**PLANNING BOARD**
**PORTSMOUTH, NEW HAMPSHIRE**

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

**7:00 PM Public Hearings begin** **February 20, 2025**

# AGENDA

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## REGULAR MEETING 7:00pm

## I. APPROVAL OF MINUTES

**A.** Approval of the January 16, 2025 meeting minutes.

## II. PUBLIC HEARINGS -- OLD BUSINESS

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

**A.** The request of **635 Sagamore Development LLC (Owner**), for property located at **635 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing structures and construction of 4 single family dwellings with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. (LU-22-209)

## III. PUBLIC HEARINGS – NEW BUSINESS

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

**A.** The request of **Donna J. Sullivan (Owner),** for property located at **435 Greenside Avenue** requesting a Conditional Use Permit from Section 10.814 for an Attached Accessory Dwelling Unit (AADU). Said property is located on Assessor Map 261 Lot 12 and lies within the Single Residence B (SRB) District. (LU-25-14)

**B.** Proposed Ordinance Amendment that Chapter 10, ZONING ORDINANCE, be amended by striking Article 5, Measurement Rules, Section 10.515.14; by amending Section 10.515.13; and by adding new Sections 10.811.60 and10.811.61, relating to Accessory Uses to Permitted Residential Uses of the Ordinances of the City of Portsmouth, all in order to bring the Zoning Ordinance into better alignment with the Building Code, and to increase government efficiency.

## IV. PRELIMINARY CONCEPTUAL CONSULTATION

**A.** The request of **Walter D. Hett Trust (Owner),** for property located at **0 Banfield Road** and **Peverly Hill Road** requesting the subdivision of an existing 8.5-acre parcel into five new residential lots with the associated site improvements. Said property is located on Assessor Map 255 Lot 2 and lies within the Single Residence A (SRA) District. (LUPD-25-1)

## V. CITY COUNCIL REFERRALS

**A.** Zoning Amendments (*See above*)

## VI. OTHER BUSINESS

**A. 99 Bow Street** – Requesting a 1-Year extension to the Site Plan Approval that was granted on March 21, 2024 and will expire on March 20, 2025.

**B. 1 (15) Congress Street** -Requesting a second 1-year extension of the February 2023 Planning Board approval to February 16, 2025.

**C.** Chairman updates and discussion items

**D.** Board discussion of Regulatory Amendments & other matters

## VII. ADJOURNMENT

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

*https://us06web.zoom.us/webinar/register/WN_hOuHiBUWShSs0Vvpw2Us8Q*

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

Memorandum

To: Planning Board

From: Peter Stith, AICP
Planning Manager

Date: February 14, 2025

Re: Recommendations for the February 20, 2025 Planning Board Meeting

## I. APPROVAL OF MINUTES

**A.** Approval of the January 16, 2025 meeting minutes.

***Planning Department Recommendation***

*1) Board members should determine if the draft minutes include all relevant details for the decision-making process that occurred at the January 16, 2025 meetings and vote to approve meeting minutes with edits if needed.*

## II. PUBLIC HEARINGS – OLD BUSINESS

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

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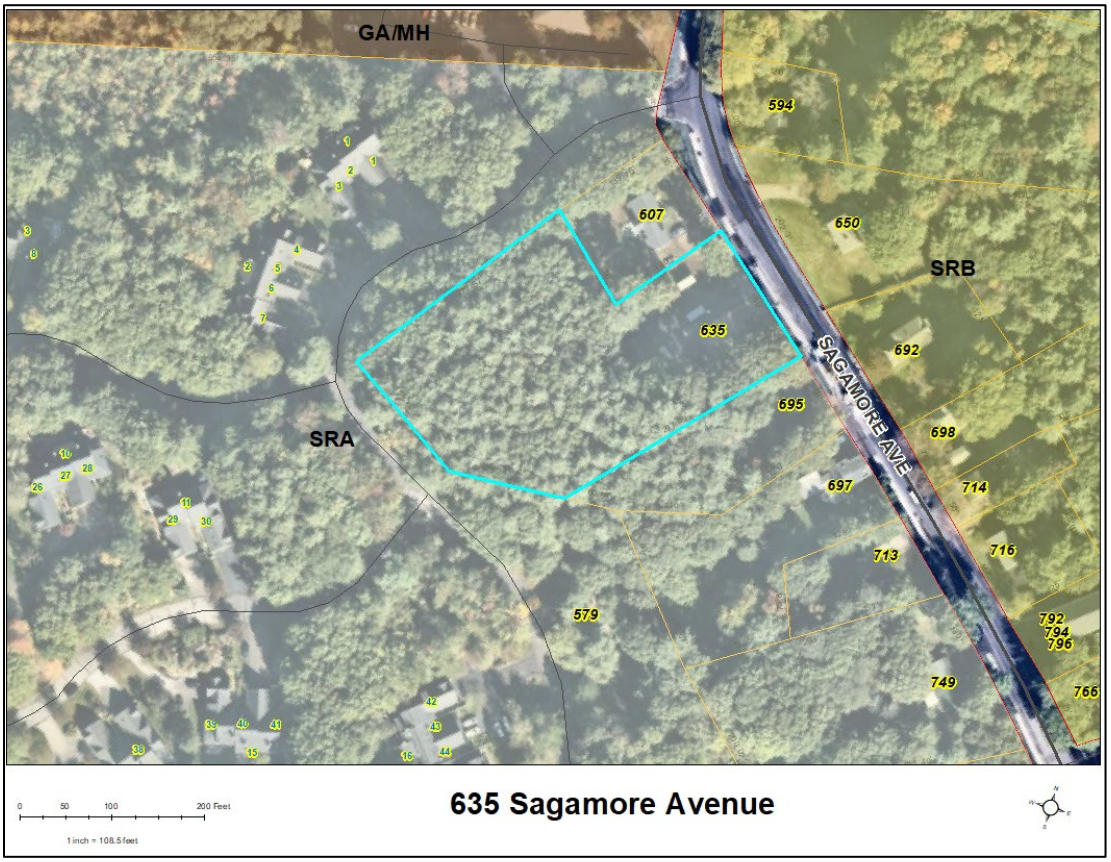
**A.** The request of **635 Sagamore Development LLC (Owner**), for property located at **635 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing structures and construction of 4 single family dwellings with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District.

Project Background

The property is located in the Single Residence A district and contains an auto detailing shop and apartment. application is for site plan review to demolish the existing structures and construct four single-family dwellings on one lot. The applicant completed Preliminary Conceptual Consultation on January 27, 2022 with the Planning Board and initially presented 6 single-family units on one lot. This was reduced to a 4-unit development as the applicant went through the variance process with the Zoning Board outlined below.



**Project Review, Discussion, and Recommendations**

The project was before the Technical Advisory Committee and Zoning Board of Adjustment. See below for details.

Board of Adjustment

The applicant first submitted to the Zoning Board in May of 2022 with a proposal for 5 single-family dwellings on a lot but withdrew the application before it was considered by the Board in order to work with neighbors to address concerns with the proposal. The applicant submitted a new variance application and was back before the Board at their regularly scheduled meeting of Tuesday, May 16, 2023 meeting. The applicant requested the following: 1) A Variance from Section 10.513 to allow four free-standing dwellings where one is permitted and 2) A Variance from Section 10.521 to allow a lot area per dwelling unit of 21,198 square feet per dwelling where 43,560 square feet is required.

The Board initially voted to deny the request, but the motion failed. A subsequent motion to approve the request passed with the following condition:

1. *The design and location of the dwelling may change as a result of Planning Board review and approval.*

Technical Advisory Committee

The applicant began the site plan review process with TAC in April 2024 and has been working through site design since then. A third-party engineer was engaged to review the storm water and drainage design throughout the process. A letter from Altus engineering is included, stating they are satisfied with the design. At their regularly scheduled meeting of Tuesday, November 5, 2024 meeting TAC voted to recommend that the Planning Board recommend approval with the following conditions:

***The following changes will be made prior to Planning Board submission:***

*1. The stormwater maintenance manual shall be updated for the submission to the Planning Board.*

*1. Trees to remain are clearly marked before site work can commence.*

*2. Monthly and annual reporting of stormwater and drainage infrastructure as defined in the stormwater maintenance manual to the Department of Public Works.*

*3. Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.*

*4. Developer to pay for the installation of the fire hydrant extended to the site. The hydrant was installed exclusively for the benefit of this site. The cost to install was $20,900.*

*5. Developer to provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.*

***The TAC comments have been addressed in the Planning Board application or added as conditions of approval.***

## *Planning Department Recommendation*

### *Site Plan Approval*

*1) Vote to find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as presented.*

*(Alt.) Vote to find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as amended.*

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

*Conditions to be satisfied subsequent to final approval of site plan but prior to the issuance of a building permit or the commencement of any site work or construction activity:*

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

*2.2) The applicant shall agree to pay for the services of an oversight engineer, to be selected by the City, to monitor the construction of improvements within the public rights-of-way and on site.*

*2.3) Any site development (new or redevelopment) resulting in 15,000 square feet or greater ground disturbance will require the submittal of a Land Use Development Tracking Form through the Pollutant Tracking and Accounting Program (PTAP) online portal. For more information visit https://www.cityofportsmouth.com/publicworks/stormwater/ptap*

*2.4) Key elevations should be added to the stone infiltration basins under the decks for Units 3 and 4. Add notes to the plan requiring inspection of the subgrade by the City to ensure that the design criteria is met.*

*2.5) The sitework details for both the sand absorption area and the infiltration*

*stone underneath deck specify uncompacted in-situ soil or suitable backfill from subject parcel native material is placed beneath and adjacent to the systems. The Designer should provide gradation, compaction, and infiltration rate requirements for the placement of the fill adjacent, below and down gradient of the infiltration practice. The sand absorption area for unit 3 is in 5-foot fill section. The detail should include a minimum depth of native material below the treatment area as well as down gradient.*

2.6) *Trees to remain shall be clearly marked before site work can commence.*

2.7) *Developer shall pay $20,900 to cover the cost of the installation of the fire hydrant extended to the site, which was installed exclusively for the benefit of this site.*

2.8) *Developer shall provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.*

*Conditions to be satisfied subsequent to final approval of site plan but prior to the issuance of a certificate of occupancy and release of the surety:*

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

2.7) *A stormwater inspection and maintenance report shall be completed annually (or monthly as outlined in O & M manual) and copies shall be submitted for review to the City's Stormwater Division/ Public Works Department.*

## III. PUBLIC HEARINGS – NEW BUSINESS

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

**A.** The request of **Donna J. Sullivan (Owner),** for property located at **435 Greenside Avenue** requesting a Conditional Use Permit from Section 10.814 for an Attached Accessory Dwelling Unit (AADU). Said property is located on Assessor Map 261 Lot 12 and lies within the Single Residence B (SRB) District.

**Project Background**

The applicant is proposing to construct a rear addition with an Attached Accessory Dwelling Unit (AADU). The one-story addition will conform to all dimensional requirements of the ordinance and no modifications are requested with the proposed AADU.

***Planning Department Recommendation***
***Attached Accessory Dwelling Unit Conditional Use Permit***

*1) Vote to find that the Conditional Use Permit Application meets the requirements set forth in Section 10.814.62 of the Ordinance and adopt the findings of fact as presented.*

*(Alt.) Vote to find that the Conditional Use Permit Application meets the requirements set forth in Section 10.814.62 of the Ordinance and adopt the findings of fact as amended.*

*2) Vote to grant the Conditional Use Permit with the following conditions:*

*2.1) Documentation of the conditional use permit approval shall be recorded at the Rockingham County Registry of Deeds, together with an affidavit that either the principal dwelling unit or the accessory dwelling unit will be occupied by the owner of the dwelling as the owner's principal place of residence, as required by Section 10.814.22.*

*2.2) A certificate of use issued by the Planning Department is required to verify compliance with the standards of this Section, including the owner occupancy and principal residency requirements. Said certificate shall be issued by the Planning Department upon issuance of a certificate of occupancy by the Inspection Department. A certificate of use shall not be issued prior to recording of documentation as required by this Ordinance.*

*2.3) The certificate of use shall be renewed annually upon submission of such documentation as the Planning Department may require to verify continued compliance with the standards of this Section. Failure to comply with this requirement shall be deemed a violation of the ordinance and may be enforced as provided in Article 2.*

## III. PUBLIC HEARINGS – NEW BUSINESS

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

**B.** Proposed Ordinance Amendment that Chapter 10, ZONING ORDINANCE, be amended by striking Article 5, Measurement Rules, Section 10.515.14; by amending Section 10.515.13; and by adding new Sections 10.811.60 and10.811.61, relating to Accessory Uses to Permitted Residential Uses of the Ordinances of the City of Portsmouth, all in order to bring the Zoning Ordinance into better alignment with the Building Code, and to increase government efficiency.

Background

At the October 7, 2024 City Council meeting, the City Council voted to refer to the Legal and Planning & Sustainability Departments a request to draft an ordinance which would exempt certain structures which do not require a building permit from zoning requirements. The draft amendments limit review of structures accessory to one and two-family dwellings such as sheds, playhouses, treehouses, playground equipment, and prefabricated above-ground pools and hot tubs. Under this proposal, up to one of these structures per dwelling unit would be exempt from zoning regulations such as setbacks and lot coverage and would only need approval pursuant to environmental protection standards, Historic District compliance, and compliance with corner lot vision obstruction regulations. In addition, the amendments include increasing height of fences exempt from side and rear yard setbacks from six feet to eight feet.

At the December 16, 2024 City Council meeting, the Council took the action below to:

7. First reading of Ordinance amending Chapter 10, Zoning Ordinance, by striking Article 5, Measurement Rules, Section 10.515.14; by amending Section 10.515.13; and by adding new Sections 10.811.60 and 10.811.61, relating to Accessory Uses to Permitted Residential Uses of the Ordinance of the City of Portsmouth, all in order to bring the Zoning Ordinance into better alignment with the Building Code, and to increase governmental efficiency – Moved to pass first reading and schedule a public hearing and second reading at the January 6, 2025 City Council meeting.

Agreed to accept a friendly amendment to refer the ordinance to the Planning Board for review and report back with a public hearing and second reading to be held at the February 3, 2025, City Council meeting. **Voted** to pass first reading and refer to the Planning Board for review and report back with a public hearing and second reading at the February 3, 2025, City Council meeting.

At the February 3, 2025 City Council meeting, the Council held second reading and revised the language outlined in the action sheet below. The revised version is included in the

Board's packet showing the strikethrough language.

| |
|---|
| 9. PUBLIC HEARING AND SECOND READING of Ordinance amendment to Chapter 10, Zoning Ordinance, by Striking Article 5, Measurement Rules, Section 10.515.14; by Amending Section 10.515.13; and by Adding new Sections 10.811.6 and 10.811.61, relating to Accessory Uses to Permitted Residential Uses of the Ordinance of the City of Portsmouth – Held a public hearing. |

**Voted** to suspend the rules to take up Item XV. B. – Councilor Moreau – Update on Zoning Ordinance amendment relating to Accessory Uses to Permitted Residential Uses.

**Voted** to amend Section 10.811.60 by the removal of the words *"up to one"* to read as follows: *Any lot containing one or two dwelling units is permitted to construction and maintain one-story detached accessory structure used as a tool or storage shed, playhouse, treehouse, or similar use per dwelling unit on the property, with a square footage not greater than 120 square feet. Voted to pass as amended second reading and hold third and final reading at the March 17, 2025, City Council meeting.*

**Section 10.515.13**

The change from 6 foot to 8 foot in height for fences along the side and read lot lines exceeds what is exempt from a building permit. The building code exempts fences 7 feet and under from requiring a building permit.

**Section 10.515.14**

The proposed amendments contain the elimination of the regulation of certain HVAC equipment pursuant to Section 10.515.14. This leads to multiple variance applications each month, which are routinely granted by the Zoning Board of Adjustment.

**Section 10.811.60 & Section 10.811.61**

The draft amendments proposed two new sections in Article 8 under Section 10.811 Accessory Uses to Permitted Residential Uses.

Section 10.570 (below) outlines requirements for accessory structures including prohibiting them from being located in a front yard or closer to the street than a principal structure. Proposed Sections 10.811.60 and 10.811.61 would allow accessory structures to be placed in the front yard and in front of a principal structure.

Section 10.573 provides setback requirements for certain sized accessory structures based on square footage and height. Specifically, Section 10.573.10 requires a 5-foot setback for an accessory structure up to 100 square feet and less than 10 feet in height. If larger than 10 square feet or taller than 10 feet, the setback is based on the height of the structure or the required setback, whichever is less, as outlined in Section 10.573.20.

Section 10.574 requires accessory structures to be included in the building coverage

calculation for a lot. The proposed amendments would remove this requirement for an accessory structure up to 120 square feet.

If the Board recommends the proposed amendments as drafted, recommendations should also be considered to Section 10.570 so there are not any conflicts.

**Section 10.570 Accessory Buildings, Structures and Uses**

10.571 No **accessory building**, **structure** or **use** shall be located in any required **front yard**, or closer to a **street** than the **principal building**.

10.572 In a Character, Business or Industrial district, all **accessory building**s and **structure**s shall conform to the **side yard** and **rear yard** requirements of the applicable zoning district.

10.573 In a Residential or Mixed Residential district, an **accessory building** or **structure** may be located in a required **side yard** or **rear yard** subject to the following:

10.573.10 An **accessory building** or **structure** not more than 10 feet in height and not more than 100 square feet in area shall be set back at least 5 feet from any **lot line**.

10.573.20 An **accessory building** or **structure** more than 10 feet in height or more than 100 square feet in area shall be set back from any **lot line** at least the height of the **building** or the applicable **yard** requirement, whichever is less.

10.574 All **accessory building**s and **structure**s shall be included in the computation of **building coverage**.

In general, the Planning Department does not regulate swings or playground equipment, above ground temporary pools or even tree houses[1] and historically would consider these to fall under Section 10.811.50 and treat them as structures customarily associated with a residential use. Hot tubs have been treated as accessory structures and typically adhere to the 5-foot setback requirement under 10.573.10.

10.811.50 Other **accessory use**s and **accessory structure**s, may be permitted if the **Code Official** determines that such **use**s or **structure**s are customarily associated with and subordinate to a principal **permitted use**.

[1] There was a recent instance where a large treehouse was constructed and enforcement action was taken, however it was a substantial structure with footings. The structure was reduced in height and size and was allowed to remain.

Allowing a 120 square foot shed anywhere on a lot without having to abide by setbacks, building coverage could create a situation where four properties connect and each lot has a 120 square foot shed on the corner of the lot with no space between the structures. Alternatively, sheds could be placed in the front yard on the front lot line, which would detract from the character of many neighborhoods throughout Portsmouth.

The amendment made by Council on February 3rd aims to allow a cumulative square footage of the items listed, up to 120 square feet. One could have multiple accessory structures that equal 120 square feet and comply with this section. This would be difficult to track and enforce.

***Planning Department Recommendation***

*1) Vote to recommend the City Council hold third reading on the proposed zoning amendments as presented.*

*Or*

1) *Vote to recommend the City Council hold third reading on the proposed zoning amendments as amended. (pending and Planning Board edits/revisions)*

## IV. PRELIMINARY CONCEPTUAL CONSULTATION

**A.** The request of **Walter D. Hett Trust (Owner),** for property located at **0 Banfield Road** and **Peverly Hill Road** requesting the subdivision of an existing 8.5-acre parcel into five new residential lots with the associated site improvements. Said property is located on Assessor Map 255 Lot 2 and lies within the Single Residence A (SRA) District. (LUPD-25-1)

The applicant has provided a set of preliminary subdivision plans for discussion with the Board.

As authorized by NH **RSA 676:4,II**, the Site Plan Regulations require preliminary conceptual consultation for certain proposals, including (1) the construction of 30,000 sq. ft. or more gross floor area, (2) the creation of 20 or more dwelling units, or (3) the construction of more than one principal structure on a lot. Preliminary conceptual consultation precedes review by the Technical Advisory Committee.

Preliminary conceptual consultation is described in the state statute as follows: *[Preliminary conceptual consultation] … shall be directed at review of the basic concept of the proposal and suggestions which might be of assistance in resolving problems with meeting requirements during final consideration. Such consultation shall not bind either the applicant or the board and statements made by planning board members shall not be the basis for disqualifying said members or invalidating any action taken. The board and the applicant may discuss proposals in conceptual form only and in general terms such as desirability of types of development and proposals under the master plan.*

The preliminary conceptual consultation phase provides the Planning Board with an opportunity to review the outlines of a proposed project before it gets to detailed design (and before the applicant refines the plan as a result of review by the Technical Advisory Committee and public comment at TAC hearings). In order to maximize the value of this phase, Board members are encouraged to engage in dialogue with the proponent to offer suggestions and to raise any concerns so that they may be addressed in a formal application. Preliminary conceptual consultation does not involve a public hearing, and no vote is taken by the Board on the proposal at this stage. Unlike Design Review, completion of Preliminary Conceptual Consultation does not vest the project to the current zoning.

## V. CITY COUNCIL REFERRALS [NOTE: ANY REFERRALS REQUIRING PUBLIC HEARING SHOULD BE INCLUDED ABOVE]

**A.** Zoning Amendments – *see above*

## VI. OTHER BUSINESS

**A. 99 Bow Street** – Requesting a 1-Year extension to the Site Plan Review approval that was granted on March 20, 2024.

Project Background
On March 20, 2024, the Planning Board granted Site Plan approval for the project referenced above. The applicant is working on post approval conditions in order to obtain a building permit.

The applicant has yet to obtain a building permit and has requested the one-year extension per Section 2.14 of the Site Plan Regulations below.

Section 2.14 of the Site Plan regulations allows for an extension:

> **Section 2.14 Approval Expiration and Extension**
>
> 1. Site plan approval by the Planning Board shall expire unless used (obtain a Building Permit) within a period of one (1) year from the date granted.
>
> 2. The Planning Board may, for good cause shown, extend such period by as much as one (1) year if requested and acted upon prior to the expiration date.

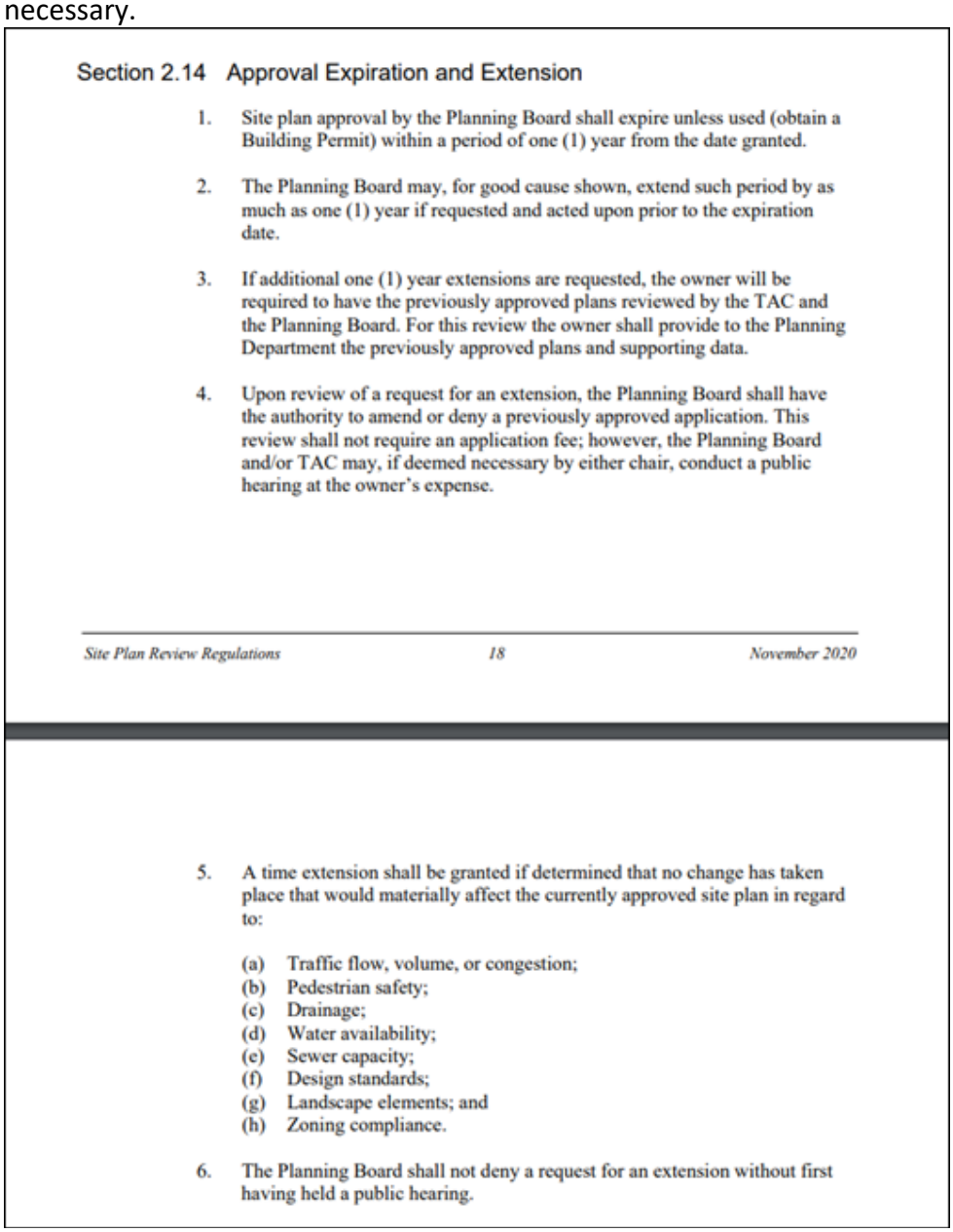
***Planning Department Recommendation***

*1) Vote to grant a one-year extension to the Planning Board Approval of the Site Plan to March 20, 2026.*

**B. 1 Congress Street** – Requesting a second 1-year extension to unless the Board grants approval for the updated 1-15 Congress Street project. First extension was granted on November 16, 2023 and will expire on February 16, 2025.

Background
The Planning Board approved the project on February 16, 2023 and granted an extension on November 16, 2023. The applicant was before TAC at the regular meeting on Tuesday, February 4, 2025 and voted to recommend a second, one-year extension.

This project was combined with the 21 (15) Congress Street project and received Planning Board approval at the January 16, 2025 meeting. Due to the appeal period of that project, the applicant proceeded with the second extension request. If there are no appeals within the 30-day appeal period (February 17th), the applicant will withdraw the second extension request, as it will not be necessary.



Section 2.14 Approval Expiration and Extension

1. Site plan approval by the Planning Board shall expire unless used (obtain a Building Permit) within a period of one (1) year from the date granted.

2. The Planning Board may, for good cause shown, extend such period by as much as one (1) year if requested and acted upon prior to the expiration date.

3. If additional one (1) year extensions are requested, the owner will be required to have the previously approved plans reviewed by the TAC and the Planning Board. For this review the owner shall provide to the Planning Department the previously approved plans and supporting data.

4. Upon review of a request for an extension, the Planning Board shall have the authority to amend or deny a previously approved application. This review shall not require an application fee; however, the Planning Board and/or TAC may, if deemed necessary by either chair, conduct a public hearing at the owner's expense.

*Site Plan Review Regulations* *18* *November 2020*

5. A time extension shall be granted if determined that no change has taken place that would materially affect the currently approved site plan in regard to:

   (a) Traffic flow, volume, or congestion;
   (b) Pedestrian safety;
   (c) Drainage;
   (d) Water availability;
   (e) Sewer capacity;
   (f) Design standards;
   (g) Landscape elements; and
   (h) Zoning compliance.

6. The Planning Board shall not deny a request for an extension without first having held a public hearing.

**C.** Chairman's Updates and Discussion Items

**D.** Board Discussion of Regulatory Amendments and Other Matters

## VII. ADJOURNMENT

**PLANNING BOARD**
**PORTSMOUTH, NEW HAMPSHIRE**

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

**7:00 PM Public Hearings begin** **January 16, 2025**

**MEMBERS PRESENT:** Rick Chellman, Chairman; Karen Conard, City Manager; Joseph Almeida, Facilities Manager; Beth Moreau, City Councilor; James Hewitt; Paul Giuliano; Andrew Samonas; and William Bowen, Alternate

**ALSO PRESENT:** Peter Stith, Planning Department Manager

**MEMBERS ABSENT:** Greg Mahanna, Vice Chair; Anthony Coviello

Chair Chellman called the meeting to order at 7:00 p.m. Alternate Mr. Bowen took a voting seat for the evening.

## I. ELECTION OF OFFICERS

*Ms. Conard moved to nominate Rick Chellman as Chair, seconded by Councilor Moreau. The motion **passed** with all in favor.*

*Mr. Giuliano moved to nominate Anthony Coviello as Vice-Chair, seconded by Ms. Conard. The motion **passed** with all in favor.*

## II. APPROVAL OF MINUTES

### A. Approval of the December 19, 2024 meeting minutes.

*Councilor Moreau moved to approve the minutes as submitted, seconded by Mr. Almeida. The motion **passed** with all in favor.*

## III. DETERMINATIONS OF COMPLETENESS

### SITE PLAN REVIEW

**A.** The request of **One Market Square LLC (Owner),** for property located at **1, 21 (15) Congress Street** requesting Site Plan Approval to construct an addition onto the previously approved project at 1 Congress Street and re-development of 15 Congress into a mixed-use building with associated site improvements; a Parking Conditional Use Permit from Section 10.1112.14 of the Zoning Ordinance to allow 21 parking spaces where 53 parking spaces are required. Said property is located on Assessor

Map 117 Lots 12-15 and lies within the Character District 5 (CDR-5), Historic and Downtown Overlay Districts. (LU-22-12)

*Councilor Moreau moved that the Board determine that Item A is complete according to the Site Plan Review Regulations (contingent on the granting of any required waivers under Section V of the agenda) and to accept the application for consideration. Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

## IV. PUBLIC HEARINGS -- OLD BUSINESS

**A.** The request of **635 Sagamore Development LLC (Owner**), for property located at **635 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing structures and construction of 4 single family dwellings with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. (LU-22-209)

### DECISION OF THE BOARD

Chair Chellman said the petition was contingent on the Board's site walk, which they had not scheduled yet.

*Councilor Moreau moved that the* Board ***postpone*** *the application to the February 20, 2025 meeting and schedule a site walk for February 20th at 3 pm. Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

**Note**: The following petition was combined with Petition A, Durgin Square LLC, 1600 Woodbury Avenue, Public Hearings, New Business.

**B.** The request of **Durgin Square LLC (Owner),** for property located at **1600 Woodbury Avenue** requesting an amended Site Plan Approval for the addition of EV charging stations in the existing parking lot with associated equipment and transformer. Said property is located on Assessor Map 238 Lot 16 and lies within the Gateway Corridor (G1) District. (LU-24-182)

*Councilor Moreau moved that the Board combine the petition with Public Hearings, New Business, Petition A, 1600 Woodbury Avenue. Mr. Almeida seconded. The motion* ***passed*** *with all in favor.*

### SPEAKING TO THE PETITION

[Timestamp 14:12] Dallas Pelland of Selective Site Consultants was present on behalf of the applicant. He reviewed the petition and said they wanted to place the requested EV charging locations in the north corner of the parcel behind the bank. He said all facilities with utilities could support the infrastructure and that the parking lot landlord approved it. He noted that there was a minor change to the plan because the landlord did not want canopies over the EV chargers.

