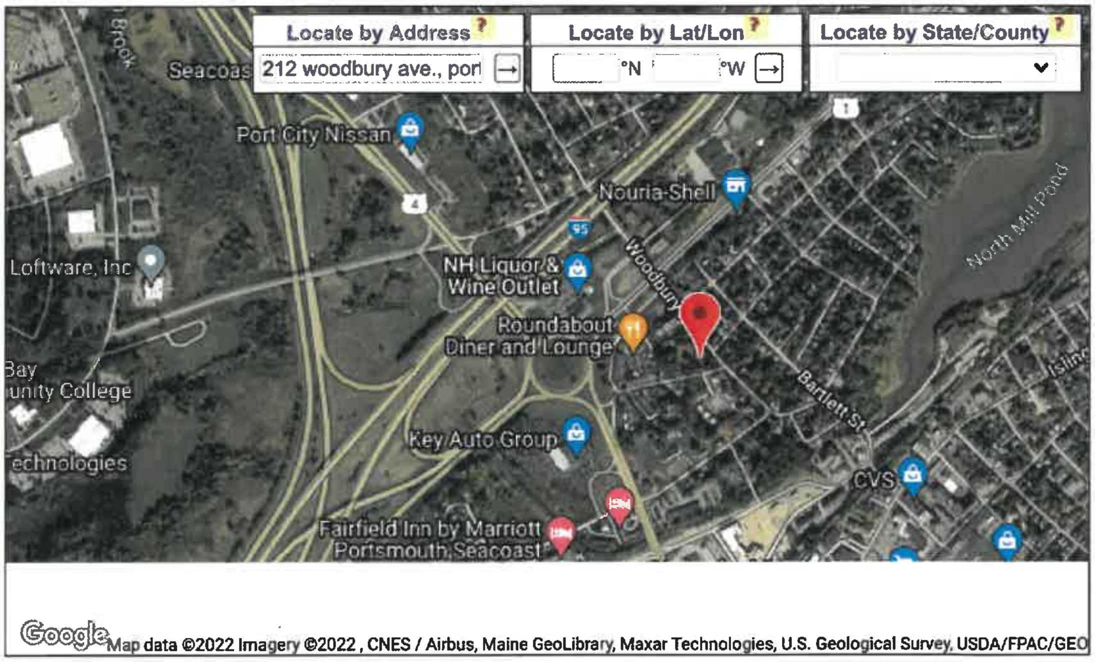
Extreme Precipitation Estimates

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
212 woodbury ave., port	°N °W	



Select Options

Smoothing	Delivery
Yes	Popup

Submit

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	70.777 degrees West
Latitude	43.073 degrees North
Elevation	0 feet
Date/Time	Wed, 04 May 2022 15:24:32 -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	0.97	1.25	1.60	**5yr**	1.08	1.46	1.88	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.93	6.70	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.75	4.87	5.53	**10yr**	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	0.48	0.76	0.96	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.62	4.74	6.17	7.10	**25yr**	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	0.53	0.86	1.10	1.53	2.06	2.75	**50yr**	1.78	2.52	3.28	4.32	5.66	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.59	0.96	1.24	1.76	2.41	3.24	**100yr**	2.08	2.97	3.89	5.15	6.76	8.86	10.38	**100yr**	7.84	9.98	11.37	12.96	14.28	**100yr**
200yr	0.67	1.10	1.42	2.04	2.81	3.82	**200yr**	2.43	3.50	4.60	6.11	8.07	10.61	12.55	**200yr**	9.39	12.07	13.74	15.55	17.04	**200yr**
500yr	0.79	1.31	1.70	2.47	3.46	4.74	**500yr**	2.98	4.36	5.74	7.68	10.21	13.49	16.15	**500yr**	11.94	15.53	17.65	19.78	21.52	**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	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.67	2.22	2.51	**1yr**	1.97	2.41	2.86	3.16	3.88	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.70	3.32	3.82	4.55	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.74	3.79	4.20	**5yr**	3.36	4.04	4.72	5.54	6.25	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.81	2.39	3.06	4.38	4.87	**10yr**	3.87	4.69	5.45	6.42	7.21	**10yr**

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.70	5.91	**25yr**	4.16	5.69	6.67	7.81	8.70	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.52	2.12	2.35	3.08	3.94	5.31	6.83	**50yr**	4.70	6.57	7.76	9.07	10.04	**50yr**
100yr	0.54	0.81	1.02	1.47	2.01	2.47	**100yr**	1.74	2.42	2.63	3.43	4.37	5.96	7.89	**100yr**	5.27	7.59	9.02	10.54	11.59	**100yr**
200yr	0.59	0.89	1.13	1.64	2.28	2.82	**200yr**	1.97	2.75	2.94	3.80	4.82	6.67	9.12	**200yr**	5.90	8.77	10.49	12.27	13.41	**200yr**
500yr	0.69	1.02	1.32	1.91	2.72	3.37	**500yr**	2.35	3.29	3.41	4.34	5.49	7.75	11.03	**500yr**	6.86	10.61	12.81	15.02	16.23	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.99	3.15	**1yr**	2.65	3.03	3.58	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.86	1.06	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.70	**2yr**	3.03	3.56	4.08	4.83	5.64	**2yr**
5yr	0.40	0.62	0.76	1.05	1.33	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.95	**5yr**	3.84	4.76	5.37	6.36	7.14	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.94	5.34	6.19	**10yr**	4.72	5.95	6.79	7.82	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.56	**25yr**	1.76	2.50	2.95	4.06	5.13	7.81	8.31	**25yr**	6.91	7.99	9.10	10.31	11.39	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.11	3.05	3.59	4.99	6.29	9.78	10.41	**50yr**	8.66	10.01	11.37	12.69	13.93	**50yr**
100yr	0.78	1.19	1.49	2.15	2.94	3.79	**100yr**	2.54	3.71	4.36	6.14	7.72	12.25	13.04	**100yr**	10.84	12.54	14.20	15.65	17.05	**100yr**
200yr	0.92	1.38	1.75	2.53	3.53	4.63	**200yr**	3.05	4.52	5.32	7.55	9.47	15.38	16.35	**200yr**	13.61	15.72	17.75	19.28	20.87	**200yr**
500yr	1.14	1.69	2.18	3.16	4.50	6.00	**500yr**	3.88	5.87	6.90	9.98	12.44	20.79	22.06	**500yr**	18.40	21.21	23.87	25.41	27.28	**500yr**

Powered by ACIS
Northeast Regional
Climate Center

APPENDIX VII

Rip Rap Calculations

RIP RAP CALCULATIONS
Grapevine Run
212, 214, & 216 Woodbury Ave
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
21-Jun-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)
				#DIV/0!	#DIV/0!	#DIV/0!

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)
8" HDPE (Pond 2P)	0.38	1.66	0.67	13.8	8	0.15

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 (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).	
1.11	ac	A = Area draining to the practice	
0.53	ac	A_I = Impervious area draining to the practice	
0.48	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.48	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.53	ac-in	WQV= 1" x Rv x A	
1,927	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
482	cf	25% x WQV (check calc for sediment forebay volume)	
1,445	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:			
1,543	sf	A_{SA} = Surface area of the practice	
0.30	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
No	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
50.0	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**
1,928	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	D4	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**
Sheet		Note what sheet in the plan set contains the filter course spec.	**mod. 304.1 (see 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:

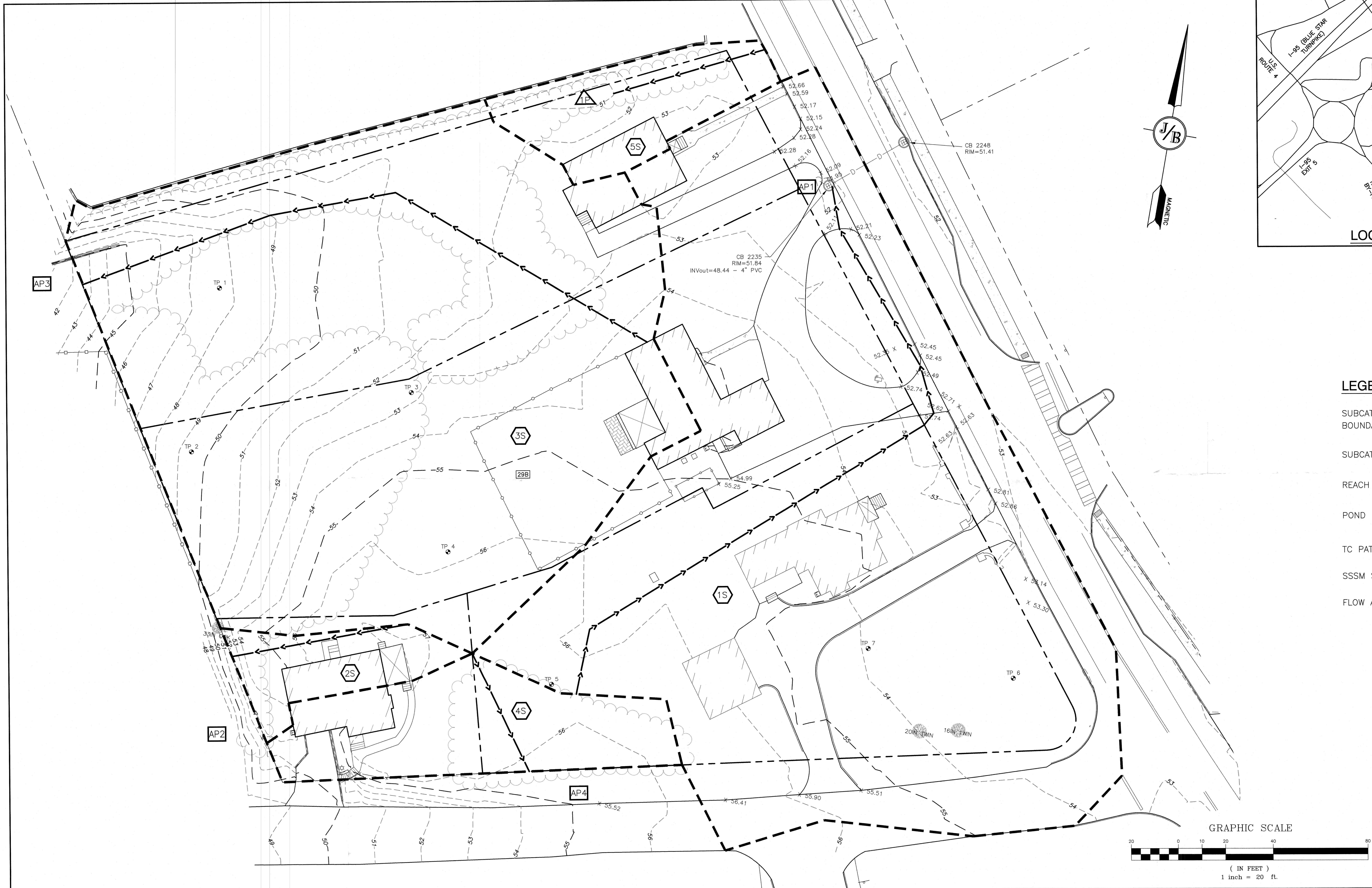
Stage-Area-Storage for Pond 2P: Bioretention

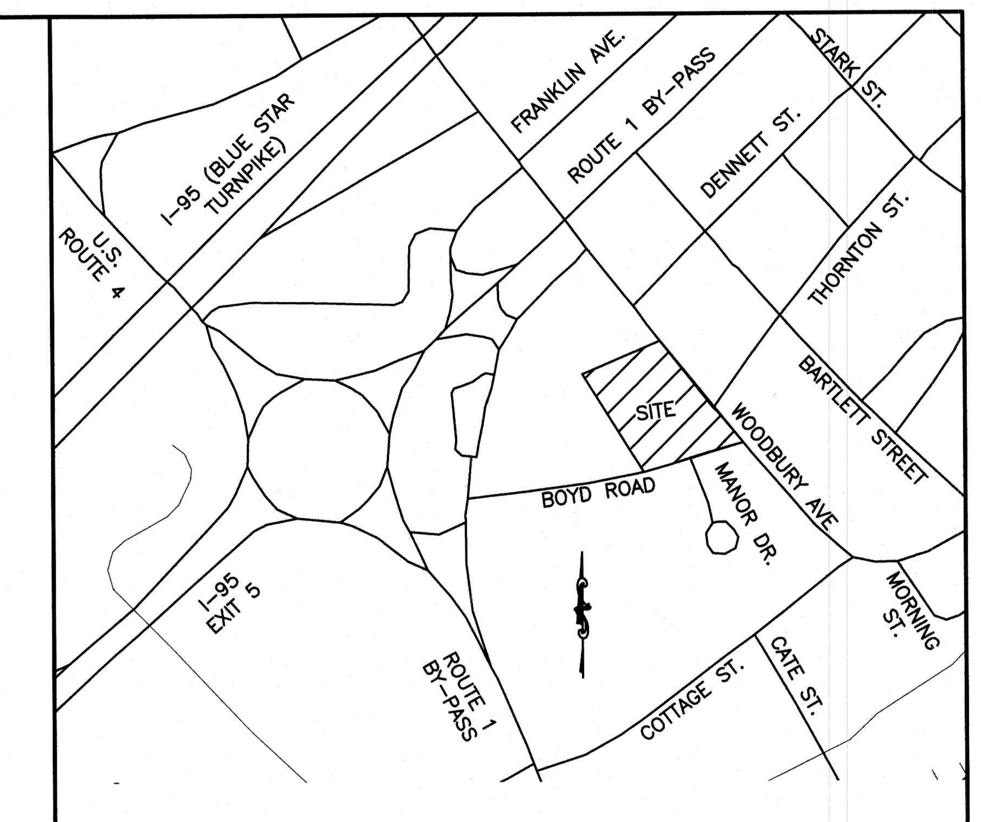
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
46.49	1,543	0	49.09	1,718	1,126
46.54	1,543	31	49.14	1,819	1,215
46.59	1,543	62	49.19	1,923	1,308
46.64	1,543	93	49.24	2,030	1,407
46.69	1,543	123	49.29	2,140	1,511
46.74	1,543	154	49.34	2,253	1,621
46.79	1,543	185	49.39	2,368	1,737
46.84	1,543	216	49.44	2,487	1,858
46.89	1,543	247	49.49	2,608	1,986
46.94	1,543	278	49.54	2,708	2,119
46.99	1,543	309	49.59	2,803	2,256
47.04	1,543	339	49.64	2,900	2,399
47.09	1,543	370	49.69	2,998	2,546
47.14	1,543	401	49.74	3,098	2,699
47.19	1,543	432	49.79	3,200	2,856
47.24	1,543	463	49.84	3,303	3,019
47.29	1,543	494	49.89	3,408	3,187
47.34	1,543	525	49.94	3,515	3,360
47.39	1,543	555	49.99	3,623	3,538
47.44	1,543	586	50.04	3,676	3,721
47.49	1,543	617	50.09	3,714	3,906
47.54	1,543	629	50.14	3,753	4,092
47.59	1,543	640	50.19	3,792	4,281
47.64	1,543	652	50.24	3,831	4,471
47.69	1,543	663	50.29	3,870	4,664
47.74	1,543	675	50.34	3,910	4,858
47.79	1,543	687	50.39	3,949	5,055
47.84	1,543	698	50.44	3,989	5,253
47.89	1,543	710	50.49	4,029	5,454
47.94	1,543	721	50.54	4,070	5,656
47.99	1,543	733	50.59	4,110	5,861
48.04	1,543	744	50.64	4,151	6,067
48.09	1,543	756	50.69	4,192	6,276
48.14	1,543	768	50.74	4,233	6,487
48.19	1,543	779	50.79	4,274	6,699
48.24	1,543	791	50.84	4,316	6,914
48.29	1,543	802	50.89	4,358	7,131
48.34	1,543	814	50.94	4,399	7,350
48.39	1,543	826	50.99	**4,442**	**7,571**
48.44	1,543	837			
48.49	1,543	849			
48.54	1,543	860			
48.59	1,543	872			
48.64	1,543	883			
48.69	1,543	895			
48.74	1,543	907			
48.79	1,543	918			
48.84	1,543	930			
48.89	1,543	941			
48.94	1,543	953			
48.99	1,543	964			
49.04	1,620	1,043			

Lowest invert el. = 49.7; Storage below = 2,545 cf
Filter course bottom el. = 47.5; Storage below = 617 cf
WQV Required = 1,927 cf per BMP Worksheet
WQV Provided = 2,546 - 617 = 1,929 cf
Practice meets WQV Requirement.

APPENDIX IX

Pre- and Post-Construction Watershed Plans





LOCUS SCALE: 1"=500'

LEGEND

SUBCATCHMENT BOUNDARY	
SUBCATCHMENT	X
REACH	X
POND	X
TC PATH	
SSSM SOILS	29B
FLOW ARROW	

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3, & 13

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
94,373 SQ. FT.
2.17 ACRES

Design: DJM	Draft: DJM	Date: 01/05/22
Checked: PSL	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-WATERSHED.dwg		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER
6/21/22

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

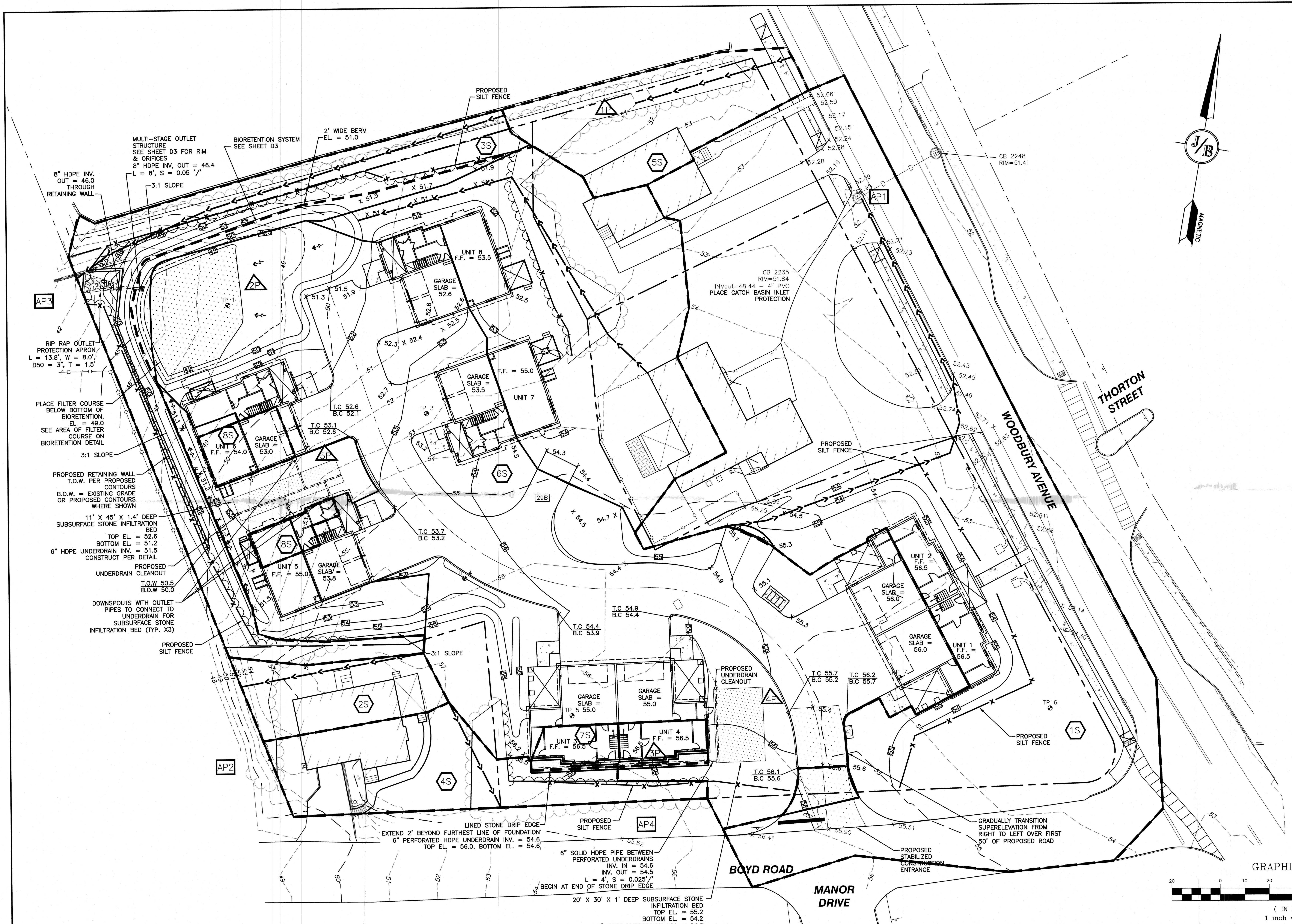
Plan Name: **EXISTING WATERSHED PLAN**

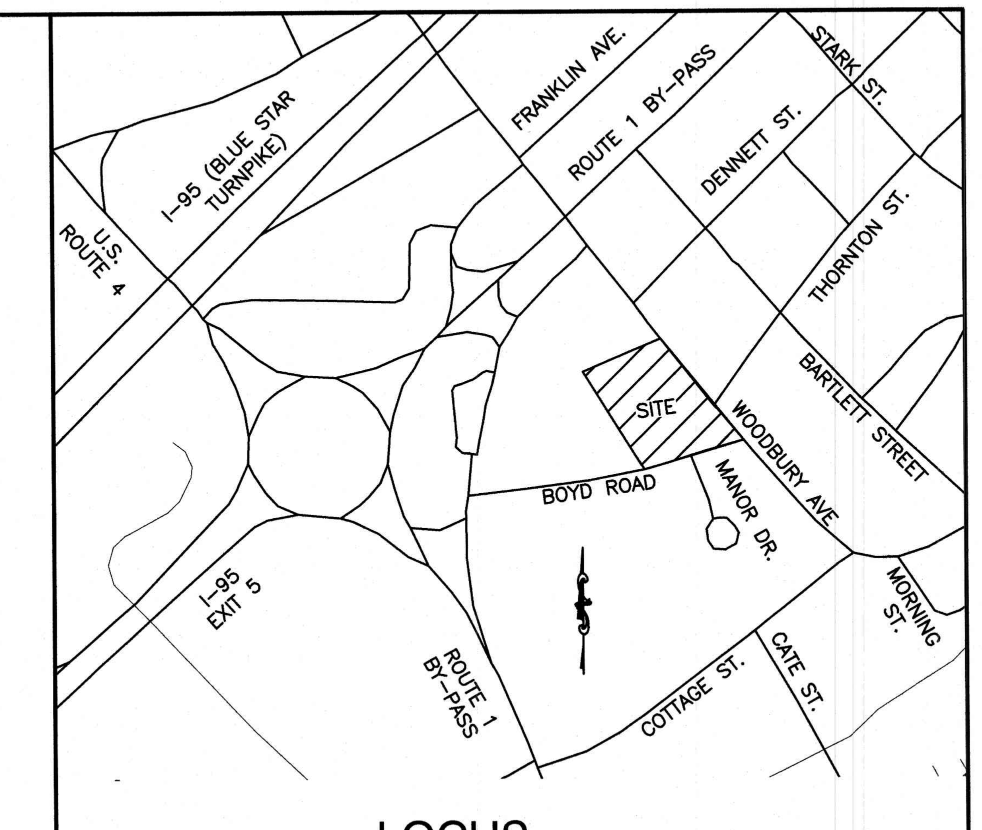
Project: GRAPEVINE RUN
212, 214, & 216 WOODBURY AVE. & 6 BOYD RD., PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894

LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345
LOT 13: BK 5500 PG 334

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 21254





LOCUS SCALE: 1"=500'

LEGEND

SUBCATCHMENT BOUNDARY	
SUBCATCHMENT	X
REACH	X
POND	X
TC PATH	
SSSM SOILS	29B
FLOW ARROW	

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1,2,3, & 13

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
94,373 SQ. FT.
2.17 ACRES

Design: DJM	Draft: DJM	Date: 01/05/22
Checked: PSL	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-WATERSHED.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.16070 LICENSED PROFESSIONAL ENGINEER
6/21/22

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **PROPOSED WATERSHED PLAN**

Project: GRAPEVINE RUN
212, 214, & 216 WOODBURY AVE. & 6 BOYD RD., PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894

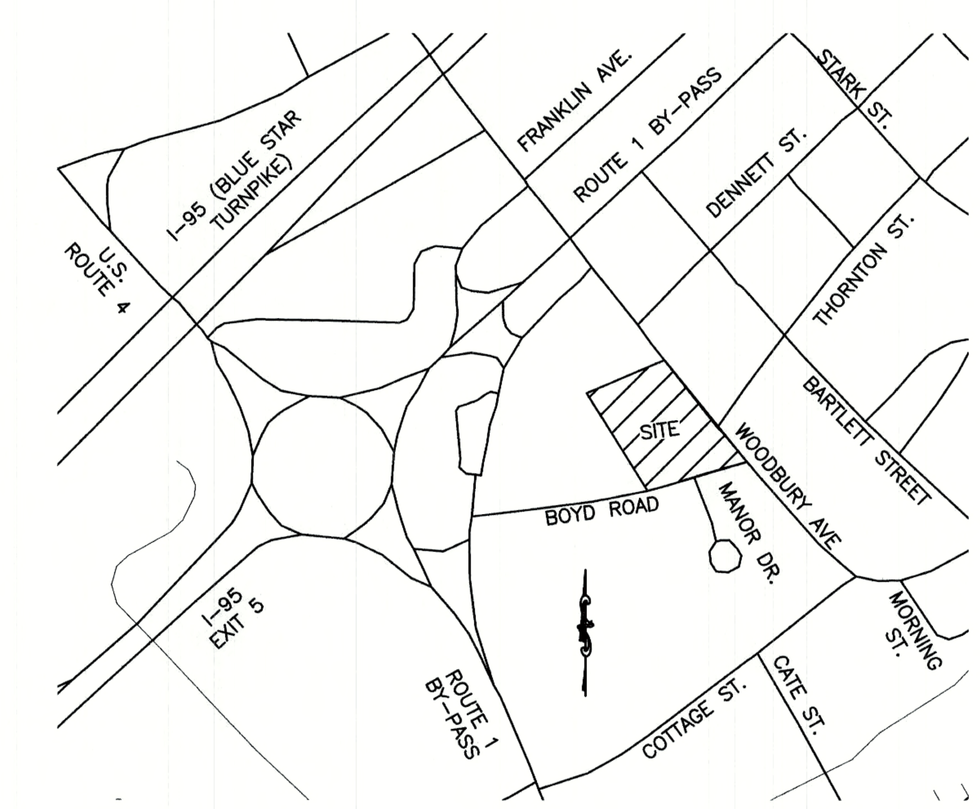
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345
LOT 13: BK 5500 PG 334

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 21254

MULTI-FAMILY RESIDENTIAL SITE PLAN
"GRAPEVINE RUN"
TAX MAP 175, LOTS 1, 2, & 3
212, 214, & 216 WOODBURY AVE.,PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		TREE LINE
		STONEWALL
		FENCE
		SOIL BOUNDARY
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
		EDGE OF PAVEMENT
VGC	VGC	VERTICAL GRANITE CURB
SGC	SGC	SLOPE GRANITE CURB
X	X	SILT FENCE
D		DRAINAGE LINE
S	S	SEWER LINE
FM	FM	SEWER FORCE MAIN
G	G	GAS LINE
W	W	WATER LINE
WS	WS	WATER SERVICE
OHE	OHE	OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
F	F	FIRE PROTECTION LINE
	W	THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 / 99.50	100.00 / 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
TP1		TEST PIT
		FAILED TEST PIT
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
S	S	SEWER MANHOLE
		HYDRANT
		WATER GATE
WSO	WSO	WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
T	T	TRANSFORMER
D		CULVERT W/WINGWALLS
D		CULVERT W/FLARED END SECTION
D		CULVERT W/STRAIGHT HEADWALL
		DRAINAGE FLOW DIRECTION
		RIPRAP
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 500'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
DM-1	DEMOLITION PLAN
A1	LOT LINE ADJUSTMENT PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
P1	PLAN AND ROAD PROFILE
P2	PLAN AND SEWER PROFILE
L1	LANDSCAPE PLAN
L2	LIGHTING PLAN
D1-D5	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
T1-T2	TRUCK TURNING PLAN
H1	HIGHWAY ACCESS PLAN

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
EMAIL: JCORONATI@JONESANDBEACH.COM

LIGHTING CONSULTANT
CHARRON, INC.
P.O BOX 4550
MANCHESTER, NH 03108
(603) 945-3500
CONTACT: KEN SWEENEY
EMAIL: KSWEENEY@CHARRONINC.COM

SOILS CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DR., BLDG 2, UNIT H
EXETER, NH 03833-7507
(603) 418-7260
CONTACT: JAMES GOVE
EMAIL: JGOVE@GESINC.BIZ

LANDSCAPE DESIGNER
LM LAND DESIGN, LLC
11 SOUTH ROAD
BRENTWOOD, NH 03833
(603) 770-7728
CONTACT: LISE MCNAUGHTON

WATER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: BRIAN GOETZ, P.E.
(603) 427-1530

SEWER
CITY OF PORTMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
CONTACT: TERRY DESMARAIS, P.E.
(603) 766-1421

ELECTRIC
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
(603) 634-3029
CONTACT: MARK BOUCHER