The Board had no questions. Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

No one spoke, and Chair Chellman closed the public hearing.

**DECISION OF THE BOARD** [Timestamp 16:48]

***Amended Site Plan***

*Councilor Moreau moved that the Board find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as presented. Mr. Almeida seconded. The motion **passed** with all in favor.*

*Councilor Moreau moved that the Board **grant** Amended Site Plan approval with the following conditions, noting that the applicant will not construct the canopies for the EV chargers that are in the plan:*

*2.1) Keep conduit crossing Durgin Lane 15 feet from any trees and protect trees during construction.*

*2.2) A license will be required by both Eversource and the applicant for the new utility pole and conduit in the right of way.*

*Mr. Almeida seconded. The motion **passed** with all in favor.*

## V. PUBLIC HEARINGS – NEW BUSINESS

**A.** The request of **Durgin Square LLC (Owner),** for property located at **1600 Woodbury Avenue** requesting a Conditional Use Permit approval for the addition of EV charging stations in the existing parking lot with associated equipment and transformer. Said property is located on Assessor Map 238 Lot 16 and lies within the Gateway Corridor (G1) District. (LU-24-182)

**Note:** This was combined with Petition B, New Business, Durgin Square LLC above.

**DECISION OF THE BOARD**

***EV Fueling Space Conditional Use Permit***

1) *Councilor Moreau moved that the Board find that the Conditional Use Permit Application meets the requirements set forth in Section 10.243 of the Ordinance and adopt the findings of fact as presented. Mr. Samonas seconded. The motion **passed** with all in favor.*

2) *Councilor Moreau moved that the Board grant the Conditional Use Permit as presented. Mr. Samonas seconded. The motion **passed** with all in favor.*

**B.** The request of **One Market Square LLC (Owner),** for property located at **1, 21 (15) Congress Street** requesting Site Plan Approval to construct an addition onto the previously approved project at 1 Congress Street and re-development of 15 Congress into a mixed-use building with associated site improvements; a Parking Conditional Use Permit from Section 10.1112.14 of the Zoning Ordinance to allow 21 parking spaces where 53 parking spaces are required. Said property is located on Assessor Map 117 Lots 12-15 and lies within the Character District 5 (CDR-5), Historic and Downtown Overlay Districts. (LU-22-12)

**SPEAKING TO THE PETITION**

[Timestamp 19:23] John Chagnon was present on behalf of One Market Square LLC, along with project architect Tracy Kozak, landscape architect Terrence Parker, and owner Mark McNabb. Mr. Chagnon reviewed the petition. He noted that the Board previously approved the One Congress Street project and that the J.J Newberry building was proposed to be added and that both buildings would be separated by a space. He said they also had a parking Conditional Use Permit application for 19 parking spaces where 53 were required. He reviewed the existing conditions and the demolition plan to remove the rear part of the One Congress Street building and to place the parking lot underground. He said 40 units with a total of 84 bedrooms were proposed, along with restaurant and retail uses. He reviewed the site plan, noting that Haven Court would be lowered and renamed Newberry Way and upgraded to include a pedestrian-friendly corridor. He said Mr. McNabb bought the adjacent Gilley's Diner lot to expand the corridor to Fleet Street. He said the J.J Newberry building upper floor office spaces would be converted to residential. He said the traffic report indicated that there would be an increase of 18 vehicle trips on Saturday midday but a peak net reduction in daily trips during the weekday a.m. and p.m. peak hours. He said no parking would be required for nonresidential uses. He said the applicant would work with the City to relocate a solid waste facility to a portion of the parking garage that was currently used for storage, so no parking would be lost.

[Timestamp 28:29] Ms. Kozak reviewed the building's elevations. She said the only new construction would be the parking lot, and the only addition on the Newberry property would be an elevator stair tower, fire stair, and small lounge area. She reviewed the roof plan and said both parcels would have solar arrays and rooftop mechanicals. She discussed the addition of awnings over the storefront windows and lowering some window sills and grades to make the building more pedestrian friendly. [Timestamp 35:50] Mr. Parker reviewed the landscape features.

[Timestamp 41:27] Mr. Chagnon said the Technical Advisory Committee (TAC) recommended approval on December 3 with the understanding that the two buildings would be separated, which would make the back addition smaller. He said the trash portion of the project potentially might be located somewhere on the Gilley's lot but that it would be an offsite improvement.

[Timestamp 43:14] Mr. Bowen said the parking was portrayed differently in different places and that he would use the GPI report as a baseline for understanding the parking implications. He said 53 parking spaces were required by code, of which there was a 21-space underground parking area in what was a portion of the prior approved project. Mr. Chagnon said that would

also be included in the present project. Mr. Bowen said it replaced a privately-owned lot with about 20 spaces. Mr. Chagnon said the initial count was 19 spaces but it was now 21 spaces. Mr. Bowen concluded that there would be no incremental parking. Ms. Kozak said there would be a net increase in parking of two spaces compared to what was there now. Mr. Bowen said if both projects were viewed together, there were 21 spaces built underground and 19 aboveground spaces going away. He asked if the five spaces on High Street would go away. Mr. Chagnon agreed and said the Fire Department considered those five spaces to be dangerous because they restricted their access. Mr. Bowen said there were be 5-6 fewer parking spaces available and 56 more spaces required. Mr. Chagnon said there were currently 18-19 spaces on the surface lot. He said the City recently did a pilot program where they created four new spaces in Market Square, so there would be less of a parking decrease. He said the five spaces on High Street turned into four spaces in Market Square. He also noted that the bus turnoff was not used anymore and that a lot of the increased parking was due to the conversion from office to residential. He said from a trip generation standpoint, the weekday a.m. and p.m. peak hours generated less traffic.

[Timestamp 50:24] Mr. Samonas asked about the logistics of things like the car elevator, queuing on Haven Court, trash, and so on. Mr. Chagnon said currently the delivery area for the J.J. Newberry building was a back corner, where the delivery trucks came down and backed up. He said there would be enough space for two cars to pass each other in the garage but some cars would have to wait for another car to be brought up or down. Mr. Samonas said he was more concerned about the confliction of uses between the pedestrian space, loading space, and car access and asked Mr. Chagnon if he agreed that the bottleneck would be troublesome. Mr. Chagnon said he did not agree and explained that traffic would be lighter and at slower speeds than Market Street. Mr. Samonas asked about Retail Space No. 5. Mr. McNabb said it was for deliveries and that the deliveries were only for the Thirsty Moose restaurant. He said his development had loading zones and frontage on every street and that they would redirect the limited deliveries that the Thirsty Moose had to the front loading zones. He said the only thing allowed on Newberry Way would be the cars going in and out of the garage. Mr. Samonas asked if that included the newly-created retail stores, and Mr. McNabb agreed. Mr. Samonas asked about the vestibule entrance to Retail Space No. 5 and about trash pickup. Mr. McNabb said the entrance was to eliminate another step stoop off the side and that he was working with the City on a plan for the Hanover Street Garage, otherwise the trash needs would be met on Gilley's lot.

[Timestamp 57:00] Mr. Samonas said the City was facing a parking crunch and that people always asked about parking when renting apartments. He said the plan did not acknowledge grocery, pharmacy, and other needs within the Downtown Corridor. Mr. McNabb said he could not do anything about the built-in parking hardship downtown. He said the downtown area was subdivided before cars were even thought about and that there were a lot of parking spaces at night. Mr. Samonas said the Board did not want to further perpetuate the issue by adding 50 or more cars, and he asked how they would answer the public who perceived it as an added tax. Mr. McNabb said the City made money on parking and that the residents and taxpayers did not fund parking. He said retail, restaurant, and office space required and used more parking than residential. He also noted that there would be parking provided under his building. Councilor Moreau asked what would happen to the rest of the basement level space besides the storage and sprinkler and electric rooms. Ms. Kozak said the only change was moving the stair to the right.

[Timestamp 1:06:40] Mr. Giuliano asked if there was a solution within the project footprint or contractually nearby where the required number of 53 parking spaces could be provided. Mr. Chagnon said there was not. Mr. Almeida said he remained in full support of the project and agreed with the applicant's parking philosophy as it related to the City's urban core. He said cars were introduced to the area when the J.J. Newberry building was built and that the modern-day need for parking was managed and met. He said the activity around the building would remain the same. He said parking garages did create revenue and that the City was discussing a third parking garage. He said the community had been requesting pedestrian passageways in the core more than parking for many years. Mr. Bowen said it wasn't rational economically or architecturally to require each property to provide its own parking and that the most cost-effective way to provide it was to centralize it in a convenient place. It was further discussed.

[Timestamp 1:18:43] Mr. Hewitt said the project would have 40 units and 84 bedrooms, yet the applicant's demand study showed that they only needed 28 parking spaces. Mr. Chagnon said they were providing 21 spaces based on the ITE trip generation for the core. Mr. Hewitt asked Mr. Chagnon to describe what a dense urban use setting was. Mr. Chagnon said downtown Portsmouth was a dense core. Mr. Hewitt compared it to downtown Manhattan. Mr. Chagnon said the nature of transportation and parking demand was proportionally adjustable based on the infrastructure available. Mr. Hewitt asked whether 0.28 spaces per unit was a reasonable estimate in Portsmouth. Mr. Chagnon said the GPI report used that figure and the person who did the study thought it was important. It was further discussed. Chair Chellman said there were three options under the ITE: suburban, dense mixed use urban, and dense mixed use urban with rail, and that he agreed that the chosen middle option for Portsmouth was the option he would pick. It was further discussed. Chair Chellman asked Mr. Chagnon if he had done a comparison for how many parking spaces were used before the building's conversion vs. what would be needed after the conversion. Mr. Chagnon said he would look at the study. Chair Chellman asked Mr. McNabb if the project was only one project or two projects side by side. Mr. McNabb said he preferred to merge and combine the lots and have them as one project inside buildings, but from the outside perspective, they would appear as one project until or if he could merge those lots and do co-living. He said he was simply taking the best path he could in the zoning that was provided by right. Chair Chellman said he had been lobbying to get parking out of the zoning ordinance and thought the applicant's project was a good reason why. He said philosophically he agreed with the applicant and thought adding the new parking garage to the CIP was a good idea, but the Board had to deal with the existing zoning ordinance, and a Conditional Use Permit was their only relief valve. He said a lot of the citizens' parking concerns were from people who didn't live downtown. Mr. Chagnon said the trip generation did not include the existing parking demand vs. the proposed one, but the office trips based on the existing office space were 248 daily trips, and the residential trips proposed were 36, which was a significant reduction. Ms. Kozak said when they calculate building and safety codes, office is calculated at 100 sf per person and 200 sf per person for residential. She said per those calculations, they had half as many people in the buildings and half as many cars.

[Timestamp 1:33:22] Marie Bodi of McNabb Properties said in other areas pertaining to office vs. residential, it was typically four parking spaces per thousand. She said if they were to build

J.J. Newberry in a traditional market, they would have to provide up to 176 parking spaces, so the residential use would need much less parking.

Councilor Moreau said there was bicycle parking provided as well as a nearby parking garage, which added to the Conditional Use Permit analysis indicating that there was adequate parking for people living in an urban core. Chair Chellman referred to the daily trips quoted by Mr. Chagnon and said office use typically had inbound trips in the morning and outbound trips in the evening, unlike a convenience store that had in-and-out traffic all day. He said residential typically had more evening peak than office use. Mr. Hewitt asked the Chair if he thought commercial parking space was synonymous with a residential parking space. Chair Chellman said he did not and that it depended on the use. It was further discussed. Chair Chellman said the City was currently at 95 percent plus occupancy for downtown parking, which he thought was another reason the City had to construct another parking garage. He said it was a very bad public policy for private landowners to build parking downtown.

[Timestamp 1:37:10] Mr. Samonas said when leasing office space downtown that was not assigned, the office tenant could still think it was worth it to lease an office space. He said the tenant of an apartment unit had a higher expectation or greater demand of the surrounding parking area because their life revolved around that, and that it wasn't so much the tax burden but the expectation. He said it was hard to ignore the public's comments about parking and the burden of the parking because it was so expectedly drawn into the living arrangement. Mr. McNabb said he was one of the largest private owners of private parking spaces downtown, at 200 spaces, and he only have seven residential units. He said he leased those 200 spaces and contributed to the broader market by helping with parking solutions. It was further discussed. Mr. Almeida said the project, short of converting the Newberry building into a parking garage itself, would take a significant chunk out of the answer to anyone's concerns with downtown parking. He said the applicant's trip generation data gave him comfort and thought it was a unique situation in the City.

Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

[Timestamp 1:43:06] Isabella Romero of 425 Islington Street said she supported the project because it would bring more residential opportunities through co-living units. She said the City should be thinking more about the housing deficit than parking. She said she knew people who wanted to live in Portsmouth and would walk to work instead of having a car. She said she currently lived in a fourplex and that they all used public parking and could always find a spot.

Ellie Coakley of 425 Islington Street said the 2022 Portsmouth Housing Authority study stated that the vacancy rates in downtown Portland were a shocking 1.86 percent. She said median rents had skyrocketed and that the City had to focus on where people would live vs. cars. She said affordable housing close to where people work in the downtown area was needed.

Marcio von Muhlen of 303 Thaxter Road said he was in support of the project. He said he lived in co-living for four years after college and would not have been able to afford anything else. He said he did not have a car for many years and biked everywhere. He said co-living made sense in downtown Portsmouth, and he did not think that the lack of required parking should prevent the project. He said many members of his community were asking for more housing vs. parking.

Robin Husslage of 27 Rock Street (via Zoom) said she was not in favor of a parking Conditional Use Permit to allow 21 spots where 53 are required. She said the 84 bedrooms would likely have 84 cars, and she asked where guests would park. She said providing 36 bicycle parking spaces would not make up for the deficit of needed car parking spaces. She said the CUP parking requests that continued to be approved was the reason the City was looking to build a new parking garage. She said the tax burden continued to shift to taxpayers like her who lived in a house and that it was time for big developers to pay for the parking they don't provide.

Logan Roy of 233 Hillside Drive (via Zoom) said he was in support of the project. He said he lived in Portsmouth and had always been able to find parking downtown. He said the skyrocketing prices for downtown housing showed that housing demand far exceeded the supply, and he asked that the co-living aspect of the project also be approved.

No one else spoke, and Chair Chellman closed the public hearing.

**DISCUSSION OF THE BOARD**

[Timestamp 1:55:46] Mr. Almeida asked Ms. Conard to explain how a parking garage would impact a taxpayer. Ms. Conard said the City paid the construction bond from the parking fund and that it was a common misconception that the cost would be borne by the taxpayers. She said the City decided to support parking as an enterprise that supports the uses in the downtown, and she thought the applicant's project was a good example of a project that would rely on that enterprise. Mr. Giuliano said the applicant moved the surface parking that provided 18 spaces below grade along with a few spaces and a car elevator, which would be less impactful than having ramps going in and out. He said it was a costly and challenging solution to maintain what was there now and add to it for tenants and that it showed the applicant's willingness to address the parking problem as best as he could. Mr. Stith said TAC reviewed the whole application, including the parking, and had no concerns with the demand analysis. Mr. Giuliano said the zoning ordinance stated that there are more requirements of the Planning Board to be able to approve the Conditional Use Permit. He said the minimum number of spaces and the maximum number would not happen, and he asked how the Board would rationalize approving the Conditional Use Permit. Chair Chellman said the technical number the applicant was looking for was 21 spaces. It was further discussed. Mr. Hewitt asked how four units would share one parking space downtown. He read a few sentences from Perry Silverstein, who said "in his 30 years of apartment leasing downtown, he never had someone in his apartments without a car and that any argument made by Mr. McNabb that his proposed project of high-end residences and businesses will not have cars is absurd." Mr. Hewitt said he agreed and that 84 bedrooms would have 84 adults and each one would have a car. He said the project deficit was not seven spaces but 66 spaces, and there was a wide discrepancy. Mr. Bowen said he looked at the Master Plan

and found that the only mention that addressed it was an acknowledgement of the conflict between the need for cars and the other requirements of downtown, so he thought the Master Plan was silent on whether there should be more housing downtown, and also silent on solving the problem of parking downtown. He said he watched the videos of the Market Square Master Plan meetings and did not find anything to help him understand what the Board should be doing in the Market Square area. He said that project was mostly about pedestrian activity and traffic flow. Chair Chellman said the Board was constrained by the criteria in their ordinance.

**DECISION OF THE BOARD**

***Site Plan Review Approval*** [Timestamp 2:06:42]

1) *Councilor Moreau moved that the Board find that the Site Plan Application meets the requirements set forth in the Site Plan Regulations Section 2.9 Evaluation Criteria and adopt the findings of fact as presented. Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

2) *Councilor Moreau moved that the Board grant Site Plan Approval with the following conditions, in addition to the original conditions of approval stated in the Letter of Decision dated February 16, 2023:*

   2.1) *The applicant shall agree to pay for the services of an oversight engineer, to be selected by the City, to monitor the construction of improvements within the public rights-of-way and on site.*

   2.2) *Later review and approval of all off-site areas including but not limited to Ladd St, High St and Haven Ct planned improvements will be required in a separate reviewing action.*

   2.3) *The City makes no guarantee on the timeline that the proposed Fleet Street utility improvements will be constructed. The applicant must therefore show the existing utilities in Fleet Street and how any proposed work will be incorporated into the existing Fleet St pipe network. A separate sheet should be provided showing the proposed Fleet Street improvement design and how any new improvements on Haven Ct or the Newberry building will eventually interface.*

   2.4) *Proposed elevation changes to Haven Ct may affect the foundations, walls etc. of the Hanover Municipal parking garage. Third party review of structures and foundations will be required by the City.*

*Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

***Parking Conditional Use Permit*** [Timestamp 2:08:27]

1) *Councilor Moreau moved that the Board find that the Conditional Use Permit Application meets the requirements set forth in Section 10.1112.14 of the Ordinance and adopt the findings of fact as presented. Ms. Conard seconded.*

[Timestamp 2:08:45] There was further discussion. Mr. Samonas said he could see Mr. Hewitt's points but that the project was near a parking garage and that it was also suburban living. He said people had some expectation of not having parking. He said it was a good opportunity to re-use and further retrofit the buildings into what he thought would be a nice continuation of Commercial Alley or Chestnut Street. Mr. Bowen said it represented a decision to ignore the requirements in the code and not to require parking for a residential area or a project in an area that requires it. He said he worried about the precedent it could set. He said the City was structured by the law passed by the City Council that said 53 spaces, so if the Board approved the Conditional Use Permit, it meant that they were really eliminating the requirement for parking in residential areas downtown. Mr. Almeida said it would be consistent with the decision on any development of that scale in the City's core center and that he would not apply the same ideas to new construction on a green field site that was not in the core. He said he wasn't fooled by the idea that there would not be any cars but knew the core could absorb it because it was a unique situation. He said to comply, a garage would have to be built on the Congress Street site, and the community did not want that. Mr. Bowen said there were two other significantly sized projects in some state of approval in the downtown area that had a parking requirement and that he didn't know how the project's parking could be differentiated from those. Mr. Hewitt said it was a dangerous assumption to assume that all the project's residents would use a parking garage because it cost money and perhaps the people would park in nearby residential areas instead. It was further discussed. Chair Chellman said it was hard to set a precedent on an application like Mr. McNabb's due to the specifics with Haven Court, the adjacent street, and the existing nonconforming size of the use being converted from office to residential. He said all those factors made the project unique and not precedent setting. He said a Conditional Use permit was a means of relief under the ordinance and was a discretionary authority that the Board had from the City Council. He said he understood the concerns, however, and it was further discussed.

[Timestamp 2:17:15]

1) *Councilor Moreau moved that the Board grant the Conditional Use Permit as amended, noting existing trip counts for office at 248 and 36 for residential. Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

2) *Councilor Moreau moved that the Board grant the Conditional Use Permit as presented. Ms. Conard seconded.*

[Timestamp 2:17:55] There was further discussion. Councilor Moreau said she did not think the City had a parking issue, but they had parking that they had to manage. She said parking made the City a lot of money, and most of the money did not come from the residents. She said the parking structures were funded through the City's parking revenues. She also noted that the top floor of the nearby parking garage often did not have one car in it, so she had a hard time imagining that there would be a parking problem. She said the City Council was working toward a solution for people parking in neighborhoods surrounding the downtown and was also looking at micro transit solutions. It was further discussed. Councilor Moreau said she was the president of a condo association of all business units and that they needed parking for employees and

visitors, and that was why the parking demand for an office during the day was an issue. She said businesses and offices created much more of a parking need than the residents.

*The motion **passed** 6-2, with Mr. Hewitt and Mr. Bowen voting against.*

## VI. CITY COUNCIL REFERRALS

### A. Zoning Amendments

[Timestamp 2:31:05] Mr. Stith said the first amendment was to increase the height of fences along the side and rear lot lines from six feet to eight feet, and the second section was related to mechanical systems and HVAC units that routinely were granted variances by the Board of Adjustment. He said the proposal was to strike that section and add two new sections under Residential and Institutional Residence of Care Uses. He said Section 10.811.60 would allow any lot that contained one or two dwelling units to construct or maintain a one-story detached accessory structure used as a tool or storage shed, playhouse, treehouse or similar use with a square footage not greater than 120 square feet. He said one of those items would be allowed and would not have to comply with certain zoning requirements, such as environmental protection standards, corner lot provisions, and whether it was in the Historic District. He said it did not involve setbacks or building coverage and that it had to be in line with things exempt from requiring a building permit. He said Section 10.811.61 allowed for playground equipment, aboveground pools and hot tubs permitted as accessory structures to single and two-family dwellings as long as they met environmental protection and corner lot vision obstruction standards. He said the City Council referred it to the Planning Board and scheduled a second reading at their February 3 meeting. Councilor Moreau noted that there would be a public hearing at that meeting. Mr. Almeida said the new fence measurement seemed very specific and asked why it was brought to the Planning Board. Chair Chellman said a building permit was needed for a fence that was higher than eight feet. Mr. Almeida said a neighbor could place an 8-ft tall fence on top of a retaining wall so that it was 12 feet high. It was further discussed. It was further discussed. Chair Chellman suggested having a public hearing. He said allowing people to build 120-sf sheds or playhouses on a property line with no permits could result in the neighbor also doing it and having the sheds be side by side.

**DECISION OF THE BOARD**

*Councilor Moreau moved that the Board schedule a public hearing on the amendments for February 20, 2025. Ms. Conard seconded. The motion **passed** with all in favor.*

## VII. OTHER BUSINESS

**A. 815 Lafayette Road** – Requesting a 1-Year extension to the Site Plan Review, Development Site and Wetland Conditional Use approvals that were granted on January 18, 2024.

Mr. Stith said the petitioner would receive a building permit within the next two weeks.

*Ms. Conard moved that the Board grant a one-year extension to the Planning Board Approval of the Site Plan and Conditional Use permits to January 18, 2026. Mr. Samonas seconded. The motion **passed** with all in favor.*

**B. 1 Congress Street** – Requesting a second 1-year extension to unless the Board grants approval for the updated 1-15 Congress Street project. The first extension was granted on November 16, 2023 and will expire on February 16, 2025.

**Note**: the extension was not necessary because the petition was approved.

**C. Chairman Updates and Discussion Items**

Chair Chellman said a workshop was needed to discuss co-living, solar panels, the Hanover Street change, and possibly wetlands. He suggested February 27 as a date at 6 p.m.

Chair Chellman said contract negotiations for the Master Plan were almost finalized and that once the contract was executed, the Board would start to be involved with the Master Plan. Mr. Bowen noted that the State Statute specifically used the word 'shall' to state that "it shall be the duty of every planning board established under the regulation to prepare and amend a master plan to guide the development of the municipality". Ms. Conard said the Board would guide the chosen consultant's work along with City Staff, the City Council, and the Steering Committee, but that there was management in place to procure services.

**D. Board Discussion of Regulatory Amendments and Other Matters**

There was no discussion.

## VIII. ADJOURNMENT

The meeting adjourned at 9:48 p.m.

Submitted,

Joann Breault
Planning Board Meeting Minutes Taker

# Findings of Fact | Site Plan Review
## City of Portsmouth Planning Board

Date: 12/12/2024
Property Address: 635 Sagamore Avenue
Application #: LU-22-209
Decision: □ Approve □ Deny □ Approve with Conditions

**Findings of Fact:**

Per RSA 676:3, I: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. **The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval.** If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of the all conditions necessary to obtain final approval.

Site Plan Regulations Section 2.9 Evaluation Criteria - in order to grant site plan review approval, the TAC and the Planning Board shall find that the application satisfies evaluation criteria pursuant to NH State Law and listed herein. In making a finding, the TAC and the Planning Board shall consider all standards provided in Articles 3 through 11 of these regulations.

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| **1** | Compliance with all City Ordinances and Codes and these regulations. Applicable standards: | **Meets** **Does Not Meet** | We received the required zoning relief from the Zoning Board of Adjustments on May 23, 2023. Otherwise, TAC and the City's third party review engineer have reviewed to ensure that the proposed development complies with the requirements of the Zoning Ordinance and the Site Plan Review Regulations. |
| **2** | Provision for the safe development, change or expansion of use of the site. | **Meets** **Does Not Meet** | The proposed shared driveway for the four units has been designed to accommodate Portsmouth's largest fire truck as well as an SU-30 box truck. Additionally, we are providing an offsite double panel advisory speed limit and blind drive sign as well as a TC-600 radar speed sign just down the street to the south of the proposed site entrance in order to improve traffic safety at the intersection between the proposed shared driveway and Sagamore Ave. TAC |

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| | | | has reviewed to ensure that the proposed site re-development is safe. |
| **3** | Adequate erosion control and stormwater management practices and other mitigative measures, if needed, to prevent adverse effects on downstream water quality and flooding of the property or that of another. | **Meets**<br>**Does Not Meet** | The proposed stormwater management facilities, including a bioretention system with a sediment forebay, several infiltration areas, and a closed drainage system as well as a recently installed catch basin along Sagamore Avenue will ensure that peak rates and volumes of runoff will be reduced toward all offsite points of analysis resultant to this development as compared with the existing condition. Additionally, the stormwater management system has been designed to meet the stormwater treatment and pollutant removal requirements of the City of Portsmouth to the satisfaction of TAC and the City's third party review engineer. |
| **4** | Adequate protection for the quality of groundwater. | **Meets**<br>**Does Not Meet** | We are providing groundwater recharge practices to hydrologically offset the proposed impervious surfaces. Treatment BMPs have been provided to protect the quality of surface water and groundwater. |
| **5** | Adequate and reliable water supply sources. | **Meets**<br>**Does Not Meet** | The four units will be supplied by the City's municipal water system. |
| **6** | Adequate and reliable sewage disposal facilities, lines, and connections. | **Meets**<br>**Does Not Meet** | The four units will be serviced by the City's municipal sanitary sewer system. |
| **7** | Absence of undesirable and preventable elements of pollution such as smoke, soot, particulates, odor, wastewater, stormwater, sedimentation or any other discharge into the environment which might prove harmful to persons, structures, or adjacent properties. | **Meets**<br>**Does Not Meet** | As stated above, the proposed stormwater management system meets the requirements of Section 7.6 of the Site Plan Review Regulations. Peak discharge rates and volumes of runoff toward the analysis points will be reduced post-construction resultant to the stormwater management system, and the pollutant removal thresholds required by these regulations have been met, Additionally, these four units will be ties into the City's sewer system and sewage will be treated at the wastewater treatment plant. Appropriate steps take nfor erosion control include silt fence, rip rap, and stabilized construction entrance. We do not anticipate smoke, soot, particulates, or odor resultant to this |

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| | | | multi-family residential development. |
| **8** | Adequate provision for fire safety, prevention and control. | **Meets**<br>**Does Not Meet** | A fire hydrant has been installed at the intersection of Sagamore Ave. and the proposed shared driveway for the development and the shared driveway has been designed to accommodate Portsmouth's largest fire truck. |
| **9** | Adequate protection of natural features such as, but not limited to, wetlands. | **Meets**<br>**Does Not Meet** | There are no wetlands or other outstanding natural features on the subject parcel. A 100' buffer to offsite wetlands is being maintained as well. See Note #6 on Sheet C2. The site has been designed to keep tree clearing and ledge removal to the minimum possible. The remaining wooded buffer to the Tidewatch Condominiums in the rear of the site will be enhanced with proposed tree plantings. This is a re-development of the existing Luster King auto detailing business. |
| **10** | Adequate protection of historical features on the site. | **Meets**<br>**Does Not Meet** | There are no known historical features on the site. |
| **11** | Adequate management of the volume and flow of traffic on the site and adequate traffic controls to protect public safety and prevent traffic congestion. | **Meets**<br>**Does Not Meet** | Significant traffic is not anticipated resultant to this four-unit residential development. A trip generation memorandum prepared by Stephen G. Pernaw was included in the initial TAC submission. In order to improve traffic safety at the proposed intersection, we are proposing to provide a double panel advisory speed limit and blind drive sign as well as a TC-600 radar speed sign to the south of the site entrance. The proposed site entrance for the 20' wide site driveway directly replaces the existing Luster King site entrance and it is our opinion that this is a significant traffic safety improvement due to the width, location, and elevation of the proposed curb cut. |

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| **12** | Adequate traffic controls and traffic management measures to prevent an unacceptable increase in safety hazards and traffic congestion off-site. | **Meets**<br>**Does Not Meet** | See response to Comment #11, these issues are addressed in that response. |
| **13** | Adequate insulation from external noise sources. | **Meets**<br>**Does Not Meet** | The subject parcel is located outside of the Highway Noise Overlay District and from our observation it is not noisy on the subject parcel. Landscape trees and existing vegetation will provide some insulation to noise resulting from traffic on Sagamore Avenue to the extent practicable. |
| **14** | Existing municipal solid waste disposal, police, emergency medical, and other municipal services and facilities adequate to handle any new demands on infrastructure or services created by the project. | **Meets**<br>**Does Not Meet** | See Note #21 on Sheet C2: "The owner of each unit shall store trash in their garage. Trash will be picked up by a private hauler".<br><br>The proposed private driveway is designed for the turning radii of Portsmouth's largest fire truck. We went through the TAC process and third party review to ensure that the proposed infrastructure is adequate for the proposed development. |
| **15** | Provision of usable and functional open spaces of adequate proportions, including needed recreational facilities that can reasonably be provided on the site | **Meets**<br>**Does Not Meet** | 80% of the subject parcel will consist of open space post-construction. Lawn space will be provided in front of, between, and behind each of the units. |
| **16** | Adequate layout and coordination of on-site accessways and sidewalks in relationship to off-site existing or planned streets, accessways, bicycle paths, and sidewalks. | **Meets**<br>**Does Not Meet** | The proposed site driveway will be tied into the recently installed sidewalk tipdowns along Sagamore Avenue. The proposed site driveway has been designed at the part of the subject parcel with the most available sight distance along Sagamore Avenue. |
| **17** | Demonstration that the land indicated on plans submitted with the application shall be of such character that it can be used for building purposes without danger to health. | **Meets**<br>**Does Not Meet** | Stormwater from non-roof impervious surfaces will be treated before leaving the site or recharging t ogroundwater. The peak flow rate and volume of runoff will be reduced post-construction. The stormwater management BMPs that were implemented exceed the pollutant removal requirements of the City of Portsmouth as well. Wastewater will enter the municipal sewer system toward the |

| | Site Plan Review Regulations Section 2.9 Evaluation Criteria | Finding (Meets Standard/Criteria) | Supporting Information |
|---|---|---|---|
| | | | wastewater treatment plant. The minimal possible amount of tree clearing and ledge removal will be performed to support the proposed development. |
| **18** | Adequate quantities, type or arrangement of landscaping and open space for the provision of visual, noise and air pollution buffers. | **Meets**<br>**Does Not Meet** | We are maintaining existing vegetation to the extent possible while still providing adequate yard space for the unit owners and enhancing the remaining buffer with proposed tree plantings. We are providing additional trees and shrubs around the site and have worked with TAC to provide vegetated buffers to abutting properties. |
| **19** | Compliance with applicable City approved design standards. | **Meets**<br>**Does Not Meet** | We have obtained the necessary zoning relief to have more than one free-standing dwelling on a lot and to permit more than one dwelling unit per acre, and otherwise meet all requirements of the Zoning Ordinance and the Site Plan Review Regulations. |
| | **Other Board Findings:** | | |

ALTUS ENGINEERING

*Civil*
*Site Planning*
*Environmental*
*Engineering*

133 Court Street
Portsmouth, NH
03801-4413

December 5, 2024

Peter Stith, Planning Manager
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Peer Review #5
"Luster Cluster" Residential Development
Tax Map 222, Lot 19
Altus Project 5583

Transmitted via email to: pmstith@cityofportsmouth.com

Dear Peter,

On May 21, 2024, Altus Engineering (Altus) received the executed three-party contract to provide peer review of the Luster Cluster multi-family development at 635 Sagamore Avenue.

This review has been conducted to determine conformance with City of Portsmouth Stormwater Regulations as well as the City's expectations, good engineering practices, and specifically the items identified in Exhibit A, Task 1 of the Agreement including the following:

- Conduct a site visit to observe current site conditions to assess that JBE's assumptions are accurate.
- Review the drainage study and site design as it relates to the short term and long-term drainage scenarios.
- Review the Stormwater Management Operation and Maintenance Manual.
- Review the design for conformance to City Regulations, City expectations, and standard engineering practices.

On May 30, 2024, Altus walked the property with Michael Garrepy, the owner's representative and Paige Libbey, the project engineer from Jones & Beach Engineers, Inc. (JBE). Altus issued review letters on June 4th, August 28th, October 7th, and October 29, 2024.

On August 26, 2024, Altus performed a follow up visit to confirm the existing site conditions.

On November 25, 2024, JBE submitted a revised plan set dated November 25, 2024, updated Stormwater Management Operations and Maintenance Manual, and a supporting cover letter. Their October 14, 2024 Drainage Analysis remains valid.

The revised submission satisfactorily addresses our concerns with the exception of the following housekeeping items.

**GENERAL COMMENTS**

1. Key elevations should be added to the stone infiltration basins under the decks for Units 3 and 4. Notes should be added to the plan requiring inspection of the subgrade by the City to ensure that the design criteria is met.

2. The sitework details for both the sand absorption area and the infiltration stone underneath deck specify uncompacted in-situ soil or suitable backfill from subject parcel native material is placed beneath and adjacent to the systems. It is Altus' opinion that the Designer should provide gradation, compaction, and infiltration rate requirements for the placement of the fill adjacent, below and down gradient of the infiltration practice. The sand absorption area for unit 3 is in 5-foot fill section. The detail should include a minimum depth of native material below the treatment area as well as down gradient.

Altus is available to meet with the City and/or the applicant's engineer to further discuss this review. Please feel free to contact us at any time at (603) 433-2335.

Respectfully submitted,

**Altus Engineering, LLC**

Eric D. Weinrieb, PE
President

Ecopy: David Desfosses, Portsmouth DPW
Zach Cronin, Portsmouth DPW
Mike Garrepy
Daniel Meditz, JBE

Wde/5583 rev 4.docx

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

November 22, 2024

Portsmouth Planning Board
Attn: Rick Chellman, Chair
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

**RE: Site Plan Application – Case # LU-22-209**
**Luster Cluster**
**635 Sagamore Avenue, Portsmouth, NH**
**Tax Map 222, Lot 19**
**JBE Project No. 18134.1**

Dear Board Members,

Jones & Beach Engineers, Inc., respectfully submits a Site Plan Application on behalf of the applicant & owner, 635 Sagamore Development LLC. The intent of this application is to remove the 2 pre-existing non-conforming structures known as the Luster King, then construct a four-unit single-family residential condominium development with a paved driveway. This project was approved by ZBA on May 16, 2023, and TAC on November 5, 2024.

The following items are provided in support of this Application:

1. Completed Site Plan Application (submitted online).
2. Site Plan Application Checklist.
3. ZBA Approval from May 16, 2023.
4. TAC Approval from November 5, 2024.
5. Letter of Authorization.
6. Current Deed.
7. Green Building Statement.
8. RCCD Offsite Wetland Letter.
9. Response Letter to Altus Comments.
10. Wetland Delineation Letter.
11. Trip Generation Memorandum.
12. Test Pit Log.
13. One (1) Full Size Plan Set Folded.
14. One (1) Architectural Plans at End of Plan Set.
15. One (1) Drainage Report.
16. One (1) Stormwater Operations and Maintenance Manual.

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 Coronati
Vice President

cc: Michael Garrepy (via email)
Eric Weinrieb, Altus Engineering (via email & U.S. Mail)

# 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: 635 Sagamore Development, LLC Date Submitted: 3/18/24

Application # (in City's online permitting): LU-22-209

Site Address: 635 Sagamore Avenue Map: 222 Lot: 19

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

| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☒ | Statement that lists and describes "green" building components and systems. **(2.5.3.1B)** | Included with Submission | |
| ☒ | 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)** | Architectural Plans | N/A |
| ☒ | Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)** | Cover Sheet & Sheet C2 | N/A |

| Site Plan Review Application Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| X | Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)** | Cover Sheet | N/A |
| X | Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)** | Cover Sheet | N/A |
| X | Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)** | Cover Sheet | N/A |
| X | List of reference plans. **(2.5.3.1H)** | C1 | N/A |
| X | List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)** | Cover Sheet | N/A |

| Site Plan Specifications | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| X | Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)** | Required on all plan sheets | N/A |
| X | Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)** | Required on all plan sheets | N/A |
| X | GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)** | C1, Note #3 | N/A |
| X | Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)** | Required on all plan sheets | N/A |
| X | Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)** | None Observed, Wetland Delineation Report Included | N/A |
| X | Title (name of development project), north point, scale, legend. **(2.5.4.2A)** | C1 | N/A |
| X | Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)** | All Sheets | N/A |
| X | Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)** | Required on all plan sheets | N/A |
| X | Source and date of data displayed on the plan. **(2.5.4.2D)** | C1 | N/A |

| Site Plan Specifications – Required Exhibits and Data | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☒ | **1. Existing Conditions: (2.5.4.3A)**<br>• Surveyed plan of site showing existing natural and built features;<br>• Existing building footprints and gross floor area;<br>• Existing parking areas and number of parking spaces provided;<br>• Zoning district boundaries;<br>• Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre;<br>• Existing impervious and disturbed areas;<br>• Limits and type of existing vegetation;<br>• Wetland delineation, wetland function and value assessment (including vernal pools);<br>• SFHA, 100-year flood elevation line and BFE data, as required. | C1 | |
| ☒ | **2. Buildings and Structures: (2.5.4.3B)**<br>• Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;<br>• Elevations: Height, massing, placement, materials, lighting, façade treatments;<br>• Total Floor Area;<br>• Number of Usable Floors;<br>• Gross floor area by floor and use. | Architectural Plans | |
| ☒ | **3. Access and Circulation: (2.5.4.3C)**<br>• Location/width of access ways within site;<br>• Location of curbing, right of ways, edge of pavement and sidewalks;<br>• Location, type, size and design of traffic signing (pavement markings);<br>• Names/layout of existing abutting streets;<br>• Driveway curb cuts for abutting prop. and public roads;<br>• If subdivision; Names of all roads, right of way lines and easements noted;<br>• AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC). | C2<br>T1-T2 | |
| ☒ | **4. Parking and Loading: (2.5.4.3D)**<br>• Location of off street parking/loading areas, landscaped areas/buffers;<br>• Parking Calculations (# required and the # provided). | C2, Note #3 | |
| ☒ | **5. Water Infrastructure: (2.5.4.3E)**<br>• Size, type and location of water mains, shut-offs, hydrants & Engineering data;<br>• Location of wells and monitoring wells (include protective radii). | C4 | |
| ☒ | **6. Sewer Infrastructure: (2.5.4.3F)**<br>• Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period. | C4 & P2 | |

| | | | |
|---|---|---|---|
| ☒ | **7. Utilities: (2.5.4.3G)**<br>• *The size, type and location of all above & below ground utilities;*<br>• Size type and location of generator pads, transformers and other fixtures. | C4 | |
| ☒ | **8. Solid Waste Facilities: (2.5.4.3H)** | C2, Note #22 | |
| | • The size, type and location of solid waste facilities. | | |
| ☒ | **9. Storm water Management: (2.5.4.3I)**<br>• The location, elevation and layout of all storm-water drainage.<br>• The location of onsite snow storage areas and/or proposed off-site snow removal provisions.<br>• Location and containment measures for any salt storage facilities<br>• Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures. | Snow Storage - C2<br>Everything Else - C3 | |
| ☒ | **10. Outdoor Lighting: (2.5.4.3J)**<br>• Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan. | L2 | |
| ☒ | **11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)** | Everywhere | |
| ☒ | **12. Landscaping: (2.5.4.3K)**<br>• Identify all undisturbed area, existing vegetation and that which is to be retained;<br>• Location of any irrigation system and water source. | L1 | |
| ☒ | **13. Contours and Elevation: (2.5.4.3L)**<br>• Existing/Proposed contours (2 foot minimum) and finished grade elevations. | C3 | |
| ☒ | **14. Open Space: (2.5.4.3M)**<br>• Type, extent and location of all existing/proposed open space. | C2, Note #2 | |
| ☐ | **15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)** | N/A | |
| ☐ | **16. Character/Civic District (All following information shall be included): (2.5.4.3P)**<br>• Applicable Building Height (10.5A21.20 & 10.5A43.30);<br>• Applicable Special Requirements (10.5A21.30);<br>• Proposed building form/type (10.5A43);<br>• Proposed community space (10.5A46). | N/A | |
| ☐ | **17. Special Flood Hazard Areas (2.5.4.3Q)**<br>• The proposed development is consistent with the need to minimize flood damage;<br>• All public utilities and facilities are located and construction to minimize or eliminate flood damage;<br>• 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)** | Included with Submission | |
| ☒ | Indicate where Low Impact Development Design practices have been incorporated. **(7.1)** | C3 | |
| ☒ | Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)** | C2, Note #23 | |
| ☒ | Stormwater Management and Erosion Control Plan. **(7.4)** | Included with Submission | |
| ☒ | Inspection and Maintenance Plan **(7.6.5)** | Included with Submission | |

| 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:<br>• Waivers;<br>• Driveway permits;<br>• Special exceptions;<br>• Variances granted;<br>• Easements;<br>• Licenses.<br>**(2.5.3.2A)** | C2, Note # 4 & 5 | |
| ☒ | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to:<br>• Calculations relating to stormwater runoff;<br>• Information on composition and quantity of water demand and wastewater generated;<br>• Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;<br>• Estimates of traffic generation and counts pre- and post-construction;<br>• Estimates of noise generation;<br>• A Stormwater Management and Erosion Control Plan;<br>• Endangered species and archaeological / historical studies;<br>• Wetland and water body (coastal and inland) delineations;<br>• Environmental impact studies.<br>**(2.5.3.2B)** | Included with Submission | |
| ☒ | 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.<br>**(2.5.3.2D)** | Pending | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☒ | A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)** | C2, Note #5 | |
| ☒ | A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)** | C2, Note #21 | 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:<br>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."<br>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."<br>**(2.13.3)** | C2, Note #19 & 20 | N/A |

**Applicant's Signature:** Daniel Medlitz **Date:** 9/5/2024

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

**ZONING BOARD OF ADJUSTMENT**

June 28, 2023

635 Sagamore Development, LLC
3612 Lafayette Rd Dept 4
Portsmouth, New Hampshire 03801

RE: **Board of Adjustment request for property located at 635 Sagamore Avenue (LU-22-209)**

Dear Property Owner:

The Zoning Board of Adjustment, at its regularly scheduled meeting of **Tuesday, May 16, 2023**, considered your application for the removal of existing structures and constructing 4 single family dwellings which requires the following: 1) A Variance from Section 10.513 to allow four free-standing dwellings where one is permitted. 2) A Variance from Section 10.521 to allow a lot area per dwelling unit of 21,198 square feet per dwelling where 43,560 square feet is required. Said property is shown on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. As a result of said consideration, the Board voted to to **deny** the request initially because the proposed plan did not meet the hardship criteria. This Motion failed. The Board then voted to **approve** the variances for the project as presented with the following **condition:**

1) The design and location of the dwellings may change as a result of Planning Board review and approval.

The Board's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Board's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Approvals may also be required from other City Commissions or Boards. Once all required approvals have been received, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work.

This approval shall expire unless a building permit is issued within a period of two (2) years from the date granted unless an extension is granted in accordance with Section 10.236 of the Zoning Ordinance.

*The Findings of Fact associated with this decision are available: attached here or as an attachment in the Viewpoint project record associated with this application and on the Zoning Board of Adjustment Meeting website:*

https://www.cityofportsmouth.com/planportsmouth/zoning-board-adjustment/zoning-board-adjustment-archived-meetings-and-material

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Phyllis Eldridge, Chair of the Zoning Board of Adjustment

cc: Shanti Wolph, Chief Building Inspector

Rosann Maurice-Lentz, City Assessor

Joseph Coronati, Jones & Beach
R. Timothy Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC

CITY OF PORTSMOUTH
Planning & Sustainability
Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

**TECHNICAL ADVISORY COMMITTEE**

November 8, 2024

635 Sagamore Development, LLC
3612 Lafayette Rd Dept 4
Portsmouth, New Hampshire 03801

RE: Site Plan Approval request for property located at 635 Sagamore Avenue, Portsmouth, NH (LU-22-209)

Dear Property Owner:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, November 5, 2024 , considered your application for Site Plan approval for the removal of the existing structures and construction of 4 single-family dwellings on one lot with associated site improvements. Said property is shown on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. As a result of said consideration, the Committee voted to **recommend approval** to the Planning Board with the following **conditions**:

**The following changes will be made prior to Planning Board submission:**

1. The stormwater maintenance manual shall be updated for the submission to the Planning Board.

**Conditions:**

1. Trees to remain are clearly marked before site work can commence.

2. Monthly and annual reporting of stormwater and drainage infrastructure as defined in the stormwater maintenance manual to the Department of Public Works.

3. Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.

4. Developer to pay for the installation of the fire hydrant extended to the site. The hydrant was installed exclusively for the benefit of this site. The cost to install was $20,900.

5. Developer to provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, December 19, 2024**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning

& Sustainability Department and uploaded to the online permit system no later than **Wednesday, November 27, 2024**.

*Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:*

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*
- *Traffic Studies*
- *Etc.*

***All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.***

The minutes and audio recording of this meeting are available by contacting the Planning & Sustainability Department.

Very truly yours,

Peter Britz,
Planning and Sustainability Director

cc: Joseph Coronati, Jones & Beach
cc: R. Timothy Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC

**Letter of Authorization**

635 Sagamore Development, LLC, owner of property located at 635 Sagamore Avenue in Portsmouth, NH, known as Tax Map 222, Lot 19, 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 behalf of 635 Sagamore Development, LLC in the Planning Board and Zoning Board application process, to include any required signatures.

635 Sagamore Development, LLC

Timothy J. Black, Duly Authorized

January 5, 2022
Date

Book: 6332 Page: 1158

E # 21060614 09/24/2021 09:32:59 AM
Book 6332 Page 1158 Page 1 of 2
Register of Deeds, Rockingham County

Return to:

| | | |
|---|---|---|
| LCHIP | ROA585829 | 25.00 |
| TRANSFER TAX | RO109828 | 5,807.00 |
| RECORDING | | 14.00 |
| SURCHARGE | | 2.00 |

# WARRANTY DEED

KNOW ALL BY THESE PRESENTS, that I, **WILLIAM A. HINES**, married person, **TRUSTEE OF THE WILLIAM A. HINES FAMILY REVOCABLE TRUST** a/k/a The Hines Family Revocable Trust of 2006, of 635 Sagamore Avenue, Portsmouth, New Hampshire 03801, for consideration paid, hereby grant to **635 SAGAMORE DEVELOPMENT, LLC**, a New Hampshire limited liability company with a mailing address of 3612 Lafayette Road, Dept. 4, Portsmouth, New Hampshire 03801 with WARRANTY COVENANTS, the following described premises:

A certain tract of land with the buildings thereon, situate on Sagamore Avenue in said Portsmouth, more particularly described as follows:

Beginning at a point on Sagamore Avenue at land now or formerly of Arnold, thence running Westerly by said Arnold land three hundred (300) feet, more or less, to land now or formerly of W.W. and D.M. Johnston; thence turning and running Northwesterly by said Johnston land one hundred and twenty-four (124) feet; thence turning and running Northerly also by said Johnston land one hundred sixty-two (162) feet to land now or formerly of C.W. Walker; thence turning and running Easterly by said Walker land four hundred nineteen (419) feet to Sagamore Avenue; thence turning and running Easterly one hundred forty (140) feet; thence turning and running along said Sagamore Avenue thirty (30) feet to land of one Smith; thence turning and running Westerly one hundred forty (140) feet; thence turning and running Southerly ninety (90) feet; thence turning and running Easterly one hundred forty (140) feet to Sagamore Avenue; the last three bounds being land of Smith; thence turning running Southerly by said Sagamore Avenue one hundred sixty (160) feet to the point of beginning.

EXCEPTING AND RESERVING to the said William A. Hines and his wife Bonnie Hines a life estate in the above-described property permitting them to reside in the existing residential apartment on the property for the remainder of William A. Hines natural life, plus one year unless Bonne Hines shall have predeceased.

Meaning and intending to convey the same premises conveyed to the Grantor by deed of William A. Hines dated February 11, 2008 and recorded in the Rockingham County Registry of Deeds at Book 4885, Page 1538.

BY SIGNING BELOW, William A. Hines and Bonnie Hines release all homestead rights to the Premises.

TRUSTEE CERTIFICATE

I, William A. Hines, Trustee of the William A. Hines Family Revocable Trust A/K/A The Hines Family Revocable Trust of 2006, hereby covenant that said Trust is duly organized under the laws of the State of New Hampshire; that I am the sole trustee pursuant to said Declaration of Trust; that said Trust is still in full force and effect; that I have the power thereunder to convey as aforesaid; and that, in making this conveyance, I have, in all respects, acted pursuant to the authority vested in and granted to me therein and no purchaser or third party shall be bound to inquire whether the Trustee has said power or are properly exercising said power or to see to the application of any trust assets paid to the Trustee for a conveyance thereof.

Signed this 3rd day of September, 2021.

William A. Hines, Trustee of the William A. Hines Family Revocable Trust A/K/A The Hines Family Revocable Trust of 2006

Bonnie Hines

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this, the 3rd day of September, 2021, before me, the undersigned Officer, personally appeared William A. Hines, Trustee of the William A. Hines Family Revocable Trust A/K/A The Hines Family Revocable Trust of 2006, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument, and acknowledged that he executed the same for the purposes set forth therein.

Justice of the Peace/Notary Public
My commission expires:

LAURA H. RAMSDELL
MY COMMISSION EXPIRES MAY 20, 2025
NOTARY PUBLIC
NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this, the 3rd day of September, 2021, before me, the undersigned Officer, personally appeared Bonnie Hines, known to me, or satisfactorily proven, to be the person whose name is subscribed to the foregoing instrument, and acknowledged that she executed the same for the purposes set forth therein.

Justice of the Peace/Notary Public
My commission expires:

LAURA H. RAMSDELL
MY COMMISSION EXPIRES MAY 20, 2025
NOTARY PUBLIC
NEW HAMPSHIRE

**Letter of Authorization**

635 Sagamore Development, LLC, owner of property located at 635 Sagamore Avenue in Portsmouth, NH, known as Tax Map 222, Lot 19, 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 behalf of 635 Sagamore Development, LLC in the Planning Board and Zoning Board application process, to include any required signatures.

635 Sagamore Development, LLC

Timothy J. Black, Duly Authorized

January 5, 2022
Date

We GSD Studios
Architecture | Planning
22 Jady Hill Avenue
Exeter, NH 03833
207.347.1504

City of Portsmouth
Planning Department
Attn: Peter Stith, Principal Planner
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

April 1, 2024

Dear Mr. Stith,

The residential units proposed for the project at 635 Sagamore Avenue are being designed to meet or exceed the applicable green building standards as set forth in the 2018 set of Codes adopted by the State of New Hampshire, along with associated amendments codified by the City of Portsmouth.

In an effort promote the buildings' efficiency, longevity, and health of their occupants, close attention shall be given to the following building categories:

- Tight building enclosures
  - Watertightness (though moisture barriers)
  - Vapor permeability
  - Airtightness
  - Aire quality, environmental controls, and whole-house ventilation
- Thermal control for reduced energy usage
  - Enhanced envelope assembly R-Values and window/door U-Values
  - Solar Heat Gain Coefficient and orientation of windows and doors
- High-efficiency water heating & HVAC equipment
- ENERGY STAR appliances
- High-efficiency lighting
- Low-flow water fixtures

Assemblies and systems for the proposed residences shall be specified during the Building Permit Application phase.

Thank you,

Margaret Randolph, RA, NCARB, AIA, LEED AP ND

# ROCKINGHAM COUNTY CONSERVATION DISTRICT

110 North Road, Brentwood, NH 03833-6614
Tel: 603-679-2790 • Fax: 603-679-2860
www.rockinghamccd.org


23 May 2024

Peter Britz, Director of Planning
City of Portsmouth Planning Dept.
1 Junkins Avenue
Portsmouth, NH 03801

RE: 635 Sagamore Avenue
Tax map/lot: 222, lot 19
RCCD #PR222-19 N24

Dear Mr. Britz;

At your instruction, Rockingham County Conservation District (RCCD) performed a wetland review of this site. The scope of work included a wetland review on the project site and a determination of reference lines for buffer measurements from off-site wetlands. A site visit was conducted on 22 May 2024 by Michael Cuomo of the Rockingham County Conservation District and Brenden Walden of Gove Environmental Services.

1) Confirming the findings of Mr. Walden's letter dated 8 November 2021, there are no wetlands on the project site.

2) There are two wetlands across the street from the project site on the Tidewatch Condominium property. The attached Sketch One shows the general locations, overlaid on part of the Jones and Beach existing conditions plan. The wetlands were not flagged because they are off the project site. Measurements were taken from the wetland boundary to the centerline of the road for location reference. The Easterly wetland requires a 100 foot buffer and the Westerly wetland does not, according to the City's GIS.

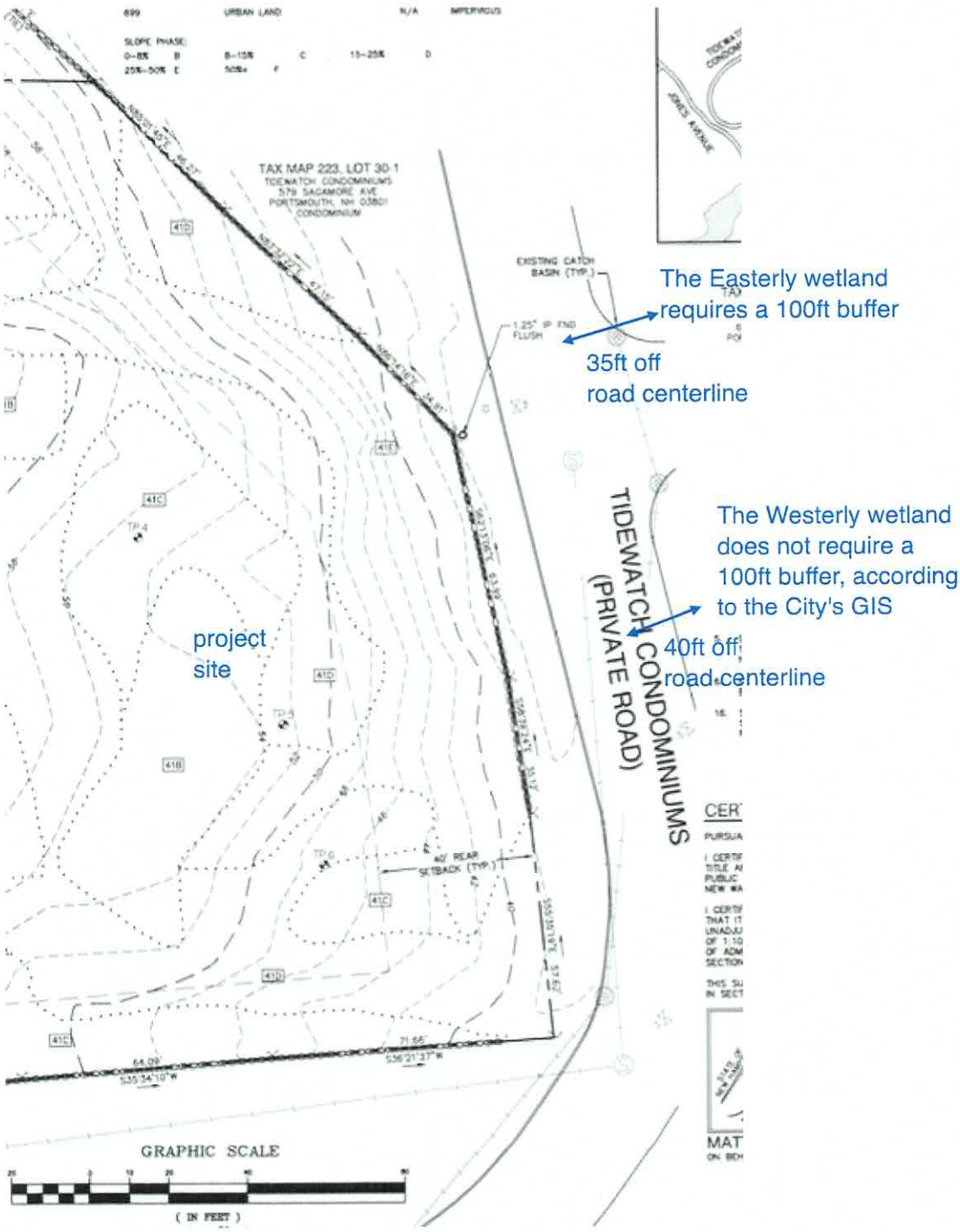
3) Sketch Two is taken from the City's GIS. It generally shows the two wetlands discussed above and a third 'wetland' south and east of the project site, partially on the Tidewatch Condominium property. This 'wetland' does not exist; its is a map error.

Sincerely,

Michael Cuomo
NH Certified Soil Scientist #6
NH Certified Wetland Scientist #4

Copy to: plbritz@cityofportsmouth.com
bwalden@gesinc.biz
mgarrepy@gmail.com

Sketch One
Part of 635 Sagamore Ave, Portsmouth
Buffer from off-site wetlands
23 May 2024
Michael Cuomo, RCCD



Sketch Two
635 Sagamore Avenue, Portsmouth
Wetlands around site
23 May 2024
Michael Cuomo, RCCD

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

November 22, 2024

City of Portsmouth Planning Department
Attn: Peter Stith, Planning Manager
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

**RE: Response Letter 4**
**635 Sagamore Ave, Portsmouth, NH**
**Tax Map 222, Lot 19**
**JBE Project No. 18134.1**

Dear Mr. Stith,

We are in receipt of comments from Eric Weinrieb, P.E., Altus Engineering dated October 29, 2024. Review comments are listed below with our responses in bold. Additionally, the Technical Advisory Committee decided to recommend approval to the Planning Board at their meeting on November 8, 2024. The TAC requested one change the stormwater operations and maintenance manual as a condition of their recommendation for approval, so we are responding to that condition with this letter as well.

*ALTUS Comments:*

*1. Based on the discussion at the October 1st TAC meeting, it is understood the Designer was going to expand the retaining wall and move it closer to buildings 3 and 4, making the wall higher, while preserving more of the natural vegetation. The boulder wall to the south of Unit 4 has not moved. The natural buffer between the development and Tidewatch Condominium development remains the same in this area. The Committee should confirm if the wall location is acceptable.*
**RESPONSE: TAC has signed off on the retaining wall location.**

*2. Key elevations should be added to the stone infiltration basins under the decks for Units 3 and 4. Additionally, the design computations include an assumption that there will be no ledge to elevation 62.33 for building 3 and elevation 61.0 for building 4. Notes should be added to the plan requiring inspection of the subgrade to ensure that the design criteria are met.*
**RESPONSE: Specifications for the top and bottom of stone elevations relative to existing grade have been added the labels for the stone infiltration beds on Sheet C3. Additionally, notes have been added to the "Infiltration Stone Underneath Deck" detail on Sheet D5 directing the contractor to remove ledge to at least 2' below existing grade in the footprint of these practices if encountered, and to verify that existing subgrade has not been excessively compacted prior to placement of stone.**

*3. The Designer is proposing to provide "sand absorption areas" for the gravity foundation drainage discharge. The absorption area for building units 1 and 2 is approximately 30- feet from the nearest test pit. Altus recommends that notes be added to the plans requiring confirmation that there is adequate separation to ledge.*
**RESPONSE: Note #4 has been added to the sand absorption area detail on Sheet D4 specifying that a test pit shall be performed prior to construction of these practices in order to confirm adequate separation to ledge, and that ledge shall be removed to at least 12" below the bottom of the practice if encountered.**

*4. The sitework details for both the sand absorption area and the infiltration stone underneath deck specify native material is placed beneath and adjacent to the systems. It is Altus' opinion that the Designer should provide gradation and compaction requirements for the placement of the fill. The detail should include a minimum depth of native material below the treatment area as well as down gradient.*
**RESPONSE: We revised the sand absorption area detail to specify that the sand, per the specified gradation, shall be placed from existing grade to finished grade. The material below that will be uncompacted in-situ soil. Fill material on the downgradient slopes will be suitable backfill from the subject parcel. The same sand gradation from the sand absorption area detail has been added to the detail for the stone infiltration beds underneath unit decks and the detail has been revised to state that this sand material shall be placed from existing grade to the bottom of stone on these features.**

*5. The Designer provided two Stormwater Management Operation and Maintenance Manuals with their submission. One dated October 14th and an updated copy dated October 22nd. It is presumed that the October 22nd version is the correct version. The Designer notes that the sand absorption areas maintenance are to be inspected monthly. The maintenance requirements should include the removal of any vegetated growth.*
**RESPONSE: The Stormwater Management Operation and Maintenance Manual dated October 22nd was the correct version (though a November 19th revision date has now been added). A sentence has been added to the O&M sections for the sediment forebay, bioretention system, stone drip edges, stone underneath decks, and rip rap outlet protection aprons stating that excessive vegetative growth shall be removed, and to the section for the sand absorption areas stating that ALL vegetative growth shall be removed.**

*TAC Changes to be made prior to Planning Board Submission:*

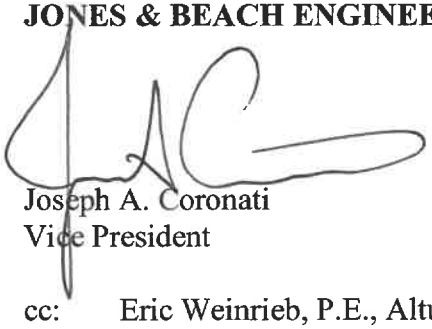
1. *The stormwater maintenance manual shall be updated for the submission to the Planning Board.*
   **RESPONSE: The Stormwater Operations & Maintenance Manual has been updated to specify that the sand absorption areas shall be inspected quarterly rather than monthly, as requested.**

Included with this response letter are the following:

1. One (1) Full Size Revised Plan Set (Architectural Plans at End of Set).
2. One (1) Revised Stormwater Operations & Maintenance Manual.