TELEPHONE
FAIRPOINT COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(800) 427-5525
CONTACT: JOE CONSIDINE

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-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
6/21/22

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

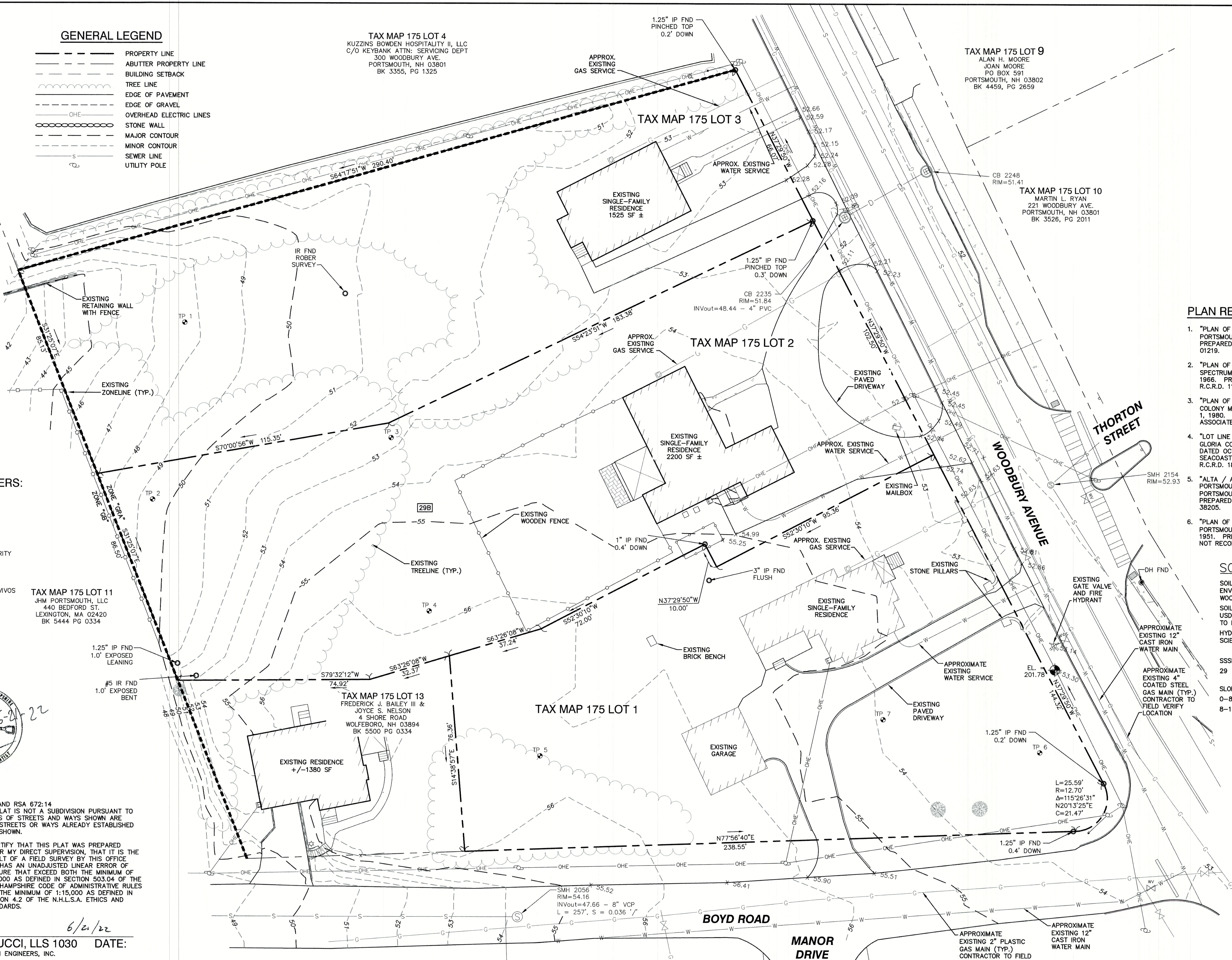
Plan Name:	COVER SHEET	
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801	
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894	LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
CS
SHEET 1 OF 20
JBE PROJECT NO. 21254

GRAPEVINE RUN, PORTSMOUTH, NH
JBE # 21254 REVISION 1, 06/21/22

GENERAL LEGEND

— — —	PROPERTY LINE
— — —	ABUTTER PROPERTY LINE
- - - -	BUILDING SETBACK
⌒⌒⌒	TREE LINE
———	EDGE OF PAVEMENT
- - - -	EDGE OF GRAVEL
—OHE—	OVERHEAD ELECTRIC LINES
○○○○	STONE WALL
— — —	MAJOR CONTOUR
- - - -	MINOR CONTOUR
—S—	SEWER LINE
	UTILITY POLE



ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4
KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2989

STATE OF NEW HAMPSHIRE JAMES P. GOVE No. 004 CERTIFIED SOIL SCIENTIST 6-21-22

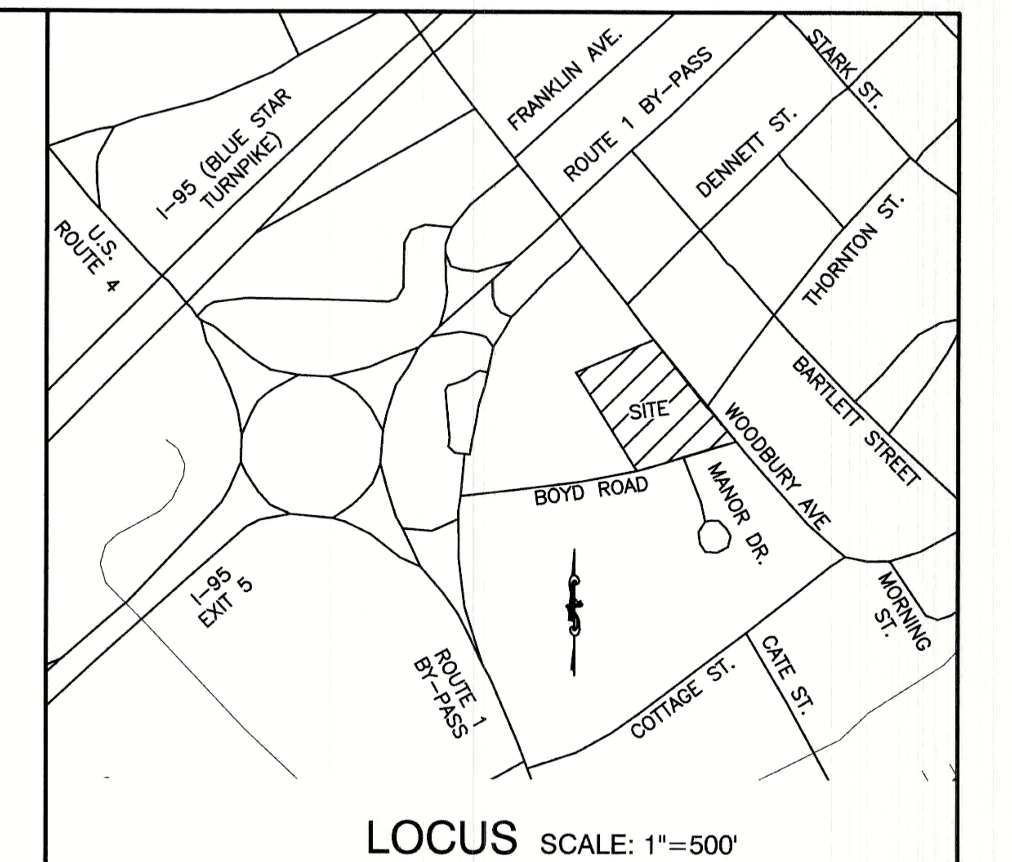
CERTIFICATION:

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 6/21/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.



LOCUS SCALE: 1"=500'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF PORTSMOUTH TAX MAP 175, LOTS 1, 2, 3, AND 13.
2. 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.
3. 4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
4. BASIS OF BEARING:
   HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
5. NO WETLANDS WERE OBSERVED WITHIN 100' OF THE PROPERTY BOUNDARY. SEE LETTER FROM GOVE ENVIRONMENTAL SERVICES, INC.
6. 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.

PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
3. "PLAN OF LAND, PORTSMOUTH, N.H. FOR COLONY MOTOR HOTEL, INC." DATED JULY 1, 1980. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 9644.
4. "LOT LINE ADJUSTMENT PLAN FOR JOHN & GLORIA COLLINS IN PORTSMOUTH. NH" DATED OCTOBER 27, 1988. PREPARED BY SEACOAST ENGINEERING ASSOCIATES. R.C.R.D. 18914.
5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.

SOIL NOTES:

SOILS SHOWN HEREON WERE CLASSIFIED IN SPRING 2022 BY JAMES GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC. THE SURVEY AREA IS LOCATED ON 212, 214, AND 216 WOODBURY AVE, PORTSMOUTH, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
29	WOODBRIDGE FINE SANDY LOAM	229BH	C

SLOPE PHASE:

0-8%	B	15-25%	D
8-15%	C	25%+	E

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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.

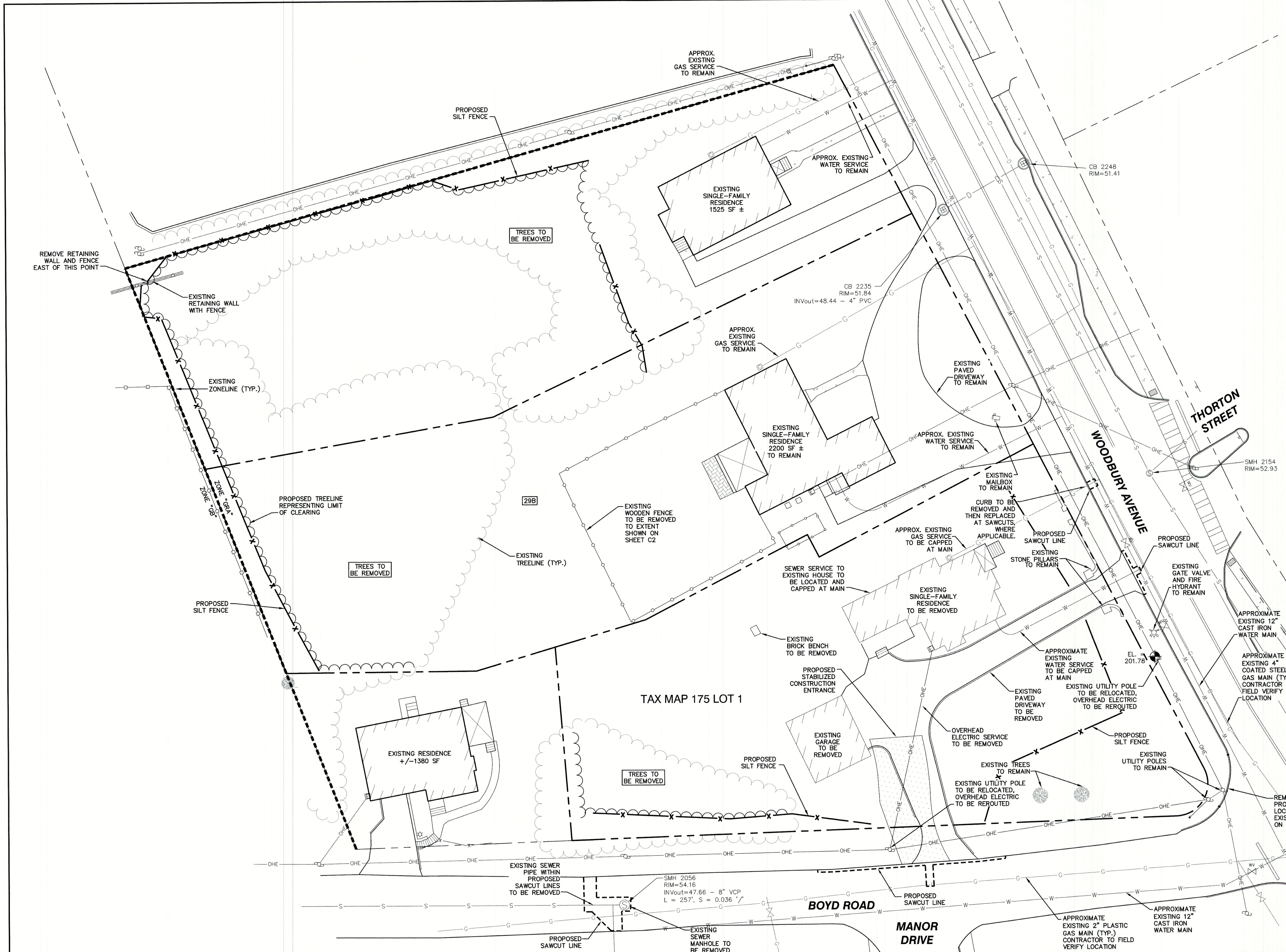
STATE OF NEW HAMPSHIRE PAIGE LIBBEY No. 16670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No.
C1
SHEET 2 OF 20
JBE PROJECT NO. 21254



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 PAVED SURFACES WITHIN THE LIMITS OF WORK THAT ARE TO REMAIN SHALL BE RECLAIMED TO MINIMUM DEPTH OF 12" AND REGRADED AS SHOWN ON THE GRADING AND DRAINAGE PLAN. RECLAIMED ASPHALT SHALL CONFORM TO STATE SPECIFICATIONS. PRIOR TO REMOVAL, PAVEMENT SHALL BE SAWCUT AT ALL ENTRANCES AND LIMITS OF REMOVAL.
5. ALL EXISTING GRANITE CURBING TO BE REMOVED SHALL BE STOCKPILED IN AN AREA TO BE DESIGNATED BY THE OWNER OR OWNER'S REPRESENTATIVE. THE OWNER SHALL INSPECT GRANITE CURBING TO BE RESET AND APPROVE LOCATION OF RESET CURBING. THE CONTRACTOR SHALL NOT INSTALL USED CURBING AT ANY ENTRANCE LOCATIONS.
6. 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.
7. EXISTING WATERLINES AND HYDRANTS TO BE REMOVED SHALL BE CAPPED AT EXISTING WATERMAIN.
8. EXISTING GAS SERVICE LINES ARE TO BE REMOVED ON-SITE UP TO EXISTING GASMAIN LINES OR VALVES.
9. 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).
10. SEE LANDSCAPE PLAN FOR "TREES TO BE SAVED" AND DETAILS ASSOCIATED WITH LANDSCAPED AREAS.
11. 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.
12. SEWER LINES SHALL BE DISCONNECTED IN ACCORDANCE WITH LOCAL STANDARDS AND REGULATIONS.
13. 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.
14. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

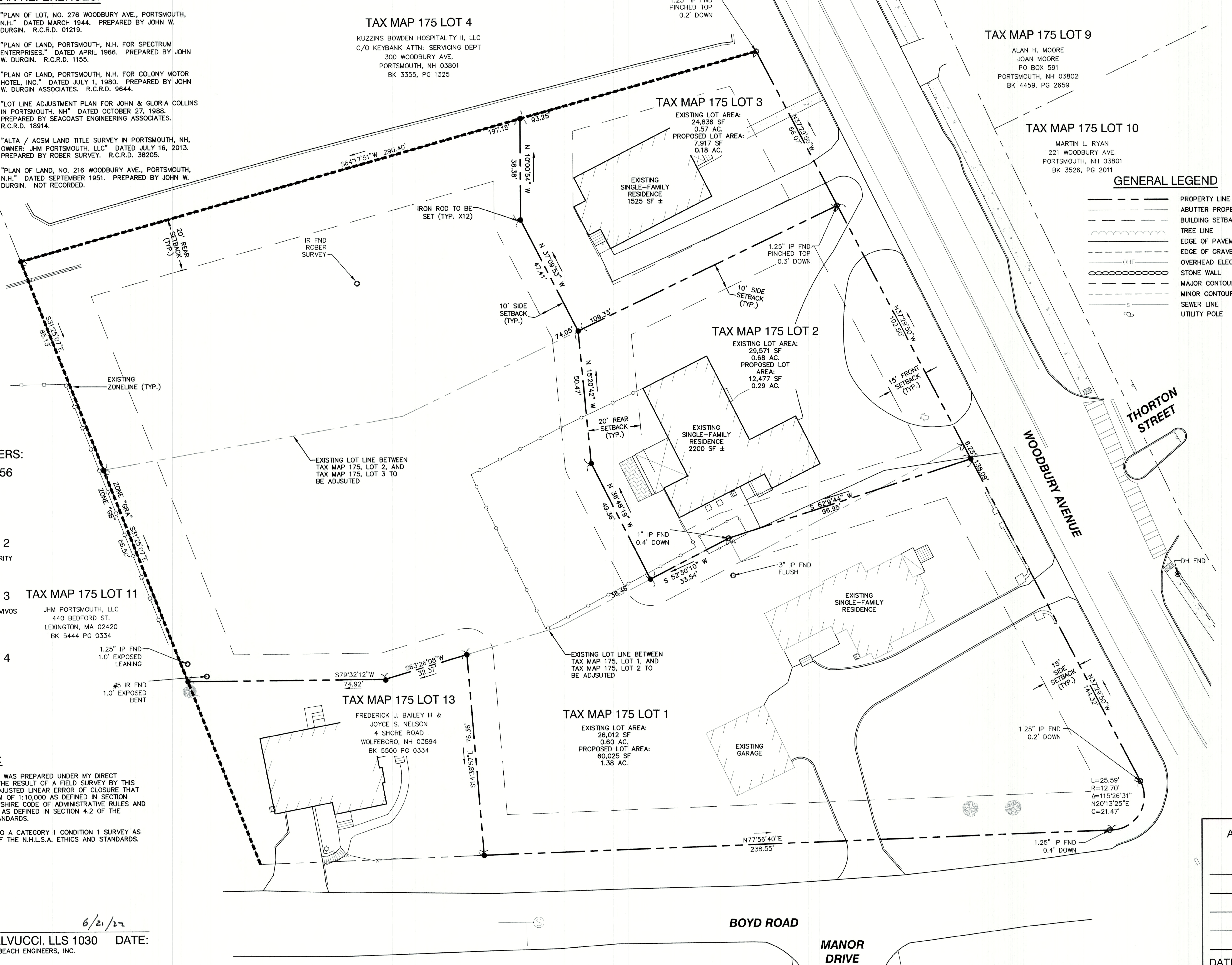
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DEMOLITION PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No.
DM-1
SHEET 3 OF 20
JBE PROJECT NO. 21254

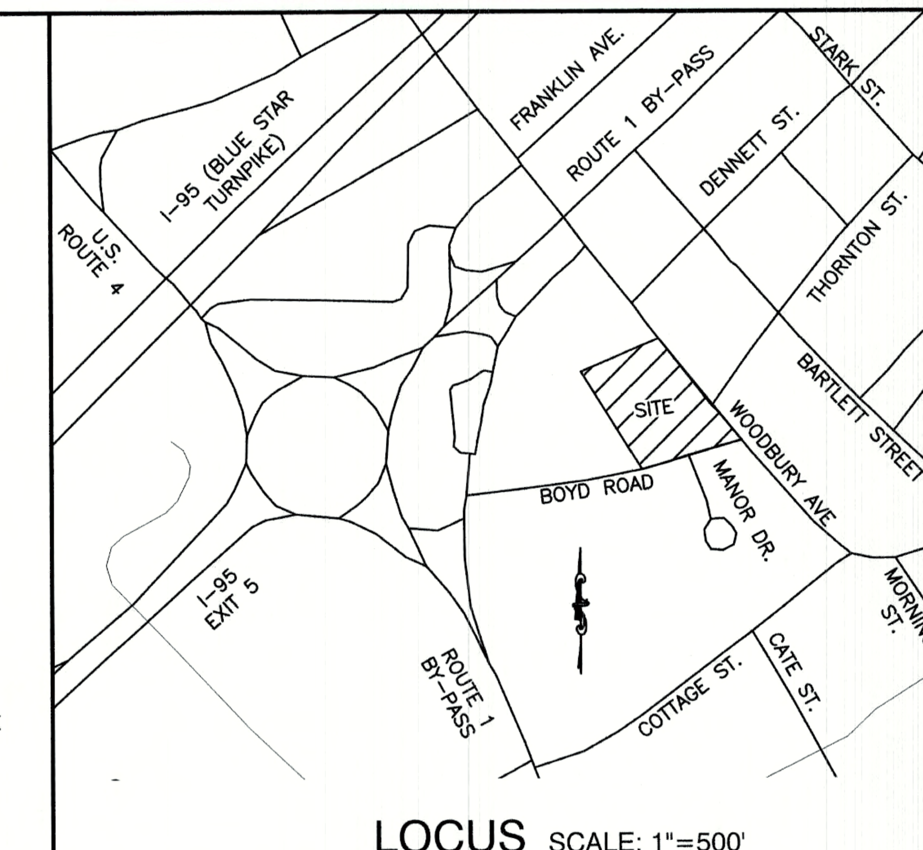
PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
3. "PLAN OF LAND, PORTSMOUTH, N.H. FOR COLONY MOTOR HOTEL, INC." DATED JULY 1, 1980. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 9644.
4. "LOT LINE ADJUSTMENT PLAN FOR JOHN & GLORIA COLLINS IN PORTSMOUTH, NH" DATED OCTOBER 27, 1988. PREPARED BY SEACOAST ENGINEERING ASSOCIATES. R.C.R.D. 18914.
5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.



GENERAL LEGEND

	PROPERTY LINE
	ABUTTER PROPERTY LINE
	BUILDING SETBACK
	TREE LINE
	EDGE OF PAVEMENT
	EDGE OF GRAVEL
OHE	OVERHEAD ELECTRIC LINES
	STONE WALL
	MAJOR CONTOUR
	MINOR CONTOUR
S	SEWER LINE
	UTILITY POLE



LOCUS SCALE: 1"=500'

SUBDIVISION NOTES:

1. THE INTENT OF THIS PLAN IS TO ADJUST THE LOT LINE BETWEEN TAX MAP 175, LOTS 1, 2, AND 3.
2. ZONING DISTRICT: GENERAL RESIDENTIAL A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   MIN. OPEN SPACE = 30%
3. 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.
4. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
5. IRON RODS WITH SURVEY CAPS TO BE SET AT ALL PROPERTY CORNERS AND ANGLE POINTS, UNLESS OTHERWISE INDICATED. ALL MONUMENTS SET ARE 5/8" IRON RODS WITH ALUMINUM CAPS MARKED "JONES & BEACH ENGINEERS BOUNDARY, DO NOT DISTURB, STRATHAM, N.H." AS SHOWN.
6. NO WETLANDS WERE OBSERVED ON THE SUBJECT PREMISES.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS AND ABUTTING OWNERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSORS OFFICE AND 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 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.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56
COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3
DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4
KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2989

CERTIFICATION:

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.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR
SIGNATURE

6/21/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

APPROVED - PORTSMOUTH, NH PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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. 15670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	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: **LOT LINE ADJUSTMENT PLAN**
TAX MAP 175, LOTS 1, 2, & 3

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.

A1

SHEET 4 OF 20
JBE PROJECT NO. 21254

CERTIFICATION:

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.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

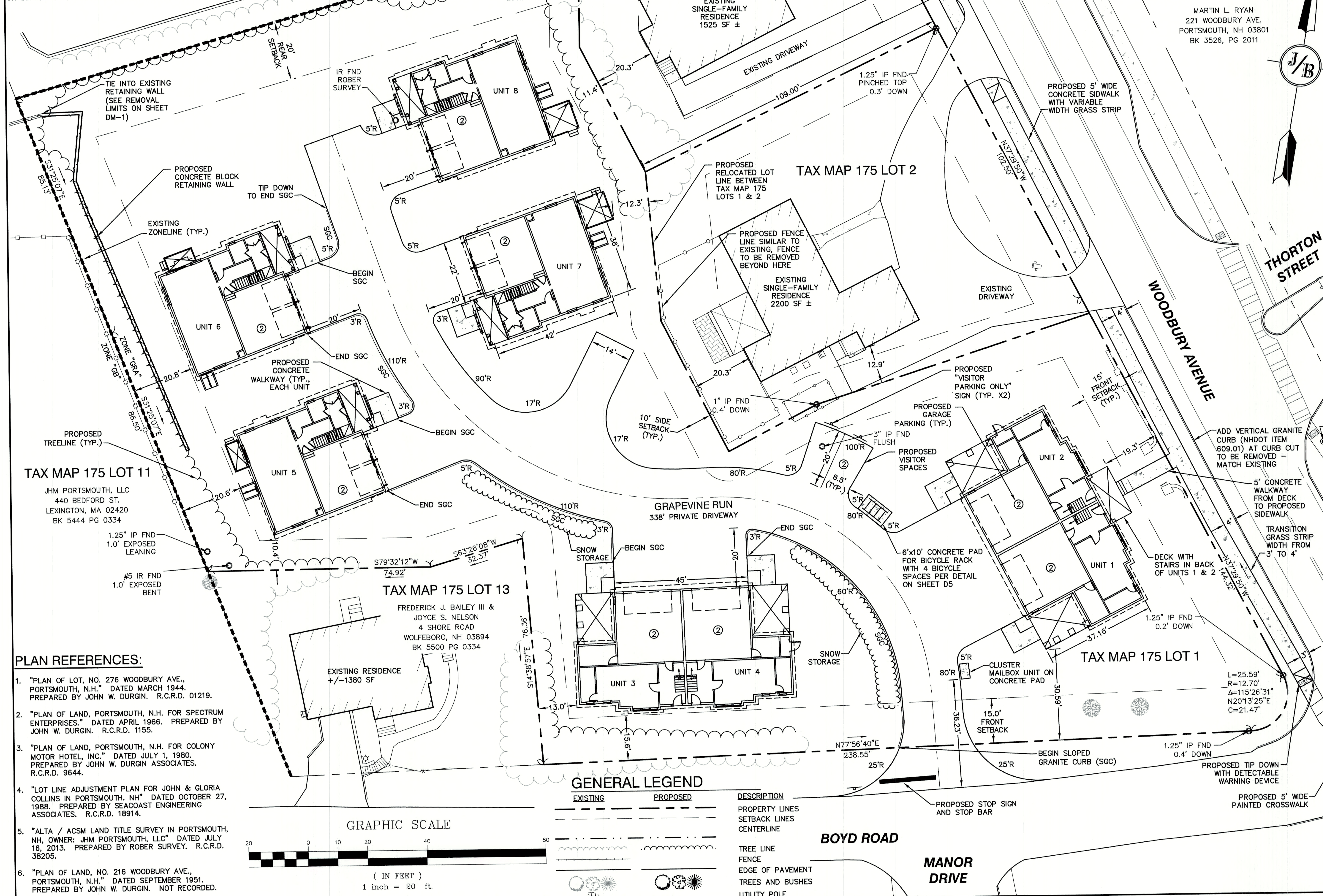
STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR

SIGNATURE

6/21/22

MATTHEW J. SALVUCCI, LLS 1030 DATE:

ON BEHALF OF JONES & BEACH ENGINEERS, INC.



PLAN REFERENCES:

1. "PLAN OF LOT, NO. 276 WOODBURY AVE., PORTSMOUTH, N.H." DATED MARCH 1944. PREPARED BY JOHN W. DURGIN. R.C.R.D. 01219.
2. "PLAN OF LAND, PORTSMOUTH, N.H. FOR SPECTRUM ENTERPRISES." DATED APRIL 1966. PREPARED BY JOHN W. DURGIN. R.C.R.D. 1155.
3. "PLAN OF LAND, PORTSMOUTH, N.H. FOR COLONY MOTOR HOTEL, INC." DATED JULY 1, 1980. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 9644.
4. "LOT LINE ADJUSTMENT PLAN FOR JOHN & GLORIA COLLINS IN PORTSMOUTH. NH" DATED OCTOBER 27, 1988. PREPARED BY SEACOAST ENGINEERING ASSOCIATES. R.C.R.D. 18914.
5. "ALTA / ACSM LAND TITLE SURVEY IN PORTSMOUTH, NH, OWNER: JHM PORTSMOUTH, LLC" DATED JULY 16, 2013. PREPARED BY ROBER SURVEY. R.C.R.D. 38205.
6. "PLAN OF LAND, NO. 216 WOODBURY AVE., PORTSMOUTH, N.H." DATED SEPTEMBER 1951. PREPARED BY JOHN W. DURGIN. NOT RECORDED.

ADDITIONAL ABUTTERS:

TAX MAP 162 LOT 56

COLBY T. GAMESTER
AMANDA D. GAMESTER
187 WOODBURY AVE.
PORTSMOUTH, NH 03801
BK 6050 PG 180

TAX MAP 174 LOT 2

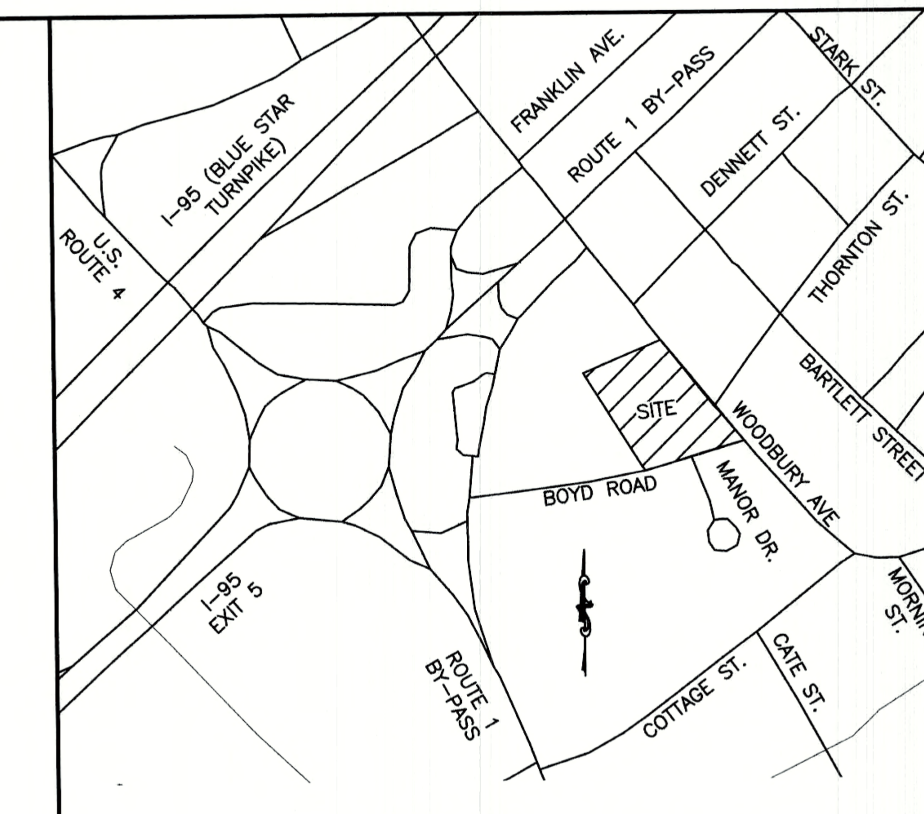
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE ST.
PORTSMOUTH, NH 03801

TAX MAP 174 LOT 3

DAWN P. MOYLAN REVO INTER VIVOS
55 BOYD RD.
PORTSMOUTH, NH 03801
BK 2969 PG 0654

TAX MAP 174 LOT 4

KAREN A. FOYE
KENNETH FOYE
79 BOYD RD.
PORTSMOUTH, NH 03801
BK 6108 PG 2989



LOCUS SCALE: 1"=500'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE THE HOUSE AND GARAGE ON LOT 1, ADJUST THE LOT LINE BETWEEN LOT 1 WITH LOTS 2 & 3, AND PROPOSE AN 8-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT ON LOT 1 WITH ACCESS FROM BOYD ROAD.
2. ZONING DISTRICT: GENERAL RESIDENTIAL A (GRA)
   LOT AREA MINIMUM = 7,500 S.F.
   MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA
   PROPOSED ON LOT 1 = 60,025 S.F. / 8 = 1 UNIT PER 7,503 S.F PROVIDED
   LOT FRONTAGE MINIMUM = 100'
   LOT DEPTH MINMUM = 70'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 15'
   SIDE SETBACK = 10'
   REAR SETBACK = 20'
   MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF
   MAX. BUILDING COVERAGE = 25%
   PROPOSED, LOT 1 = 21.2%
   PROPOSED, LOT 2 = 17.6%
   PROPOSED, LOT 3 = 19.3%
   MAX. OPEN SPACE = 30%
   PROPOSED, LOT 1 = 58.7%
   PROPOSED, LOT 2 = 58.1%
   PROPOSED, LOT 3 = 68.2%
3. PARKING CALCULATIONS
   UNITS OVER 750 S.F. – 1.3 SPACES REQUIRED PER UNIT PLUS 1 VISITOR SPACE PER EVERY 5 DWELLING UNITS OR PORTION THEREOF
   8 UNITS * 1.3 SPACES REQUIRED = 11 SPACES REQUIRED, 16 SPACES PROVIDED IN GARAGES
   8 UNITS: 2 VISITOR SPACES REQUIRED, 2 VISITOR SPACES PROVIDED
   TOTAL: 13 SPACES REQUIRED, 18 SPACES PROVIDED.
4. LOT 1 CALCULATIONS
   TOTAL BUILDING FOOTPRINT = 12,700 SF
   TOTAL PAVED AREA = 12,200 SF
   TOTAL IMPERVIOUS ON LOT 1 = 24,900 S.F. = 41.5% OF LOT 1
   TOTAL OPEN SPACE ON LOT 1 = 100% – 41.5% = 58.5%
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
6. AT ITS MEETING ON APRIL 19, 2022, THE CITY OF PORTSMOUTH ZONING BOARD OF ADJUSTMENT VOTED TO GRANT A VARIANCE FROM THE FOLLOWING REQUIREMENT:
   – SECTION 10.513 – TO ALLOW MORE THAN ONE FREE-STANDING DWELLING ON A SINGLE LOT WITHIN THE GRA ZONE
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. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
10. 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.
11. 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.
12. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
13. 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.
14. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
15. 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.
16. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
17. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
18. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
19. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
20. 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.
21. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
22. 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.
23. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
24. 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.
25. 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.
26. 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.
27. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
28. ON-SITE SALT STORAGE IS PROHIBITIED WITHIN 250' OF AN INLAND WETLAND UNLESS COMPLETELY COVERED AND CONTAINED IN A STRUCTURE.
29. AREA OF DISTURBANCE = 58,000 S.F.

APPROVED - PORTSMOUTH, NH
PLANNING BOARD

DATE:

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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

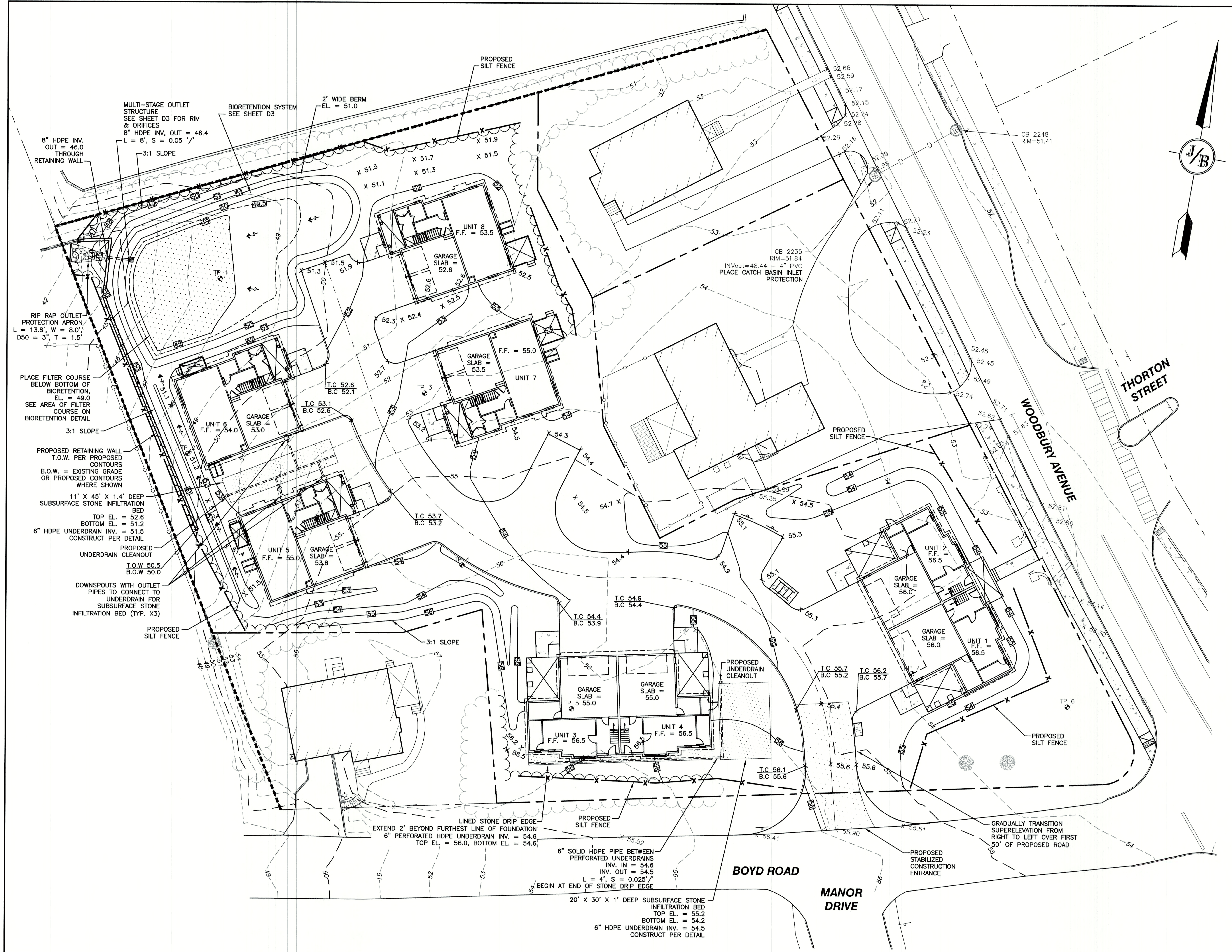
6/21/22

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owners of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.
C2
SHEET 5 OF 20
JBE PROJECT NO. 21254



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 AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
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 ROOF DRAINS FROM BUILDING SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
6. ALL SWALES AND BIORETENTION SYSTEMS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
7. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 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. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE DETAIL SHEETS 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 PAD 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.
14. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
15. 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.
16. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING AND ANYTIME CONSTRUCTION STOPS FOR LONGER THAN 3 DAYS.
17. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
18. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
19. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
20. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
21. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
22. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
23. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
24. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
25. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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.

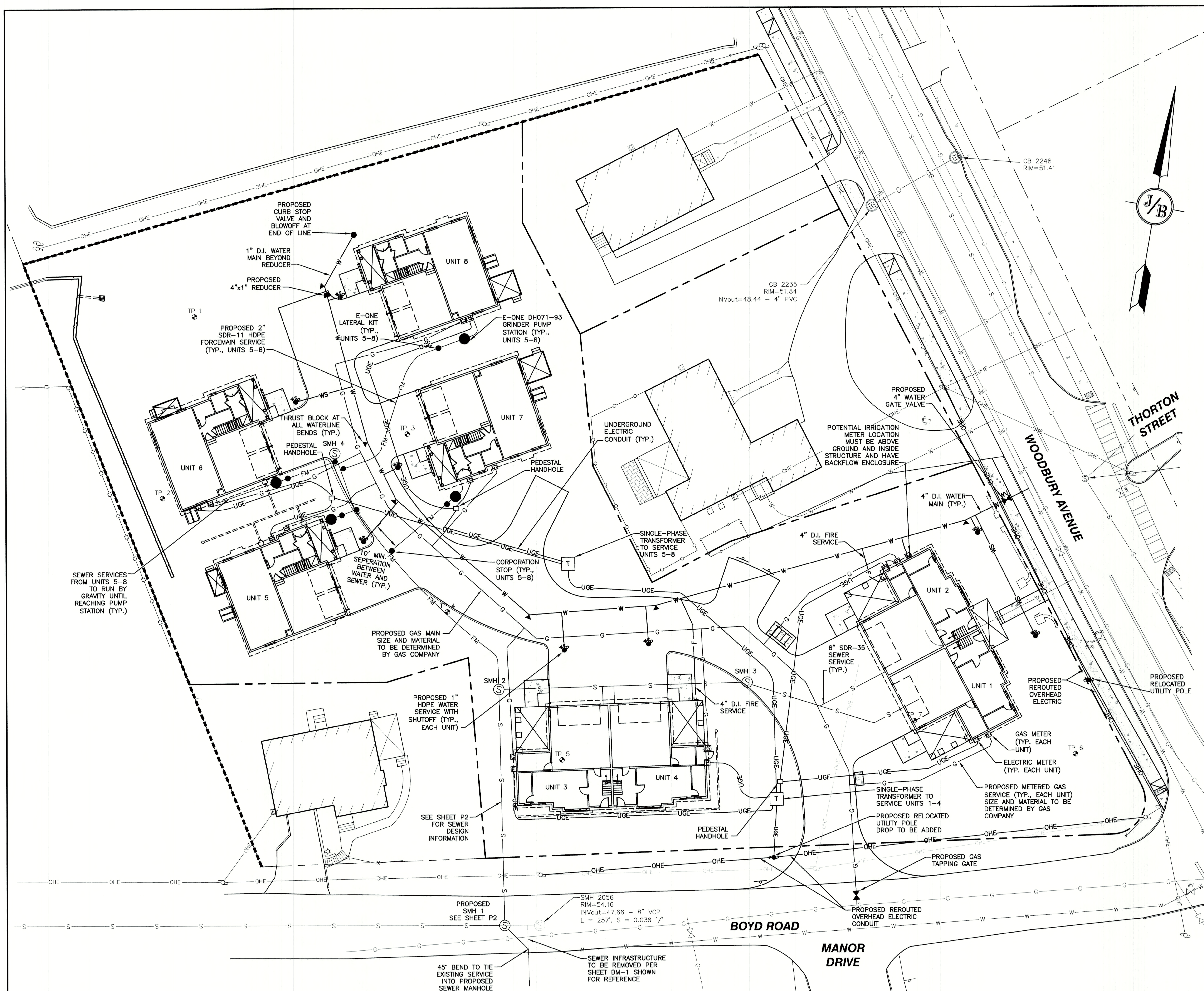
STATE OF NEW HAMPSHIRE
PAIGE LIBBEY No. 16670
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	GRADING AND DRAINAGE PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No.
C3
SHEET 6 OF 20
JBE PROJECT NO. 21254



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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 TOWN STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS A WAIVER IS OTHERWISE OBTAINED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS
7. BUILDING 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" 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, SERVICES, AND FORCE MAINS.
14. SANITARY SEWER FLOW CALCULATIONS:
    8 – THREE BEDROOM UNITS @ 150 GPD/BEDROOM = 3,600 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 FIRE HYDRANTS.
21. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
22. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
23. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHALL BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
24. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
25. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
26. 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.
27. 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-BELL PVC PIPE ASSOCIATION 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.
28. 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.
29. 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.
30. 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.
31. 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 DEPARTMENT OF PUBLIC WORKS.
32. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
38. AN AS-BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT.
39. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
40. SHOP DRAWINGS TO BE SUBMITTED TO CITY OF PORTSMOUTH FOR REVIEW AND APPROVAL.
41. 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.
42. 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.
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.
41. DISINFECTION OF WATER MAINS SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH AWWA STANDARD C651, LATEST EDITION. THE BASIC PROCEDURE TO BE FOLLOWED FOR DISINFECTING WATER MAINS IS AS FOLLOWS:
    a. PREVENT CONTAMINATING MATERIALS FROM ENTERING THE WATER MAIN DURING STORAGE, CONSTRUCTION, OR REPAIR.
    b. REMOVE, BY FLUSHING OR OTHER MEANS, THOSE MATERIALS THAT MAY HAVE ENTERED THE WATER MAINS.
    c. CHLORINATE ANY RESIDUAL CONTAMINATION THAT MAY REMAIN, AND FLUSH THE CHLORINATED WATER FROM THE MAIN.
    d. PROTECT THE EXISTING DISTRIBUTION SYSTEM FROM BACKFLOW DUE TO HYDROSTATIC PRESSURE TEST AND DISINFECTION PROCEDURES.
    e. DETERMINE THE BACTERIOLOGICAL QUALITY BY LABORATORY TEST AFTER DISINFECTION.
    f. MAKE FINAL CONNECTION OF THE APPROVED NEW WATER MAIN TO THE ACTIVE DISTRIBUTION SYSTEM

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16570
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

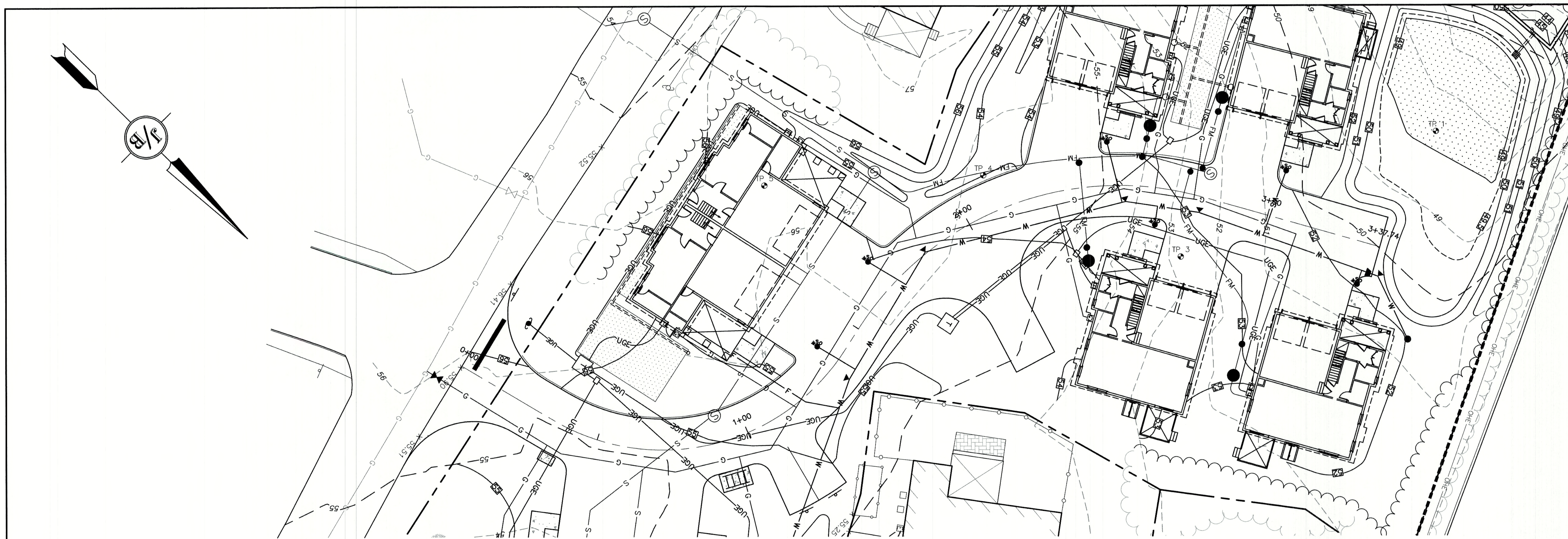
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

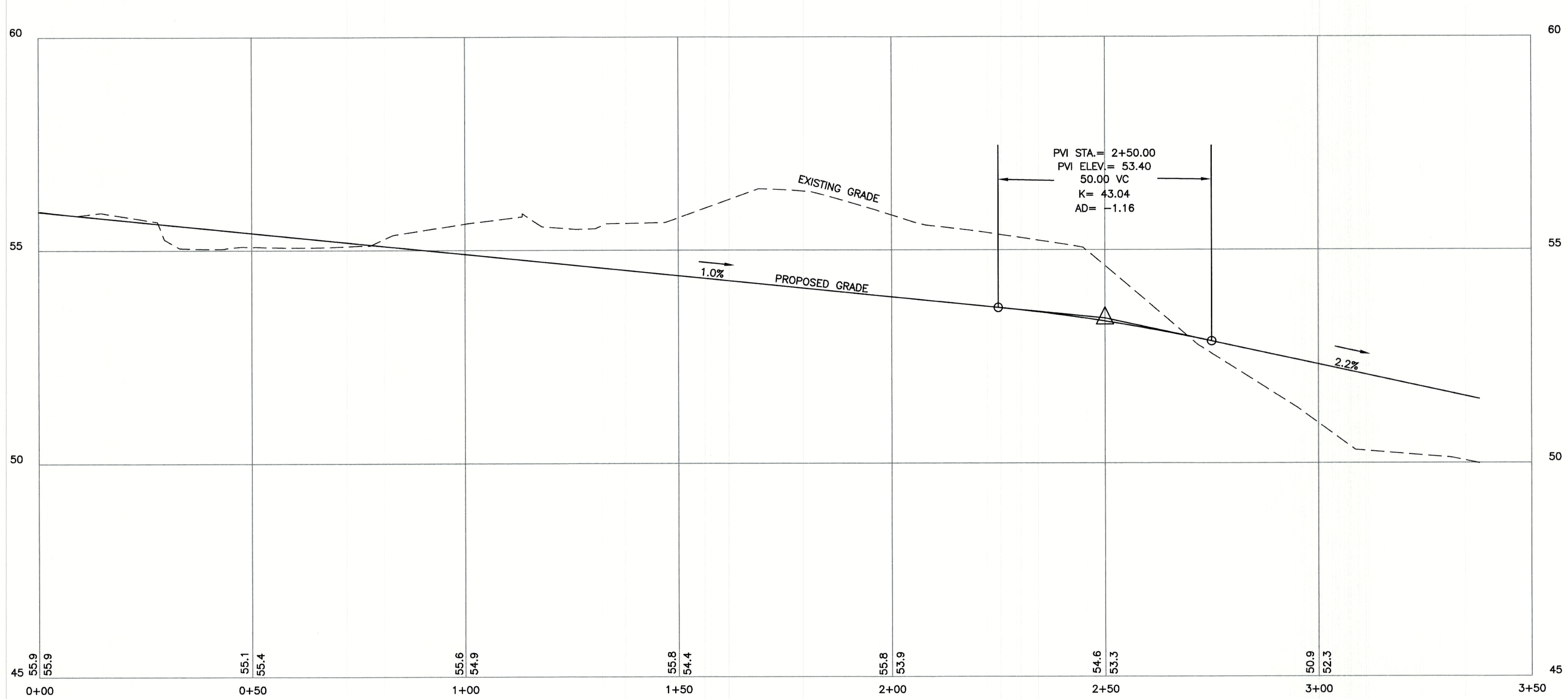
Plan Name: UTILITY PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
C4
SHEET 7 OF 20
JBE PROJECT NO. 21254





NOTES:

1. THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE CONSTRUCTION SITE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND BE MADE ACCESSIBLE TO THE PUBLIC. THE CONSTRUCTION SITE OPERATOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA REGIONAL OFFICE SEVEN DAYS PRIOR TO COMMENCEMENT OF ANY WORK ON SITE. EPA WILL POST THE NOI AT HTTP://CFPUB1.EPA.GOV/NPDES/STORMWATER/NOI/NOISEARCH.CFM. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE" STATUS ON THIS WEBSITE. A COMPLETED NOTICE OF TERMINATION SHALL BE SUBMITTED TO THE NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET:
   A. FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR
   B. ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED. PROVIDE DPW WITH A COPY OF THE NOTICE OF TERMINATION (NOT).

C. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE CITY, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.

D. CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, AND FIRE ALARM PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.

E. THIS PLAN 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 SHOWN ON THE 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.

F. SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION. SEE DETAIL SHEET E1 FOR ADDITIONAL NOTES ON EROSION CONTROL.

G. ALL DISTURBED AREAS NOT STABILIZED BY OCTOBER 15TH SHALL BE COVERED WITH AN EROSION CONTROL BLANKET AS SPECIFIED ON SHEET E1..

H. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.

I. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.

J. ROADWAY INTERSECTIONS WITH SLOPE GRANITE CURB SHALL EXTEND AROUND RADIUS WITH 6' STRAIGHT PIECE ALONG TANGENT.

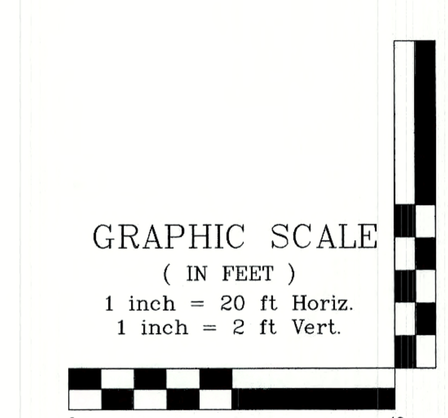
K. RETAINING WALLS SHALL BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER PRIOR TO INSTALLATION.

L. DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE: SILT FENCING WILL BE INSPECTED DURING AND AFTER STORM EVENTS TO ENSURE THAT THE FENCE STILL HAS INTEGRITY AND IS NOT ALLOWING SEDIMENT TO PASS. FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.

M. CONTRACTOR MUST HAVE A VALID PIPE INSTALLER'S LICENSE BEFORE WORKING ON ANY DRAINAGE AND/OR UTILITY CONSTRUCTION.

N. ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.

O. COMPACTION TESTING SERVICES (I.E. NUCLEAR DENSITY TESTS) ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR FOR ROADWAY CONSTRUCTION, AND ON THE FOUNDATION OF THE BERM OF THE PROPOSED STORMWATER FEATURE AND ON EVERY LIFT OF NEWLY PLACED MATERIAL



Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER
6/21/22

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH

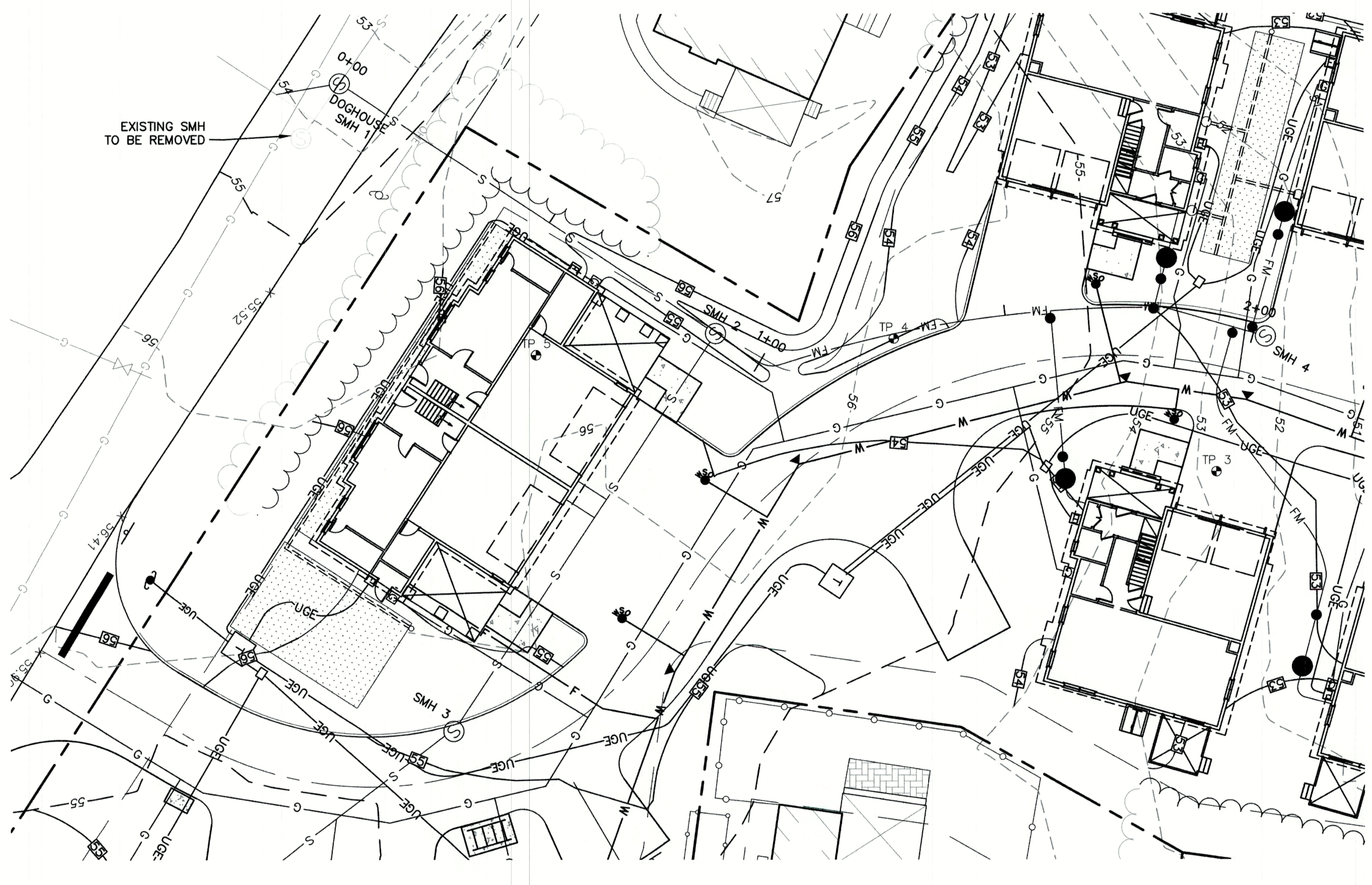
Jones & Beach Engineers, Inc.
Civil Engineering Services

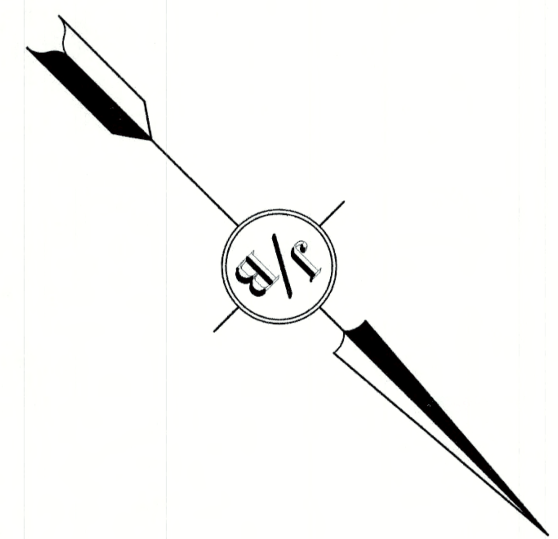
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