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: Eric Weinrieb, P.E., Altus Engineering (via email and hand delivered)
Michael Garrepy (via email)

GOVE ENVIRONMENTAL SERVICES, INC.

November 8, 2021

Subject: Wetland Delineation Report
635 Sagamore Ave, Portsmouth, NH

Dear Michael Garrepy,

Per your request, this letter is to verify that Gove Environmental Services, Inc., performed a site inspection to identify wetlands on the subject properties located on Tax Map 222 Lots 19 on Sagamore Ave in Portsmouth, NH. Wetlands were evaluated utilizing the following standards:

1. *US Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*, Technical Report ERDC/EL TR-12-1 (January 2012).
2. *Field Indicators for Identifying Hydric Soils in New England – Version 4, June 2020.* New England Hydric Soils Technical Committee.
3. *US Army Corps of Engineers National Wetland Plant List, 2018.*
4. *Classification of Wetlands and Deepwater Habitats of the United States.* USFW Manual FWS/OBS–79/31 (1979).

Brenden Walden performed the site inspection on 10/29/2021. The Subject property was reviewed in its entirety with careful attention paid to the area outlined southeast of the property on the City of Portsmouth's GIS website as being a wetland with a 100ft buffer that encroaches onto the property. During the site review it was determined, using the methods and standards above, that no areas on the property had any areas that would meet the criteria needed to be classified as a wetland. The area outside to the southeast of the property was also reviewed and was determined to also not have any characteristics of a wetland and thus would not have any buffer that would encroach on the subject property.

This concludes the wetland delineation report. If I can be of further assistance, please feel free to contact me at (603) 778-0644.

Sincerely,

Brenden Walden
Business Manager & Wetland Scientist
Gove Environmental Services, Inc.


Enc. Portsmouth GIS
Granitview Maps: Aerial
Aerial w/ Topography
Aerial w/ Topography & NWI

8 Continental Dr Unit H, Exeter, NH 03833-7507
*Ph* (603) 778 0644 / *Fax* (603) 778 0654
*www.gesinc.biz*
*info@gesinc.biz*


MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019
Data updated 7/17/2019

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

## Map Theme Legends

### Wetlands


City of Portsmouth

# Map by NH GRANIT


Legend

Map Scale

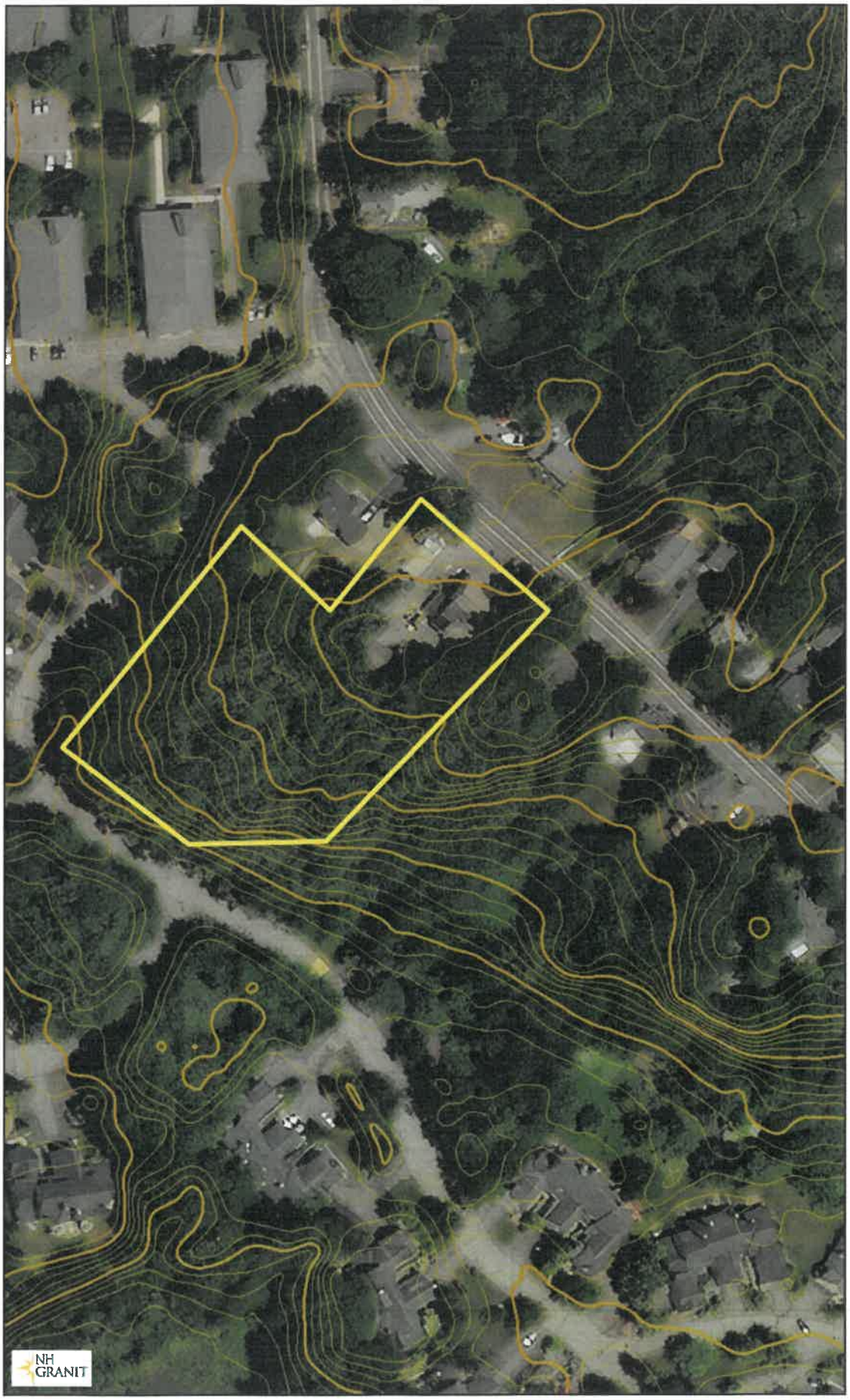
1: 1,624



Map Generated: 11/8/2021

Notes

# Map by NH GRANIT




## Legend

Contour_2ft_0108020201_s
Contour_2ft_0108020202_s
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Map Scale
1: 1,624


Map Generated: 11/8/2021

## Notes

# NWI


## Legend

NWIPlus

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetlan
- Freshwater Pond
- Lake
- Other
- Riverine

Map Scale

1: 1,624



Map Generated: 11/8/2021

Notes

**Stephen G. Pernaw & Company, Inc.**

P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com

*Transportation: Engineering • Planning • Design*

# *MEMORANDUM*

Ref: 2180A

To: Michael Garrepy

From: Stephen G. Pernaw, P.E., PTOE

Subject: Residential Development – 635 Sagamore Avenue
Portsmouth, New Hampshire

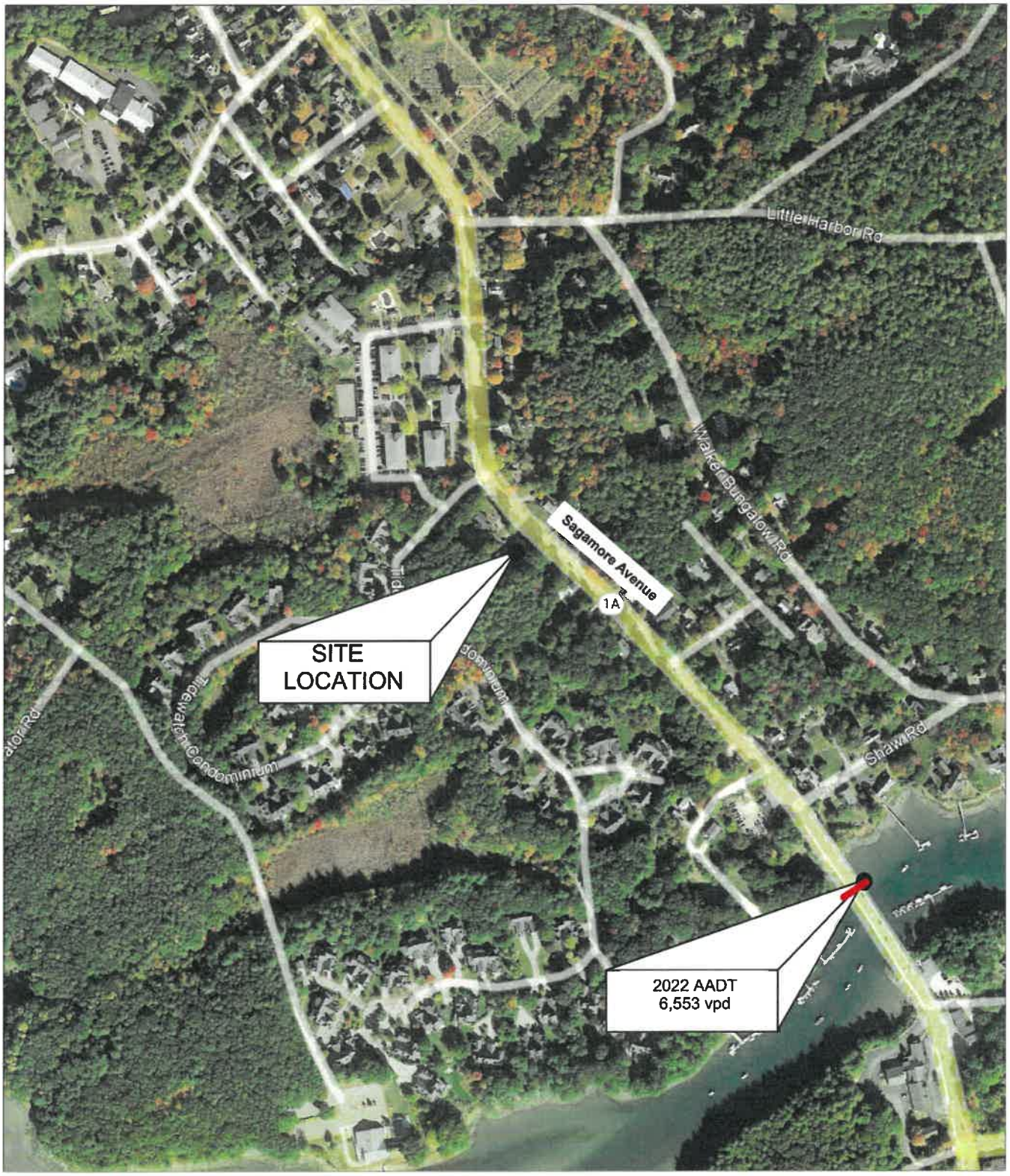
Date: August 8, 2023

Introduction - As requested, our office has conducted a trip generation analysis for the proposed change of use that will occur at 635 Sagamore Avenue (NH1A) in Portsmouth, New Hampshire. This analysis is based on the latest edition of the Institute of Transportation Engineers *"Trip Generation Manual"* and the results reflect average weekday conditions. We also researched available traffic count data at the New Hampshire Department of Transportation. Figure 1 shows the location of the subject site with respect to the area road system.

Proposed Development - The plan entitled *"ZBA Site Plan,"* prepared by Jones and Beach Engineers, Inc. dated 12/7/21 (revised 6/23/22), Scale 1" = 20', Sheet C2 shows that the existing Luster King Car Care business located on the west side of Sagamore Avenue will be razed and replaced by four single-family detached dwelling units. The wide-open curb cut that provides access to the current site will be replaced by a well-defined site access road. Access to the individual residences will be provided by driveways that intersect the site access road (see Attachment 1).

Existing Conditions - Sagamore Avenue is a two-lane state-maintained minor arterial roadway that is delineated with a four-inch double-yellow centerline and four-inch single white edge lines. The speed limit is posted at 30 mph in both directions.

Research at the NHDOT revealed that a short-term automatic traffic recorder count was conducted on Sagamore Avenue at Sagamore Creek in August 2022. This count station is located approximately 0.3 miles south of the subject site. The NHDOT estimates that the 2022 Annual Average Daily Traffic volume was 6,553 vehicles per day (see Attachment 2). The raw data collected in the month of August exceeded 7,000 vehicles per day. This data confirms that the highest traffic hours on Sagamore Avenue occurred from 8:00 to 9:00 AM and from 5:00 to 6:00 PM on weekdays (see Attachment 3)`.




= AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)

NORTH

2180A

**Figure 1**

## Site Location

*Traffic Evaluation, Proposed Residential Development, Portsmouth, New Hampshire*

Trip Generation – To estimate the volume of traffic generated by the former use and the proposed residential development, Pernaw & Company, Inc. considered the standardized trip-generation rates and equations published by the Institute of Transportation Engineers (ITE)[1]. More specifically, ITE Land Use Code (LUC) 942 (Automobile Care Center) was selected for the former use and the number of service bays (3 bays) was utilized as the independent variable. ITE LUC 210 (Single-Family Detached Housing) was chosen for the residential development and the number of dwelling units was used as the independent variable. The results of the trip generation comparison are summarized in Table 1.

During the peak hour periods of the adjacent street system, the proposed residential development will generate approximately 3 vehicle-trips (1 arrival, 2 departures) during the AM peak hour, and 4 vehicle-trips (2 arrivals, 2 departures) during the PM peak hour. When compared to the car care center, the proposed development likely generates slightly fewer vehicle-trips during both the AM and PM peak hour periods. The trip generation computations are attached (see Attachments 4 - 8).

**Table 1 — Trip Generation Comparison**

| | | Current Use [1] (Car Care) | Proposed Use [2] (Residential) | Change |
|---|---|---|---|---|
| Weekday Peak Hour (24 hrs.) | | | | |
| | Entering | NA | 19 veh | NA |
| | Exiting | NA | 19 veh | NA |
| | Total | NA | 38 trips | NA |
| AM Peak Hour | | | | |
| | Entering | 3 veh | 1 veh | -2 trips |
| | Exiting | 2 veh | 2 veh | 0 trips |
| | Total | 5 trips | 3 trips | -2 trips |
| PM Peak Hour | | | | |
| | Entering | 3 veh | 2 veh | -1 trips |
| | Exiting | 4 veh | 2 veh | -2 trips |
| | Total | 7 trips | 4 trips | -3 trips |

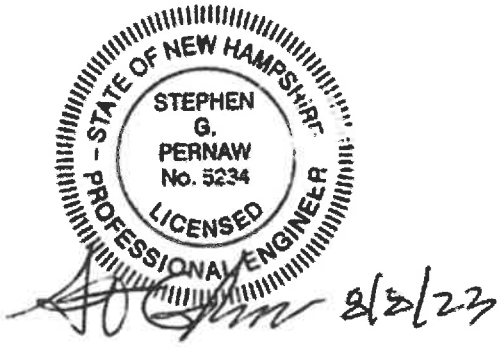
[1] ITE Land Use Code 942 - Automobile Care Center - 3 Service Bays - Trip Rate Method (PM directional distribution is estimated)

[2] ITE Land Use Code 210 - Single-Family Detached Housing - Trip Rate Method

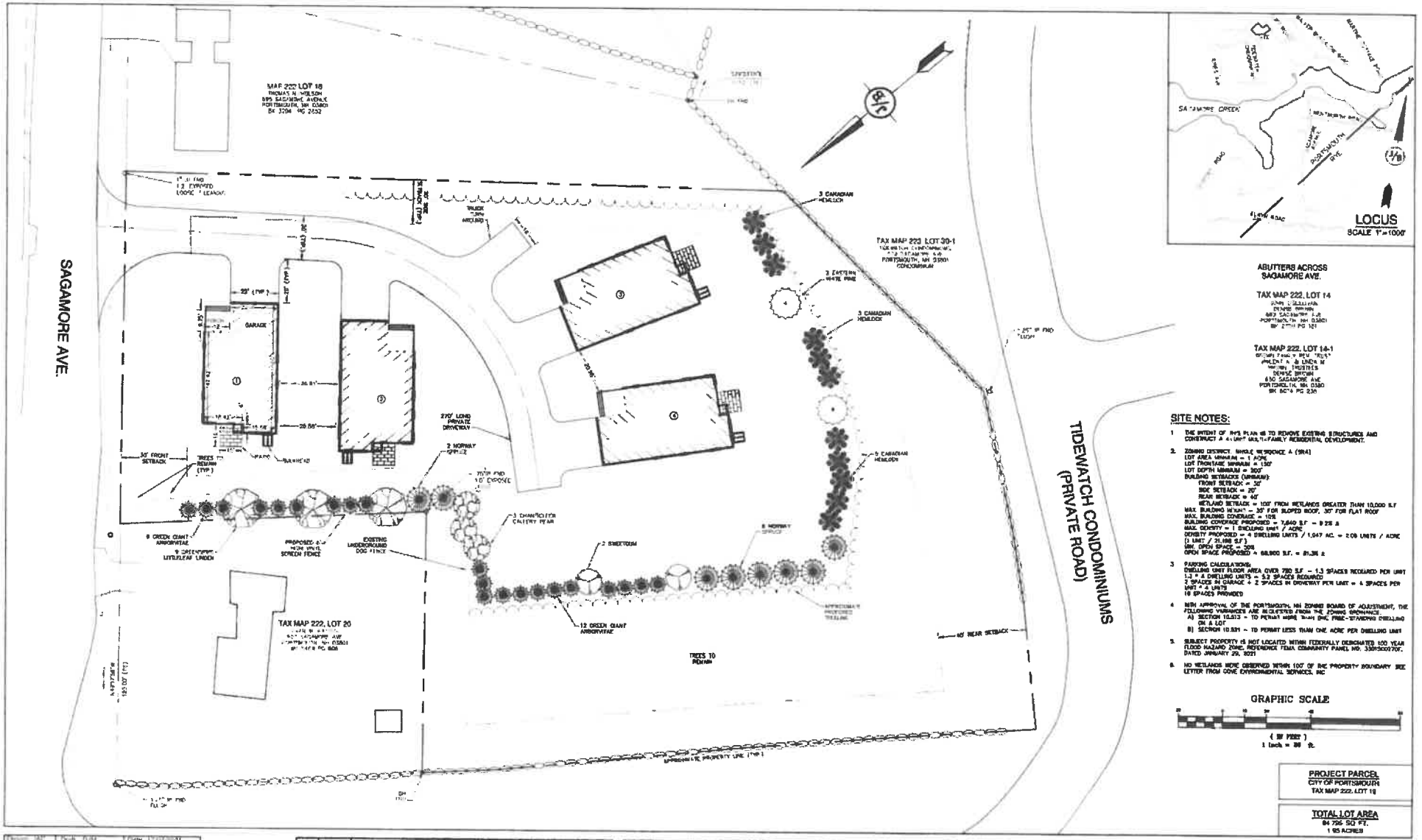
[1] Institute of Transportation Engineers, *Trip Generation*, eleventh edition (Washington, D.C., 2021)

Conclusions - Replacement of the Luster King car care business with four residential single-family dwelling units will likely result in a slight reduction in vehicle-trips that are generated during the weekday AM and PM peak hour periods. From this it is reasonable to conclude that off-site traffic impacts will be de minimis. The proposed closure of the wide-open curb cut on the highway, and replacing it with one well-defined site access road intersection on the state highway, represents a significant improvement from an access management and safety standpoint. In short, we find that the proposed redevelopment of the subject site to be reasonable and beneficial from a transportation engineering and traffic operations standpoint.

Attachments



# ATTACHMENTS




Design: JAT | Drafting: DJM | Date: 12/07/2021
Checked: JAT | Scale: AS NOTED | Project No: 18134.1
Owner's Name: 635 SAGAMORE DEVELOPMENT, LLC



| REV | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 8/23/22 | REVISED CONCEPTUAL LAYOUT | DJM |
| 4 | 6/1/22 | ADDED UTILITY INFORMATION | DJM |
| 3 | 3/31/22 | REVISED CONCEPTUAL LAYOUT | DJM |
| 2 | 2/10/22 | REVISED CONCEPTUAL LAYOUT | DJM |
| 1 | 1/4/22 | REVISED CONCEPTUAL LAYOUT | DJM |

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
83 Portsmouth Ave
PO Box 219
Stratham, NH 03885
603 772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESBEACH.COM

| | |
|---|---|
| Plan Name: | ZBA SITE PLAN |
| Project: | 5-UNIT RESIDENTIAL SITE<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT, LLC<br>3812 LAFAYETTE RD., DEPT #, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No: C2
SHEET 2 OF 3
JBE PROJECT NO. 18134.1

Attachment 1

New Hampshire DOT Department of Transportation

MS2

**Transportation Data Management System**

List View | All DIRs

Record 1 of 1 Goto Record go

| | | | |
|---|---|---|---|
| **Location ID** | 82379151 | **MPO ID** | |
| **Type** | SPOT | **HPMS ID** | |
| **On NHS** | No | **On HPMS** | No |
| **LRS ID** | S0000001A_ | **LRS Loc Pt.** | |
| **SF Group** | 04 | **Route Type** | |
| **AF Group** | 04 | **Route** | NH 1A |
| **GF Group** | E | **Active** | Yes |
| **Class Dist Grp** | Default | **Category** | 3 |
| **Seas Clss Grp** | Default | | |
| **WIM Group** | Default | | |
| **QC Group** | Default | | |
| **Fnct'l Class** | Minor Arterial | **Milepost** | |
| **Located On** | Sagamore Ave | | |
| **Loc On Alias** | NH 1A (SAGAMORE AVE) AT SAGAMORE CREEK (SB-NB) (81379151-81379152) | | |

More Detail

STATION DATA

**Directions:** 2-WAY | NB | SB

AADT

| Year | AADT | DHV-30 | K % | D % | PA | BC | Src |
|---|---|---|---|---|---|---|---|
| 2022 | 6,553 | 702 | 11 | 54 | 6,250 (95%) | 303 (5%) | |
| 2021 | 6,633[3] | | 11 | 56 | 6,029 (91%) | 604 (9%) | Grown from 2020 |
| 2020 | 5,981[3] | | 11 | 56 | 5,442 (91%) | 539 (9%) | Grown from 2019 |
| 2019 | 7,086 | 763 | 11 | 56 | 6,489 (92%) | 597 (8%) | |
| 2018 | 7,823[3] | | 10 | 58 | 7,212 (92%) | 611 (8%) | Grown from 2017 |

> | >>| 1-5 of 16

Travel Demand Model

| | Model Year | Model AADT | AM PHV | AM PPV | MD PHV | MD PPV | PM PHV | PM PPV | NT PHV | NT PPV |
|---|---|---|---|---|---|---|---|---|---|---|

VOLUME COUNT

| | Date | Int | Total |
|---|---|---|---|
| | Thu 8/11/2022 | 60 | 7,538 |
| | Wed 8/10/2022 | 60 | 7,434 |
| | Tue 8/9/2022 | 60 | 7,490 |
| | Thu 6/6/2019 | 60 | 8,374 |
| | Wed 6/5/2019 | 60 | 8,121 |
| | Tue 6/4/2019 | 60 | 8,151 |

VOLUME TREND

| Year | Annual Growth |
|---|---|
| 2022 | -1% |
| 2021 | 11% |
| 2020 | -16% |
| 2019 | -9% |
| 2018 | 2% |
| 2017 | 2% |

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

Excel Version

| Weekly Volume Report | | | |
|---|---|---|---|
| **Location ID:** | 82379151 | **Type:** | SPOT |
| **Located On:** | Sagamore Ave | : | |
| **Direction:** | 2-WAY | | |
| **Community:** | PORTSMOUTH | **Period:** | Mon 8/8/2022 - Sun 8/14/2022 |
| **AADT:** | 6553 | | |

| Start Time | Mon | Tue | Wed | Thu | Fri | Sat | Sun | Avg | Graph |
|---|---|---|---|---|---|---|---|---|---|
| 12:00 AM | | 33 | 19 | 29 | | | | 27 | 0.4% |
| 1:00 AM | | 10 | 8 | 12 | | | | 10 | 0.1% |
| 2:00 AM | | 5 | 0 | 6 | | | | 4 | 0.0% |
| 3:00 AM | | 6 | 1 | 6 | | | | 4 | 0.1% |
| 4:00 AM | | 13 | 16 | 18 | | | | 16 | 0.2% |
| 5:00 AM | | 48 | 48 | 46 | | | | 47 | 0.6% |
| 6:00 AM | | 143 | 127 | 142 | | | | 137 | 1.8% |
| 7:00 AM | | 298 | 289 | 313 | | | | 300 | 4.0% |
| 8:00 AM | | 404 | 434 | 425 | | | | 421 | 5.6% |
| 9:00 AM | | 467 | 470 | 419 | | | | 452 | 6.0% |
| 10:00 AM | | 438 | 480 | 428 | | | | 449 | 6.0% |
| 11:00 AM | | 541 | 546 | 504 | | | | 530 | 7.1% |
| 12:00 PM | | 533 | 582 | 516 | | | | 544 | 7.3% |
| 1:00 PM | | 521 | 536 | 541 | | | | 533 | 7.1% |
| 2:00 PM | | 559 | 538 | 533 | | | | 543 | 7.3% |
| 3:00 PM | | 575 | 563 | 582 | | | | 573 | 7.7% |
| 4:00 PM | | 573 | 639 | 630 | | | | 614 | 8.2% |
| 5:00 PM | | 693 | 644 | 702 | | | | 680 | 9.1% |
| 6:00 PM | | 539 | 476 | 566 | | | | 527 | 7.0% |
| 7:00 PM | | 440 | 403 | 377 | | | | 407 | 5.4% |
| 8:00 PM | | 306 | 269 | 367 | | | | 314 | 4.2% |
| 9:00 PM | | 198 | 190 | 220 | | | | 203 | 2.7% |
| 10:00 PM | | 110 | 99 | 93 | | | | 101 | 1.3% |
| 11:00 PM | | 37 | 57 | 63 | | | | 52 | 0.7% |
| **Total** | **0** | **7,490** | **7,434** | **7,538** | **0** | **0** | **0** | | |
| **24hr Total** | | 7490 | 7434 | 7538 | | | | 7,487 | |
| **AM Pk Hr** | | 11:00 | 11:00 | 11:00 | | | | | |
| **AM Peak** | | 541 | 546 | 504 | | | | 530 | |
| **PM Pk Hr** | | 5:00 | 5:00 | 5:00 | | | | | |
| **PM Peak** | | 693 | 644 | 702 | | | | 680 | |
| **% Pk Hr** | | 9.25% | 8.66% | 9.31% | | | | 9.07% | |

# Graph Look Up

Query

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
942

LAND USE GROUP:
(900-999) Services

LAND USE :
942 - Automobile Care Center

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

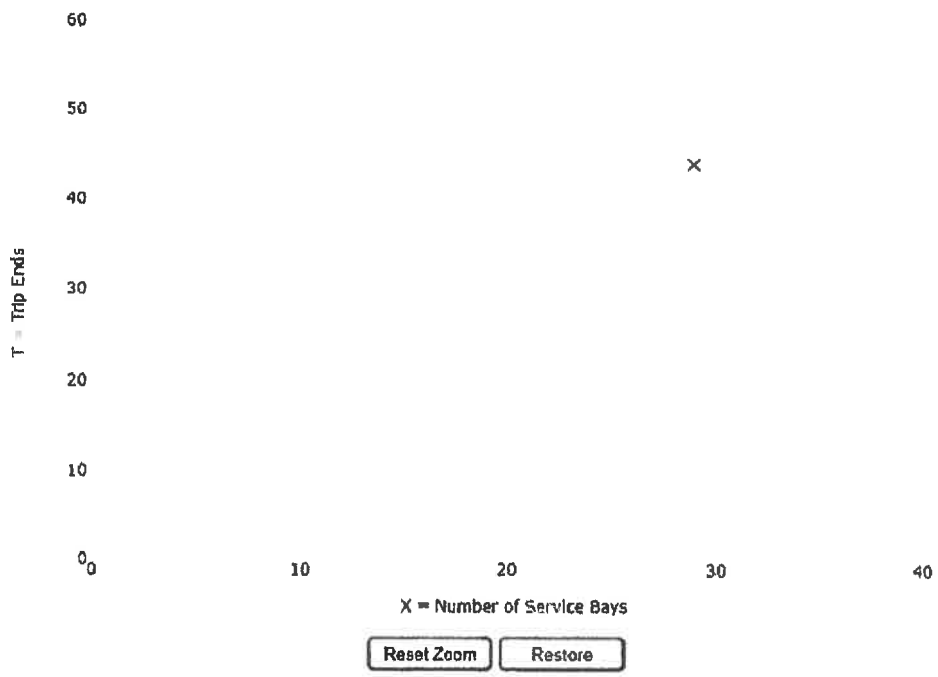
INDEPENDENT VARIABLE (IV):
Service Bays

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
3 Calculate

## Data Plot and Equation




***Caution – Small Sample Size***

## DATA STATISTICS

Land Use:
Automobile Care Center (942)

Independent Variable:
Service Bays

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
1

Avg. Num. of Service Bays
29

Average Rate
1.52

Range of Rates
1.52 - 1.52

Standard Deviation
****

Fitted Curve Equation:
Not Given

$R^2$
****

Directional Distribution:
68% entering, 32% exiting

Calculated Trip Ends:
Average Rate: 5 (Total), 3 (Entry), 2 (Exit)

Use the mouse wheel to Zoom Out or Zoom In

Attachment 4

*ITETripGen* Web-based App

Help Stephen Pernav

# Graph Look Up

Query

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
942

LAND USE GROUP:
(900-999) Services

LAND USE:
942 - Automobile Care Center

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

INDEPENDENT VARIABLE (IV):
Service Bays

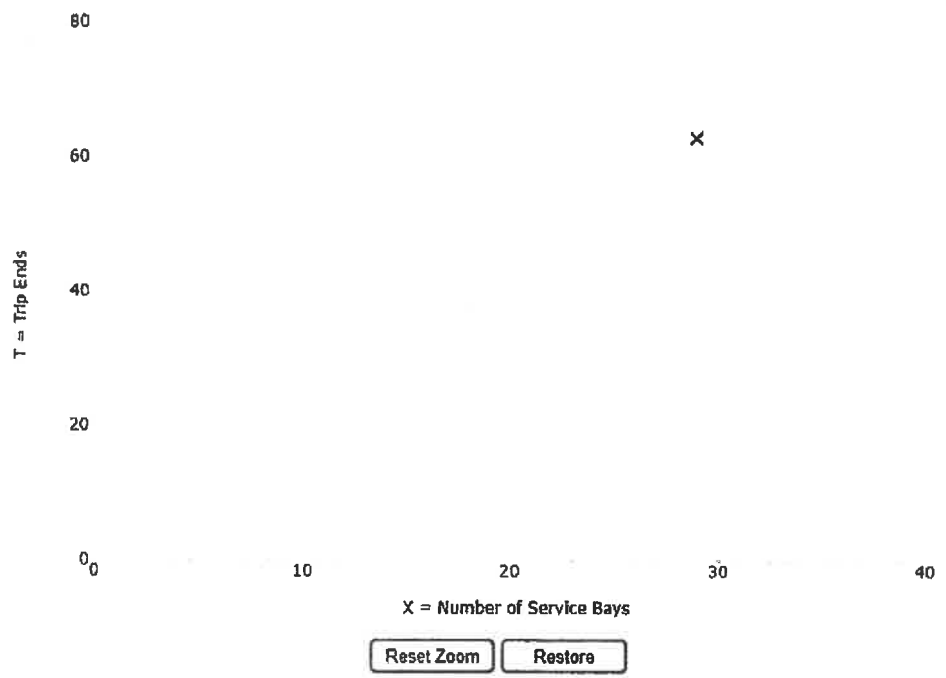
TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
3 Calculate