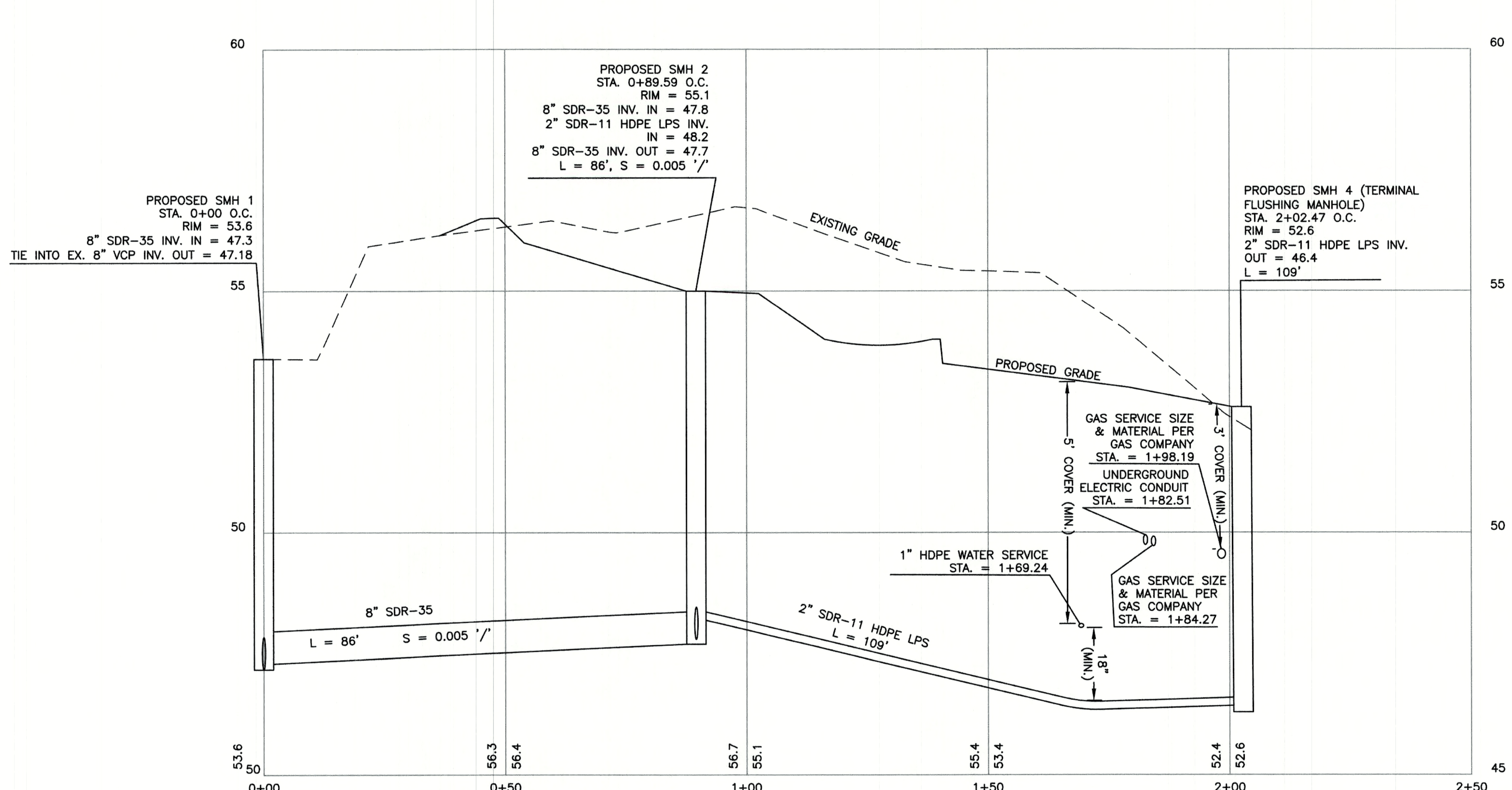
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	PLAN AND ROAD PROFILE
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

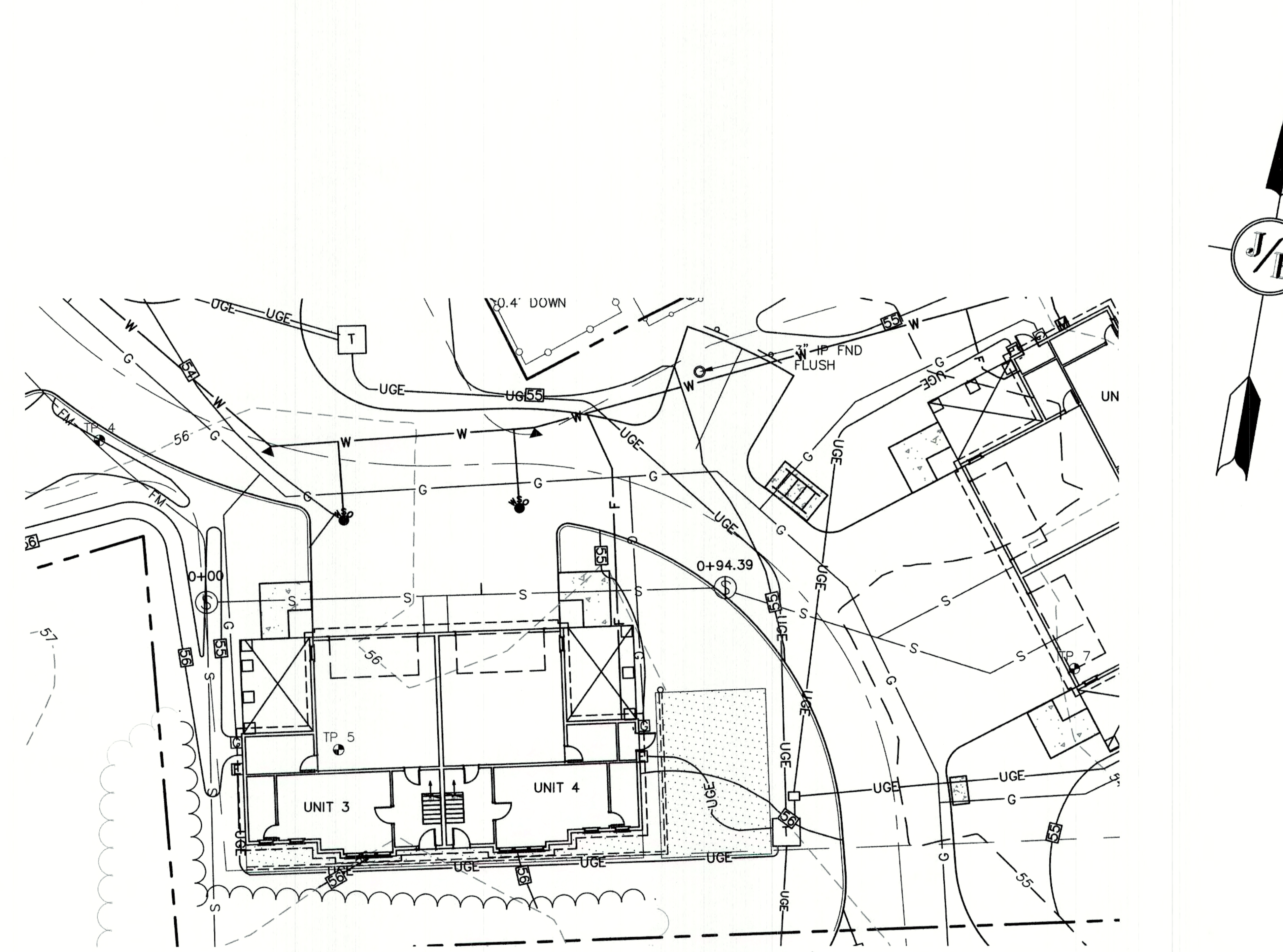
DRAWING No.
P1
SHEET 8 OF 20
JBE PROJECT NO. 21254

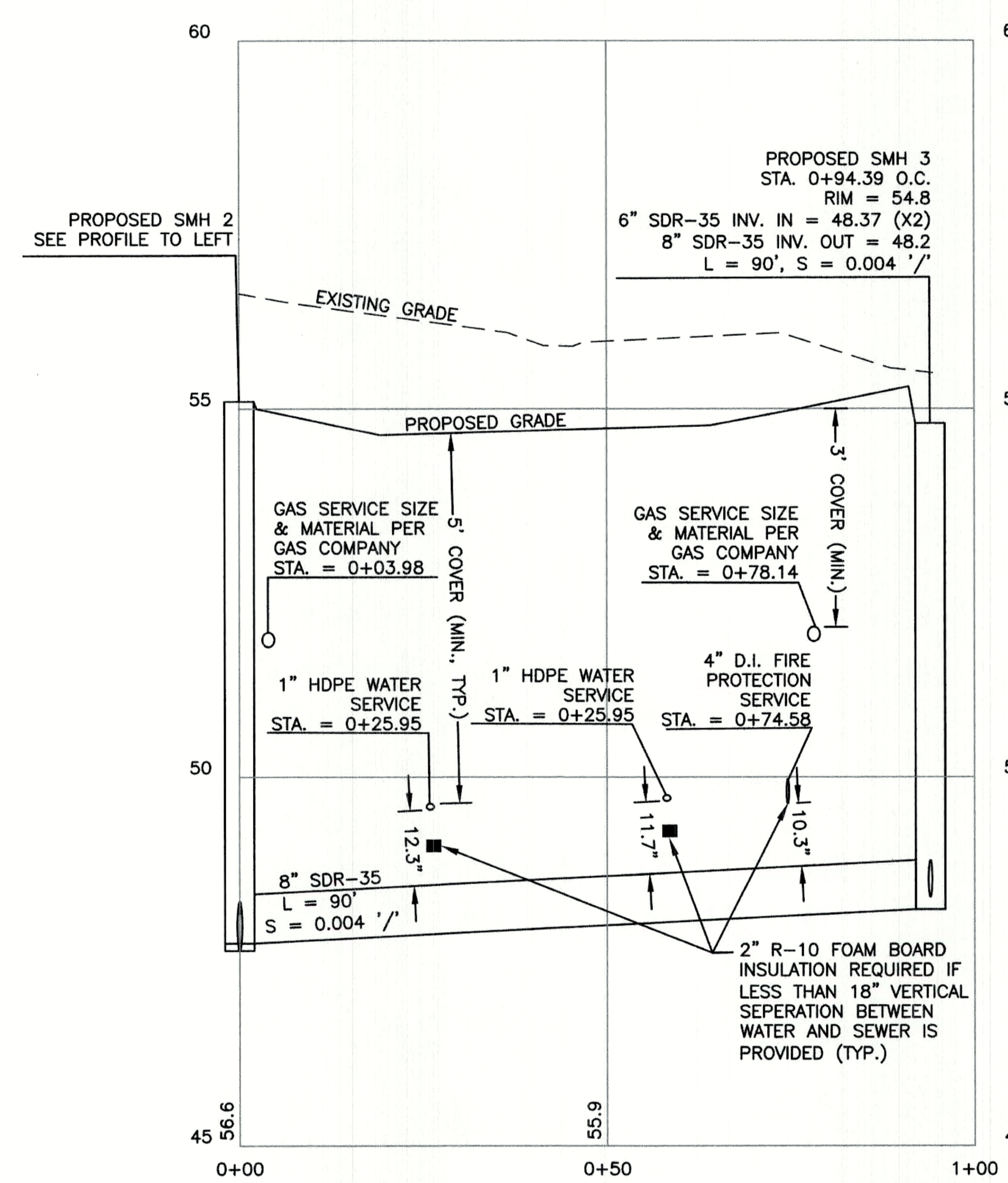






MAIN SEWER THROUGH SITE





SEWER MAIN SERVICING UNITS 1-2

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	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: PLAN AND SEWER PROFILE

Project: "GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

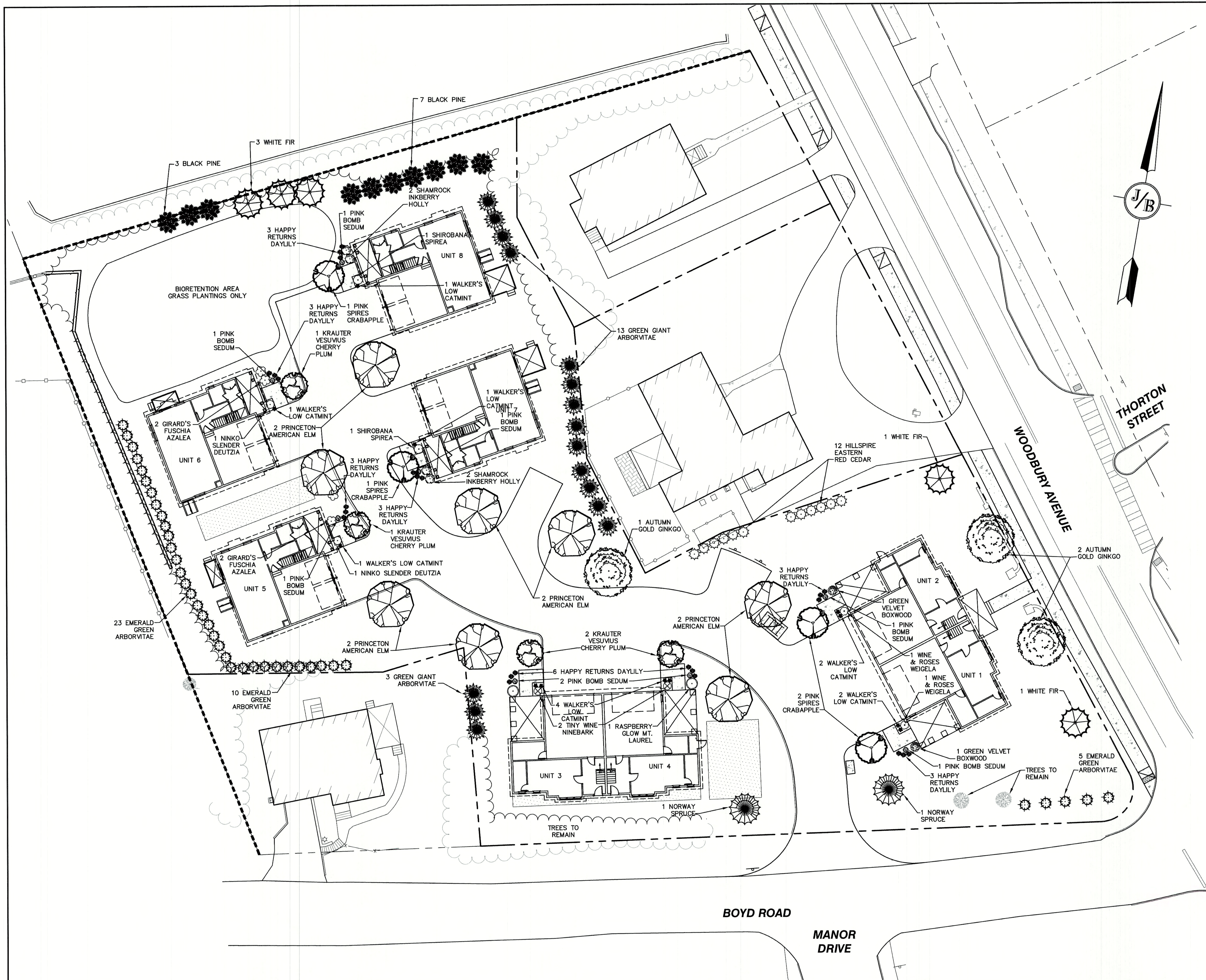
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894

LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.

P2

SHEET 9 OF 20
JBE PROJECT NO. 21254



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 D5.

Quantity	Botanical Name	Common Name	Size
	TREES		
5	Abies concolor	WHITE FIR	7-8 FT. HT.
3	Ginkgo biloba 'Autumn Gold'	AUTUMN GOLD GINKGO	3" CALIPER
12	Juniperus virginiana 'Hillspire'	HILLSPIRE EASTERN RED CEDAR	7-8 FT. HT.
4	Malus x 'Pink Spires'	PINK SPIRES CRABAPPLE	2" CALIPER
2	Picea abies	NORWAY SPRUCE	8-9 FT. HT.
10	Pinus nigra	BLACK PINE	7-8 FT. HT.
4	Prunus cerasifera 'Krauter Vesuvius'	KRAUTER VESUVIUS CHERRY PLUM	2" CALIPER
34	Thuja occidentalis 'Smaragd Emerald'	EMERALD GREEN ARBORVITAE	5-6 FT. HT.
16	Thuja plicata 'Green Giant'	GREEN GIANT ARBORVITAE	7-8 FT. HT.
8	Ulmus americana 'Princeton'	PRINCETON AMERICAN ELM	3" CALIPER
	SHRUBS		
4	Azalea 'Girard's Fuchsia'	GIRARD'S FUCHSIA AZALEA	5 GALLON
2	Buxus 'Green Velvet'	GREEN VELVET BOXWOOD	5 GALLON
2	Deutzia gracilis 'Nikko'	NIKKO SLENDER DEUTZIA	3 GALLON
4	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 GALLON
2	Kalmia latifolia 'Raspberry Glow'	RASPBERRY GLOW MT LAUREL	5 GALLON
2	Physocarpus opulifolius 'SMNPOTW'	TINY WINE NINEBARK	3 GALLON
2	Spiraea japonica 'Shirobana'	SHIROBANA SPIREA	3 GALLON
2	Weigela florida 'Alexandra'	WINE & ROSES WEIGELA	3 GALLON
	PERENNIALS		
24	Hemerocallis 'Happy Returns'	HAPPY RETURNS DAYLILY	1 GALLON
12	Nepeta x faassenii 'Walker's Low'	WALKER'S LOW CATMINT	1 GALLON
8	Sedum 'Pink Bomb'	PINK BOMB SEDUM	1 GALLON

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
L1
SHEET 10 OF 20
JBE PROJECT NO. 21254

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Calvin Wall

TMSLIGHTING
ESTABLISHED 1923

Features

- Provides excellent coverage and uniformity with cut-off
- Practical and aesthetic options for application and design flexibility
- Weatherproof construction to withstand the elements
- Quality components combined with the most current technology for high efficiency and reduced lighting costs

Applications

The Calvin wall-mount luminaire is ideal for illuminating areas where localized distribution is necessary, such as doorways and entrances, laneways, patios and could provide adequate night time security lighting. It lends itself to commercial, and industrial applications that could benefit from materials and maintenance cost reductions. Calvin could either augment the existing lighting, or illuminate a small to medium-sized area.

Calvin is also available as a pendant-style model.

Construction

High grade spun aluminum, brushed solid copper, or brushed 316L stainless steel reflector, with stainless steel mounting hardware, for indoor and outdoor applications.

Lamp

Operates with Cree™ LED (19W max.), compact fluorescent (42W max.), metal halide (100W max.), or incandescent (150W max.). Specify 3000K, 3500K or 4000K CCT for LED systems. A dimmable, screw-type, 17W LED lamp is also available (PAR 38, E26 base, 120V, 4000K CCT).

Note: LED systems are available with 120-277V supply voltage only.

LED modules do not require a socket, and are wired directly to the integral driver.

Incandescent and metal halide systems, and those using the 17W LED PAR 38 lamp, use a medium base socket (E26).

Diffuser

Globe: clear and prismatic, elongated, glass globes are available.

Lens: the clear, flat lens provides slight diffusion, and protects any components located in the reflector.

Note: G3 is used with 100IN, 32CF, and 15LED max.

Only prismatic globes are compatible with LED systems.

Globes are not available with the 17W LED PAR 38 lamps.

Option

Wire Guard: a steel, chrome-plated wire guard is available for lamp protection against light projectiles, wildlife, and serves as a vandal deterrent.

Ballast/LED Driver

Ballasts are efficient with a high power factor greater than 90%, and quiet with an "A" sound rating.

The LED source is controlled by an advanced electronic driver that delivers consistent power.

Ballast and LED drivers are electronic, and available for integral and remote mounting, indoor or outdoor.

IP23

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
—⊙	8	W	Single	2W-O-15LED-30K-120-WM-CXX / WALL MTD 9' AFG

LIGHTING AND ELECTRICAL NOTES:

1. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER CITY 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.

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

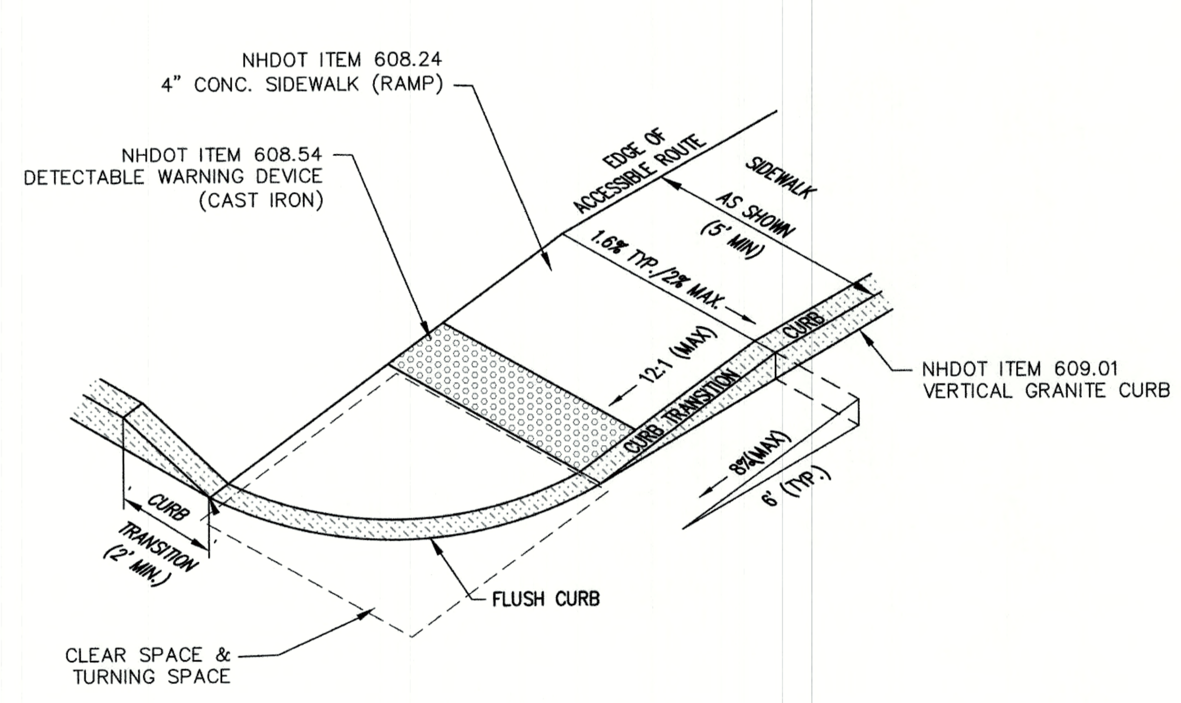
STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No.16670
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

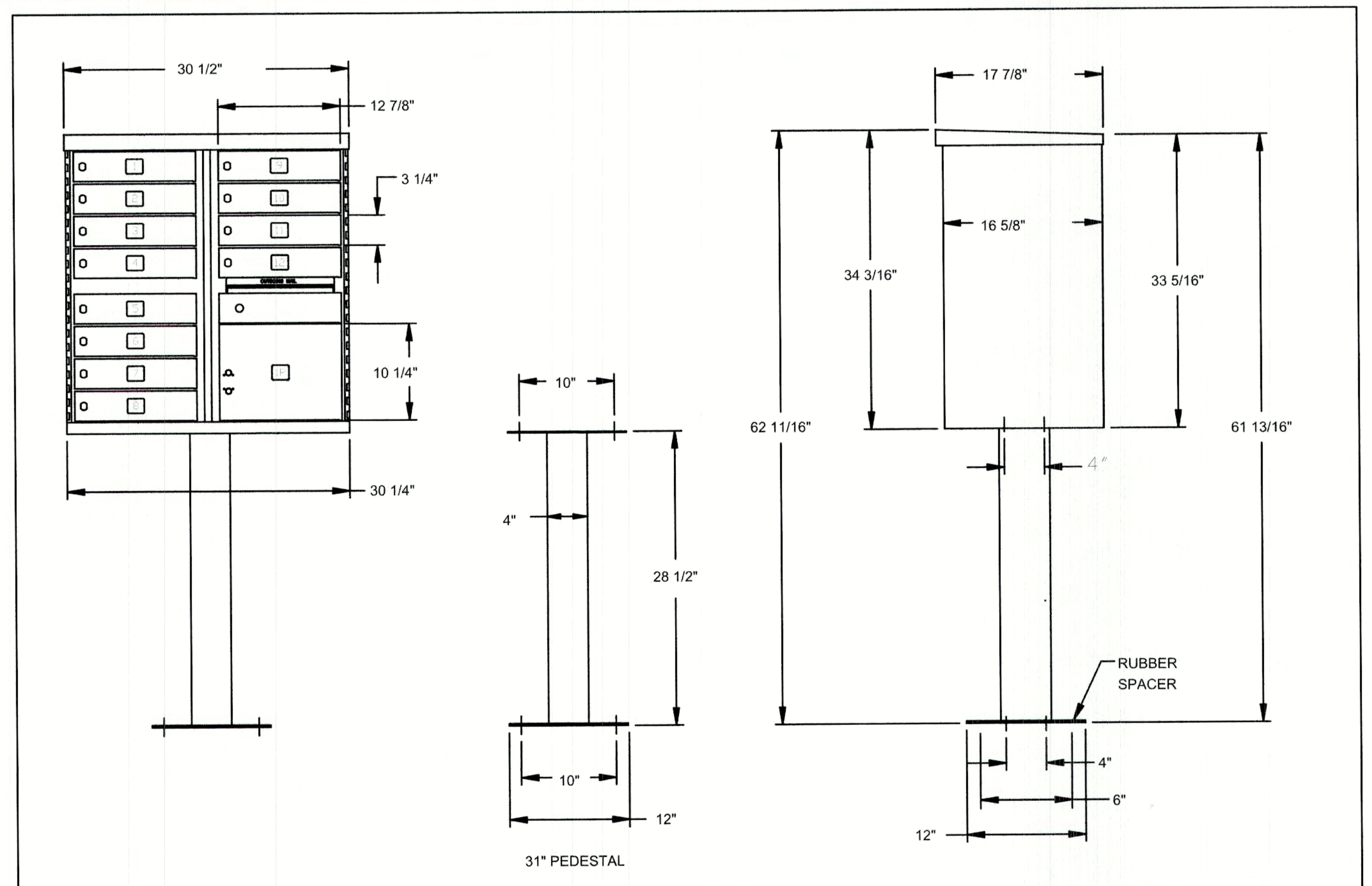
DRAWING No.
L2
SHEET 11 OF 20
JBE PROJECT NO. 21254



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)

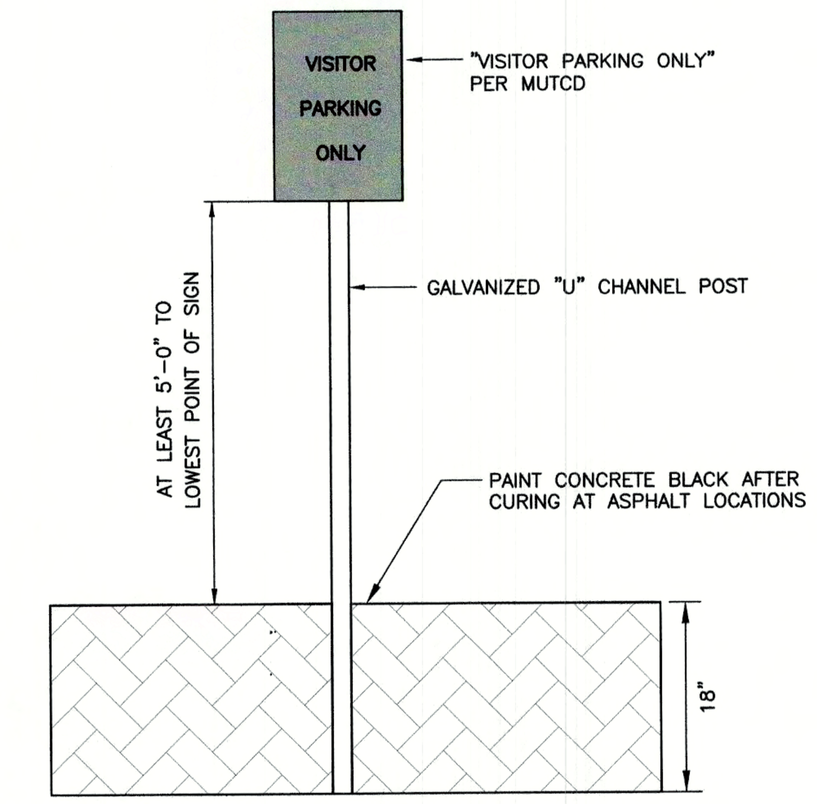
NOT TO SCALE



POSTAL PRODUCTS UNLIMITED, INC.™ A Division of American Postal Manufacturing, Inc. Phone. 1-800-229-4500 800 W. Oklahoma Ave. Milwaukee, WI 53207-2649	Product: Type II CBU with Pedestal – Front Loading – N1027875	
	Distribution: USPS Approved	Finish: Powder Coat
	Mounting: Pedestal	Total Mailboxes: 12 Doors – 1 Locker
	Date: 02/02/06 Scale: NONE	Drawn By: CDO Checked By: AJK

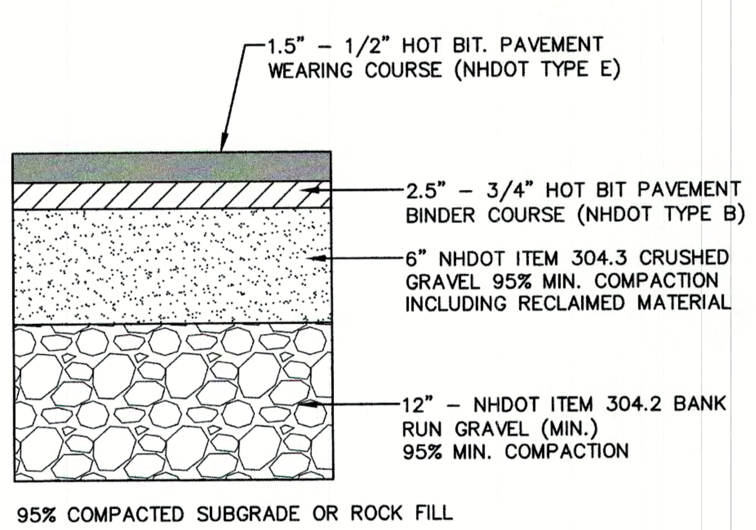
CLUSTER MAILBOX UNIT DETAIL

NOT TO SCALE



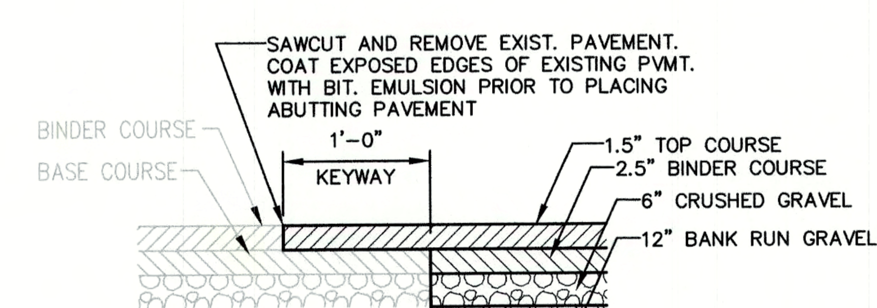
VISITOR PARKING SIGN

NOT TO SCALE



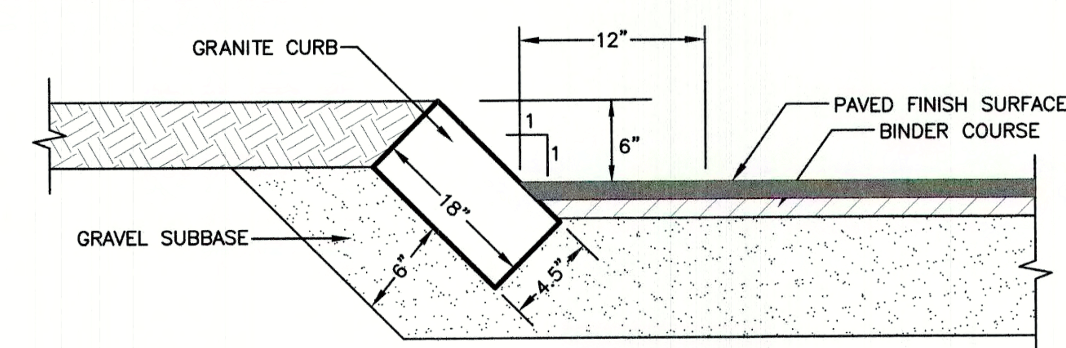
TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE



KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

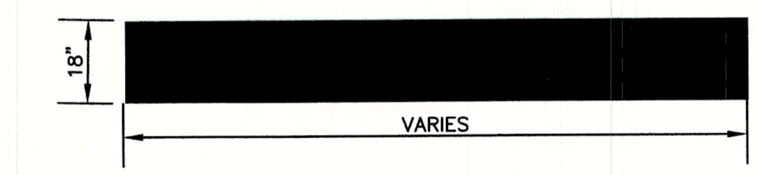
NOT TO SCALE



NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPED GRANITE CURB

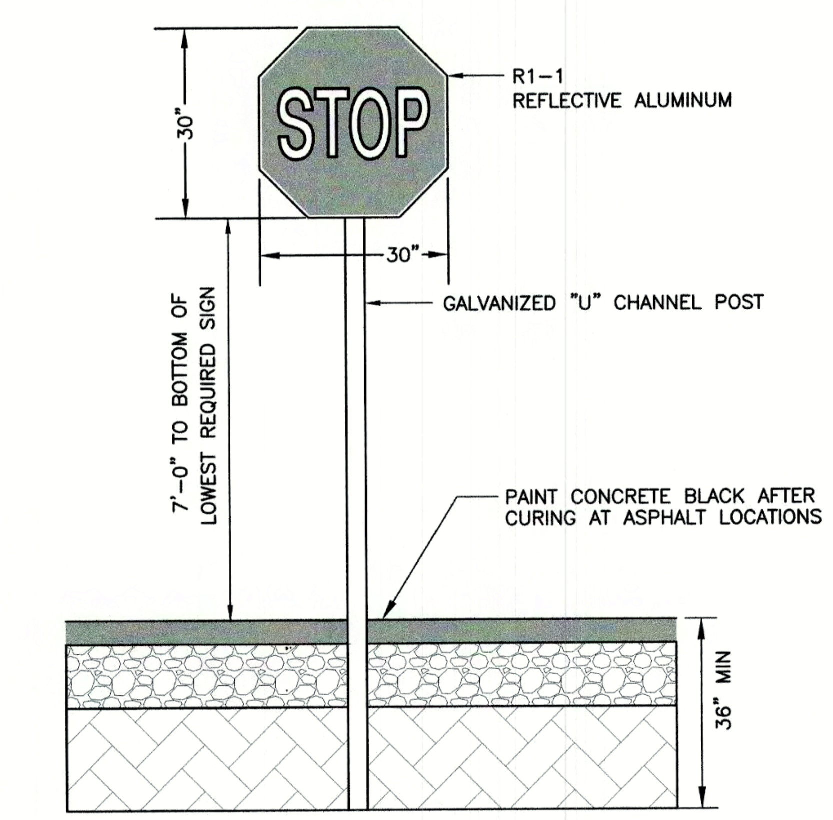
NOT TO SCALE



NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

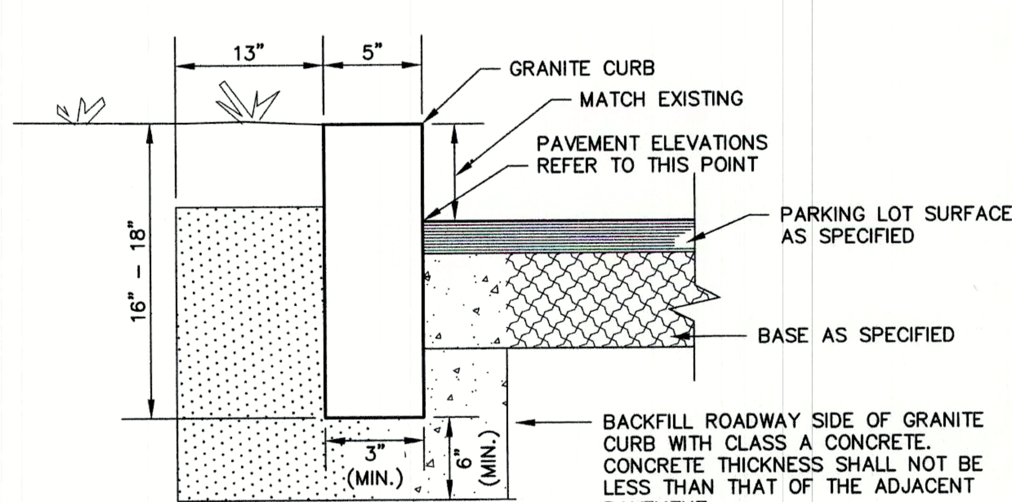
NOT TO SCALE



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.

STOP SIGN (R1-1)

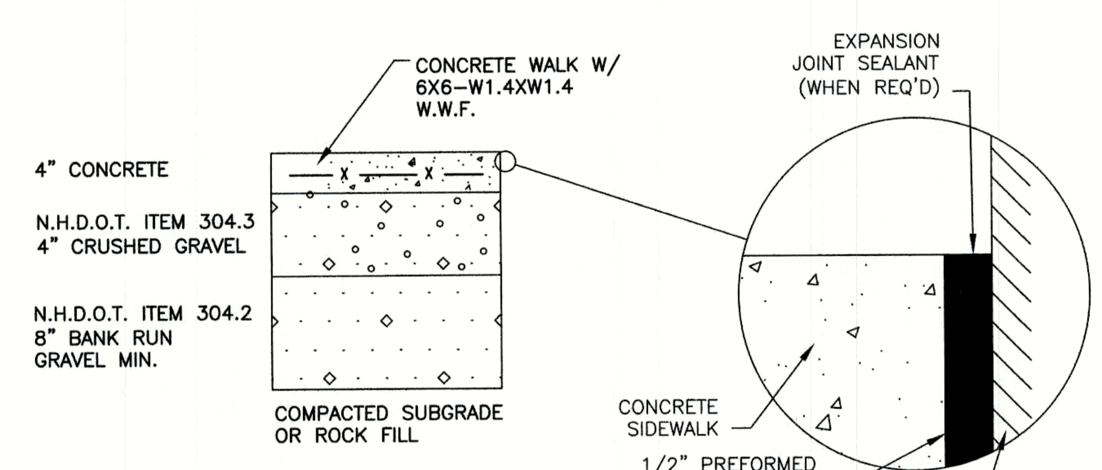
NOT TO SCALE



NOTES
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. PROPOSED VERTICAL GRANITE CURB ALONG WOODBURY AVE. AT CURB CUT TO BE REMOVED SHALL MEET THE REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS SECTION 609.

VERTICAL GRANITE CURB

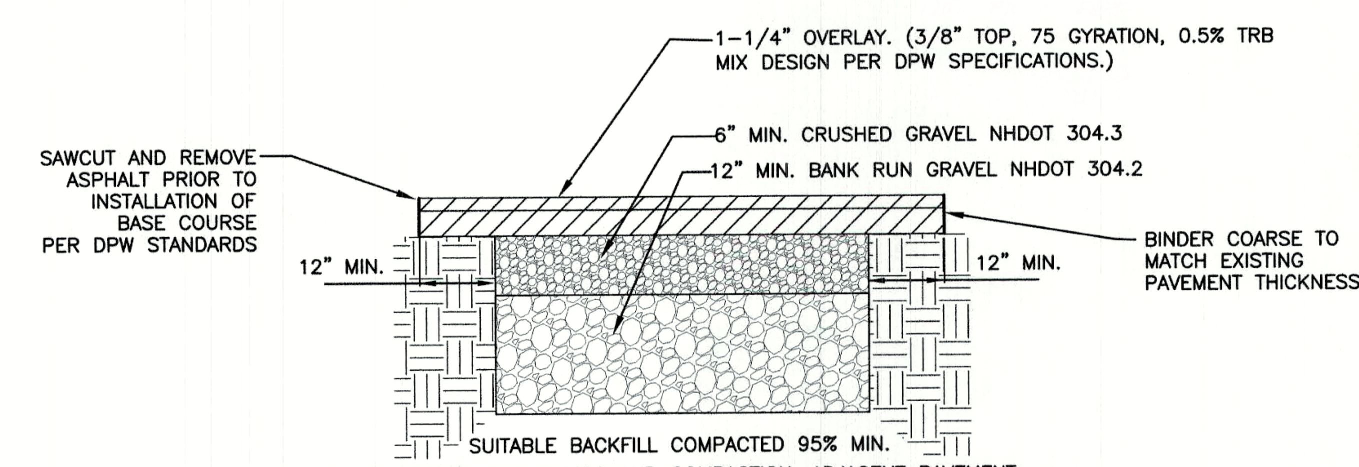
NOT TO SCALE



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.

CONCRETE SIDEWALK

NOT TO SCALE



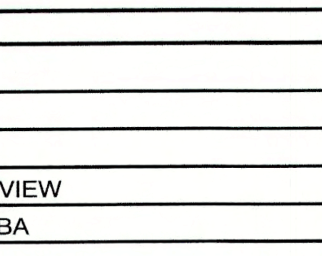
1. AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
2. INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
3. INSTALL SURFACE COURSE OF ASPHALT PAVING.
4. APPLY 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.

TYPICAL PAVEMENT REPAIR DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-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
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

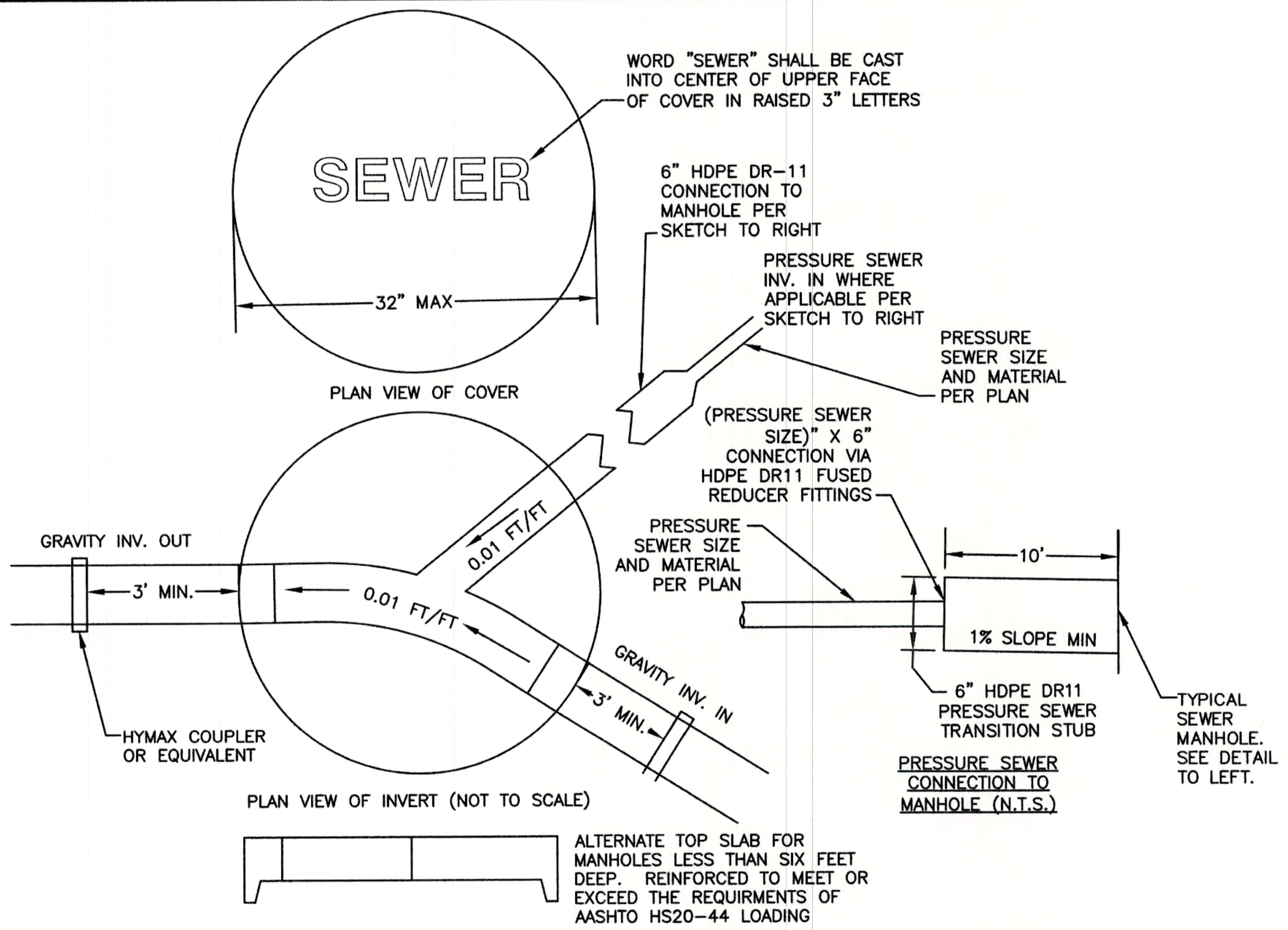
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

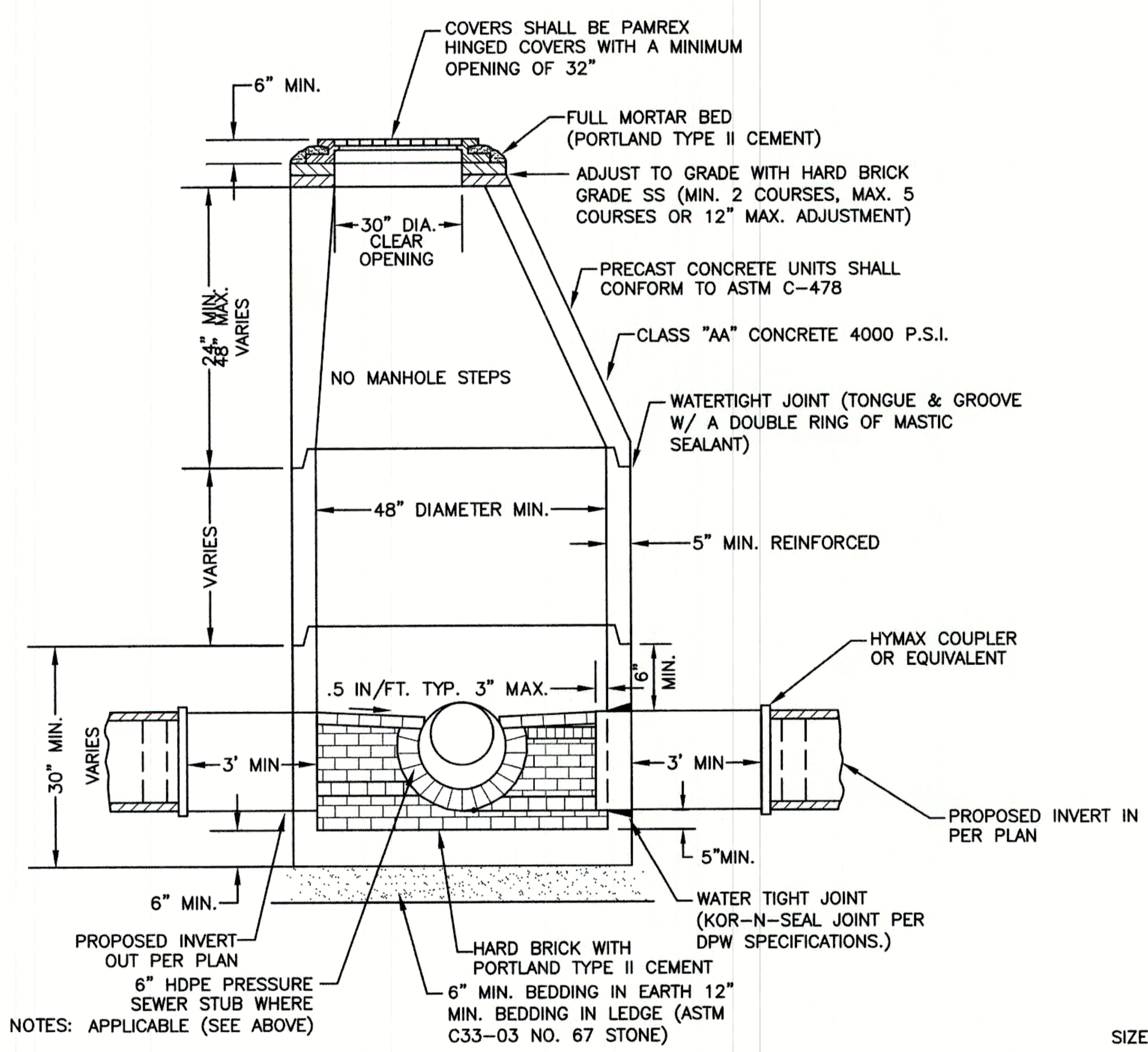
Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No.

D1

JBE PROJECT NO. 21254



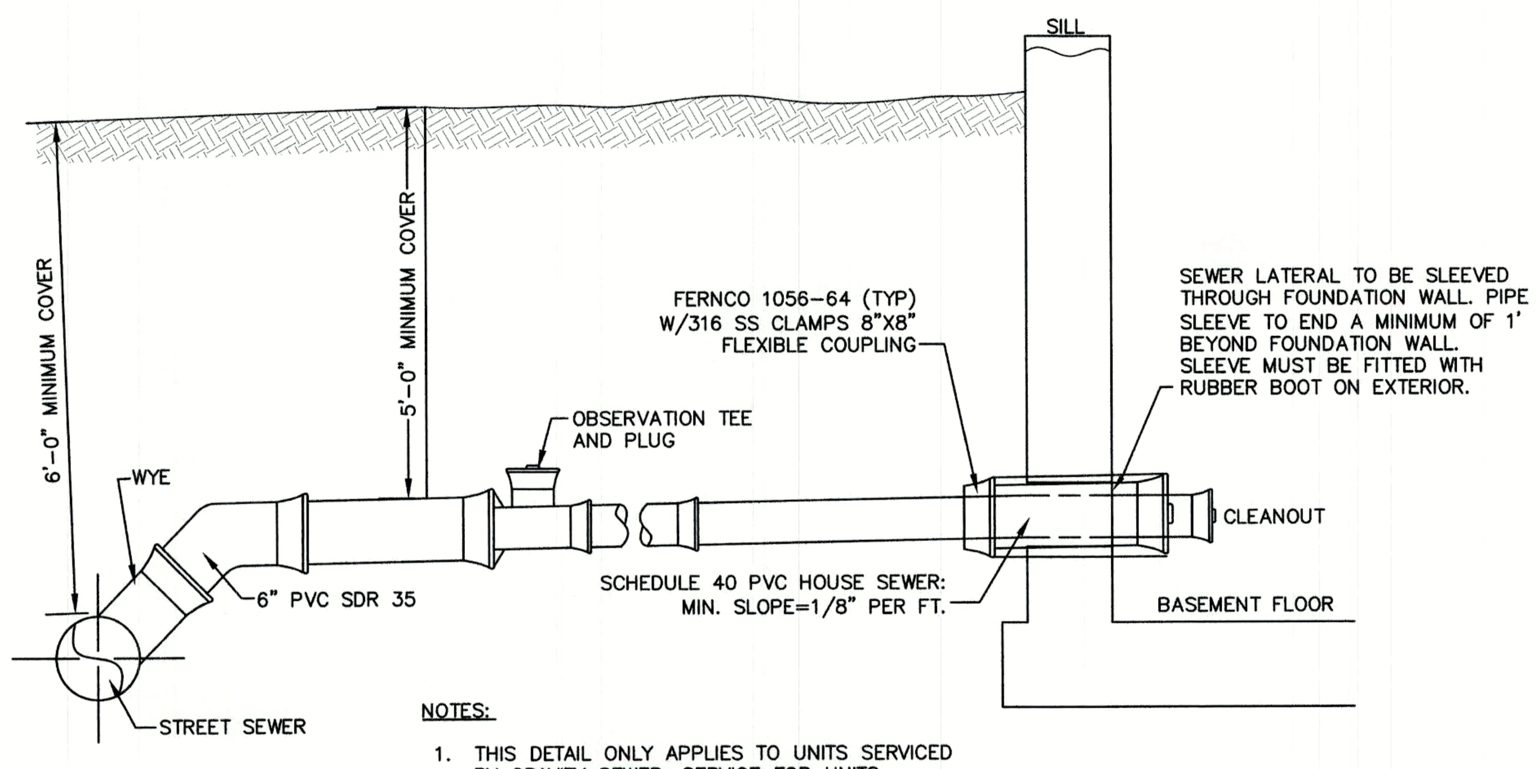


NOTES: APPLICABLE (SEE ABOVE)

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

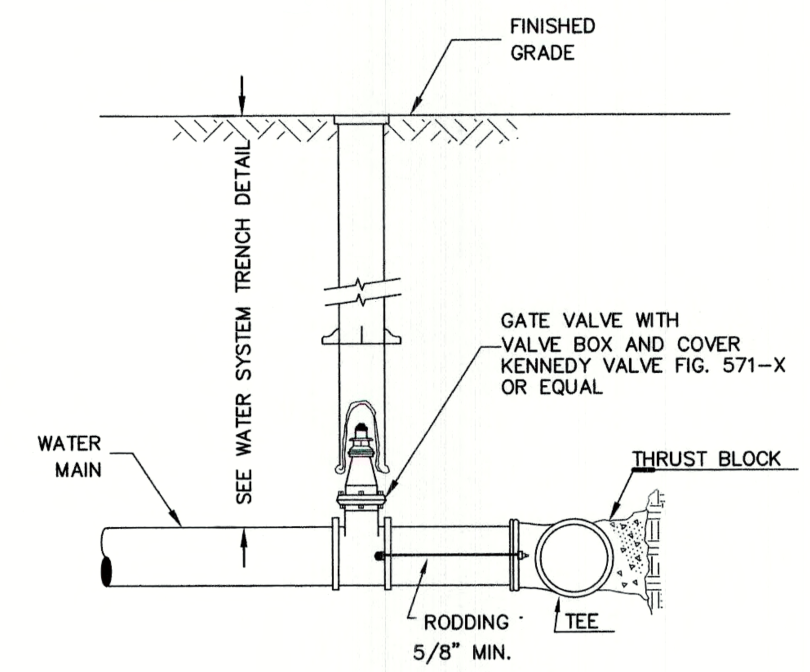


NOTES:

1. THIS DETAIL ONLY APPLIES TO UNITS SERVICED BY GRAVITY SEWER. SERVICE FOR UNITS SERVICED BY LOW PRESSURE SEWER SHALL FOLLOW E-ONE DETAILS ON SHEET D3.