## Data Plot and Equation

*Caution – Small Sample Size*




## DATA STATISTICS

Land Use:
Automobile Care Center (942)

Independent Variable:
Service Bays

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
1

Avg. Num. of Service Bays:
29

Average Rate:
2.17

Range of Rates:
2.17 - 2.17

Standard Deviation:
****

Fitted Curve Equation:
Not Given

$R^2$:
****

Directional Distribution:
Not available

Calculated Trip Ends:
Average Rate: 7 (Total)

Attachment 5

# Graph Look Up

Query

DATA SOURCE:
Trip Generation Manual 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE :
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

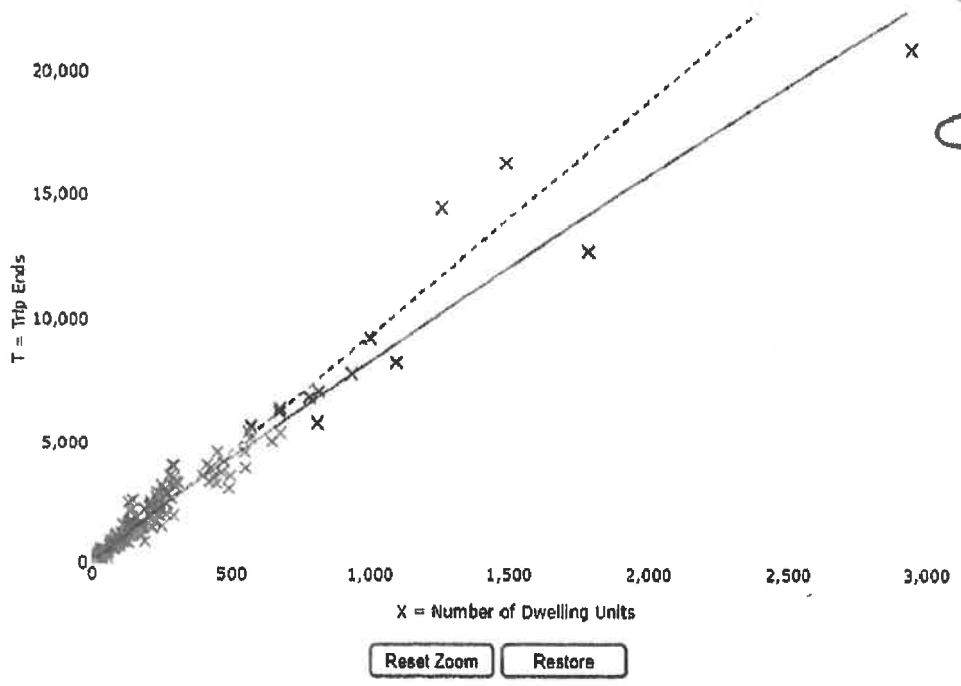
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
4 Calculate

## Data Plot and Equation




## DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) for
Independent Variable:
Dwelling Units
Time Period:
Weekday
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
174
Avg. Num. of Dwelling Units:
246
Average Rate:
9.43
Range of Rates:
4.45 - 22.61
Standard Deviation:
2.13
Fitted Curve Equation:
Ln(T) = 0.92 Ln(X) + 2.68
$R^2$:
0.95
Directional Distribution:
50% entering, 50% exiting
Calculated Trip Ends:
Average Rate: 38 (Total) 19 (Entry), 19 (Exit)
Fitted Curve: 52 (Total) 26 (Entry), 26 (Exit)

Attachment 6

# Graph Look Up

Query

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE :
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

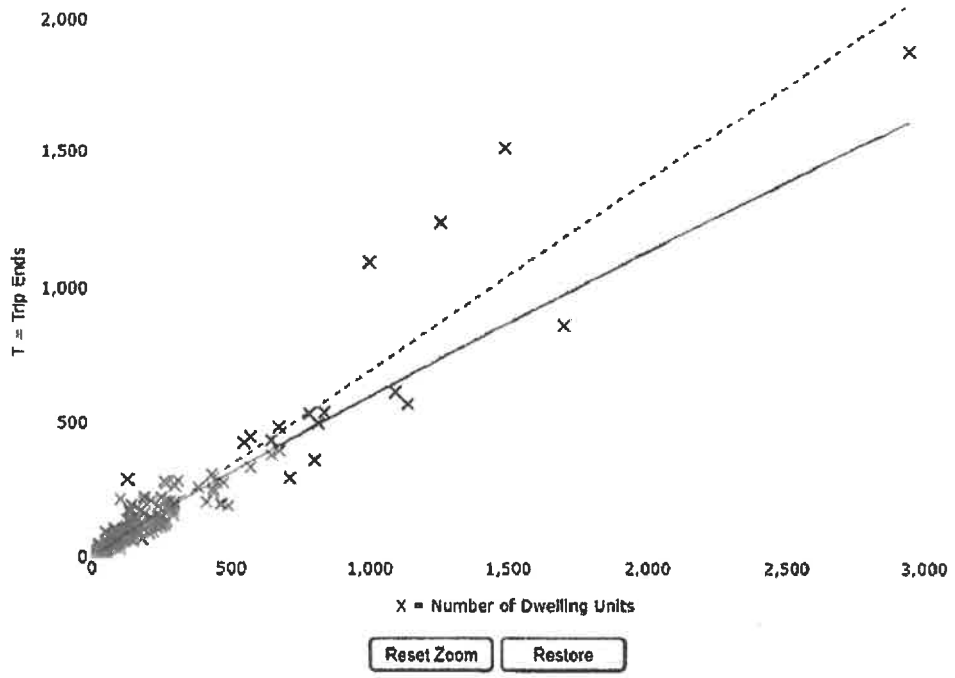
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
4 Calculate

## Data Plot and Equation




## DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) Click for

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a m

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
192

Avg. Num. of Dwelling Units
226

Average Rate
0 70

Range of Rates.
0 27 - 2 27

Standard Deviation
0 24

Fitted Curve Equation:
Ln(T) = 0 91 Ln(X) + 0 12

$R^2$
0 90

Directional Distribution:
25% entering, 75% exiting

Calculated Trip Ends:
Average Rate: 3 (Total), 1 (Enter), 2 (Exit)
Fitted Curve: 4 (Total), 1 (Enter), 3 (Exit)

Attachment 7

# Graph Look Up

Query

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
210

LAND USE GROUP:
(200-299) Residential

LAND USE:
210 - Single-Family Detached Housing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

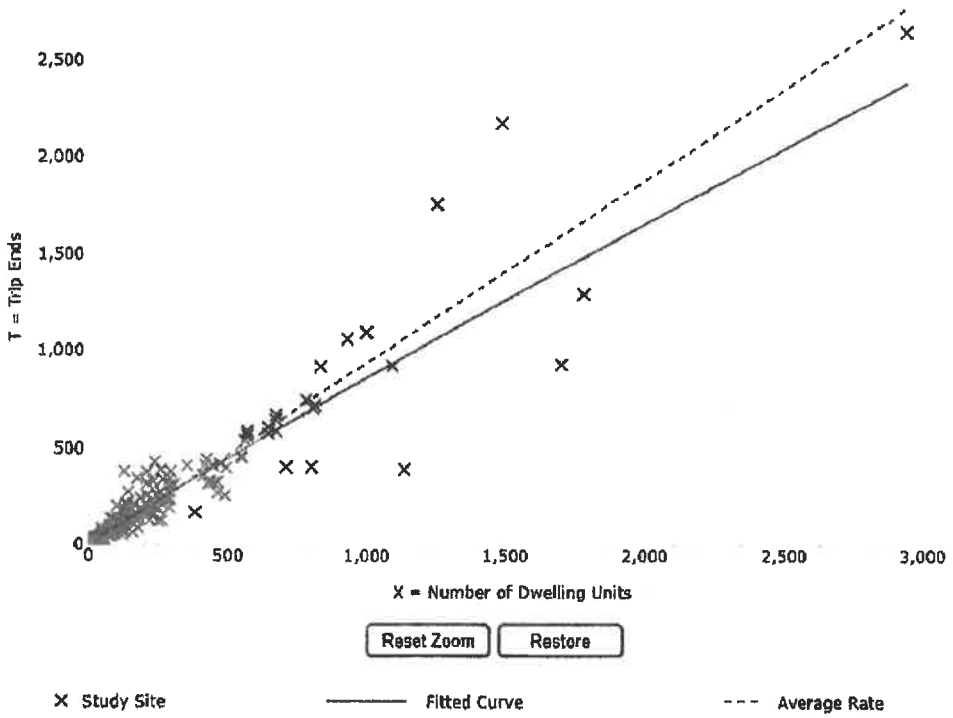
INDEPENDENT VARIABLE (IV):
Dwelling Units

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: Vehicle
4 Calculate

## Data Plot and Equation




## DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) Click for

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
208

Avg. Num. of Dwelling Units:
248

Average Rate
0.94

Range of Rates:
0.35 - 2.98

Standard Deviation:
0.31

Fitted Curve Equation:
Ln(T) = 0.94 Ln(X) + 0.27

$R^2$:
0.92

Directional Distribution:
63% entering, 37% exiting

Calculated Trip Ends:
Average Rate: 4 (Total), 2 (Entry), 2 (Exit)
Fitted Curve: 5 (Total), 3 (Entry), 2 (Exit)

Attachment 8

## Daniel Meditz

**From:** Eric B. Eby <ebeby@cityofportsmouth.com>
**Sent:** Friday, February 23, 2024 9:06 AM
**To:** Daniel Meditz; Joseph Coronati; Zachary M. Cronin; Dave J. Desfosses
**Cc:** Mike Garrepy (mgarrepy@gmail.com); Steve Pernaw
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance



Daniel
I've had a chance to review the Green Book section on sight distance and I am fine with your calcs and explanation. As described in the Green Book, stopping sight distance is broken into two portions. One is the distance traveled during the brake reaction time and the second is the distance to brake the vehicle to a stop. At 33 mph, the brake reaction distance is 121 feet, meaning that with a sight distance of 228 feet, 107 feet remains to bring the vehicle to a stop. This is approximately the 100 feet that is being assumed in this case, so I am fine with your calculations. As the sight distance is very close to the minimum requirement, there is a chance it may meet the minimum requirements after the City finishes the roadwork planned for this year. I would recommend checking it again after the roadwork is complete and if still short on the sight line, then I would recommend the installation of an advance warning sign for BLIND DRIVEWAY with a supplementary advisory speed plaque of 25 MPH.
Best,
Eric

**Eric B. Eby, P.E.**
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

**From:** Daniel Meditz <DMeditz@jonesandbeach.com>
**Sent:** Wednesday, February 21, 2024 8:51 AM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

Eric,

The 100 feet braking distance was an approximation after consulting with Steve Pernaw, who is copied on this email. The only thing it really effects in terms of our analysis is that the slope we used to determine the required stopping sight distance is based on the average slope for the first 100' along the approach.

Thanks,

Daniel Meditz, P.E.
Lead Design Engineer

JONES&BEACH ENGINEERS, INC.
85 Portsmouth Avenue
PO Box 219
Stratham, NH 03885
(603) 772-4746 (ext. #128)
http://www.jonesandbeach.com



---

**From:** Eric B. Eby <ebeby@cityofportsmouth.com>
**Sent:** Friday, February 16, 2024 3:43 PM
**To:** Daniel Meditz <DMeditz@jonesandbeach.com>; Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

> You don't often get email from ebeby@cityofportsmouth.com. Learn why this is important

Daniel
Thank you for the explanation and revised plans. I think we are very close. I want to check on the 100-foot assumption of when vehicles apply their brakes. Is that guidance from the Green Book or just an assumption on your part? That distance would seem to depend on their speed. I think they may be applying the brakes sooner, and on the northbound approach they may still be going uphill, which could reduce the required sight distance needed and allow the minimum sight line to be provided.
For a vehicle waiting to turn out of the driveway onto Sagamore, they need to be able to see the minimum stopping sight distance to the south, which, if the driver's eye is at 69 feet, would appear to be sufficient, even for the sight line as currently calculated. This is based on my rough drawing of lines on my computer screen. That can be checked once we agree on what the sight distance should be for the northbound approach.
I agree it will be an improvement over existing conditions, but I would prefer that we do all we can to meet or exceed the required minimums.
I am out of the office this afternoon, so I don't have access to the Green Book or my other materials on sight distance. I will check them when I return on Tuesday.

**Eric B. Eby, P.E.**
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

---

**From:** Daniel Meditz <DMeditz@jonesandbeach.com>
**Sent:** Thursday, February 15, 2024 3:44 PM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

Eric,

Thank you for reviewing. The profile I was showing actually reflected the grade of the centerline of Sagamore Avenue where I had the stationing, though I can see the confusion as I had the sight line itself thick, dashed and in red. I inverted the color scheme for those but I am still showing the line of sight from the driveway as a solid line. Second, I switched the profile from being along the centerline of the road to the centerline of each lane. Third, I am no longer accounting for the driveway grade in the stopping sight distance profile – As you said, that will impact intersection sight distance but not stopping sight distance.

I have updated the plans and report accordingly. Let me know if you have any more questions or comments.

Thanks,

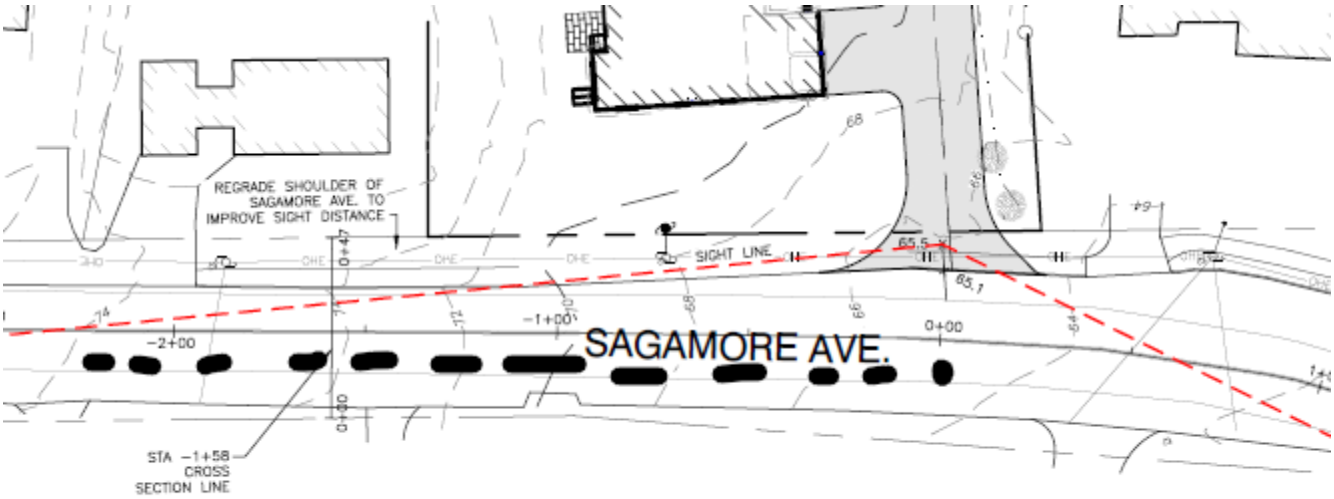
Daniel Meditz, P.E.
Lead Design Engineer
JONES&BEACH ENGINEERS, INC.
85 Portsmouth Avenue
PO Box 219
Stratham, NH 03885
(603) 772-4746 (ext. #128)
http://www.jonesandbeach.com



---

**From:** Eric B. Eby <ebeby@cityofportsmouth.com>
**Sent:** Thursday, February 15, 2024 2:07 PM
**To:** Daniel Meditz <DMeditz@jonesandbeach.com>; Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

Daniel
Looking at the plans, it appears that the sight line was plotted along the red dashed line. However, this line would represent the intersection sight line and not the stopping sight line. The 2-foot object height for stopping sight distance needs to be at a point in the travel lane, not at a point 14.5 feet from the edge of the travel lane. Stopping sight distance is for approaching vehicles to be able to see and react to a vehicle stopped in Sagamore Ave waiting to turn left into the site driveway. I don't know how much of a difference, if any, the location of the 2-foot object will have on the sight lines, but it needs to be shown and the report updated to reflect the proper location.
The black dotted line in the figure below illustrates where the 2-foot object should be located.
Let me know if you have any questions.
Best,
Eric




**Eric B. Eby, P.E.**
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

**From:** Daniel Meditz <DMeditz@jonesandbeach.com>
**Sent:** Wednesday, February 14, 2024 8:58 AM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

Eric,

Please see attached technical report and revised sight distance plans. The northern curb cut would provide us with the best sight distance. Please review and let us know if you have any questions.

Thanks,

Daniel Meditz, P.E.
Lead Design Engineer
JONES&BEACH ENGINEERS, INC.
85 Portsmouth Avenue
PO Box 219
Stratham, NH 03885
(603) 772-4746 (ext. #128)
http://www.jonesandbeach.com

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---

**From:** Eric B. Eby <ebeby@cityofportsmouth.com>
**Sent:** Wednesday, January 3, 2024 12:03 PM
**To:** Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>; Daniel Meditz <DMeditz@jonesandbeach.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

> You don't often get email from ebeby@cityofportsmouth.com. Learn why this is important

Joe,

Thank you for the updated plans.

Looking at the sight lines, neither driveway location has adequate Stopping Sight distance under current conditions. Due to the existing grade of the driveway at 695 Sagamore, we wouldn't be able to lower the top of the hill on Sagamore more than a few inches. While you might want to look and determine if it is possible to raise your driveway a bit to improve Intersection Sight lines, a profile adjustment of Sagamore is most likely the key to providing adequate Stopping Sight distance. Raising Sagamore a bit near the driveway should also be looked at to see if it is feasible without acquiring easements.

Stopping Sight distance is the critical requirement, whereas Intersection Sight distance is desirable but at a minimum must at least equal the Stopping Sight distance. With that in mind, the Option 2 location would appear to have more of a chance of meeting Stopping Sight line requirements if the profile of the roadway could be modified sufficiently. I would suggest that you develop a profile of Sagamore Ave that will provide the minimum Stopping Sight distance at the Option 2 location and then we can review that with our design consultant to determine if it is feasible.

**Eric B. Eby, P.E.**
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

---

**From:** Joseph Coronati <jcoronati@Jonesandbeach.com>
**Sent:** Wednesday, January 3, 2024 10:06 AM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>; Daniel Meditz <DMeditz@jonesandbeach.com>
**Subject:** Re: 18134.1 - Luster Cluster, Sight Distance

Eric,
Hope you had a good holiday. Was wondering if you have had a chance to review this.

thanks

Joseph Coronati
Vice President
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
PO Box 219
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(603) 772-4746 (ext. #114)
jcoronati@jonesandbeach.com
http://www.jonesandbeach.com

---

**From:** Joseph Coronati
**Sent:** Thursday, December 21, 2023 1:28:06 PM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>; Steve Pernaw <sgp@pernaw.com>; Daniel Meditz <DMeditz@jonesandbeach.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance

Eric,
Here's the modified plans and the speed study that Steve Pernaw did for the site. Let us know if you want to have a quick Teams meeting to determine the best driveway location.

Thanks

Joseph Coronati
Vice President
JONES&BEACH ENGINEERS, INC.
85 Portsmouth Avenue
PO Box 219
Stratham, NH 03885
(603) 772-4746 (ext. #114)
jcoronati@jonesandbeach.com
http://www.jonesandbeach.com

---

**From:** Eric B. Eby <ebeby@cityofportsmouth.com>
**Sent:** Thursday, December 7, 2023 12:47 PM
**To:** Joseph Coronati <jcoronati@Jonesandbeach.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>
**Subject:** RE: 18134.1 - Luster Cluster, Sight Distance



Joe
Thank you for the plans and the update. Looking quickly at the profile plans, you have provided plans for both Intersection Sight Distance (ISD) on Sheet H1 and Stopping Sight Distance (SSD) on Sheet H2. ISD is for vehicles turning out of the driveway. SSD is for vehicles approaching the driveway on Sagamore Ave. The ISD appears to be plotted correctly. However, in the case of SSD, the 3.5-foot driver height should be a 2-foot object height. Revising the plans

with the 2-foot object height is needed to provide a more complete picture of the constraints and limitations at the driveway location.
It also appears that you used a 33 MPH design speed in your calculations. Did we give you that information or did you do your own speed data collection? Need to be sure that it is based on 85th %ile speeds, and not just an estimation.
I am available anytime on Tuesday and Wednesday next week, as well as parts of other days.

**Eric B. Eby, P.E.**
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

**From:** Joseph Coronati <jcoronati@Jonesandbeach.com>
**Sent:** Wednesday, December 6, 2023 5:16 PM
**To:** Eric B. Eby <ebeby@cityofportsmouth.com>; Zachary M. Cronin <zmcronin@cityofportsmouth.com>; Dave J. Desfosses <djdesfosses@cityofportsmouth.com>
**Cc:** Mike Garrepy (mgarrepy@gmail.com) <mgarrepy@gmail.com>
**Subject:** 18134.1 - Luster Cluster, Sight Distance

Eric, Zach & Dave,
We have been coordinating with Steve Pernaw, who is retired so this took a little longer than expected. Please review the plans and let us know if you have any questions. I think in the end, it would be better to look at each of these locations in person as it is tight. The sight lines go over sidewalk, which is changing and uneven and over lawn areas with vegetation at the uphill section. I'm not sure how much you are lowering the hill in your next contract with Severino.

Let me know if you can meet next week to look at this so we can determine the best driveway location.

Thanks

Joseph Coronati
Vice President
JONES&BEACH ENGINEERS, INC.
85 Portsmouth Avenue
PO Box 219
Stratham, NH 03885
(603) 772-4746 (ext. #114)
jcoronati@jonesandbeach.com
http://www.jonesandbeach.com

**EXTERNAL SENDER:** Use caution when following links or opening attachments.

GOVE ENVIRONMENTAL SERVICES, INC.

# TEST PIT DATA

Project 635 Sagamore Ave
Client 635 Sagamore Development LLC
GES Project No. GES 2021307
MM/DD/YY Staff 3-18-2022 JPG

**Test Pit No. 1**
ESHWT: n/a
Termination @ 15”
Refusal: 15” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–5” | 10YR 3/2 | FSL | GR | FR | NONE |
| 5–15” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 2**
ESHWT: n/a
Termination @ 25”
Refusal: 25” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–5” | 10YR 3/2 | FSL | GR | FR | NONE |
| 5–25” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 3**
ESHWT: n/a
Termination @ 25”
Refusal: 25” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–6” | 10YR 3/2 | FSL | GR | FR | NONE |
| 6–25” | 10YR 5/6 | FSL | GR | FR | NONE |

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
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*info@gesinc.biz*
*www.gesinc.biz*

**Test Pit No. 4**
ESHWT: n/a
Termination @ 15”
Refusal: 15” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–15” | 10YR 3/2 | FSL | GR | FR | NONE |

**Test Pit No. 5**
ESHWT: 30”
Termination @ 36”
Refusal: 36” SCS Soil: Chatfield variant
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–8” | 10YR 3/2 | FSL | GR | FR | NONE |
| 8–30” | 10YR 4/6 | FSL | GR | FR | NONE |
| 30–36” | 2.5Y 5/3 | FSL | GR | FR | 10% Distinct |

**Test Pit No. 6**
ESHWT: n/a
Termination @ 12”
Refusal: 12” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–12” | 10YR 3/2 | FSL | GR | FR | NONE |

**Test Pit No. 7**
ESHWT: n/a
Termination @ 27”
Refusal: 27” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–4” | 10YR 3/2 | FSL | GR | FR | NONE |
| 4–27” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 8**
ESHWT: 35”
Termination @ 40”
Refusal: 40” SCS Soil: Chatfield variant
Obs. Water: none

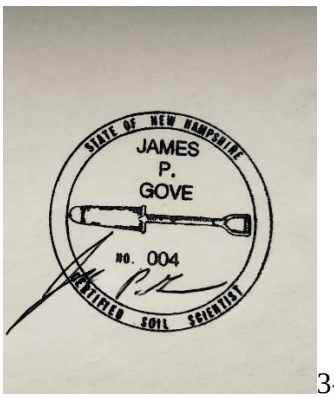
| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–6” | 10YR 3/2 | FSL | GR | FR | NONE |
| 6–35” | 10YR 5/6 | FSL | GR | FR | NONE |
| 35–40” | 2.5Y 5/3 | FSL | OM | FI | 10% Distinct |

**Test Pit No. 9**
ESHWT: n/a
Termination @ 27”
Refusal: 27” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–4” | 10YR 3/2 | FSL | GR | FR | NONE |
| 4–27” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 10**
ESHWT: 35
Termination @ 62”
Refusal: 62” SCS Soil: Scituate
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–10” | 10YR 3/2 | FSL | GR | FR | NONE |
| 10–35” | 10YR 5/6 | FSL | GR | FR | NONE |
| 35–62” | 2.5Y 5/3 | FSL | PL | FI | 10%, Distinct |



3-21-2022

Legend:

FSL = fine sandy loam
GR = granular
PL = platy
FI = firm

GOVE ENVIRONMENTAL SERVICES, INC.

# TEST PIT DATA

Project 635 Sagamore Ave., Portsmouth NH
Client 635 Sagamore Development LLC
GES Project No. 2021308
MM/DD/YY Staff 07-24-2024 James Gove, CSS#004

Witnessed by: David Desfosses, City of Portsmouth

| | | | |
|---|---|---|---|
| **Test Pit No.** | **11** | Soils Series: | Udorthents |
| ESHWT:: | none | Landscape: | Paved |
| Termination @ | 32” | Slope: | B |
| Refusal: | 32” | Parent Material: | Fill over till |
| Obs. Water: | None | Hydrologic Soil Group: | Impervious |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| Fill 1, 0-8” | 10YR4/4 | fine sandy loam | massive-friable-none |
| Fill 2, 8-19” | 10YR2/1 | ground pavement | massive-firm-none |
| Bw 18-32” | 10YR5/6 | fine sandy loam | granular-friable-none |

| | | | |
|---|---|---|---|
| **Test Pit No.** | **12** | Soils Series: | Chatfield |
| ESHWT:: | none | Landscape: | Hillside |
| Termination @ | 28” | Slope: | C |
| Refusal: | 28” | Parent Material: | Bedrock Till |
| Obs. Water: | None | Hydrologic Soil Group: | B |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| A 0-6” | 10YR3/2 | fine sandy loam | granular-friable-none |
| Bw 6-28” | 10YR5/6 | fine sandy loam | granular-friable-none |

Bedrock ranges from 20” to 28” in test pit.

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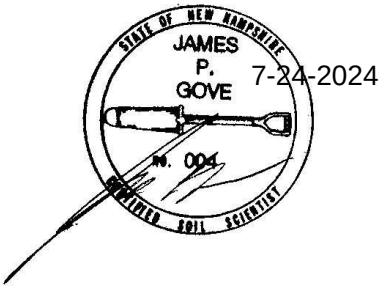
*www.gesinc.biz*

| | | | |
|---|---|---|---|
| **Test Pit No.** | **13** | Soils Series: | Chatfield |
| ESHWT:: | none | Landscape: | Hillside |
| Termination @ | 36” | Slope: | C |
| Refusal: | 36” | Parent Material: | Bedrock Till |
| Obs. Water: | None | Hydrologic Soil Group: | B |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| A 0-6” | 10YR3/2 | fine sandy loam | granular-friable-none |
| Bw 6-24” | 10YR4/6 | fine sandy loam | granular-friable-none |
| C 24-36” | 2.5Y5/3 | fine sandy loam | granular-friable-none |

Bedrock ranges from 24” to 36” in test pit.

Note: Site should be calculated as HSG C, due to the limited infiltration in thin soil layers above the bedrock.



635 Sagamore Avenue (LU-24-34) Staff Comments for TAC Meeting

"not type B soils due to shallow ledge"

The dominant soil unit mapped on the site was 41- a complex of soil types so intermixed that no one soil can be separated into a single consociation or soil type. The complex is named Chatfield-Hollis-Rock Outcrop. Based upon the test pits (3 Hollis, 6 Chatfield (Chatfield well drained and Chatfield moderately well drained) and one deep soil), the percentage of each soil type was 50% Chatfield, 25% Hollis, and 25% Rock Outcrop. The standard protocol is to utilize the dominant soil type for Hydrologic Soil Group, which is Chatfield (well drained and moderately well drained) with a Hydrologic Soil Group of B. Chatfield has a depth of 20 to 40 inches to bedrock. The Hydrologic Soil Groups are assigned to soil units by Publication Number 5 of the Society of Soil Scientists of Northern New England and adopted by NH DES Alteration of Terrain.

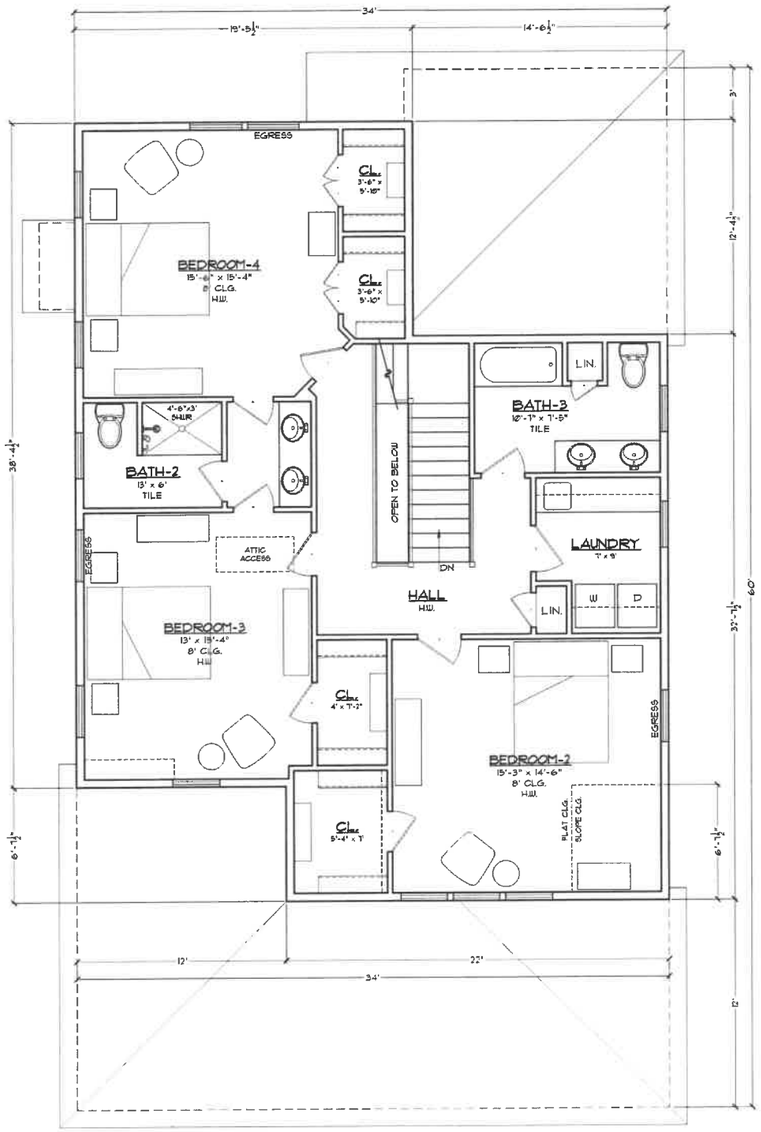
Hollis has a soil depth of 10 to 20 inches to bedrock. It also has a combined Hydrologic Soil Group of C/D. Rock Outcrop is any area that has surface exposed bedrock to 10 inches deep.