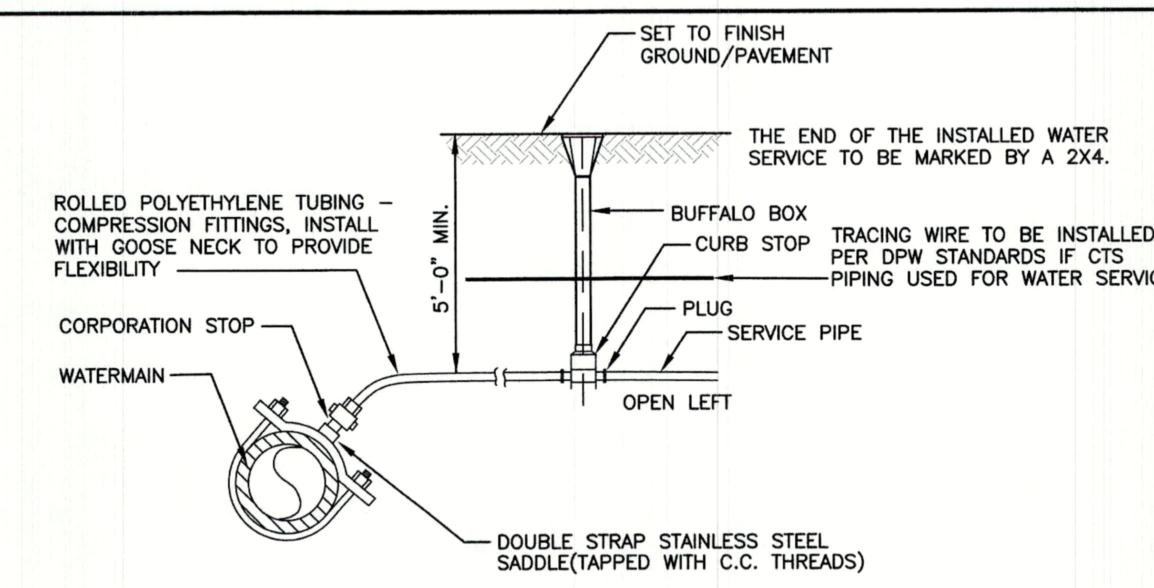
HOUSE SEWER SERVICE

NOT TO SCALE



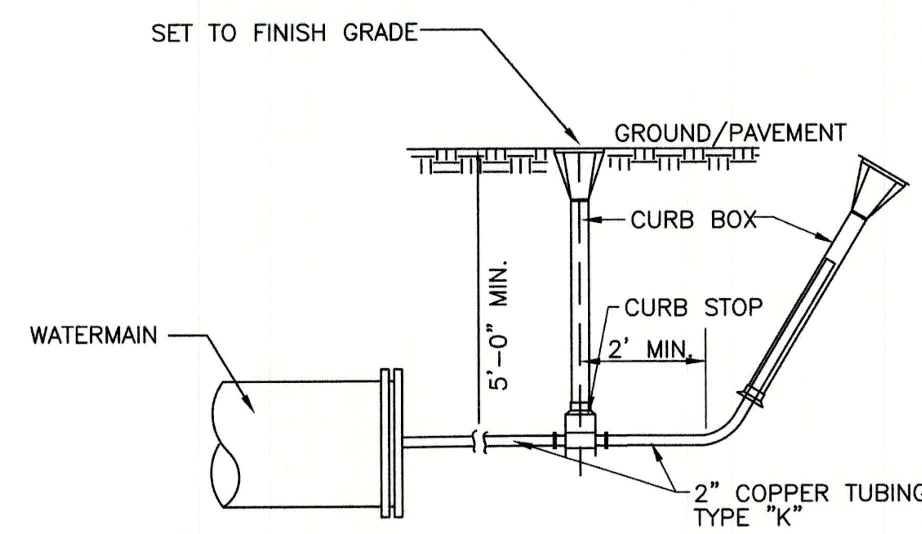
BURIED GATE VALVE DETAIL

NOT TO SCALE



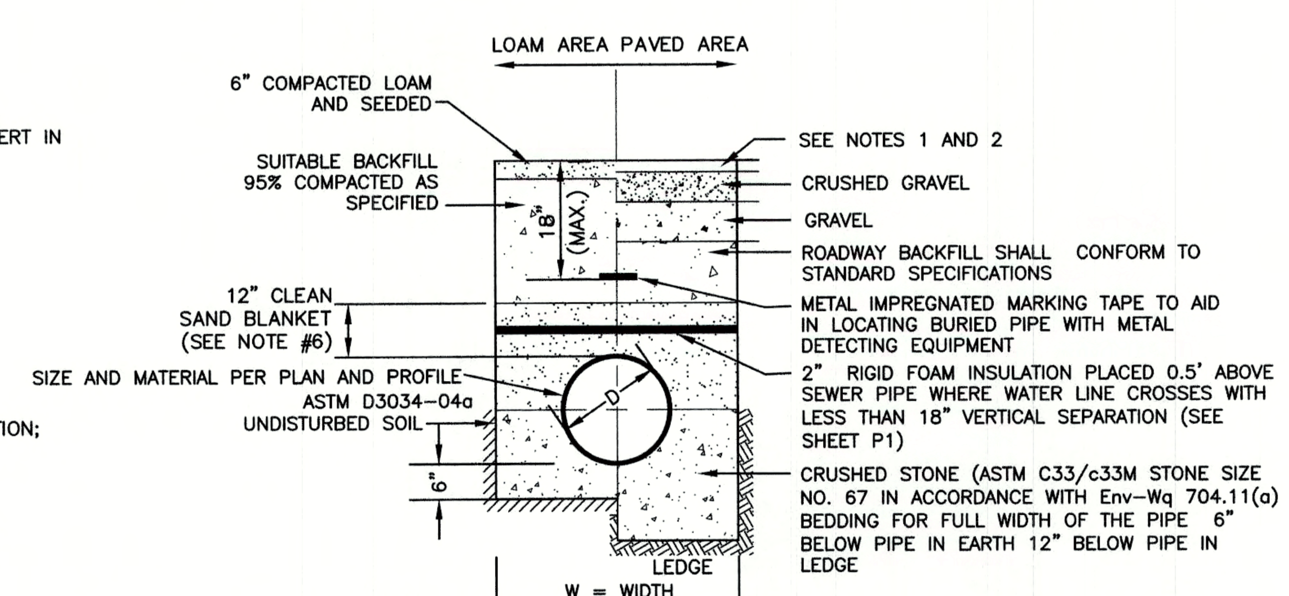
WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



TYPICAL WATER MAIN BLOW OFF DETAIL

NOT TO SCALE

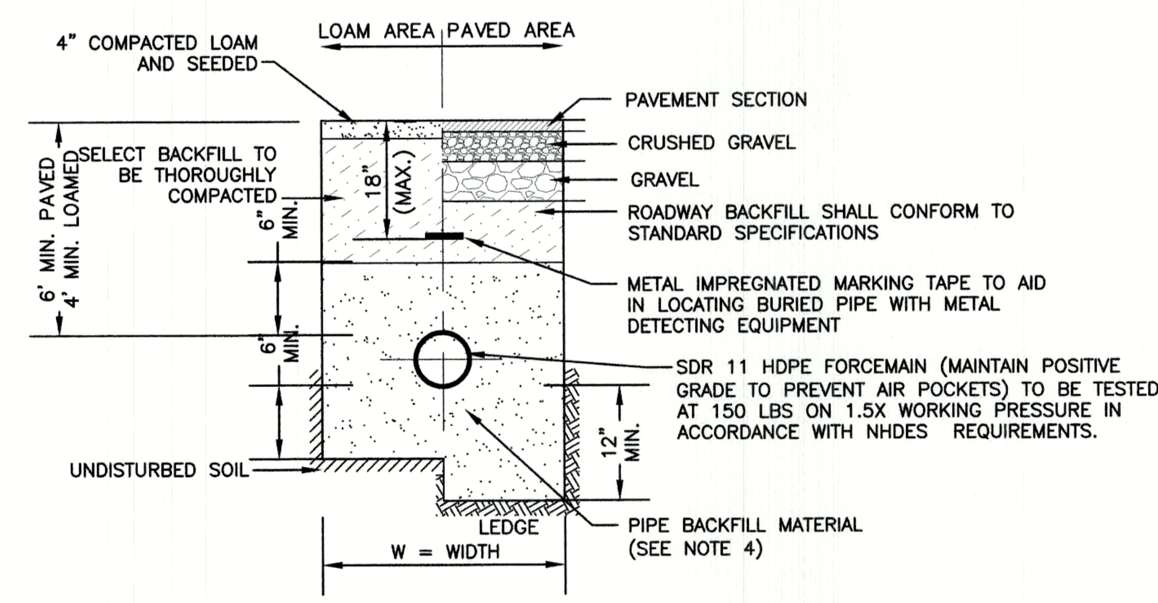


NOTES:

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

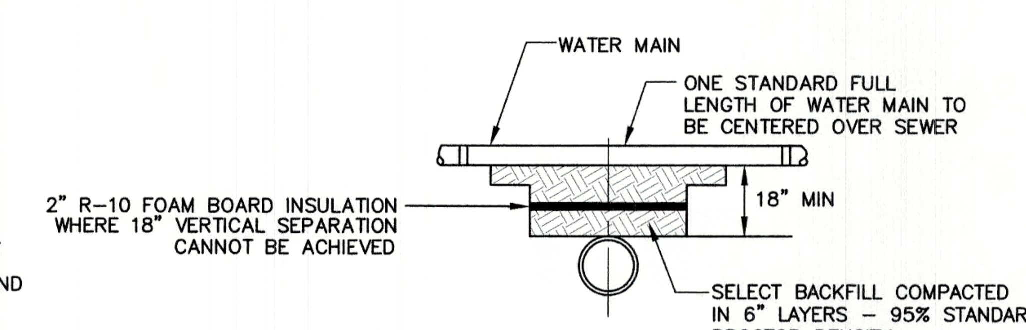


NOTES:

1. ALL JOINTS TO BE MECHANICALLY RESTRAINED.
2. W=MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. W SHALL BE NO MORE THAN 36"
3. SAND BEDDING AND BLANKET SHALL BE CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90-100% PASSES A 1/2 INCH SIEVE AND NO MORE THAN 15% WILL PASS A #200 SIEVE.

FORCE MAIN SEWER TRENCH

NOT TO SCALE

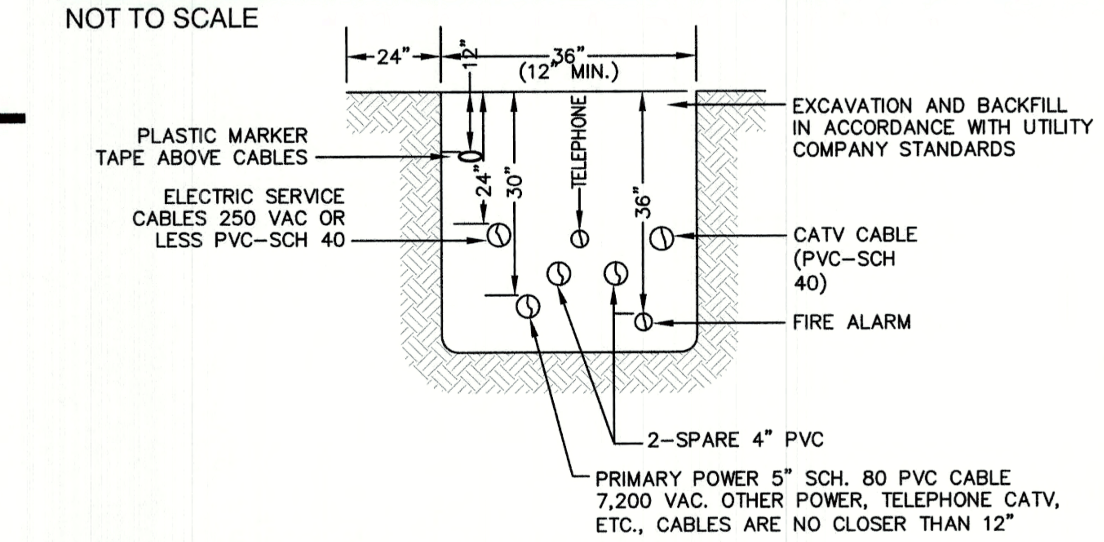


SEPARATION NOTES:

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 HORIZONTALLY FROM THE WATER MAIN.

TYPICAL WATER / SEWER SEPARATION

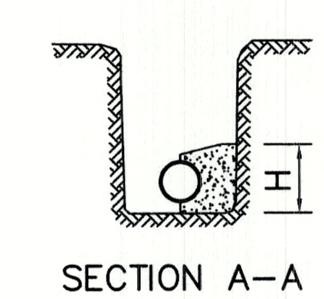
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

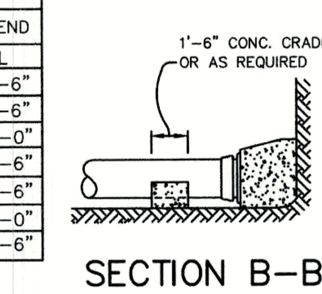
UTILITY TRENCH

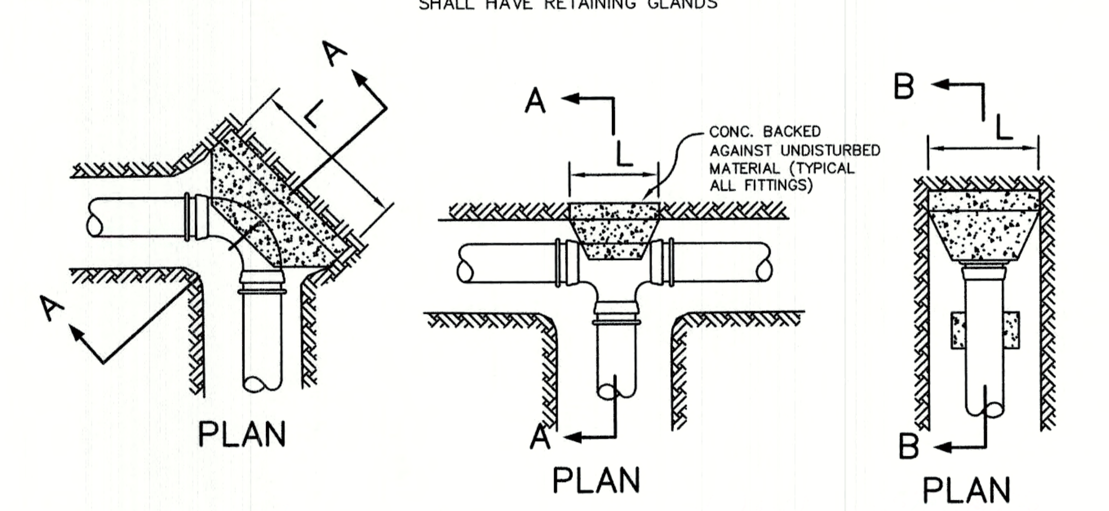
NOT TO SCALE



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

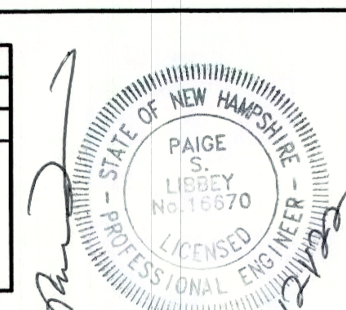




THRUST BLOCK DETAILS

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		



REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: "GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

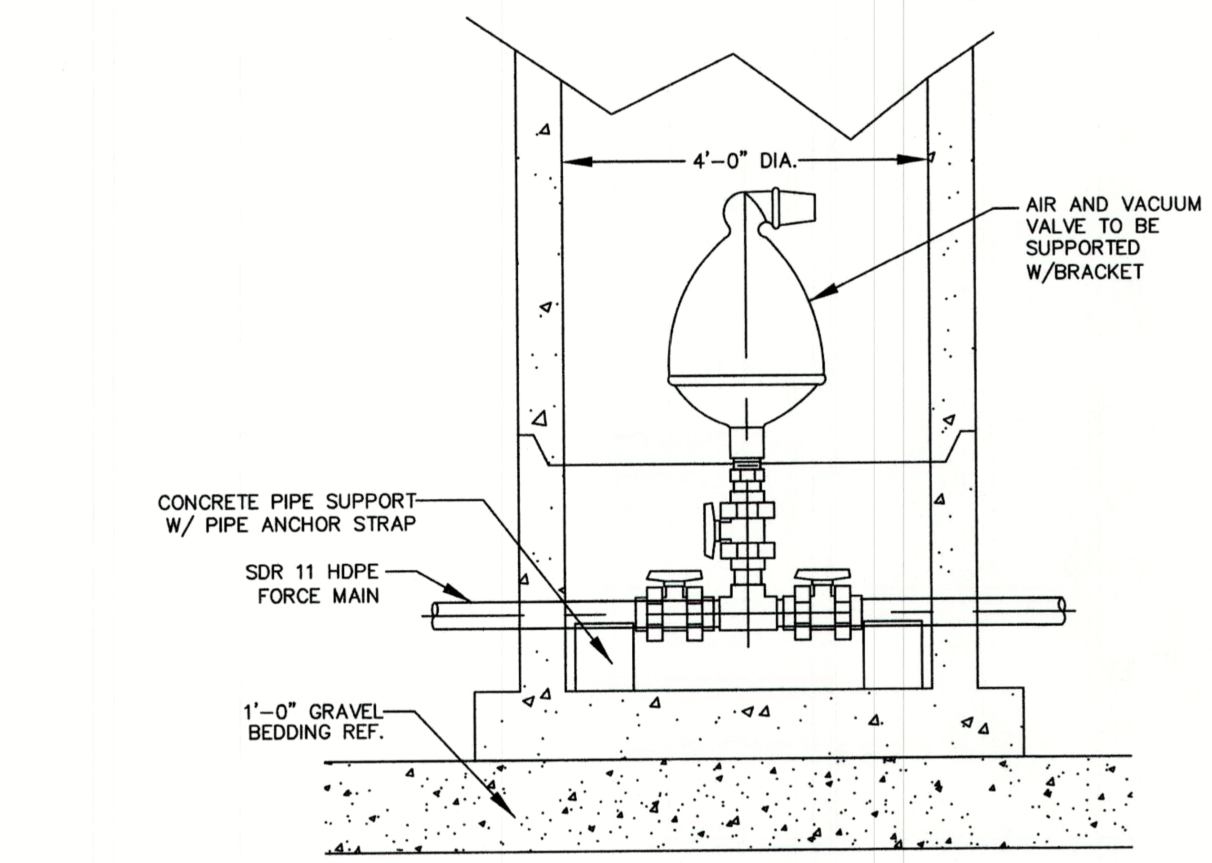
Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894

LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.

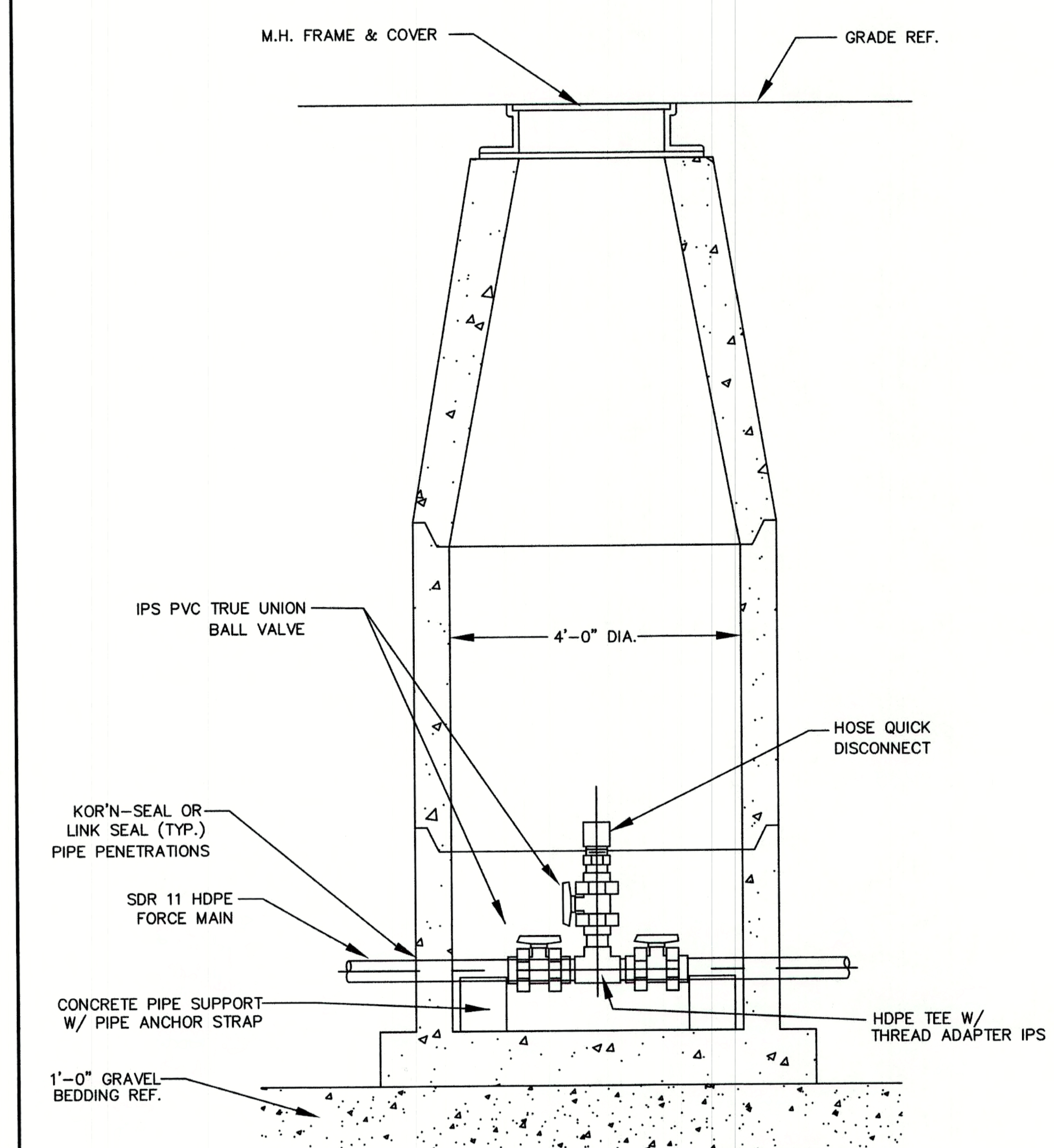
D2

SHEET 13 OF 20
JBE PROJECT NO. 21254



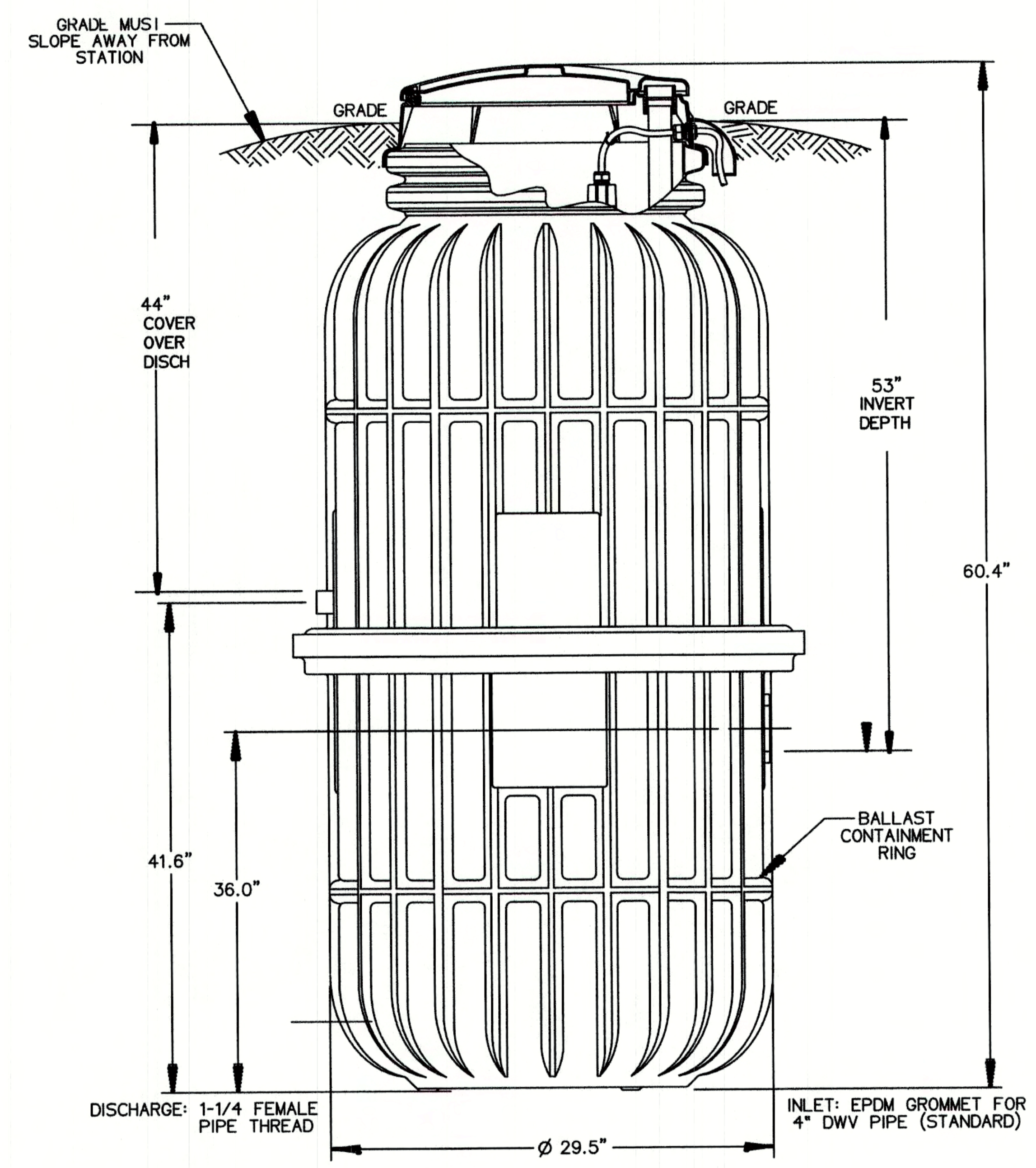
TERMINAL FLUSHING MANHOLE - OPTIONAL ELEV. VIEW

NOT TO SCALE



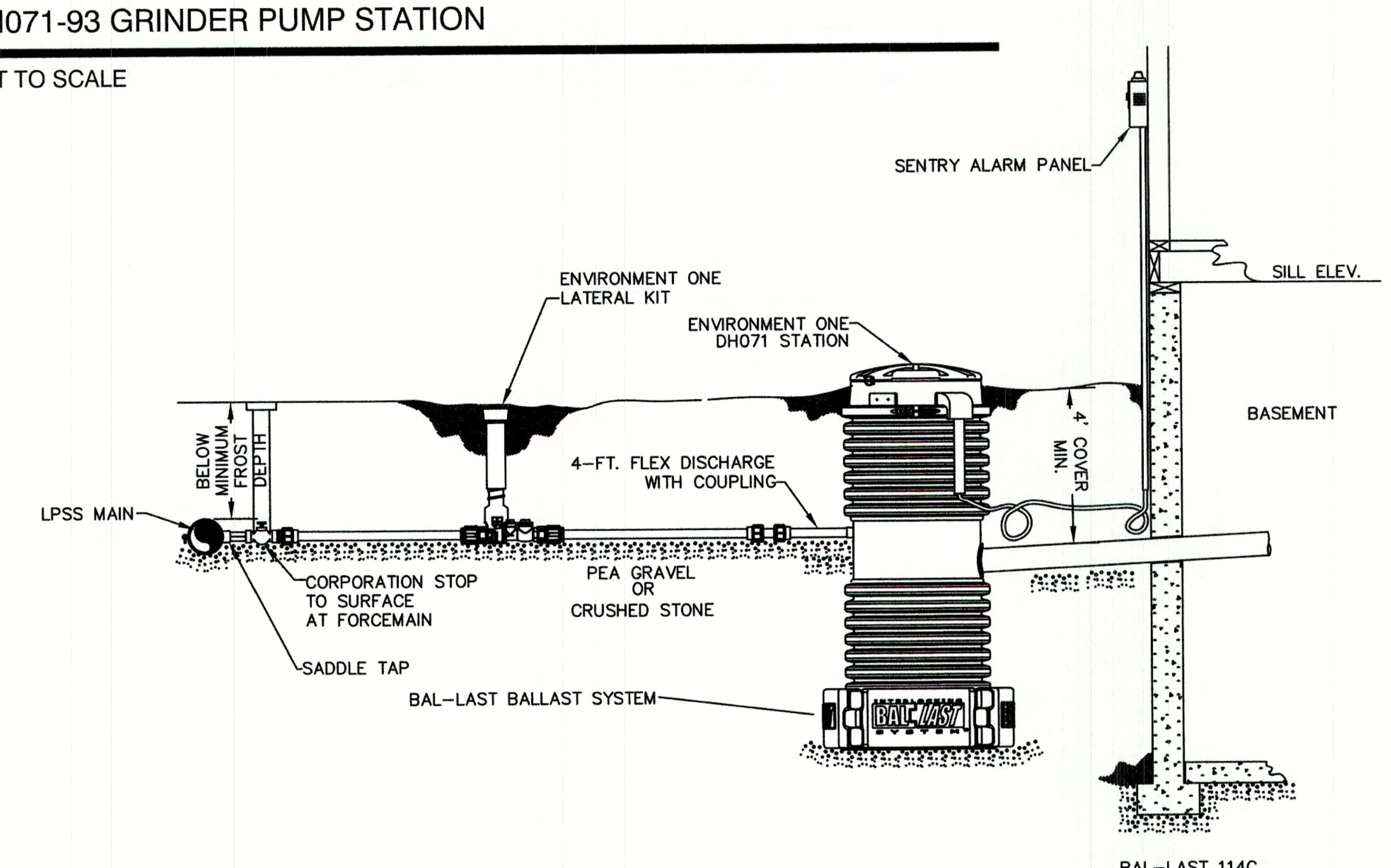
TERMINAL FLUSHING MANHOLE

NOT TO SCALE



DH071-93 GRINDER PUMP STATION

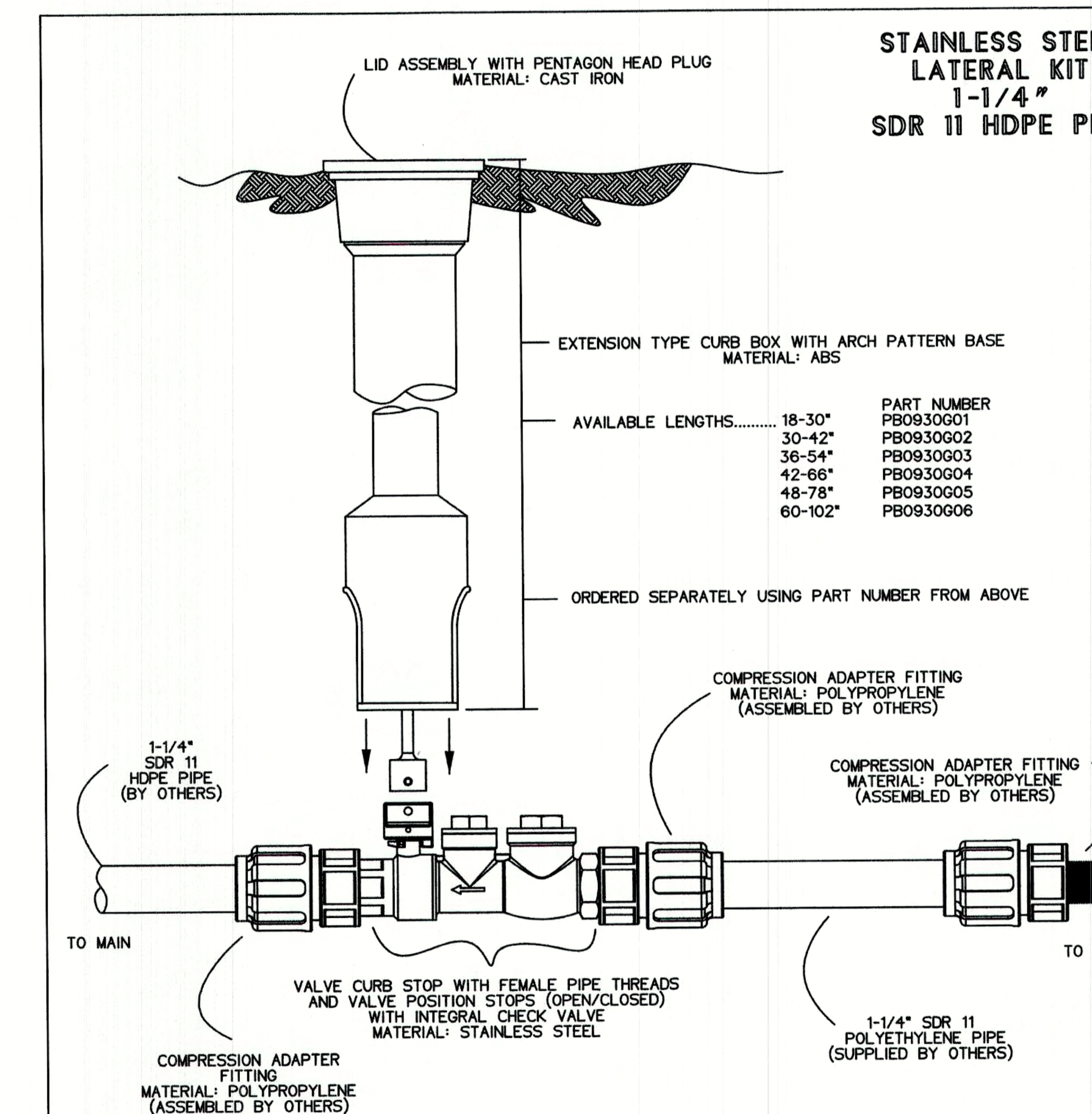
NOT TO SCALE



TYPICAL PUMP AND BALLAST INSTALLATION

NOT TO SCALE

STAINLESS STEEL LATERAL KIT 1-1/4" SDR 11 HDPE PIPE



NOTES:

1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND A LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
   *FOR SS FITTING INTO SS THREAD, USE PIPE DOPE OR TEFLON TAPE, NOT BOTH
3. ASSEMBLY IS TO BE PRESSURE TESTED (BY OTHERS)
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE
5. TO ORDER SS LATERAL KIT, USE PART NUMBER NC0193G01
6. CURB BOX IS TO BE ORDERED SEPARATELY, SEE ABOVE

KIT PARTS ARE NOT ASSEMBLED

SGS	DN	11/02/11	B	3/16
DR BY	CHK'D	DATE	ISSUE	SCALE

eone SEWER SYSTEMS

STAINLESS STEEL LATERAL KIT 1-1/4" SDR 11 HDPE PIPE

NA0330P02

STAINLESS STEEL LATERAL KIT

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-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. 14570 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

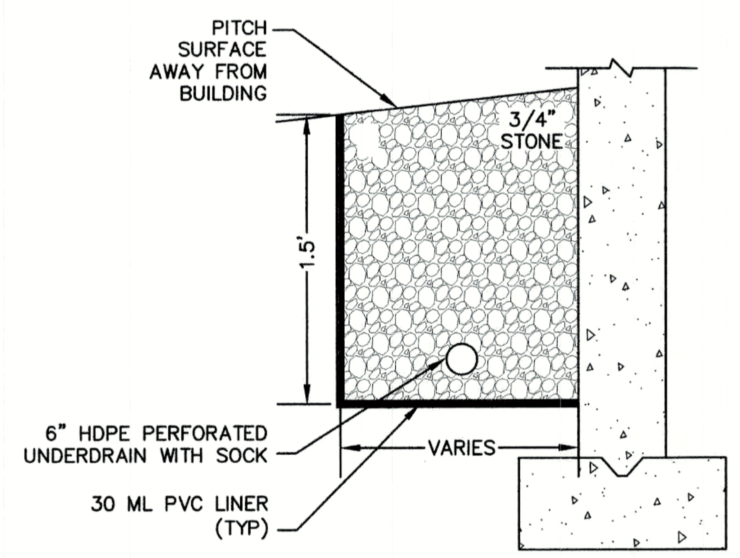
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979 LOT 2: BK 4582 PG 888 LOT 3: BK 3919 PG 1345

DRAWING No.

D3

SHEET 14 OF 20
JBE PROJECT NO. 21254



THE INTENT OF THIS FEATURE IS TO COLLECT ROOF WATER INTO THE PERFORATED UNDERDRAIN. LINE SYSTEM AS SPECIFIED TO PREVENT INFILTRATION.

LINED DRIP EDGE DETAIL

NOT TO SCALE

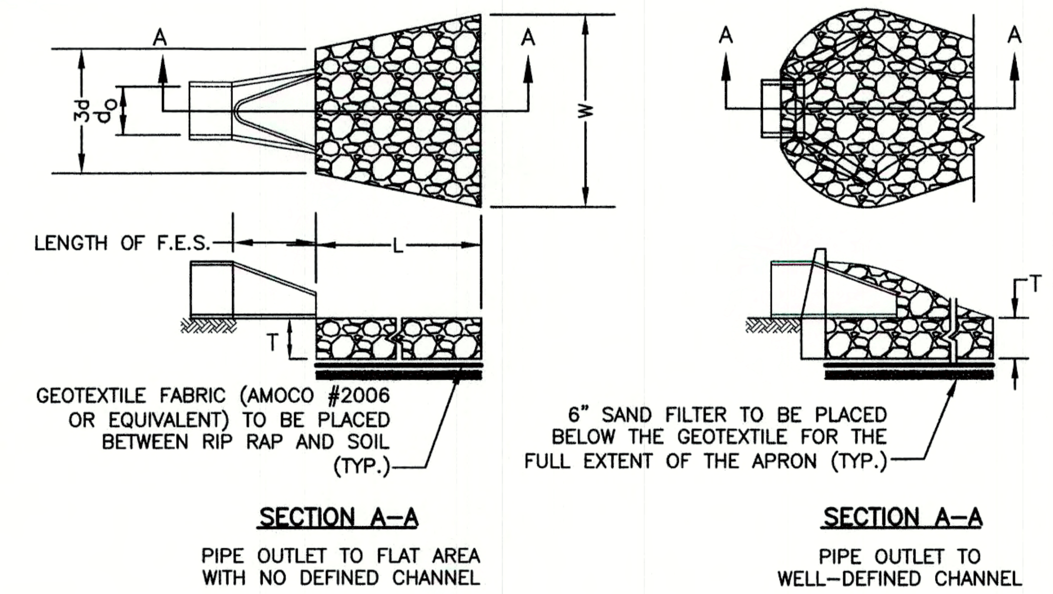


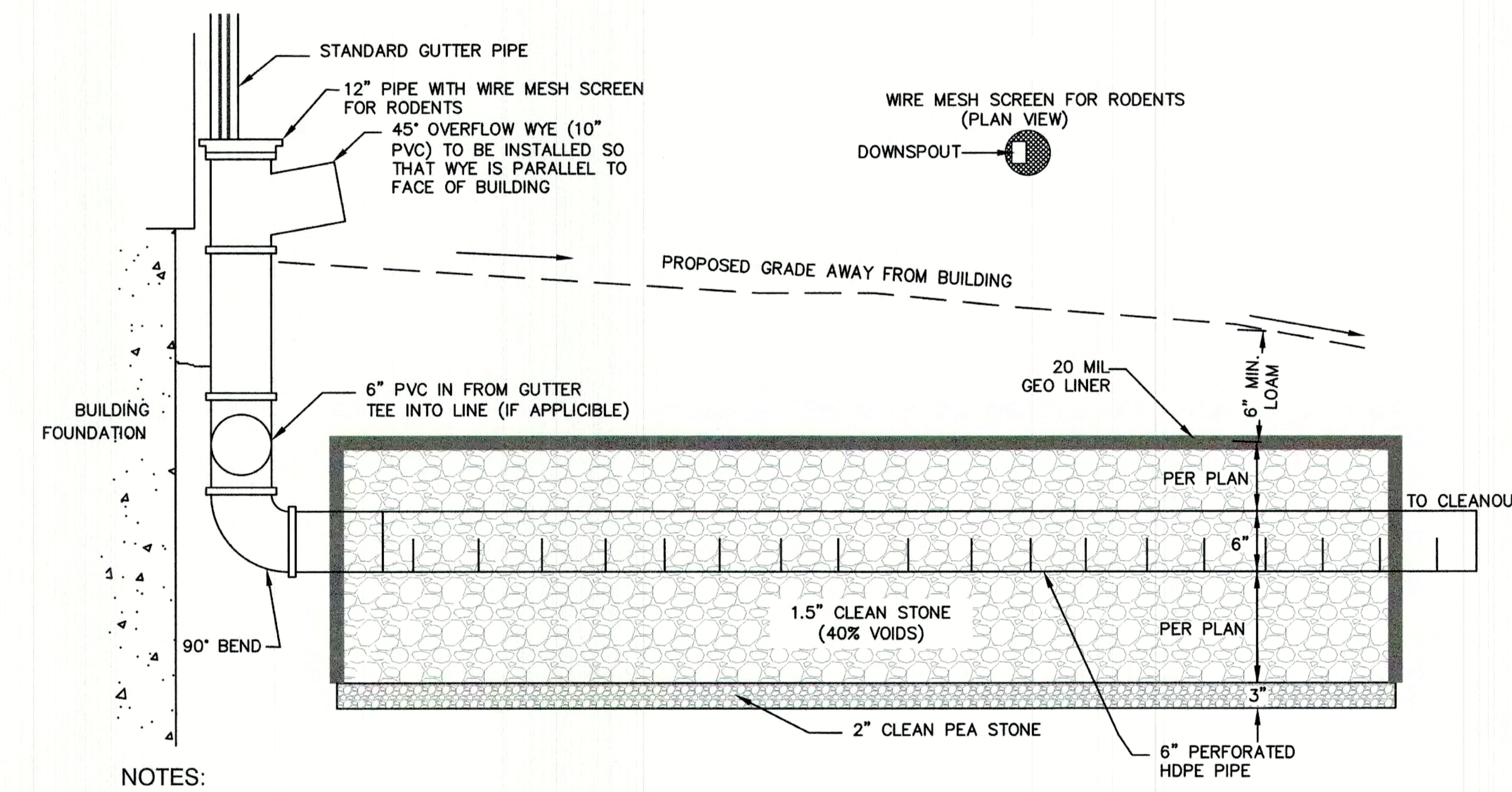
TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES		
THICKNESS OF RIP RAP = 1.5 FEET		
d50 SIZE= 0.25	FEET	3 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	5	6
85%	4	5
50%	3	5
15%	1	2

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



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. KEEP HEAVY VEHICLES FROM DRIVING OR PARKING OVER THE SYSTEM.
4. 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.
5. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
6. 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.
7. OVERFLOWS ARE TO BE INSTALLED ON EXTERIOR DOWNSPOUT LEADERS ONLY.

HOUSE ROOF INFILTRATION DETAIL

NOT TO SCALE

BIORETENTION SYSTEM ELEVATIONS								
BIORETENTION	SIZE OF BOTTOM (S.F.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	SHWT	LEDGE
1	1,543	51.0	49.0	47.5	47.25	46.5	46.25	44.42

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

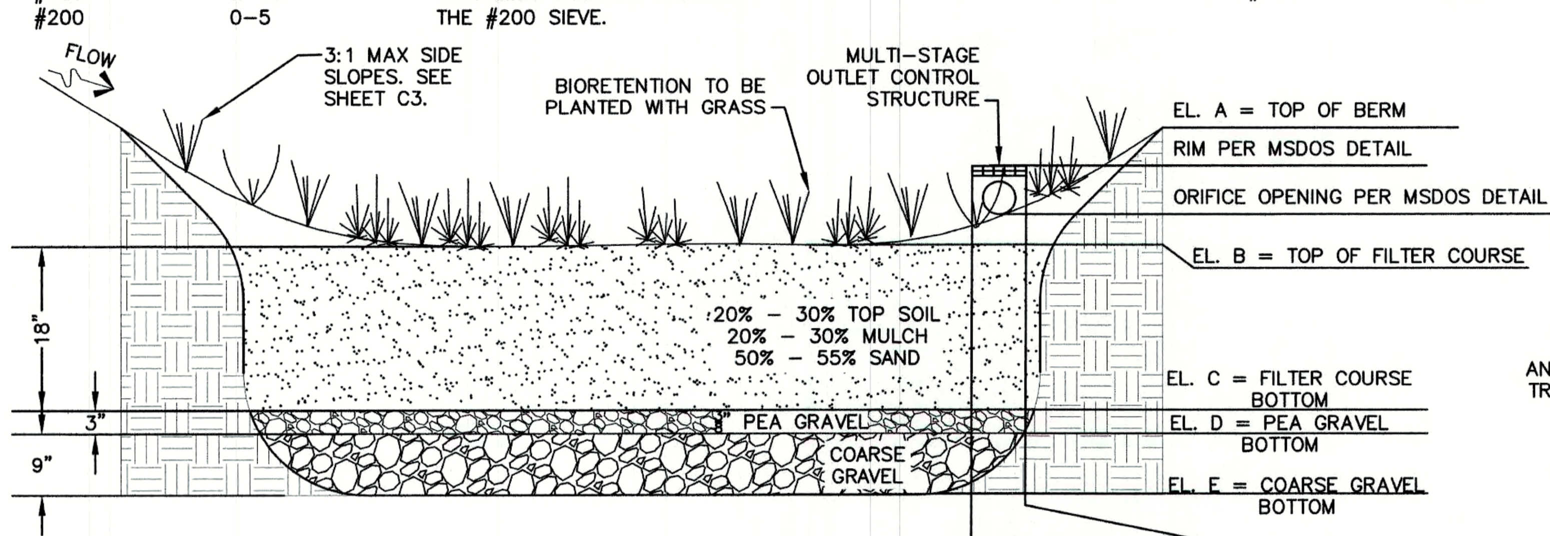
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

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

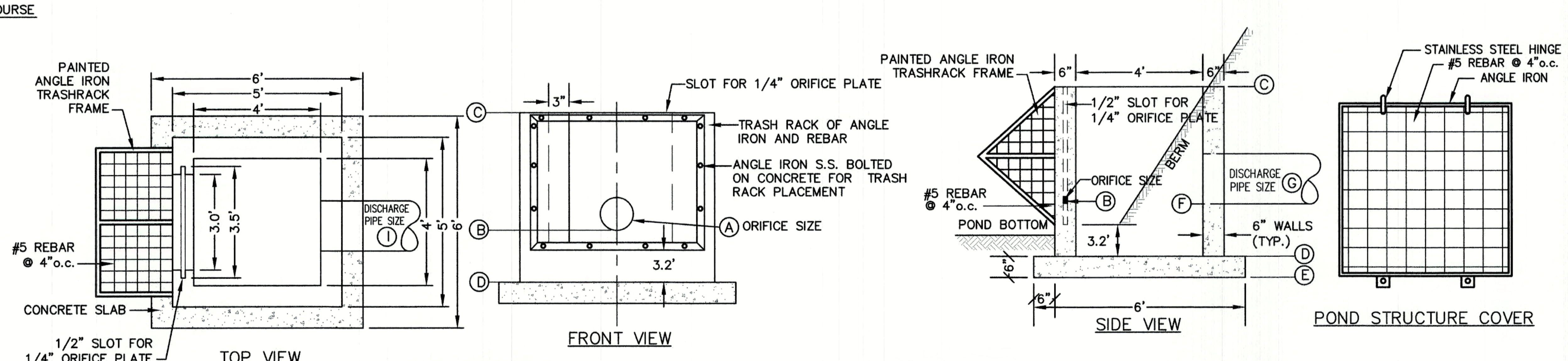
1. DO NOT DIRECT RUNOFF TO THE BIORETENTION SYSTEMS UNTIL IT HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN-OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM

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.
4. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
5. 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.
6. 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.

BIORETENTION SYSTEM

NOT TO SCALE



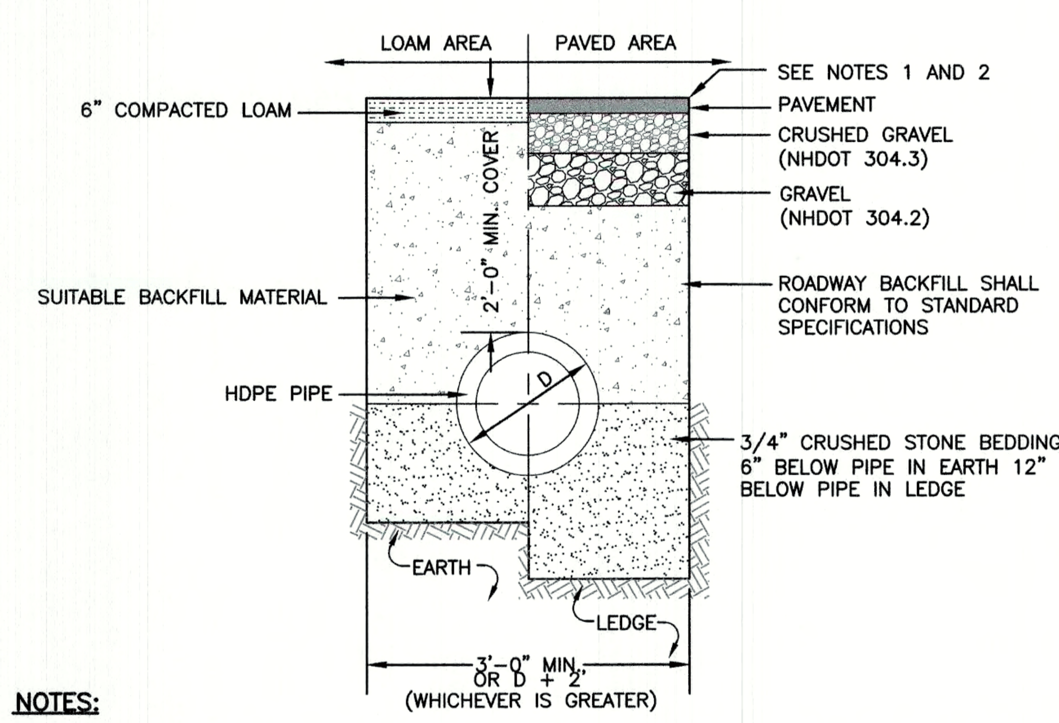
APPROXIMATE LIST OF MATERIALS
1. 3 C.Y. – 5000 PSI CONCRETE
2. 15 ANGLE IRONS @ 4' LENGTH
3. REQUIRED S.S. BOLTS AND FASTENERS
4. 1/4" STEEL PLATE WITH DRILLED ORIFICES
5. 1 C.Y. – CRUSHED STONE FOR BASE
6. 48 #5 REBARS @ 1', 2' AND 3' LENGTHS
7. 32 #4 REBARS @ 4.5' LENGTH

	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ
MSDOS A	8"	49.7	50.7	46.2	45.7	46.4	8"

NOTES:
1. REINFORCING STEEL SHALL CONSIST OF A SINGLE LAYER OF HORIZONTAL AND VERTICAL PLACED #4 REBAR @ 12" O.C.
2. CONCRETE BOX TO BE CONSTRUCTED OR PRECAST OF EQUAL DIMENSIONS AND REINFORCING.
3. CONCRETE SLAB TO BE CONSTRUCTED ALONG WITH BASE. FOR PRECAST BOX, A SLOTTED CONCRETE SLAB TO BE USED.
4. SECTION JOINTS AND PIPE OPENING SHALL BE SEALED WATERTIGHT WITH MORTAR BY CONTRACTOR.
5. ALL EXPOSED REBAR TO BE PAINTED WITH RUST-RESISTANT PAINT, COLOR AT CONTRACTOR'S DISCRETION.
6. TO BE SUPPLIED BY CAPITAL CONCRETE PRODUCTS OF HENNIKER, N.H., (1-603-428-3218) OR EQUAL.
7. STRUCTURE TO HAVE TEMPORARY PLYWOOD INSTALLED IN THE ORIFICE PLATE SLOT UNTIL THE SITE IS STABLIZED.
8. STRUCTURE IS TO BE DESIGNED FOR H20 LOADING.
9. SOIL UNDERLYING THE STRUCTURE IS TO BE COMPACTED TO 95% MODIFIED PROCTOR.

MULTI-STAGE DISCHARGE OUTLET STRUCTURE (MSDOS)

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

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

STATE OF NEW HAMPSHIRE PAIGE S. LIBBEY No. 15670 LICENSED PROFESSIONAL ENGINEER

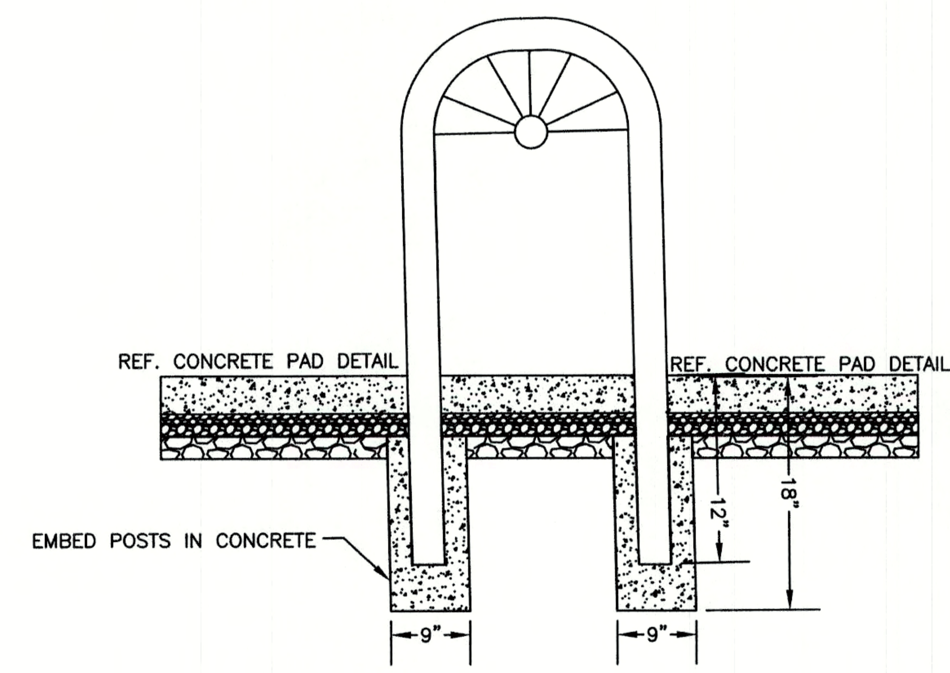
REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

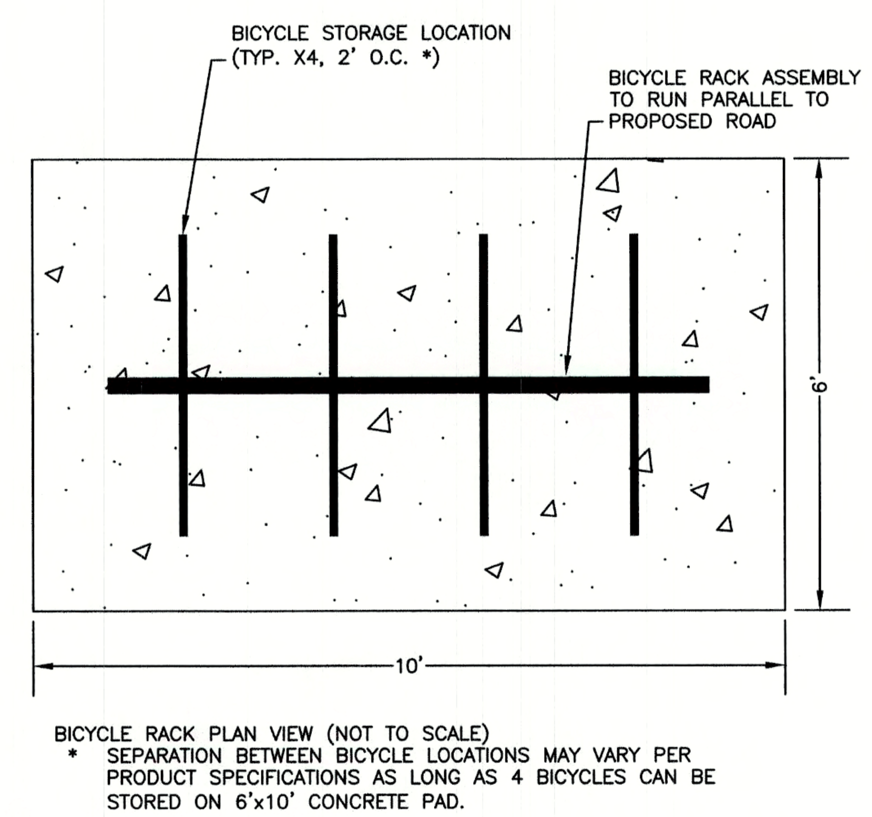
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

DRAWING No.
D4

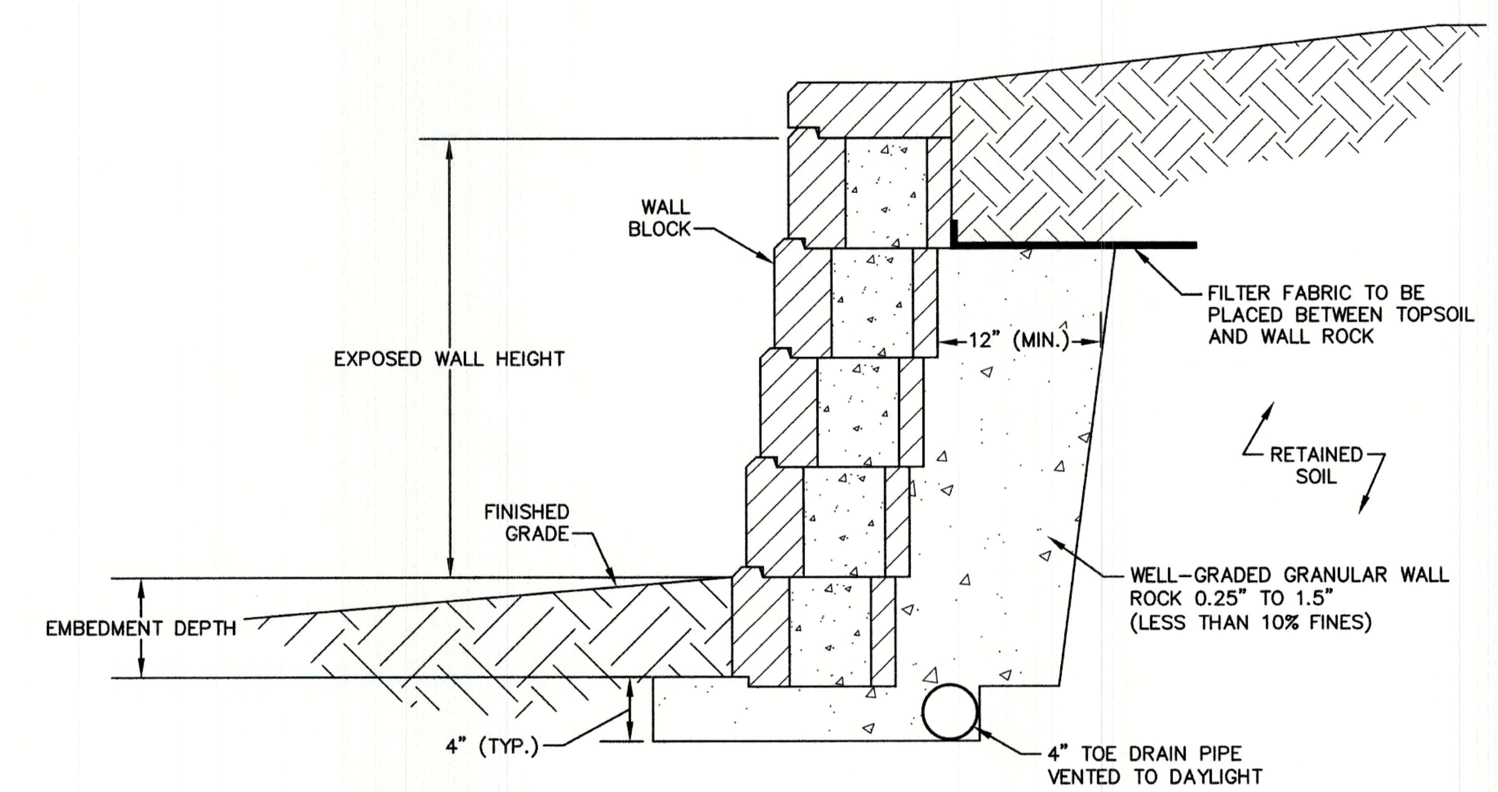
JBE PROJECT NO. 21254





BICYCLE RACK

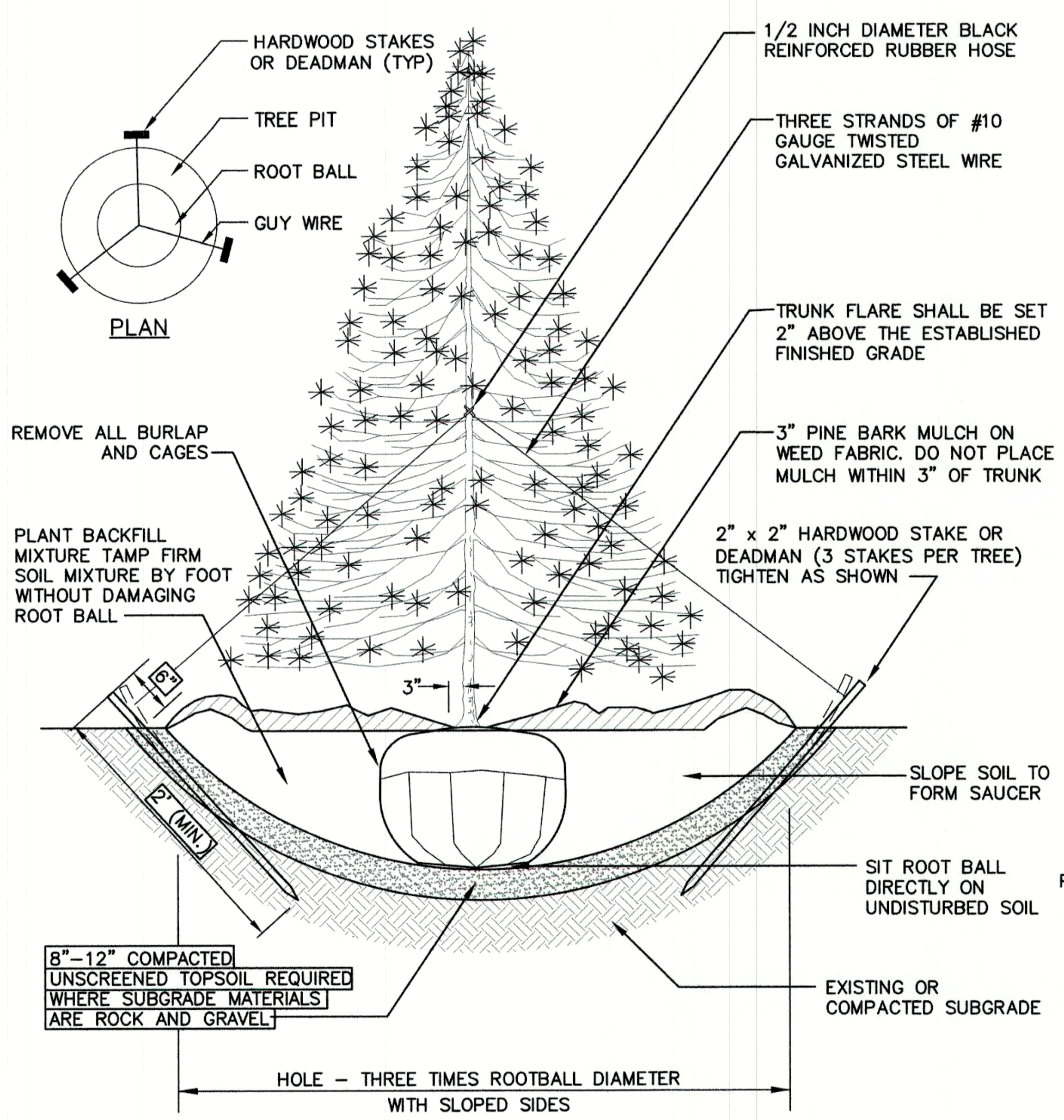
NOT TO SCALE



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.