Typically for drainage analysis, the dominant hydrologic soil group is used, in this case B. Conversely, a weighted average could be used to mimic the complex: 50% B, 25% C/D, and 25% D-virtually impervious.

Complexes are difficult to interpret given that multiple soil types are present and randomly intermixed. It becomes even more difficult when the multiple soil types have differing characteristics.

Jim Gove, CSS #004

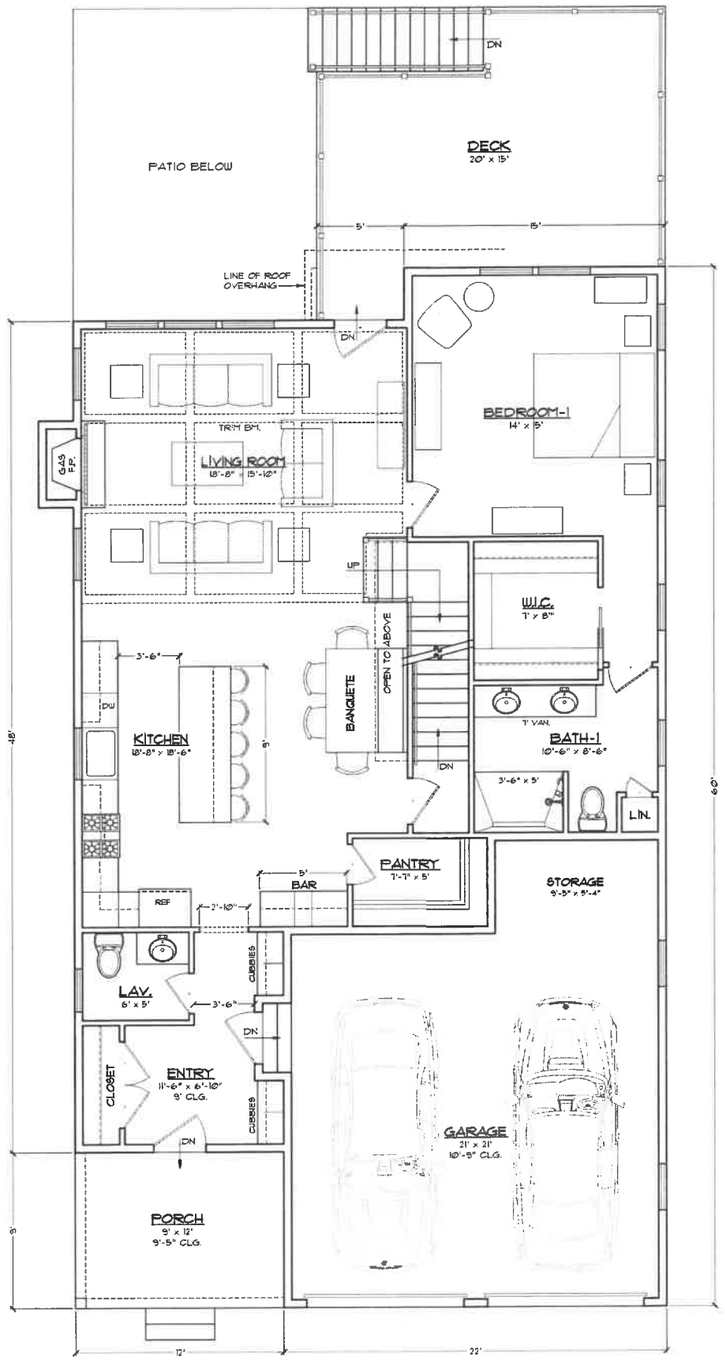
4-1-2024




## SECOND FLOOR PLAN

¼"=1'-0"

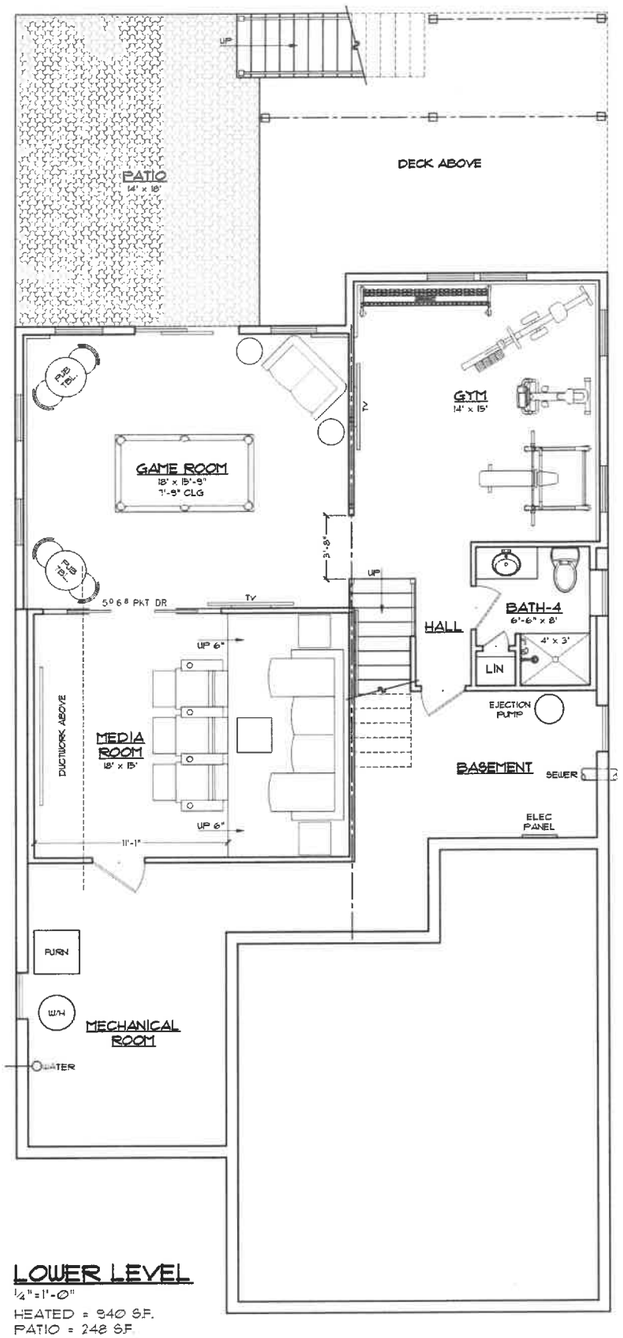
HEATED = 1270 S.F.
(INCLUDES 67 S.F. OF STAIRWELL)




## FIRST FLOOR PLAN

¼"=1'-0"

HEATED = 1,347 S.F.
GARAGE = 528 S.F.
FRONT PORCH = 108 S.F.
DECK = 280 S.F.
TOTAL HEATED =3,557 S.F.




## LOWER LEVEL

¼"=1'-0"

HEATED = 940 S.F.
PATIO = 248 S.F.

## WALK-OUT CONCEPT

PROJECT:
The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801


E-mail: tech-ill2@comcast.net
Phone: 603-964-1300
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
196 Bunker Hill Ave. Stratham, NH 03885


DATE: 1-30-24
REVISED:
DWG NO. 3

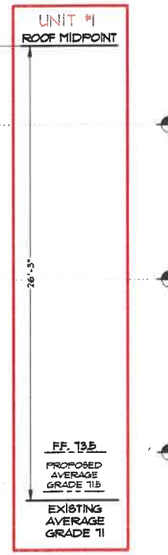
C:\TI-INC\2024\Oaks Walk-Out\BD


RIGHT SIDE ELEVATION
1/4"=1'-0"


UNIT #1 - F.F. = 73.5
UNIT #2 - F.F. = 74.0
UNIT #3 - F.F. = 75.25
W/O = 65.45
UNIT #4 - F.F. = 75.5
W/O = 65.70


REAR ELEVATION
1/4"=1'-0"


LEFT SIDE ELEVATION
1/4"=1'-0"





FRONT ELEVATION
1/4"=1'-0"

UNITS 1&2

C:\TI-INC\2024\Oaks80

PROJECT: The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801

E-mail: tech-ill@comcast.net
Phone: 603-964-1300
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
186 Bunker Hill Ave. Stratham, NH 03885

DATE: 10-21-24
REVISED:
SHEET NO. 1


## RIGHT SIDE ELEVATION

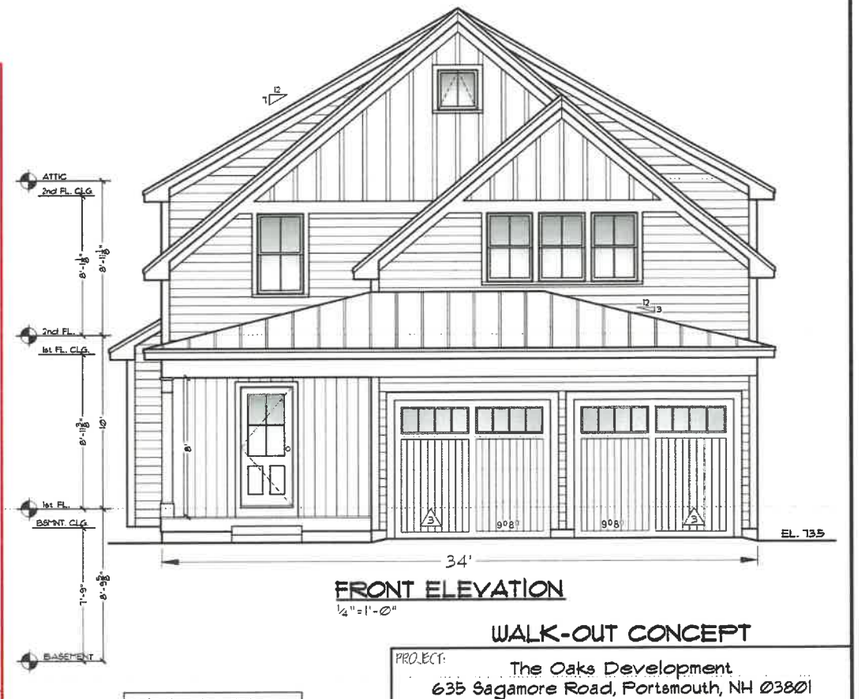
¼"=1'-0"


## REAR ELEVATION

¼"=1'-0"


## LEFT SIDE ELEVATION

¼"=1'-0"




## FRONT ELEVATION

¼"=1'-0"

## UNITS 3&4

## WALK-OUT CONCEPT

UNIT #1 - F.F. = 73.5
UNIT #2 - F.F. = 74.0
UNIT #3 - F.F. = 75.25
W/O = 65.45
UNIT #4 - F.F. = 73.5
W/O = 65.70

PROJECT: The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801

E-mail: tech-ill2@comcast.net
Phone: 603-964-1500
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
196 Bunker Hill Ave. Stratham, NH 03885

DATE: 10-21-24
REVISED:
DRG NO. 1

C:\Tech-INC\2024\Oaks Walk-Out80

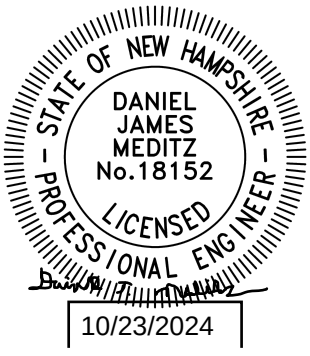
# DRAINAGE ANALYSIS

# SEDIMENT AND EROSION CONTROL PLAN

**"Luster Cluster"**
**635 Sagamore Ave.**
**Portsmouth, NH 03801**
**Tax Map 222, Lot 19**

**Prepared for:**

**635 Sagamore Development LLC**
**3612 Lafayette Rd., Dept 4**
**Portsmouth, NH 03801**




**Prepared by:**
**Jones & Beach Engineers, Inc.**
**85 Portsmouth Avenue**
**P.O. Box 219**
**Stratham, NH 03885**
**(603) 772-4746**
**March 14, 2024**
**Revised April 18, 2024**
**Revised August 16, 2024**
**Revised September 17, 2024**
**Revised October 14, 2024**
**JBE Project No. 18134.1**

# EXECUTIVE SUMMARY

635 Sagamore Development LLC proposes to demolish an existing commercial development and construct a 4-unit multi-family residential site on the subject parcel located at 635 Sagamore Ave. in Portsmouth, NH. In the existing condition, the subject parcel is home to two buildings and a paved parking area that used to comprise the "Luster King," a former auto detailing business that has since closed.

A drainage analysis of the entire site as well as offsite contributing watershed area was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.70"), 10 Year – 24 Hour (5.61"), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff toward the three analysis points and toward the existing drainage ditch on the Tidewatch Condominium property (Reach 1R) 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 | 1.36 | 1.03 | 2.38 | 1.83 | 3.19 | 2.46 | 3.95 | 3.05 |
| Analysis Point #2 | 0.09 | 0.06 | 0.20 | 0.13 | 0.29 | 0.19 | 0.37 | 0.24 |
| Analysis Point #3 | 2.79 | 2.40 | 5.63 | 4.12 | 8.00 | 5.49 | 10.27 | 7.72 |
| Analysis Point #4 | 1.08 | 0.81 | 2.18 | 1.63 | 3.10 | 2.32 | 3.97 | 2.97 |

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 | 0.100 | 0.076 | 0.177 | 0.135 | 0.241 | 0.185 | 0.301 | 0.231 |
| Analysis Point #2 | 0.007 | 0.005 | 0.014 | 0.009 | 0.021 | 0.014 | 0.027 | 0.018 |
| Analysis Point #3 | 0.240 | 0.208 | 0.477 | 0.405 | 0.681 | 0.577 | 0.879 | 0.744 |
| Analysis Point #4 | 0.084 | 0.064 | 0.167 | 0.126 | 0.238 | 0.179 | 0.307 | 0.230 |

Peak flows and volumes are being reduced in the post-construction condition toward all analysis points during all analyzed storm events. The subject parcel is located in the Single Residence A (SRA) Zoning District. The subject parcel currently consists of the aforementioned former commercial site which is proposed to be demolished. Despite impervious surface existing on the subject parcel now, the proposed development results in an increase in impervious surface on the subject parcel. The addition of the proposed impervious surfaces causes an increase in the curve number ($C_n$) and a decrease in the time of concentration ($T_c$), and if a stormwater management system were not implemented, the net result of this would be a potential increase in peak rates of runoff from the site. In order to avoid this potential, a stormwater management system has been designed, consisting of a bioretention system with a sediment forebay for pre-treatment of runoff, stone drip edges, and stone underneath decks as well as sand absorption areas for foundation drain effluent. Due to the use of these

stormwater management features, the peak flow and volume of runoff will be reduced toward all analysis points during all analyzed storm events in the proposed condition as compared to the existing condition, and the treatment requirements of the City of Portsmouth are met. Additionally, the NHDES Alteration of Terrain Bureau's groundwater recharge volume and channel protection requirements are met with the proposed development. Although some runoff from the front of the site proposed to drain into the Sagamore Avenue right of way and into a new catch basin without on-site treatment, the catch basin was presumably designed for the impervious surface being directed toward it from the Luster King development that currently exists. We are decreasing the amount of impervious surface as well as the peak flow rate and volume of runoff being directed toward this catch basin compared to what it was designed for. Therefore, if there is a treatment system at the outfall of the closed drainage network, then it will continue to function as designed for the runoff being directed to it from the proposed development. **The stormwater management system as designed meets all requirements of the City of Portsmouth stormwater regulations per Section 7.1 and 7.4-7.6 of the Site Plan Review Regulations.**

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this stormwater management 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 to this development.

# TABLE OF CONTENTS

## 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 area. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD 10.20-3c Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.70”), 10 Year – 24 Hour (5.61”), 25 Year – 24 Hour (7.12"), and 50 Year – 24 Hour (8.53") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates and volume of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties. This is accomplished through treatment of stormwater runoff and attenuation of peak flows and volumes resulting from storm events.

## 2.0 EXISTING CONDITIONS ANALYSIS

In the existing condition, the site consists of two commercial buildings as well as a shed and a paved parking area that comprise the former Luster King auto detailing business, which has since closed. Most of the area behind the existing commercial development is wooded with light underbrush and large ledge outcrops. There is some lawn space around the existing developed area as well.

The existing topography and roof ridges divide the subject parcel and offsite contributing watershed areas into four subcatchments, draining toward three analysis points. Subcatchment 1 represents the front of the subject parcel as well as a stretch of the northbound lane of Sagamore Avenue and some offsite contributing watershed. This subcatchment is entirely developed in the existing condition, and it drains directly into the Sagamore Ave. right of way, down a flow path modelled as Reach 3R. Reach 3R ends at Analysis Point 1, a specific point along the Sagamore Avenue right of way. The reason why Analysis Point 1 was located at the specific place where it was is explained later in this report.

Runoff that reaches Analysis Point 1 from the subject parcel then follows the curb lines of Sagamore Avenue and of the Tidewatch Condominium Roadway, modelled as Reaches 4R and 5R, toward an existing water collection point on the side of the Tidewatch Condominium Roadway where it appears that a significant amount of runoff puddles in the existing condition, modelled as Analysis Point 3.

A new catch basin has been installed just to the south of the intersection of Sagamore Avenue and the Tidewatch Condominium roadway as part of the ongoing Sagamore Avenue roadway improvements. This catch basin captures all runoff directed toward Analysis Point 1 immediately downstream of Reach 3R. Therefore, Analysis Point 1 was placed at the location of the newly installed catch basin. The addition of this catch basin prevents water from the Sagamore Avenue right of way up to the top of the hill to the south of the subject parcel from draining down the Tidewatch Condominium roadway, and therefore it will somewhat mitigate the existing drainage issue. However, because this catch basin was not yet installed at the time that the design of the proposed project began, we are modelling the hydrology of the site as it was before the catch basin was installed for the purposes of the existing conditions analysis. This is consistent with Env-Wq 1503.12(d), which requires that the existing conditions for a project site be modelled as the site was 10 years ago. In the proposed conditions analysis, we are modelling the site hydrology as is with the catch basin having been installed.

Subcatchment 2S represents a small section of the developed portion of the property to the north of an existing high point which drains on to abutting Tax Map 222, Lot 20, modelled as Analysis Point 2. It is very important that peak flows and volumes draining toward Analysis Points 1 and 2 are reduced in the post-construction condition, as these two analysis points represent a highway and a house lot, respectively. Runoff directed toward Analysis Point 2 is directed through Reach 2R, a flow path through Tax Map 222 Lot 20, toward aforementioned Reach 3R, from where the runoff then collects at AP1 before following Reaches 4R and 5R toward Analysis Point 3. In effect, the runoff directed toward AP1 includes the runoff directed toward AP2, and the runoff directed toward AP3 includes the runoff directed toward both AP1 and AP2 in the existing condition.

The largest subcatchment is Subcatchment 3S. Subcatchment 3S is roughly the western quarter of the property and it consists primarily of woodland with large ledge outcrops. Subcatchment 3S drains toward an existing drainage ditch alongside and below the grade of the Tidewatch Condominium private roadway, which is curbed so that no runoff from the roadway itself enters the ditch. This drainage ditch is modelled as a Tc segment for the subcatchment and it drains toward Analysis Point 3. Analysis Point 3 is an existing water collection point along the Tidewatch Condominium Road. In theory, water that collects here eventually infiltrates or overflows, but from on-site observations, there is erosion and puddling which is evidence that runoff mostly stops in this spot. Therefore, it is modelled as an analysis point with no overflow. This point receives the runoff from 3S as well as the runoff from AP1 and AP2 upstream.

Finally, a section of both developed and undeveloped land in the western end of the property, modelled as Subcatchment 4S, drains into abutting woodland on the Tidewatch Condominium property and ultimately toward a catch basin adjacent to the Tidewatch Condominium mailhouse that is modelled as Analysis Point 4.

Existing soil types were determined through a Site Specific Soil Survey conducted by a Certified Soil Scientist. The pervious soils are categorized into Hydrologic Soil Group (HSG) B while the impervious areas of the subject parcel are categorized as Urban Land (SSS Symbol 699). The pervious sections of the property are represented as Chatfield-Hollis-Rock Outcrop complex and Chatfield Variant (moderately well drained). Although these soils are categorized as HSG B currently, it is our understanding that the “Ksat Values for New Hampshire Soils,” Special Publication No. 5 sponsored by the Society of Soil Scientists of Northern New England (SSSNNE) is in the process of being updated and there are plans to reclassify Chatfield as a HSG C soil. For this reason, Dave Desfosses of the Portsmouth Department of Public Works has requested that we model the entire site and all offsite contributing watershed areas as HSG C. We asked the project soil scientist, who confirmed that this is an acceptable approach in his professional opinion as well. Therefore, we have modelled the entire site and all offsite areas as HSG C.

According to "Ksat Values for New Hampshire Soils," Special Publication No. 5 sponsored by the Society of Soil Scientists of Northern New England (SSSNNE), Chatfield, Chatfield Variant, and Hollis soils all have identical saturated hydraulic conductivities, ranging from 0.6 to 6.0 inches/hour within both the B and C horizons.

To further determine the appropriate Ksat to use for design, infiltration testing was performed on site using a Compact Constant Head Permeameter (CCHP, also known as an amoozemeter) on July 2, 2024. Three (3) pits were dug using a shovel in the soil and three (3) infiltration tests were performed in each pit. The first pit was dug in the front of the site in order to evaluate the feasibility of adding a

new infiltration practice here. The second pit was dug in the footprint of the proposed bioretention system. The third and final pit was dug in the vicinity of Unit #4.

Standard size auger holes, 4 cm in diameter were dug within each pit to the depth of the bottom of each respective practice to obtain an accurate permeability reading below the bottom of the proposed systems. Water was then discharged through the soil and the drop in water level on the tube in which the water was stored before being discharged was recorded at several time intervals. The comparison between the drop in water level and the elapsed time from the start of the test was used to calculate the Ksat value. For example, if the water level dropped 3 cm after 5 minutes and 5 cm after 10 minutes, this was recorded and used as data to calculate the Ksat using the formulas listed in the data spreadsheets in the appendix of this report. The Ksat values from each time increment were then averaged to determine the mean Ksat, and lowest mean Ksat from each area was divided by a factor of safety of two in order to determine the saturated hydraulic conductivity to use for design purposes.

It should be noted that the CCHP was observed to drain very rapidly on these holes and it was difficult to achieve a steady state. The device was consistently draining while still attempting to fill the auger holes with water. When the test could finally be started, the first one or two increments on each test needed to be discarded from the results because they were much larger than the following increments after the soils were saturated and the infiltration rate stabilized. The saturated hydraulic conductivity that was determined at each test site was ultimately much higher than anticipated, but logically it makes sense as the substrate was observed to consist of coarse sand with many stones.

The results of the permeability testing are as summarized below:

| Test | Ksat (in/hr) |
|---|---|
| Front of site – Test #1 | 27.33 |
| Front of site – Test #2 | 30.85 |
| Front of site – Test #3 | 22.26 |
| **Front of site – Low Ksat** | **22.26** |
| Bioretention – Test #1 | 14.84 |
| Bioretention – Test #2 | 33.41 |
| Bioretention – Test #3 | 65.74 |
| **Bioretention – Low Ksat** | **14.84** |
| Unit 4 – Test #1 | 30.64 |
| Unit 4 – Test #2 | 25.41 |
| Unit 4 – Test #3 | 37.31 |
| **Unit 4 – Low Ksat** | **25.41** |

A further breakdown of the data used to arrive at the final Ksat values is included in the appendix of this report. Applying a factor of safety of two, this comes out to a saturated hydraulic conductivity of **11.1 in/hr** to use for the front of the site, **7.4 in/hr** to use for the bioretention system, and **12.71 in/hr** to use for the infiltration practices around the back two units. It was later determined that, because the bioretention system is in a cut, has a clay core berm, and is surrounded by ledge outcrops, infiltration could not be modelled on this device anyway. Because the infiltration practices are in a fill, a design infiltration rate of 0.6 in/hr was assumed as a worst-case scenario for the fill material. A factor of safety of two was applied and an infiltration rate of **0.3 in/hr** was used for design.

## 3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious surfaces causes an increase in the curve number ($C_n$) and a decrease in the time of concentration ($T_c$), and if a stormwater management system were not implemented, the net result of this would be a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to avoid this potential. The proposed development, consisting of the aforementioned four (4) residential units with associated paved roadway and driveways as well as stormwater management features divide the subject parcel into seventeen (17) subcatchments. Subcatchments 1S-4S drain directly toward Analysis Points 1-4, respectively, as previously outlined. However, because a new catch basin will now intercept the flow that reaches the Sagamore Avenue right of way (Analysis Point 1) from the subject parcel, analysis point 3 is no longer modelled downstream of analysis point 1.

Subcatchment 5S has been removed from the drainage analysis as it was the subcatchment associated with a stormwater pond that has since been removed from the drainage design. Subcatchments 6S-9S drain through catch basins into a closed drainage system which outlets toward a bioretention pond modelled as Pond 1P. The bioretention pond is designed to treat the water quality volume of runoff directed to it and otherwise attenuate stormwater so that the peak rate of runoff at the analysis point is lower post-development than it is in the existing condition. The bioretention pond will have a sediment forebay for pre-treatment. Any discharge from Pond 1P follows a path through Subcatchment 3S represented as Reach 7R, toward Reach 8R, an existing roadside ditch on the Tidewatch condominium property leading to Analysis Point 3.

Subcatchments 11S and 12S consist of lawn and roof areas that drain toward yard drains 1 and 2, respectively. The runoff that is caught by these yard drains additionally enters the previously described closed drainage system that outlets toward Pond 1P.

Subcatchments 13S and 14S represent roof and deck areas on Units 3-4 which are routed toward infiltration stone underneath these units back decks. These devices are modelled as Ponds 3P and 4P.

Subcatchments 15S and 16S represent roof areas on Units 3 and 4 which drain into stone drip edges adjacent to the inside facing walls on these units. The stone drip edges, modelled as Ponds 5P and 6P, will be lined and underdrained for the sole purpose of directing this roof water into the aforementioned stone areas underneath the back decks of these units (3P and 4P) in order to meet the City's pollutant removal requirements.

Subcatchments 17S and 18S represent roof areas on Units 3 and 4 which drain into stone drip edges adjacent to the outside facing walls on these units. Although these stone drip edges, modelled as Ponds 7P and 8P, are useless for infiltration due to the presence of a perimeter drain beneath them, they will prevent the grassed slope adjacent to the units from eroding due to inundation with roof runoff. The stone drip edges will be lined and underdrained, and the underdrains for Ponds 7P and 8P will outlet toward Reaches 9R and 10R, which themselves carry water toward 1P and AP4, respectively.

Finally, Subcatchment 19S represents the grassed and roof area that drains directly toward Pond 1P without passing through the closed drainage system in the proposed condition.

As a result of the implementation of this stormwater management system, peak flows and runoff volumes are reduced toward all four analysis points during all analyzed storm events in the proposed condition as compared with the existing condition. The NHDES Alteration of Terrain Bureau allows

an increase in runoff volume of up to 0.1 acre-feet during the 2-year 24-hour storm event. We are decreasing runoff volumes and therefore this would be approvable by the AOT Bureau if the project needed an AOT permit (which it does not as the area of disturbance is below 100,000 SF).

Furthermore, the project as designed exceeds the AOT Bureau's groundwater recharge volume requirement. A GRV worksheet is contained within the appendix of this report in order to illustrate this. Therefore, we have designed the drainage system to avoid adverse impacts to abutting infrastructure and the requirement per Section 7.1 of the Site Plan Review Regulations to "design practices to the maximum extent practical (MEP) to reduce stormwater runoff volumes, maintain predevelopment site hydrology, and protect water quality in receiving waters" is met. Rain gardens (also known as bioretention systems) are recommended as a Low Impact Development practice in this same section of the regulations. We are using bioretention systems to treat and attenuate runoff from paved areas of the subject parcel in the proposed condition.

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and drip edges provide a removal efficiency of 90% for TSS and 55% for nitrogen. While drip edges cannot be used for infiltration in this case as the units will have foundation drains, stone underneath a deck is assumed to provide similar stormwater treatment to a stone drip edge. The City of Portsmouth Site Plan Review Regulations stipulate that stormwater BMPs shall be designed for 80% TSS removal and 50% nitrogen removal of stormwater runoff from post-construction impervious surfaces. This plan meets the pollutant removal requirement for runoff directed toward Analysis Points 3 and 4 in the post-construction condition. A breakdown of pollutant removal efficiencies for the runoff that passes through the bioretention ponds, stone infiltration areas, or no treatment BMP and reaches Analysis Points 3 and 4 from the subject parcel is contained within the appendix of this report in order to demonstrate this.

No impervious surface is directed toward Analysis Point 2 post-construction. Presumably, the flow directed toward the new catch basin along the gutter line of Sagamore Avenue from the existing Luster King development was accounted for in the design of the City's closed drainage network. Because the amount of impervious surface being directed toward Analysis Point 1 is being decreased post-construction, we presume that whatever stormwater management the City had proposed for the runoff downstream of the new catch basin will continue to function as intended post-construction. Therefore, no on-site treatment BMPs are proposed for the impervious surface directed toward Analysis Point 1 post-construction, and the impervious surface directed toward analysis point 1 post-construction is excluded from the pollutant removal calculations. Even if we did propose a treatment BMP for the runoff directed toward the Sagamore Avenue right of way, what would result is a point discharge of stormwater from an outlet pipe or weir directly toward pavement, which is not advisable. Therefore, this water *cannot* be treated on site, which will not be a problem assuming that the City designed an appropriate BMP for the runoff directed toward its catch basin from the Luster King site.

## 5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures, properties, and downstream wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; this will be accomplished through the construction of a drainage system consisting of site grading, catch basins, yard drains, a bioretention system, lined stone drip edges, infiltration stone underneath decks, and temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. Best Management Practices developed by the State of New Hampshire have been utilized in the design of

this system and their application will be enforced throughout the construction process. Peak rates and volumes of runoff from the site will be reduced toward all analysis points during all analyzed storm events.

This project disturbs less than 100,000 S.F. and does not require a NHDES Alteration of Terrain Permit.

Respectfully Submitted,
**JONES & BEACH ENGINEERS, INC.**

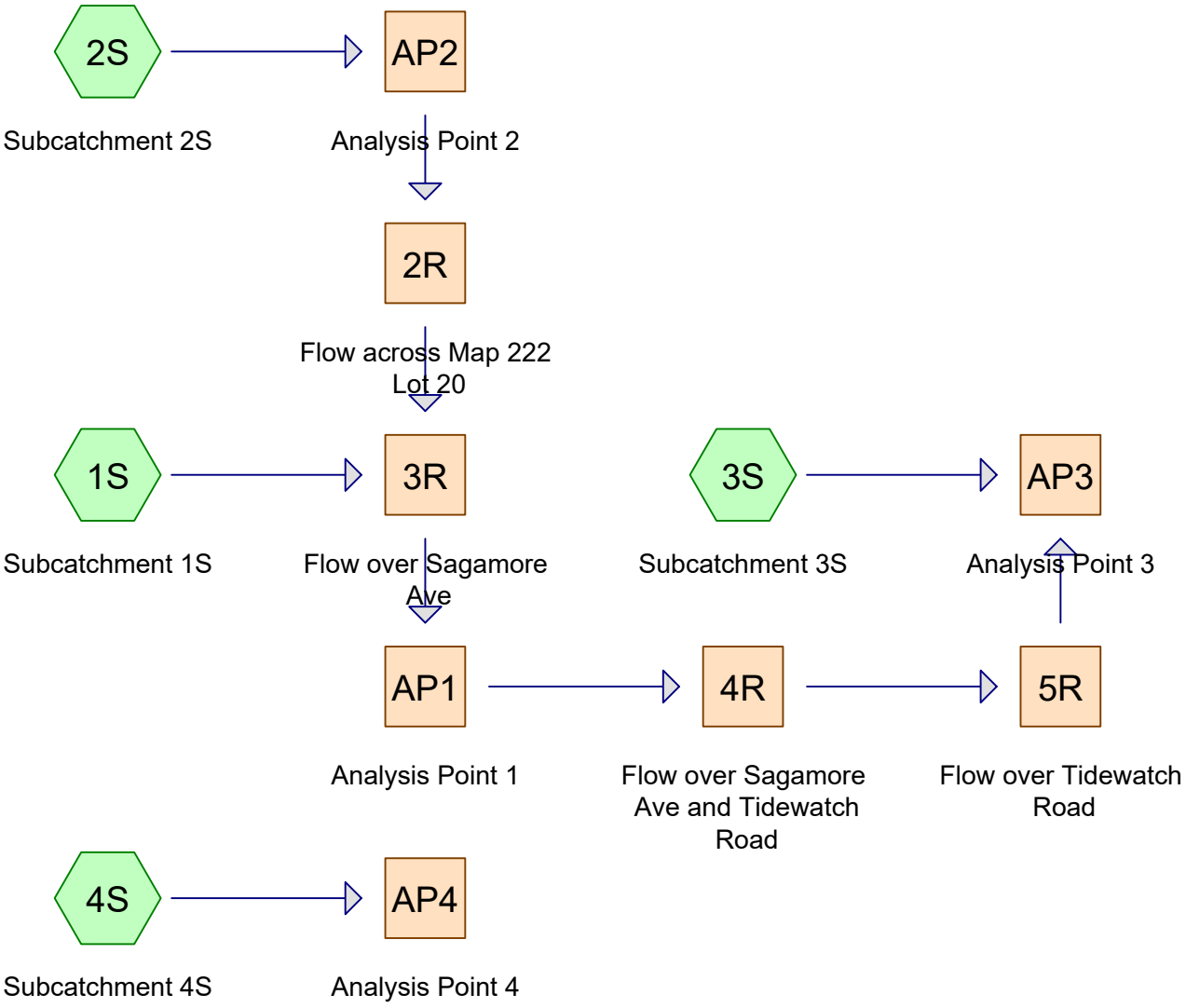
Daniel Meditz

Daniel Meditz, P.E
Lead Design Engineer

# APPENDIX I

# EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR




Subcat Reach Pond Link

**Routing Diagram for 18134-EXISTING**
Prepared by Jones & Beach Engineers Inc, Printed 9/16/2024

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.621 | 74 | >75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S) |
| 0.123 | 96 | Ledge, HSG C (3S, 4S) |
| 0.230 | 98 | Paved parking, HSG C (1S, 4S) |
| 0.129 | 98 | Roofs, HSG C (1S, 3S, 4S) |
| 1.415 | 70 | Woods, Good, HSG C (1S, 2S, 3S, 4S) |
| **2.518** | **76** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 2.518 | HSG C | 1S, 2S, 3S, 4S |
| 0.000 | HSG D | |
| 0.000 | Other | |
| **2.518** | | **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=20,592 sf 54.90% Impervious Runoff Depth>2.36"
Flow Length=187' Tc=6.0 min CN=87 Runoff=1.28 cfs 0.093 af

**Subcatchment2S: Subcatchment2S** Runoff Area=2,614 sf 0.00% Impervious Runoff Depth>1.38"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.09 cfs 0.007 af

**Subcatchment3S: Subcatchment3S** Runoff Area=58,629 sf 0.32% Impervious Runoff Depth>1.25"
Flow Length=447' Tc=11.9 min CN=72 Runoff=1.53 cfs 0.140 af

**Subcatchment4S: Subcatchment4S** Runoff Area=27,837 sf 14.82% Impervious Runoff Depth>1.58"
Flow Length=216' Tc=7.8 min CN=77 Runoff=1.08 cfs 0.084 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.02' Max Vel=0.63 fps Inflow=0.09 cfs 0.007 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.09 cfs 0.007 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.14' Max Vel=2.71 fps Inflow=1.36 cfs 0.100 af
n=0.016 L=101.0' S=0.0297 '/' Capacity=39.77 cfs Outflow=1.36 cfs 0.100 af

**Reach 4R: Flow over Sagamore Ave and** Avg. Flow Depth=0.14' Max Vel=2.85 fps Inflow=1.36 cfs 0.100 af
n=0.016 L=145.0' S=0.0345 '/' Capacity=42.85 cfs Outflow=1.35 cfs 0.100 af

**Reach 5R: Flow over Tidewatch Road** Avg. Flow Depth=0.12' Max Vel=3.38 fps Inflow=1.35 cfs 0.100 af
n=0.016 L=253.0' S=0.0553 '/' Capacity=54.28 cfs Outflow=1.31 cfs 0.100 af

**Reach AP1: Analysis Point 1** Inflow=1.36 cfs 0.100 af
Outflow=1.36 cfs 0.100 af

**Reach AP2: Analysis Point 2** Inflow=0.09 cfs 0.007 af
Outflow=0.09 cfs 0.007 af

**Reach AP3: Analysis Point 3** Inflow=2.79 cfs 0.240 af
Outflow=2.79 cfs 0.240 af

**Reach AP4: Analysis Point 4** Inflow=1.08 cfs 0.084 af
Outflow=1.08 cfs 0.084 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.324 af Average Runoff Depth = 1.55"**
**85.76% Pervious = 2.159 ac 14.24% Impervious = 0.359 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=20,592 sf 54.90% Impervious Runoff Depth>4.14"
Flow Length=187' Tc=6.0 min CN=87 Runoff=2.19 cfs 0.163 af

**Subcatchment2S: Subcatchment2S** Runoff Area=2,614 sf 0.00% Impervious Runoff Depth>2.86"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.20 cfs 0.014 af

**Subcatchment3S: Subcatchment3S** Runoff Area=58,629 sf 0.32% Impervious Runoff Depth>2.67"
Flow Length=447' Tc=11.9 min CN=72 Runoff=3.44 cfs 0.300 af

**Subcatchment4S: Subcatchment4S** Runoff Area=27,837 sf 14.82% Impervious Runoff Depth>3.14"
Flow Length=216' Tc=7.8 min CN=77 Runoff=2.18 cfs 0.167 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.03' Max Vel=0.80 fps Inflow=0.20 cfs 0.014 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.19 cfs 0.014 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.17' Max Vel=3.12 fps Inflow=2.38 cfs 0.177 af
n=0.016 L=101.0' S=0.0297 '/' Capacity=39.77 cfs Outflow=2.38 cfs 0.177 af

**Reach 4R: Flow over Sagamore Ave and** Avg. Flow Depth=0.17' Max Vel=3.29 fps Inflow=2.38 cfs 0.177 af
n=0.016 L=145.0' S=0.0345 '/' Capacity=42.85 cfs Outflow=2.37 cfs 0.177 af

**Reach 5R: Flow over Tidewatch Road** Avg. Flow Depth=0.15' Max Vel=3.88 fps Inflow=2.37 cfs 0.177 af
n=0.016 L=253.0' S=0.0553 '/' Capacity=54.28 cfs Outflow=2.31 cfs 0.177 af

**Reach AP1: Analysis Point 1** Inflow=2.38 cfs 0.177 af
Outflow=2.38 cfs 0.177 af

**Reach AP2: Analysis Point 2** Inflow=0.20 cfs 0.014 af
Outflow=0.20 cfs 0.014 af

**Reach AP3: Analysis Point 3** Inflow=5.63 cfs 0.477 af
Outflow=5.63 cfs 0.477 af

**Reach AP4: Analysis Point 4** Inflow=2.18 cfs 0.167 af
Outflow=2.18 cfs 0.167 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.644 af Average Runoff Depth = 3.07"**
**85.76% Pervious = 2.159 ac 14.24% Impervious = 0.359 ac**

## Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.19 cfs @ 12.09 hrs, Volume= 0.163 af, Depth> 4.14"
Routed to Reach 3R : Flow over Sagamore Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 2,869 | 98 | Roofs, HSG C |
| 8,436 | 98 | Paved parking, HSG C |
| 9,256 | 74 | >75% Grass cover, Good, HSG C |
| 31 | 70 | Woods, Good, HSG C |
| 20,592 | 87 | Weighted Average |
| 9,287 | | 45.10% Pervious Area |
| 11,305 | | 54.90% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 46 | 0.1090 | 0.31 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.1 | 4 | 0.0670 | 1.26 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70" |
| 0.1 | 41 | 0.0670 | 5.25 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 96 | 0.0360 | 3.85 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 3.1 | 187 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af, Depth> 2.86"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 2,495 | 74 | >75% Grass cover, Good, HSG C |
| 119 | 70 | Woods, Good, HSG C |
| 2,614 | 74 | Weighted Average |
| 2,614 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 20 | 0.1000 | 0.25 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 1.3 | 20 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 3.44 cfs @ 12.17 hrs, Volume= 0.300 af, Depth> 2.67"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 187 | 98 | Roofs, HSG C |
| | 9,391 | 74 | >75% Grass cover, Good, HSG C |
| | 46,312 | 70 | Woods, Good, HSG C |
| * | 2,739 | 96 | Ledge, HSG C |
| | 58,629 | 72 | Weighted Average |
| | 58,442 | | 99.68% Pervious Area |
| | 187 | | 0.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.6 | 50 | 0.0415 | 0.10 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.7 | 62 | 0.0968 | 1.56 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.7 | 54 | 0.0741 | 1.36 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.3 | 122 | 0.1000 | 1.58 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.6 | 159 | 0.0189 | 4.55 | 18.20 | **Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 3.0 '/' Top.W=7.00' n= 0.030 Short grass |
| 11.9 | 447 | Total | | | |

## Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 2.18 cfs @ 12.11 hrs, Volume= 0.167 af, Depth> 3.14"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 2,555 | 98 | Roofs, HSG C |
| | 1,571 | 98 | Paved parking, HSG C |
| | 5,912 | 74 | >75% Grass cover, Good, HSG C |
| | 15,194 | 70 | Woods, Good, HSG C |
| * | 2,605 | 96 | Ledge, HSG C |
| | 27,837 | 77 | Weighted Average |
| | 23,711 | | 85.18% Pervious Area |
| | 4,126 | | 14.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.9 | 14 | 0.0210 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.2 | 36 | 0.1280 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.5 | 50 | 0.1280 | 1.79 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.0 | 87 | 0.0800 | 1.41 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.2 | 29 | 0.2860 | 2.67 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 7.8 | 216 | Total | | | |

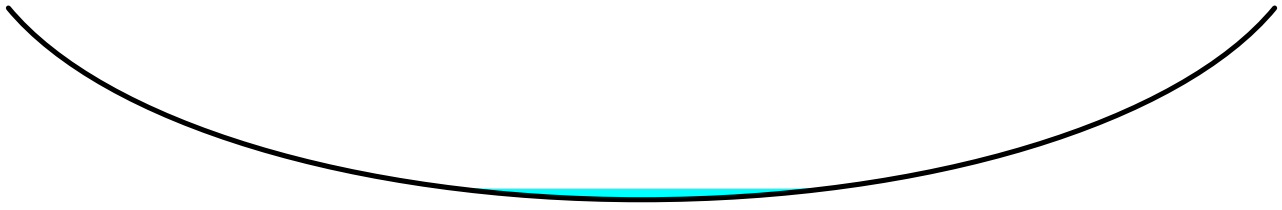
## Summary for Reach 2R: Flow across Map 222 Lot 20

Inflow Area = 0.060 ac, 0.00% Impervious, Inflow Depth > 2.86" for 10 Yr 24 Hr +15% event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.014 af, Atten= 3%, Lag= 1.2 min
Routed to Reach 3R : Flow over Sagamore Ave

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.80 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 4.4 min

Peak Storage= 19 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 12.14'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 88.18 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 81.0' Slope= 0.0494 '/'
Inlet Invert= 66.00', Outlet Invert= 62.00'



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## Summary for Reach 3R: Flow over Sagamore Ave

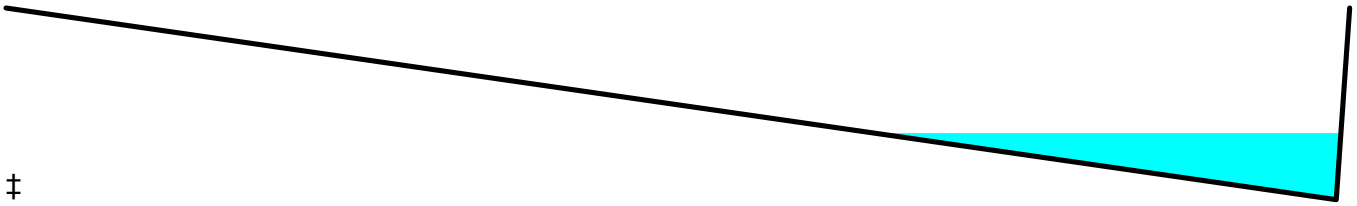
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[62] Hint: Exceeded Reach 2R OUTLET depth by 2.14' @ 12.10 hrs
[64] Warning: Exceeded Reach 2R outlet bank by 1.67' @ 12.10 hrs

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 4.00" for 10 Yr 24 Hr +15% event
Inflow = 2.38 cfs @ 12.09 hrs, Volume= 0.177 af
Outflow = 2.38 cfs @ 12.10 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.4 min
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.12 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 1.4 min

Peak Storage= 77 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 8.78'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 39.77 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 101.0' Slope= 0.0297 '/'
Inlet Invert= 64.00', Outlet Invert= 61.00'



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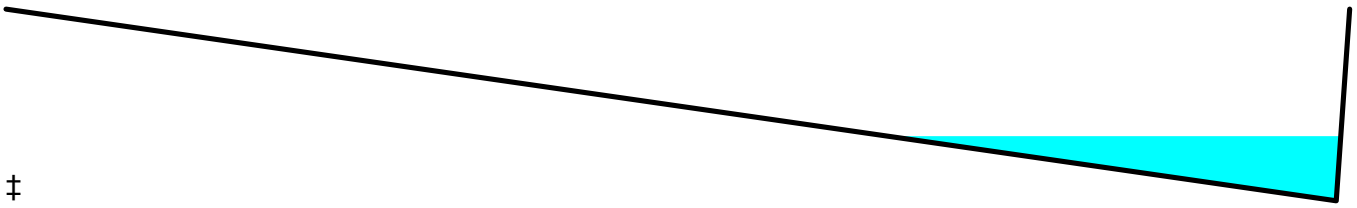
## Summary for Reach 4R: Flow over Sagamore Ave and Tidewatch Road

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 4.00" for 10 Yr 24 Hr +15% event
Inflow = 2.38 cfs @ 12.10 hrs, Volume= 0.177 af
Outflow = 2.37 cfs @ 12.11 hrs, Volume= 0.177 af, Atten= 1%, Lag= 0.6 min
Routed to Reach 5R : Flow over Tidewatch Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.29 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.9 min

Peak Storage= 104 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 8.52'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 42.85 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 145.0' Slope= 0.0345 '/'
Inlet Invert= 61.00', Outlet Invert= 56.00'



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## Summary for Reach 5R: Flow over Tidewatch Road

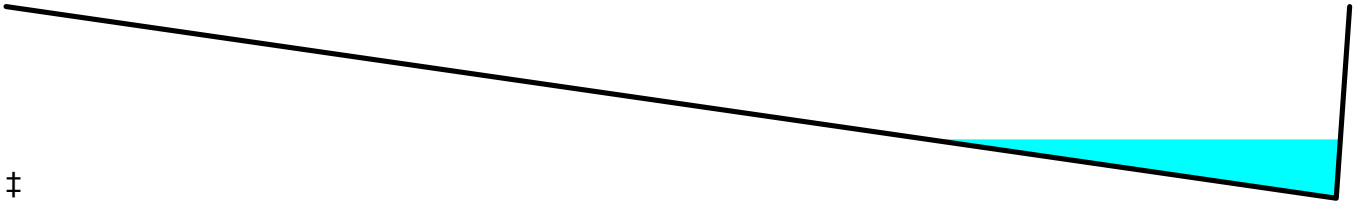
[61] Hint: Exceeded Reach 4R outlet invert by 0.15' @ 12.10 hrs

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 3.99" for 10 Yr 24 Hr +15% event
Inflow = 2.37 cfs @ 12.11 hrs, Volume= 0.177 af
Outflow = 2.31 cfs @ 12.12 hrs, Volume= 0.177 af, Atten= 2%, Lag= 0.9 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.88 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 2.7 min

Peak Storage= 150 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 7.74'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 54.28 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 253.0' Slope= 0.0553 '/'
Inlet Invert= 56.00', Outlet Invert= 42.00'



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## Summary for Reach AP1: Analysis Point 1

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

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 4.00" for 10 Yr 24 Hr +15% event
Inflow = 2.38 cfs @ 12.10 hrs, Volume= 0.177 af
Outflow = 2.38 cfs @ 12.10 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 4R : Flow over Sagamore Ave and Tidewatch Road

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, 0.00% Impervious, Inflow Depth > 2.86" for 10 Yr 24 Hr +15% event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.20 cfs @ 12.09 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flow across Map 222 Lot 20

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 = 1.879 ac, 14.04% Impervious, Inflow Depth > 3.05" for 10 Yr 24 Hr +15% event
Inflow = 5.63 cfs @ 12.15 hrs, Volume= 0.477 af
Outflow = 5.63 cfs @ 12.15 hrs, Volume= 0.477 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 = 0.639 ac, 14.82% Impervious, Inflow Depth > 3.14" for 10 Yr 24 Hr +15% event
Inflow = 2.18 cfs @ 12.11 hrs, Volume= 0.167 af
Outflow = 2.18 cfs @ 12.11 hrs, Volume= 0.167 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

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=20,592 sf 54.90% Impervious Runoff Depth>5.59"
Flow Length=187' Tc=6.0 min CN=87 Runoff=2.91 cfs 0.220 af

**Subcatchment2S: Subcatchment2S** Runoff Area=2,614 sf 0.00% Impervious Runoff Depth>4.14"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.29 cfs 0.021 af

**Subcatchment3S: Subcatchment3S** Runoff Area=58,629 sf 0.32% Impervious Runoff Depth>3.92"
Flow Length=447' Tc=11.9 min CN=72 Runoff=5.08 cfs 0.440 af

**Subcatchment4S: Subcatchment4S** Runoff Area=27,837 sf 14.82% Impervious Runoff Depth>4.47"
Flow Length=216' Tc=7.8 min CN=77 Runoff=3.10 cfs 0.238 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.04' Max Vel=0.90 fps Inflow=0.29 cfs 0.021 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.28 cfs 0.021 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.19' Max Vel=3.35 fps Inflow=3.19 cfs 0.241 af
n=0.016 L=101.0' S=0.0297 '/' Capacity=39.77 cfs Outflow=3.19 cfs 0.241 af

**Reach 4R: Flow over Sagamore Ave and** Avg. Flow Depth=0.19' Max Vel=3.54 fps Inflow=3.19 cfs 0.241 af
n=0.016 L=145.0' S=0.0345 '/' Capacity=42.85 cfs Outflow=3.18 cfs 0.241 af

**Reach 5R: Flow over Tidewatch Road** Avg. Flow Depth=0.17' Max Vel=4.19 fps Inflow=3.18 cfs 0.241 af
n=0.016 L=253.0' S=0.0553 '/' Capacity=54.28 cfs Outflow=3.11 cfs 0.241 af

**Reach AP1: Analysis Point 1** Inflow=3.19 cfs 0.241 af
Outflow=3.19 cfs 0.241 af

**Reach AP2: Analysis Point 2** Inflow=0.29 cfs 0.021 af
Outflow=0.29 cfs 0.021 af

**Reach AP3: Analysis Point 3** Inflow=8.00 cfs 0.681 af
Outflow=8.00 cfs 0.681 af

**Reach AP4: Analysis Point 4** Inflow=3.10 cfs 0.238 af
Outflow=3.10 cfs 0.238 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.919 af Average Runoff Depth = 4.38"**
**85.76% Pervious = 2.159 ac 14.24% Impervious = 0.359 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=20,592 sf 54.90% Impervious Runoff Depth>6.96"
Flow Length=187' Tc=6.0 min CN=87 Runoff=3.58 cfs 0.274 af

**Subcatchment2S: Subcatchment2S** Runoff Area=2,614 sf 0.00% Impervious Runoff Depth>5.40"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.37 cfs 0.027 af

**Subcatchment3S: Subcatchment3S** Runoff Area=58,629 sf 0.32% Impervious Runoff Depth>5.15"
Flow Length=447' Tc=11.9 min CN=72 Runoff=6.66 cfs 0.578 af

**Subcatchment4S: Subcatchment4S** Runoff Area=27,837 sf 14.82% Impervious Runoff Depth>5.76"
Flow Length=216' Tc=7.8 min CN=77 Runoff=3.97 cfs 0.307 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.04' Max Vel=0.98 fps Inflow=0.37 cfs 0.027 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.36 cfs 0.027 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.21' Max Vel=3.54 fps Inflow=3.94 cfs 0.301 af
n=0.016 L=101.0' S=0.0297 '/' Capacity=39.77 cfs Outflow=3.95 cfs 0.301 af

**Reach 4R: Flow over Sagamore Ave and** Avg. Flow Depth=0.20' Max Vel=3.74 fps Inflow=3.95 cfs 0.301 af
n=0.016 L=145.0' S=0.0345 '/' Capacity=42.85 cfs Outflow=3.93 cfs 0.301 af

**Reach 5R: Flow over Tidewatch Road** Avg. Flow Depth=0.19' Max Vel=4.42 fps Inflow=3.93 cfs 0.301 af
n=0.016 L=253.0' S=0.0553 '/' Capacity=54.28 cfs Outflow=3.86 cfs 0.301 af

**Reach AP1: Analysis Point 1** Inflow=3.95 cfs 0.301 af
Outflow=3.95 cfs 0.301 af

**Reach AP2: Analysis Point 2** Inflow=0.37 cfs 0.027 af
Outflow=0.37 cfs 0.027 af

**Reach AP3: Analysis Point 3** Inflow=10.27 cfs 0.879 af
Outflow=10.27 cfs 0.879 af

**Reach AP4: Analysis Point 4** Inflow=3.97 cfs 0.307 af
Outflow=3.97 cfs 0.307 af

**Total Runoff Area = 2.518 ac Runoff Volume = 1.186 af Average Runoff Depth = 5.65"**
**85.76% Pervious = 2.159 ac 14.24% Impervious = 0.359 ac**

## Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 3.58 cfs @ 12.09 hrs, Volume= 0.274 af, Depth> 6.96"
Routed to Reach 3R : Flow over Sagamore Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 2,869 | 98 | Roofs, HSG C |
| 8,436 | 98 | Paved parking, HSG C |
| 9,256 | 74 | >75% Grass cover, Good, HSG C |
| 31 | 70 | Woods, Good, HSG C |
| 20,592 | 87 | Weighted Average |
| 9,287 | | 45.10% Pervious Area |
| 11,305 | | 54.90% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 46 | 0.1090 | 0.31 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.1 | 4 | 0.0670 | 1.26 | | **Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.70" |
| 0.1 | 41 | 0.0670 | 5.25 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 0.4 | 96 | 0.0360 | 3.85 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 3.1 | 187 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 5.40"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 2,495 | 74 | >75% Grass cover, Good, HSG C |
| 119 | 70 | Woods, Good, HSG C |
| 2,614 | 74 | Weighted Average |
| 2,614 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 20 | 0.1000 | 0.25 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 1.3 | 20 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 6.66 cfs @ 12.17 hrs, Volume= 0.578 af, Depth> 5.15"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 187 | 98 | Roofs, HSG C |
| | 9,391 | 74 | >75% Grass cover, Good, HSG C |
| | 46,312 | 70 | Woods, Good, HSG C |
| * | 2,739 | 96 | Ledge, HSG C |
| | 58,629 | 72 | Weighted Average |
| | 58,442 | | 99.68% Pervious Area |
| | 187 | | 0.32% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.6 | 50 | 0.0415 | 0.10 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.7 | 62 | 0.0968 | 1.56 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.7 | 54 | 0.0741 | 1.36 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.3 | 122 | 0.1000 | 1.58 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.6 | 159 | 0.0189 | 4.55 | 18.20 | **Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 3.0 '/' Top.W=7.00' n= 0.030 Short grass |
| 11.9 | 447 | Total | | | |

## Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 3.97 cfs @ 12.11 hrs, Volume= 0.307 af, Depth> 5.76"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 2,555 | 98 | Roofs, HSG C |
| | 1,571 | 98 | Paved parking, HSG C |
| | 5,912 | 74 | >75% Grass cover, Good, HSG C |
| | 15,194 | 70 | Woods, Good, HSG C |
| * | 2,605 | 96 | Ledge, HSG C |
| | 27,837 | 77 | Weighted Average |
| | 23,711 | | 85.18% Pervious Area |
| | 4,126 | | 14.82% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.9 | 14 | 0.0210 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.2 | 36 | 0.1280 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.5 | 50 | 0.1280 | 1.79 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.0 | 87 | 0.0800 | 1.41 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.2 | 29 | 0.2860 | 2.67 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 7.8 | 216 | Total | | | |

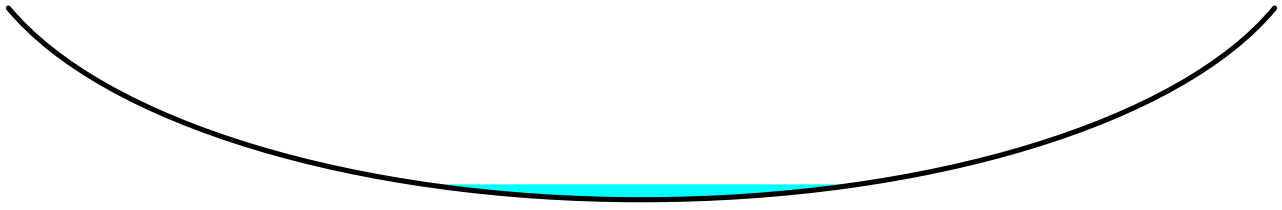
## Summary for Reach 2R: Flow across Map 222 Lot 20

Inflow Area = 0.060 ac, 0.00% Impervious, Inflow Depth > 5.40" for 50 Yr 24 Hr +15% event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.36 cfs @ 12.11 hrs, Volume= 0.027 af, Atten= 2%, Lag= 1.0 min
Routed to Reach 3R : Flow over Sagamore Ave

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.98 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 3.9 min

Peak Storage= 30 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 14.09'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 88.18 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 81.0' Slope= 0.0494 '/'
Inlet Invert= 66.00', Outlet Invert= 62.00'



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## Summary for Reach 3R: Flow over Sagamore Ave

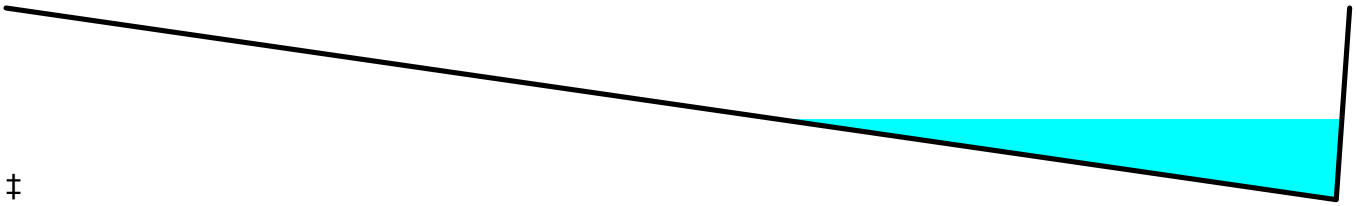
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[62] Hint: Exceeded Reach 2R OUTLET depth by 2.17' @ 12.10 hrs
[64] Warning: Exceeded Reach 2R outlet bank by 1.71' @ 12.10 hrs

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 6.78" for 50 Yr 24 Hr +15% event
Inflow = 3.94 cfs @ 12.09 hrs, Volume= 0.301 af
Outflow = 3.95 cfs @ 12.10 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.4 min
Routed to Reach AP1 : Analysis Point 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.54 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 1.2 min

Peak Storage= 113 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 10.62'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 39.77 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 101.0' Slope= 0.0297 '/'
Inlet Invert= 64.00', Outlet Invert= 61.00'



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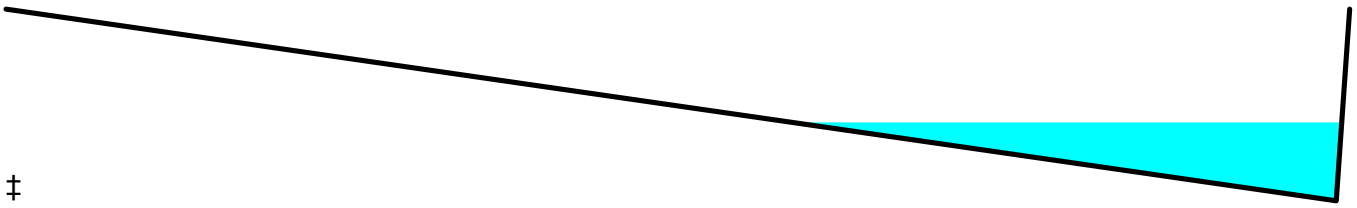
## Summary for Reach 4R: Flow over Sagamore Ave and Tidewatch Road

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 6.78" for 50 Yr 24 Hr +15% event
Inflow = 3.95 cfs @ 12.10 hrs, Volume= 0.301 af
Outflow = 3.93 cfs @ 12.10 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.5 min
Routed to Reach 5R : Flow over Tidewatch Road