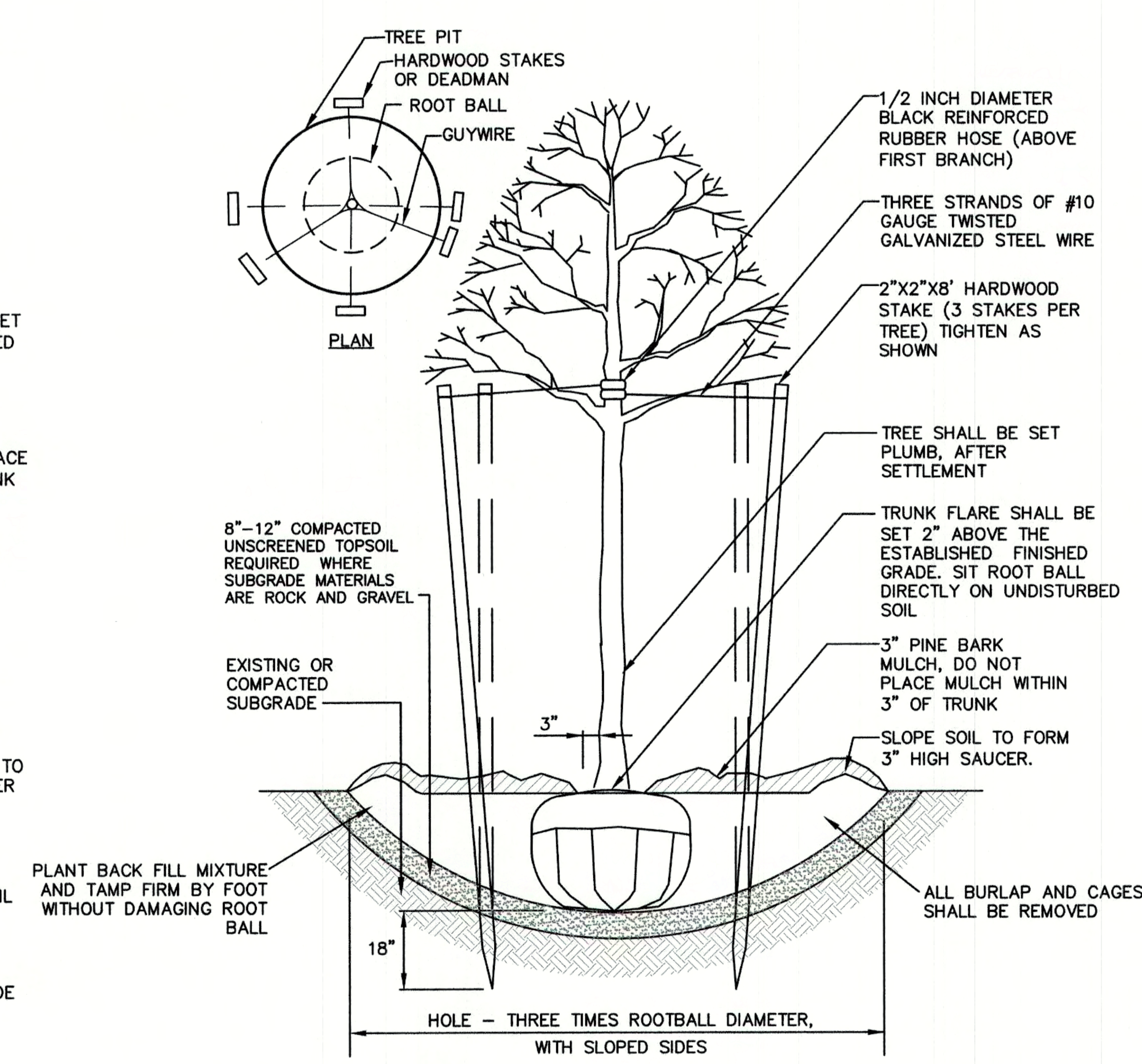
TYPICAL GRAVITY WALL DETAIL

NOT TO SCALE



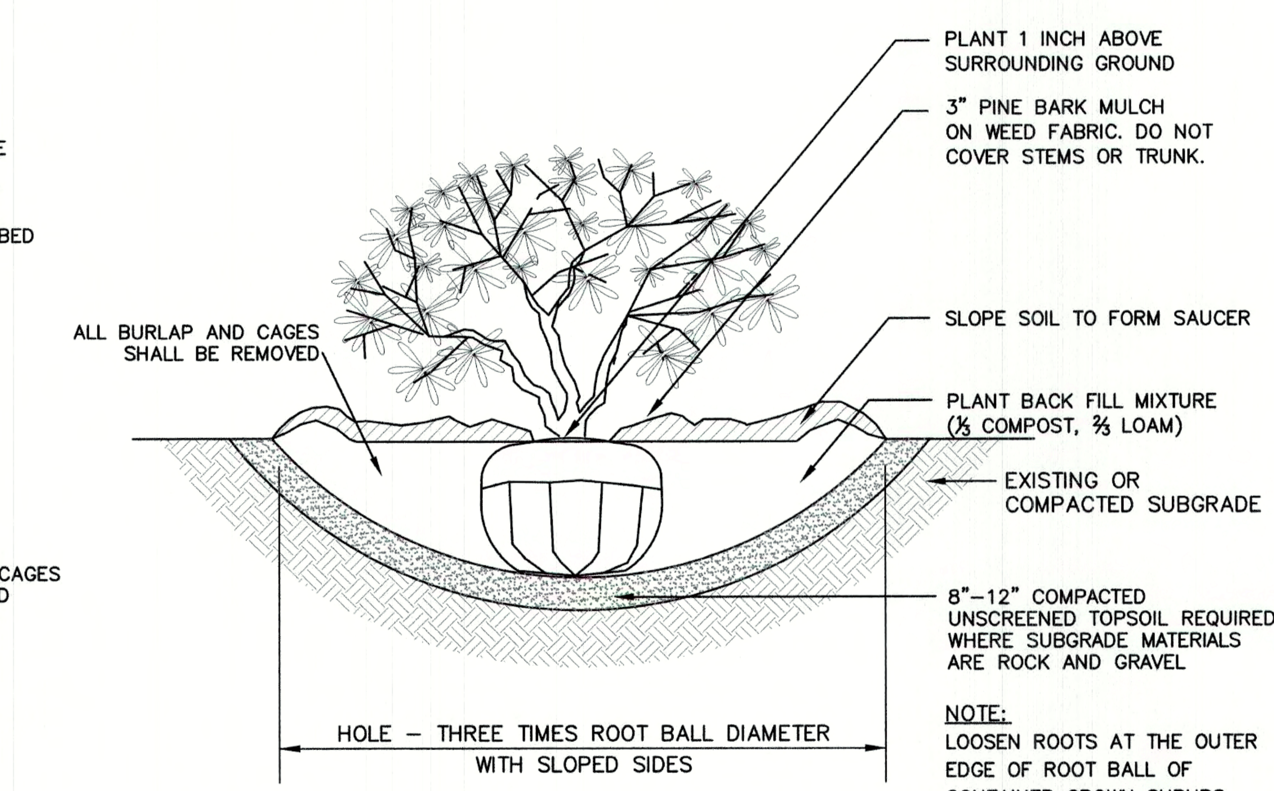
EVERGREEN PLANTING

NOT TO SCALE



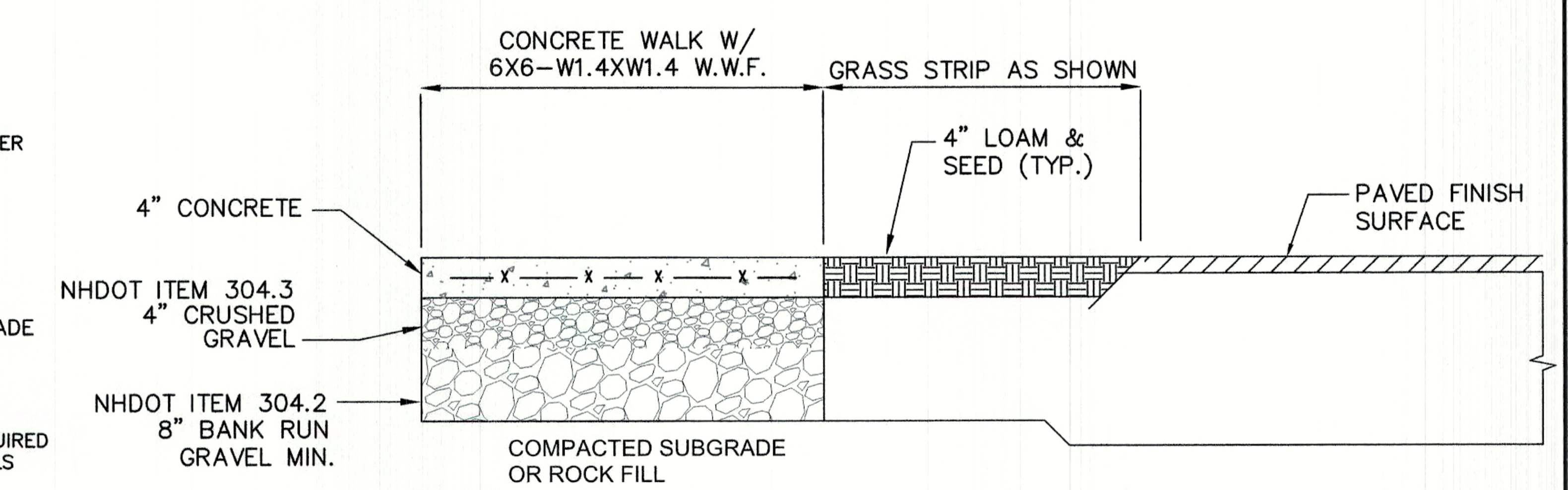
TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE



SHRUB PLANTING

NOT TO SCALE

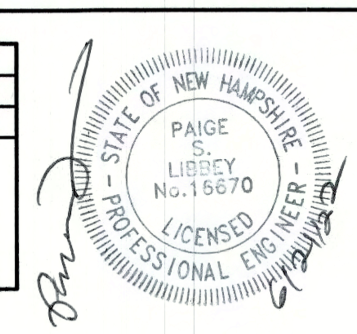


NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT EVERY 16' ALONG SIDEWALK.

CONCRETE SIDEWALK WITH GRASS STRIP

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		



REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	"GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801
Owner of Record:	FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894 — LOT 1: BK 4708 PG 979; LOT 2: BK 4582 PG 888; LOT 3: BK 3919 PG 1345

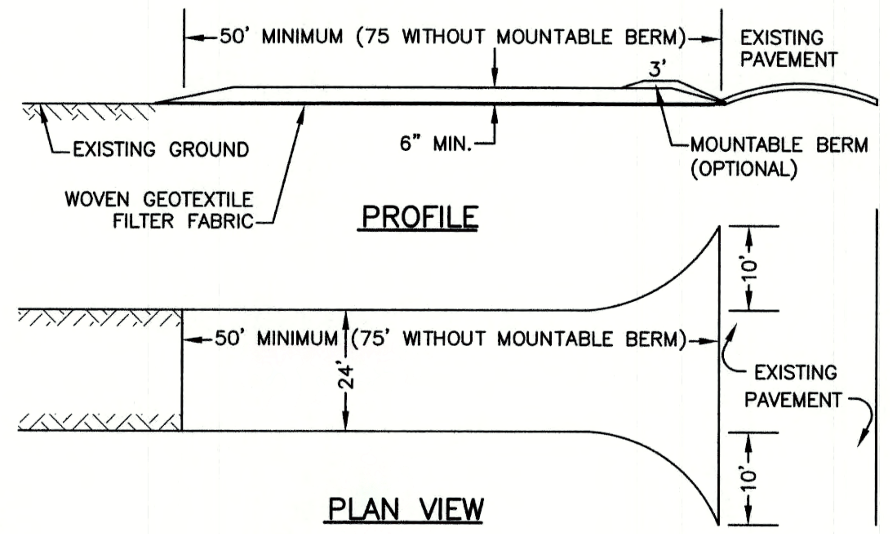
DRAWING No.

D5

JBE PROJECT NO. 21254

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 OR 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.

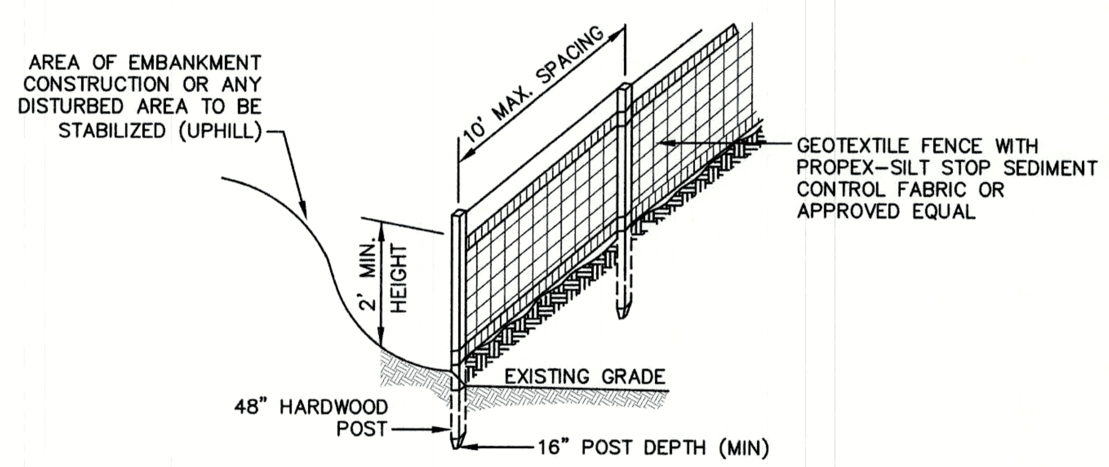


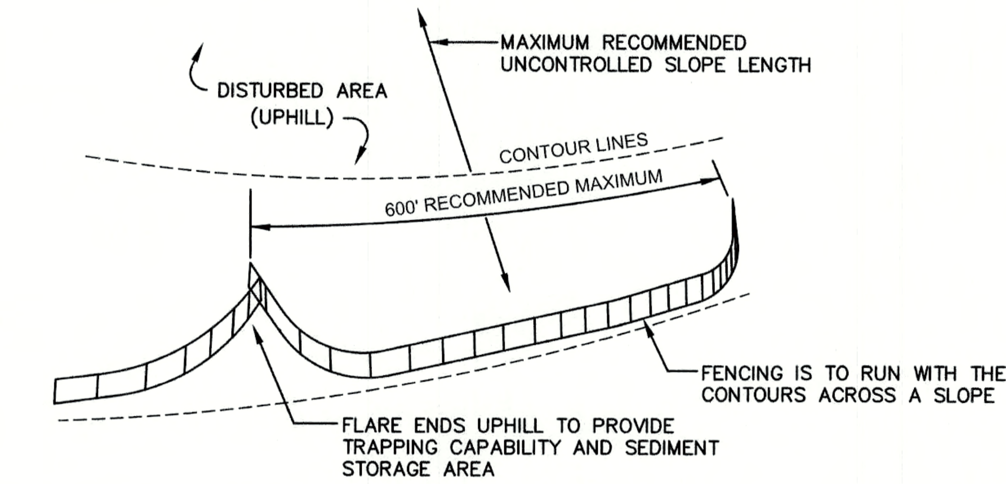
NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND 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 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.

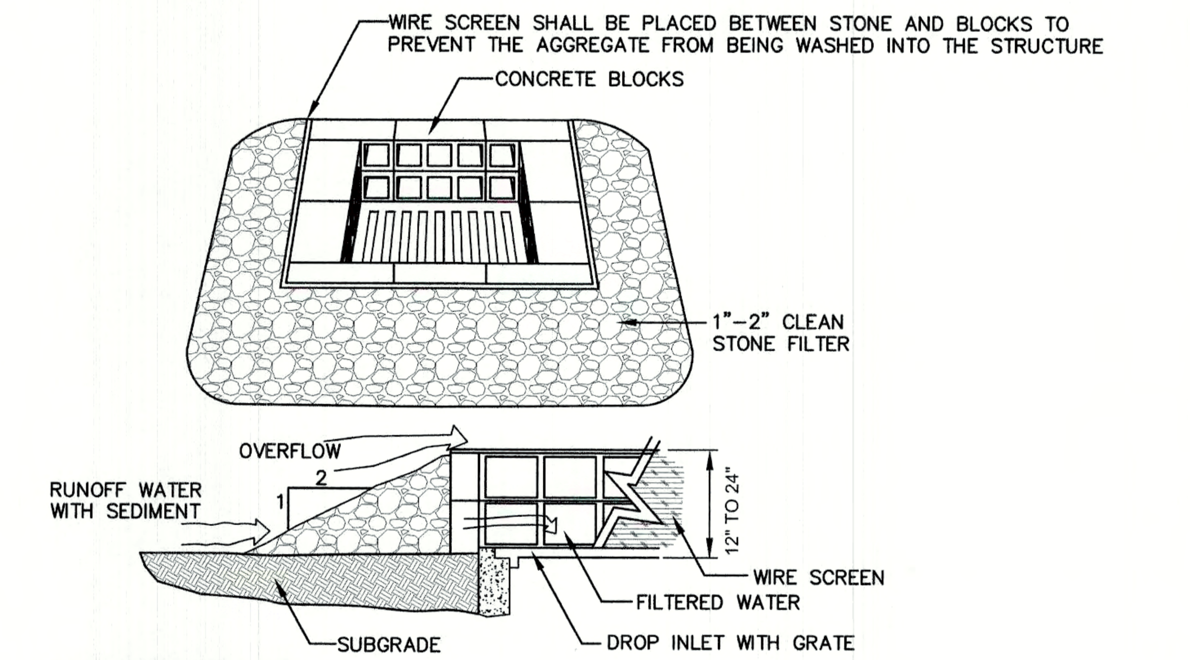
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

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



MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

TEMPORARY CATCH BASIN INLET PROTECTION
(Block and Gravel Drop Inlet Sediment Filter)

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. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
3. 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.
4. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
5. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
6. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
7. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS.
8. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
9. 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.
10. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
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 ROADWAY AND DRIVEWAYS 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 ROADWAY AND DRIVEWAYS WITH 'FINISH' COURSE.
18. ROADWAY AND DRIVEWAYS 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: 01/05/22
Checked: JAC	Scale: AS NOTED	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

STATE OF NEW HAMPSHIRE – PAIGE S. LIBBEY No.16670 – LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

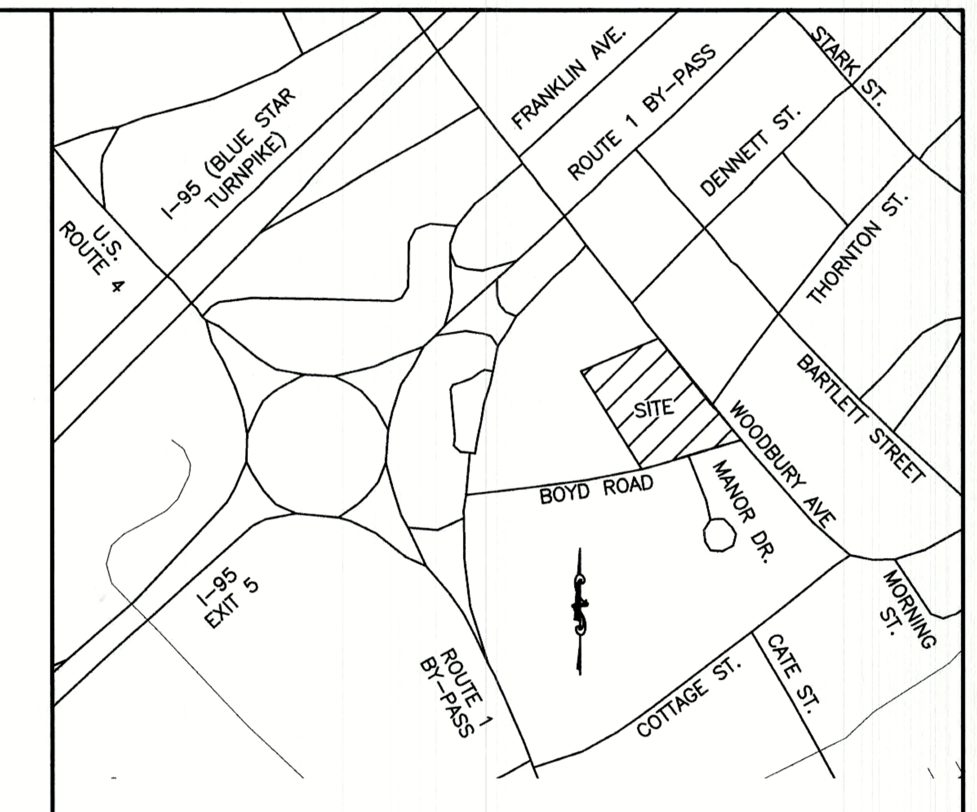
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EROSION AND SEDIMENT CONTROL DETAILS

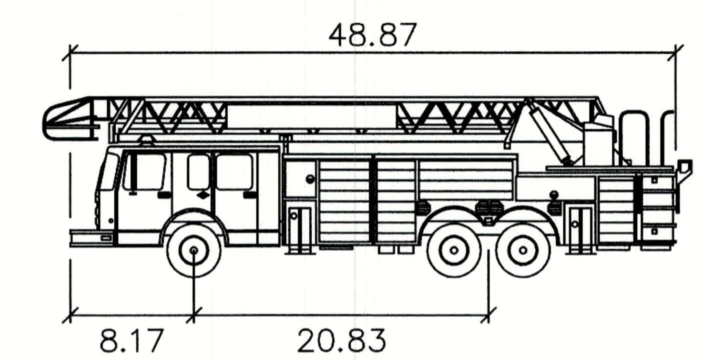
Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owner of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
E1
SHEET 17 OF 20
JBE PROJECT NO. 21254



LOCUS SCALE: 1"=500'



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

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-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. 16870 – LICENSED – PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **TRUCK TURNING PLAN**

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owners of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.

T1

SHEET 18 OF 20
JBE PROJECT NO. 21254

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 175, LOTS 1, 2, & 3

APPLICANT
TUCK REALTY CORP.
ATTN: TURNER PORTER
P.O. BOX 190
EXETER, NH 03833

TOTAL LOT AREA
80,419 SQ. FT.
1.85 ACRES

Design: JAC	Draft: DJM	Date: 01/05/22
Checked: JAC	Scale: 1"=20'	Project No.: 21254
Drawing Name: 21254-PLAN.dwg		

STATE OF NEW HAMPSHIRE
PAIGE S. LIBBEY
No. 16670
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

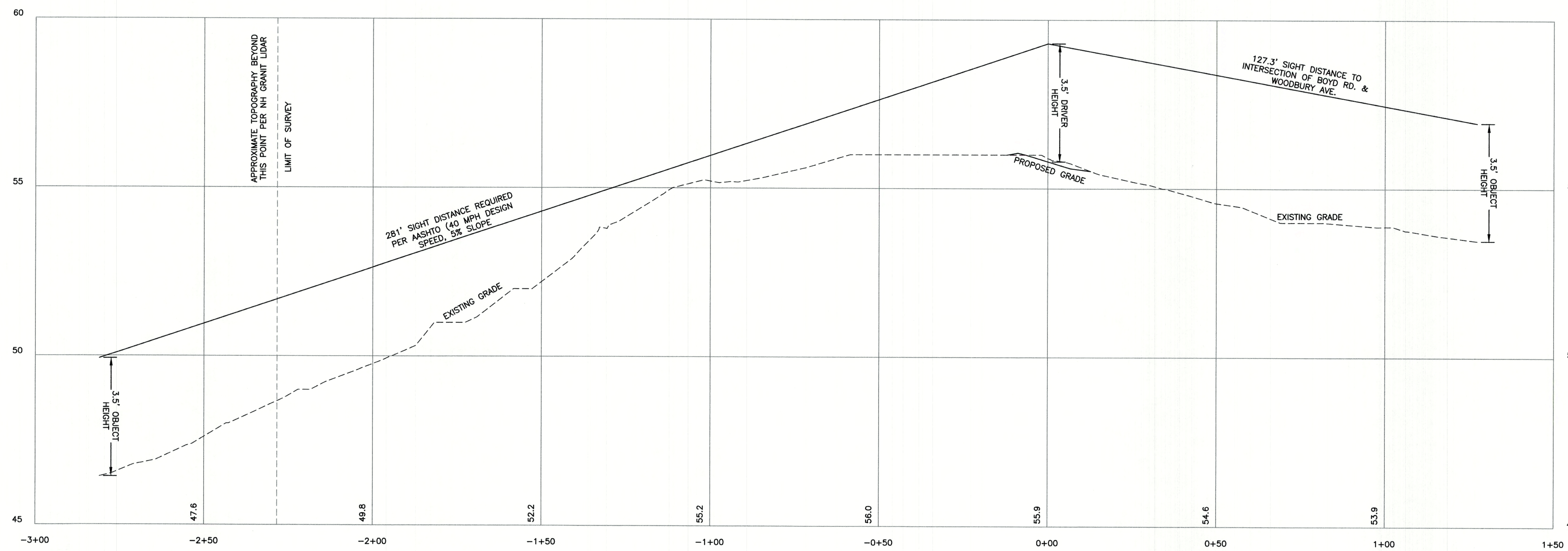
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **TRUCK TURNING PLAN**

Project: "GRAPEVINE RUN"
212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owners of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON
4 SHORE RD., WOLFEBORO, NH 03894
LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No.
T2
SHEET 19 OF 20
JBE PROJECT NO. **21254**



GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft Horiz.
1 inch = 2 ft Vert.

Design: JAC	Draft: DJM	Date: 01/05/22	
Checked: JAC	Scale: 1"=20'	Project No.: 21254	
Drawing Name: 21254-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. 15670 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
1	6/21/22	ISSUED FOR REVIEW	DJM
0	3/21/22	ISSUED TO ZBA	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: HIGHWAY ACCESS PLAN

Project: "GRAPEVINE RUN" 212, 214, & 216 WOODBURY AVE. PORTSMOUTH, NH 03801

Owners of Record: FREDERICK J. BAILEY III & JOYCE S. NELSON 4 SHORE RD., WOLFEBORO, NH 03894

LOT 1: BK 4708 PG 979
LOT 2: BK 4582 PG 888
LOT 3: BK 3919 PG 1345

DRAWING No. H1

SHEET 20 OF 20
JBE PROJECT NO. 21254