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.74 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 1.7 min

Peak Storage= 153 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 10.31'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 42.85 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 145.0' Slope= 0.0345 '/'
Inlet Invert= 61.00', Outlet Invert= 56.00'



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## Summary for Reach 5R: Flow over Tidewatch Road

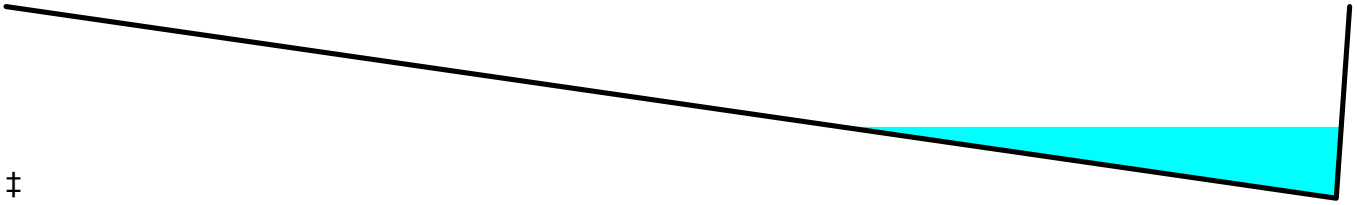
[61] Hint: Exceeded Reach 4R outlet invert by 0.18' @ 12.10 hrs

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 6.78" for 50 Yr 24 Hr +15% event
Inflow = 3.93 cfs @ 12.10 hrs, Volume= 0.301 af
Outflow = 3.86 cfs @ 12.12 hrs, Volume= 0.301 af, Atten= 2%, Lag= 0.8 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 4.42 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.74 fps, Avg. Travel Time= 2.4 min

Peak Storage= 220 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 9.38'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 54.28 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 253.0' Slope= 0.0553 '/'
Inlet Invert= 56.00', Outlet Invert= 42.00'



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## Summary for Reach AP1: Analysis Point 1

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

Inflow Area = 0.533 ac, 48.72% Impervious, Inflow Depth > 6.78" for 50 Yr 24 Hr +15% event
Inflow = 3.95 cfs @ 12.10 hrs, Volume= 0.301 af
Outflow = 3.95 cfs @ 12.10 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 4R : Flow over Sagamore Ave and Tidewatch Road

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, 0.00% Impervious, Inflow Depth > 5.40" for 50 Yr 24 Hr +15% event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flow across Map 222 Lot 20

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 = 1.879 ac, 14.04% Impervious, Inflow Depth > 5.61" for 50 Yr 24 Hr +15% event
Inflow = 10.27 cfs @ 12.15 hrs, Volume= 0.879 af
Outflow = 10.27 cfs @ 12.15 hrs, Volume= 0.879 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)

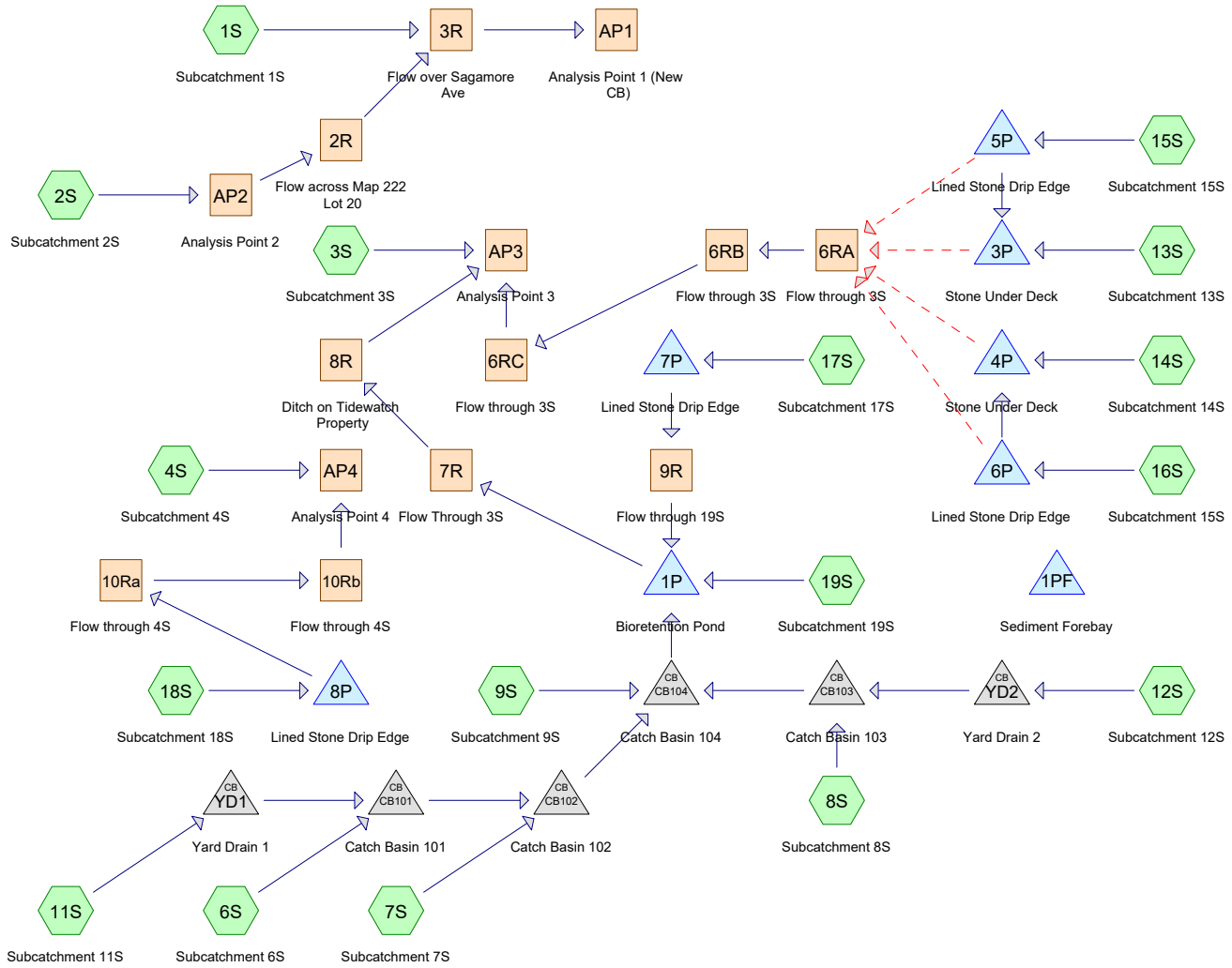
Inflow Area = 0.639 ac, 14.82% Impervious, Inflow Depth > 5.76" for 50 Yr 24 Hr +15% event
Inflow = 3.97 cfs @ 12.11 hrs, Volume= 0.307 af
Outflow = 3.97 cfs @ 12.11 hrs, Volume= 0.307 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

# APPENDIX II

# PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR




Subcat Reach Pond Link

**Routing Diagram for 18134-PROPOSED**
Prepared by Jones & Beach Engineers Inc, Printed 10/17/2024
HydroCAD® 10.20-3c s/n 00762 © 2023 HydroCAD Software Solutions LLC

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 1.067 | 74 | >75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 11S, 12S, 19S) |
| 0.071 | 96 | Ledge, HSG C (3S, 4S) |
| 0.287 | 98 | Paved parking, HSG C (1S, 6S, 7S, 8S, 9S, 11S, 19S) |
| 0.241 | 98 | Roofs, HSG C (1S, 4S, 8S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S) |
| 0.017 | 98 | Water Surface, 0% imp, HSG C (15S, 16S, 17S, 18S) |
| 0.835 | 70 | Woods, Good, HSG C (3S, 4S) |
| **2.518** | **78** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 2.518 | HSG C | 1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S, 11S, 12S, 13S, 14S, 15S, 16S, 17S, 18S, 19S |
| 0.000 | HSG D | |
| 0.000 | Other | |
| **2.518** | | **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=16,321 sf 51.36% Impervious Runoff Depth>2.27"
Flow Length=186' Tc=6.0 min CN=86 Runoff=0.98 cfs 0.071 af

**Subcatchment2S: Subcatchment2S** Runoff Area=1,728 sf 0.00% Impervious Runoff Depth>1.38"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.06 cfs 0.005 af

**Subcatchment3S: Subcatchment3S** Runoff Area=44,463 sf 0.00% Impervious Runoff Depth>1.25"
Flow Length=447' Tc=11.9 min CN=72 Runoff=1.16 cfs 0.106 af

**Subcatchment4S: Subcatchment4S** Runoff Area=20,212 sf 5.43% Impervious Runoff Depth>1.51"
Flow Length=216' Tc=7.8 min CN=76 Runoff=0.75 cfs 0.058 af

**Subcatchment6S: Subcatchment6S** Runoff Area=1,084 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

**Subcatchment7S: Subcatchment7S** Runoff Area=954 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.08 cfs 0.006 af

**Subcatchment8S: Subcatchment8S** Runoff Area=3,011 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af

**Subcatchment9S: Subcatchment9S** Runoff Area=325 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.03 cfs 0.002 af

**Subcatchment11S: Subcatchment11S** Runoff Area=4,571 sf 49.42% Impervious Runoff Depth>2.27"
Flow Length=77' Slope=0.0396 '/' Tc=6.0 min CN=86 Runoff=0.27 cfs 0.020 af

**Subcatchment12S: Subcatchment12S** Runoff Area=3,734 sf 35.30% Impervious Runoff Depth>1.95"
Flow Length=50' Slope=0.0320 '/' Tc=6.0 min CN=82 Runoff=0.19 cfs 0.014 af

**Subcatchment13S: Subcatchment13S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

**Subcatchment14S: Subcatchment14S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

**Subcatchment15S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

**Subcatchment16S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

**Subcatchment17S: Subcatchment17S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

**Subcatchment18S: Subcatchment18S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

**Subcatchment19S: Subcatchment19S** Runoff Area=9,042 sf 12.11% Impervious Runoff Depth>1.58"
Flow Length=58' Tc=6.0 min CN=77 Runoff=0.37 cfs 0.027 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.02' Max Vel=0.56 fps Inflow=0.06 cfs 0.005 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.06 cfs 0.005 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.12' Max Vel=2.94 fps Inflow=1.03 cfs 0.076 af
n=0.016 L=45.0' S=0.0444 '/' Capacity=48.65 cfs Outflow=1.03 cfs 0.076 af

**Reach 6RA: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=35.0' S=0.3429 '/' Capacity=464.76 cfs Outflow=0.00 cfs 0.000 af

**Reach 6RB: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=39.0' S=0.1026 '/' Capacity=127.08 cfs Outflow=0.00 cfs 0.000 af

**Reach 6RC: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=45.0' S=0.2667 '/' Capacity=409.88 cfs Outflow=0.00 cfs 0.000 af

**Reach 7R: Flow Through 3S** Avg. Flow Depth=0.12' Max Vel=3.30 fps Inflow=1.30 cfs 0.102 af
n=0.030 L=220.0' S=0.0909 '/' Capacity=66.79 cfs Outflow=1.30 cfs 0.101 af

**Reach 8R: Ditch on Tidewatch Property** Avg. Flow Depth=0.30' Max Vel=2.28 fps Inflow=1.30 cfs 0.101 af
n=0.030 L=159.0' S=0.0189 '/' Capacity=18.18 cfs Outflow=1.28 cfs 0.101 af

**Reach 9R: Flow through 19S** Avg. Flow Depth=0.03' Max Vel=0.61 fps Inflow=0.06 cfs 0.005 af
n=0.030 L=39.0' S=0.0205 '/' Capacity=16.36 cfs Outflow=0.06 cfs 0.005 af

**Reach 10Ra: Flow through 4S** Avg. Flow Depth=0.00' Max Vel=0.83 fps Inflow=0.06 cfs 0.005 af
n=0.030 L=18.0' S=0.3333 '/' Capacity=199.20 cfs Outflow=0.06 cfs 0.005 af

**Reach 10Rb: Flow through 4S** Avg. Flow Depth=0.00' Max Vel=0.70 fps Inflow=0.06 cfs 0.005 af
n=0.030 L=51.0' S=0.2353 '/' Capacity=167.36 cfs Outflow=0.06 cfs 0.005 af

**Reach AP1: Analysis Point 1 (New CB)** Inflow=1.03 cfs 0.076 af
Outflow=1.03 cfs 0.076 af

**Reach AP2: Analysis Point 2** Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

**Reach AP3: Analysis Point 3** Inflow=2.40 cfs 0.208 af
Outflow=2.40 cfs 0.208 af

**Reach AP4: Analysis Point 4** Inflow=0.81 cfs 0.064 af
Outflow=0.81 cfs 0.064 af

**Pond 1P: Bioretention Pond** Peak Elev=60.50' Storage=72 cf Inflow=1.33 cfs 0.102 af
Outflow=1.30 cfs 0.102 af

**Pond 1PF: Sediment Forebay** Peak Elev=0.00' Storage=0 cf

**Pond 3P: Stone Under Deck** Peak Elev=63.57' Storage=0.005 af Inflow=0.11 cfs 0.009 af
Discarded=0.01 cfs 0.007 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af

**Pond 4P: Stone Under Deck** Peak Elev=63.19' Storage=0.002 af Inflow=0.11 cfs 0.009 af
Discarded=0.04 cfs 0.009 af Secondary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.009 af

**Pond 5P: Lined Stone Drip Edge** Peak Elev=66.05' Storage=0.000 af Inflow=0.06 cfs 0.005 af
Primary=0.06 cfs 0.005 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.005 af

**Pond 6P: Lined Stone Drip Edge** Peak Elev=66.05' Storage=0.000 af Inflow=0.06 cfs 0.005 af
Primary=0.06 cfs 0.005 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.005 af

**Pond 7P: Lined Stone Drip Edge** Peak Elev=64.16' Storage=0.000 af Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

**Pond 8P: Lined Stone Drip Edge** Peak Elev=64.66' Storage=0.000 af Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

**Pond CB101: Catch Basin 101** Peak Elev=66.97' Inflow=0.36 cfs 0.027 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0071 '/' Outflow=0.36 cfs 0.027 af

**Pond CB102: Catch Basin 102** Peak Elev=66.80' Inflow=0.44 cfs 0.033 af
12.0" Round Culvert n=0.012 L=84.0' S=0.0060 '/' Outflow=0.44 cfs 0.033 af

**Pond CB103: Catch Basin 103** Peak Elev=67.97' Inflow=0.43 cfs 0.034 af
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=0.43 cfs 0.034 af

**Pond CB104: Catch Basin 104** Peak Elev=66.37' Inflow=0.90 cfs 0.069 af
12.0" Round Culvert n=0.012 L=31.0' S=0.0065 '/' Outflow=0.90 cfs 0.069 af

**Pond YD1: Yard Drain 1** Peak Elev=67.64' Inflow=0.27 cfs 0.020 af
8.0" Round Culvert n=0.012 L=15.0' S=0.0247 '/' Outflow=0.27 cfs 0.020 af

**Pond YD2: Yard Drain 2** Peak Elev=68.48' Inflow=0.19 cfs 0.014 af
8.0" Round Culvert n=0.012 L=13.0' S=0.0208 '/' Outflow=0.19 cfs 0.014 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.365 af Average Runoff Depth = 1.74"**
**79.02% Pervious = 1.990 ac 20.98% Impervious = 0.528 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=16,321 sf 51.36% Impervious Runoff Depth>4.04"
Flow Length=186' Tc=6.0 min CN=86 Runoff=1.70 cfs 0.126 af

**Subcatchment2S: Subcatchment2S** Runoff Area=1,728 sf 0.00% Impervious Runoff Depth>2.86"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.13 cfs 0.009 af

**Subcatchment3S: Subcatchment3S** Runoff Area=44,463 sf 0.00% Impervious Runoff Depth>2.67"
Flow Length=447' Tc=11.9 min CN=72 Runoff=2.61 cfs 0.227 af

**Subcatchment4S: Subcatchment4S** Runoff Area=20,212 sf 5.43% Impervious Runoff Depth>3.04"
Flow Length=216' Tc=7.8 min CN=76 Runoff=1.54 cfs 0.118 af

**Subcatchment6S: Subcatchment6S** Runoff Area=1,084 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

**Subcatchment7S: Subcatchment7S** Runoff Area=954 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment8S: Subcatchment8S** Runoff Area=3,011 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.37 cfs 0.031 af

**Subcatchment9S: Subcatchment9S** Runoff Area=325 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.04 cfs 0.003 af

**Subcatchment11S: Subcatchment11S** Runoff Area=4,571 sf 49.42% Impervious Runoff Depth>4.04"
Flow Length=77' Slope=0.0396 '/' Tc=6.0 min CN=86 Runoff=0.48 cfs 0.035 af

**Subcatchment12S: Subcatchment12S** Runoff Area=3,734 sf 35.30% Impervious Runoff Depth>3.63"
Flow Length=50' Slope=0.0320 '/' Tc=6.0 min CN=82 Runoff=0.35 cfs 0.026 af

**Subcatchment13S: Subcatchment13S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

**Subcatchment14S: Subcatchment14S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.07 cfs 0.006 af

**Subcatchment15S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

**Subcatchment16S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

**Subcatchment17S: Subcatchment17S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

**Subcatchment18S: Subcatchment18S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>5.37"
Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af

**Subcatchment19S: Subcatchment19S** Runoff Area=9,042 sf 12.11% Impervious Runoff Depth>3.14"
Flow Length=58' Tc=6.0 min CN=77 Runoff=0.75 cfs 0.054 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.02' Max Vel=0.70 fps Inflow=0.13 cfs 0.009 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.13 cfs 0.009 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.15' Max Vel=3.39 fps Inflow=1.82 cfs 0.135 af
n=0.016 L=45.0' S=0.0444 '/' Capacity=48.65 cfs Outflow=1.83 cfs 0.135 af

**Reach 6RA: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=35.0' S=0.3429 '/' Capacity=464.76 cfs Outflow=0.00 cfs 0.000 af

**Reach 6RB: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=39.0' S=0.1026 '/' Capacity=127.08 cfs Outflow=0.00 cfs 0.000 af

**Reach 6RC: Flow through 3S** Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=45.0' S=0.2667 '/' Capacity=409.88 cfs Outflow=0.00 cfs 0.000 af

**Reach 7R: Flow Through 3S** Avg. Flow Depth=0.13' Max Vel=3.52 fps Inflow=1.53 cfs 0.178 af
n=0.030 L=220.0' S=0.0909 '/' Capacity=66.79 cfs Outflow=1.53 cfs 0.178 af

**Reach 8R: Ditch on Tidewatch Property** Avg. Flow Depth=0.32' Max Vel=2.40 fps Inflow=1.53 cfs 0.178 af
n=0.030 L=159.0' S=0.0189 '/' Capacity=18.18 cfs Outflow=1.53 cfs 0.178 af

**Reach 9R: Flow through 19S** Avg. Flow Depth=0.04' Max Vel=0.71 fps Inflow=0.09 cfs 0.008 af
n=0.030 L=39.0' S=0.0205 '/' Capacity=16.36 cfs Outflow=0.09 cfs 0.008 af

**Reach 10Ra: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=0.89 fps Inflow=0.09 cfs 0.008 af
n=0.030 L=18.0' S=0.3333 '/' Capacity=199.20 cfs Outflow=0.09 cfs 0.008 af

**Reach 10Rb: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=0.80 fps Inflow=0.09 cfs 0.008 af
n=0.030 L=51.0' S=0.2353 '/' Capacity=167.36 cfs Outflow=0.09 cfs 0.008 af

**Reach AP1: Analysis Point 1 (New CB)** Inflow=1.83 cfs 0.135 af
Outflow=1.83 cfs 0.135 af

**Reach AP2: Analysis Point 2** Inflow=0.13 cfs 0.009 af
Outflow=0.13 cfs 0.009 af

**Reach AP3: Analysis Point 3** Inflow=4.12 cfs 0.405 af
Outflow=4.12 cfs 0.405 af

**Reach AP4: Analysis Point 4** Inflow=1.63 cfs 0.126 af
Outflow=1.63 cfs 0.126 af

**Pond 1P: Bioretention Pond** Peak Elev=61.22' Storage=411 cf Inflow=2.33 cfs 0.179 af
Outflow=1.53 cfs 0.178 af

**Pond 1PF: Sediment Forebay** Peak Elev=0.00' Storage=0 cf

**Pond 3P: Stone Under Deck** Peak Elev=64.72' Storage=0.008 af Inflow=0.17 cfs 0.014 af
Discarded=0.01 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.010 af

**Pond 4P: Stone Under Deck** Peak Elev=63.65' Storage=0.003 af Inflow=0.17 cfs 0.014 af
Discarded=0.06 cfs 0.014 af Secondary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.014 af

**Pond 5P: Lined Stone Drip Edge** Peak Elev=66.07' Storage=0.000 af Inflow=0.10 cfs 0.008 af
Primary=0.10 cfs 0.008 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.008 af

**Pond 6P: Lined Stone Drip Edge** Peak Elev=66.07' Storage=0.000 af Inflow=0.10 cfs 0.008 af
Primary=0.10 cfs 0.008 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.008 af

**Pond 7P: Lined Stone Drip Edge** Peak Elev=64.21' Storage=0.000 af Inflow=0.10 cfs 0.008 af
Outflow=0.09 cfs 0.008 af

**Pond 8P: Lined Stone Drip Edge** Peak Elev=64.71' Storage=0.000 af Inflow=0.10 cfs 0.008 af
Outflow=0.09 cfs 0.008 af

**Pond CB101: Catch Basin 101** Peak Elev=67.13' Inflow=0.61 cfs 0.046 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0071 '/' Outflow=0.61 cfs 0.046 af

**Pond CB102: Catch Basin 102** Peak Elev=66.96' Inflow=0.73 cfs 0.056 af
12.0" Round Culvert n=0.012 L=84.0' S=0.0060 '/' Outflow=0.73 cfs 0.056 af

**Pond CB103: Catch Basin 103** Peak Elev=68.09' Inflow=0.73 cfs 0.057 af
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=0.73 cfs 0.057 af

**Pond CB104: Catch Basin 104** Peak Elev=66.58' Inflow=1.49 cfs 0.116 af
12.0" Round Culvert n=0.012 L=31.0' S=0.0065 '/' Outflow=1.49 cfs 0.116 af

**Pond YD1: Yard Drain 1** Peak Elev=67.77' Inflow=0.48 cfs 0.035 af
8.0" Round Culvert n=0.012 L=15.0' S=0.0247 '/' Outflow=0.48 cfs 0.035 af

**Pond YD2: Yard Drain 2** Peak Elev=68.59' Inflow=0.35 cfs 0.026 af
8.0" Round Culvert n=0.012 L=13.0' S=0.0208 '/' Outflow=0.35 cfs 0.026 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.695 af Average Runoff Depth = 3.31"**
**79.02% Pervious = 1.990 ac 20.98% Impervious = 0.528 ac**

## Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 1.70 cfs @ 12.09 hrs, Volume= 0.126 af, Depth> 4.04"
Routed to Reach 3R : Flow over Sagamore Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 6,930 | 98 | Paved parking, HSG C |
| 7,938 | 74 | >75% Grass cover, Good, HSG C |
| 1,453 | 98 | Roofs, HSG C |
| 16,321 | 86 | Weighted Average |
| 7,938 | | 48.64% Pervious Area |
| 8,383 | | 51.36% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 50 | 0.1250 | 0.33 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.0 | 6 | 0.1250 | 2.47 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.3 | 30 | 0.0670 | 1.81 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.4 | 100 | 0.0360 | 3.85 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 3.2 | 186 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.86"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 1,728 | 74 | >75% Grass cover, Good, HSG C |
| 1,728 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 20 | 0.1000 | 0.25 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 1.3 | 20 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 2.61 cfs @ 12.17 hrs, Volume= 0.227 af, Depth> 2.67"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 14,740 | 74 | >75% Grass cover, Good, HSG C |
| | 28,306 | 70 | Woods, Good, HSG C |
| * | 1,417 | 96 | Ledge, HSG C |
| | 44,463 | 72 | Weighted Average |
| | 44,463 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.6 | 50 | 0.0415 | 0.10 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.7 | 62 | 0.0968 | 1.56 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.7 | 54 | 0.0741 | 1.36 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.3 | 122 | 0.1000 | 1.58 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.6 | 159 | 0.0189 | 4.55 | 18.20 | **Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 3.0 '/' Top.W=7.00' n= 0.030 Short grass |
| 11.9 | 447 | Total | | | |

## Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 1.54 cfs @ 12.11 hrs, Volume= 0.118 af, Depth> 3.04"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 9,377 | 74 | >75% Grass cover, Good, HSG C |
| | 8,075 | 70 | Woods, Good, HSG C |
| | 1,097 | 98 | Roofs, HSG C |
| * | 1,663 | 96 | Ledge, HSG C |
| | 20,212 | 76 | Weighted Average |
| | 19,115 | | 94.57% Pervious Area |
| | 1,097 | | 5.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.9 | 14 | 0.0210 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.2 | 36 | 0.1280 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.5 | 50 | 0.1280 | 1.79 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.0 | 87 | 0.0800 | 1.41 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.2 | 29 | 0.2860 | 2.67 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 7.8 | 216 | Total | | | |

## Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 5.37"
Routed to Pond CB101 : Catch Basin 101

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 1,084 | 98 | Paved parking, HSG C |
| 1,084 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 5.37"
Routed to Pond CB102 : Catch Basin 102

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 954 | 98 | Paved parking, HSG C |
| 954 | | 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: Subcatchment 8S

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 5.37"
Routed to Pond CB103 : Catch Basin 103

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 2,554 | 98 | Paved parking, HSG C |
| 457 | 98 | Roofs, HSG C |
| 3,011 | 98 | Weighted Average |
| 3,011 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 0.003 af, Depth> 5.37"
Routed to Pond CB104 : Catch Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 325 | 98 | Paved parking, HSG C |
| 325 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 4.04"
Routed to Pond YD1 : Yard Drain 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 1,998 | 98 | Roofs, HSG C |
| 2,312 | 74 | >75% Grass cover, Good, HSG C |
| 261 | 98 | Paved parking, HSG C |
| 4,571 | 86 | Weighted Average |
| 2,312 | | 50.58% Pervious Area |
| 2,259 | | 49.42% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.0 | 50 | 0.0396 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.3 | 27 | 0.0396 | 1.39 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 4.3 | 77 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 12S: Subcatchment 12S

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.026 af, Depth> 3.63"
Routed to Pond YD2 : Yard Drain 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 1,318 | 98 | Roofs, HSG C |
| 2,416 | 74 | >75% Grass cover, Good, HSG C |
| 3,734 | 82 | Weighted Average |
| 2,416 | | 64.70% Pervious Area |
| 1,318 | | 35.30% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 50 | 0.0320 | 0.19 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.3 | 50 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 13S: Subcatchment 13S

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 5.37"
Routed to Pond 3P : Stone Under Deck

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 560 | 98 | Roofs, HSG C |
| 560 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 14S: Subcatchment 14S

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 5.37"
Routed to Pond 4P : Stone Under Deck

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 560 | 98 | Roofs, HSG C |
| 560 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 15S: Subcatchment 15S

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 5.37"
Routed to Pond 5P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 16S: Subcatchment 15S

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 5.37"
Routed to Pond 6P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 5.37"
Routed to Pond 7P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 18S: Subcatchment 18S

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Depth> 5.37"
Routed to Pond 8P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 0.75 cfs @ 12.09 hrs, Volume= 0.054 af, Depth> 3.14"
Routed to Pond 1P : Bioretention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Yr 24 Hr +15% Rainfall=5.61"

| Area (sf) | CN | Description |
|---|---|---|
| 7,947 | 74 | >75% Grass cover, Good, HSG C |
| 695 | 98 | Roofs, HSG C |
| 400 | 98 | Paved parking, HSG C |
| 9,042 | 77 | Weighted Average |
| 7,947 | | 87.89% Pervious Area |
| 1,095 | | 12.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 43 | 0.0930 | 0.29 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.4 | 7 | 0.3333 | 0.33 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.0 | 8 | 0.3333 | 4.04 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 2.9 | 58 | Total, Increased to minimum Tc = 6.0 min | | | |

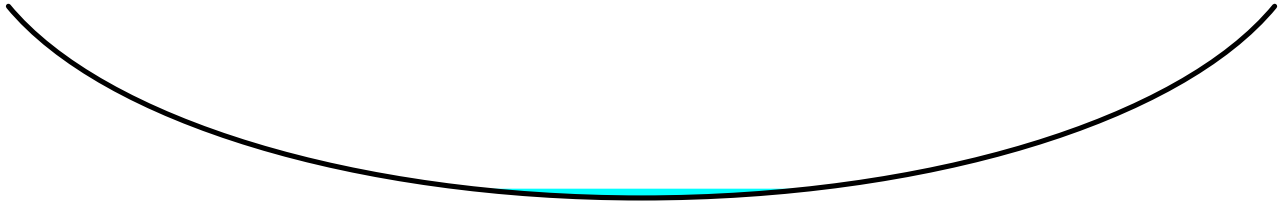
## Summary for Reach 2R: Flow across Map 222 Lot 20

Inflow Area = 0.040 ac, 0.00% Impervious, Inflow Depth > 2.86" for 10 Yr 24 Hr +15% event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.13 cfs @ 12.12 hrs, Volume= 0.009 af, Atten= 4%, Lag= 1.4 min
Routed to Reach 3R : Flow over Sagamore Ave

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.70 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 4.8 min

Peak Storage= 14 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 11.00'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 88.18 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Short grass
Length= 81.0' Slope= 0.0494 '/'
Inlet Invert= 66.00', Outlet Invert= 62.00'



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## Summary for Reach 3R: Flow over Sagamore Ave

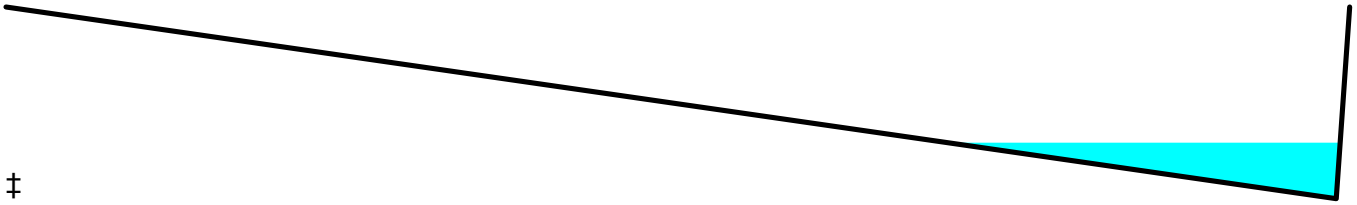
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[62] Hint: Exceeded Reach 2R OUTLET depth by 1.12' @ 12.10 hrs
[64] Warning: Exceeded Reach 2R outlet bank by 0.65' @ 12.09 hrs

Inflow Area = 0.414 ac, 46.45% Impervious, Inflow Depth > 3.92" for 10 Yr 24 Hr +15% event
Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 1.83 cfs @ 12.09 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.2 min
Routed to Reach AP1 : Analysis Point 1 (New CB)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.39 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 0.6 min

Peak Storage= 24 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 7.37'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 48.65 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 45.0' Slope= 0.0444 '/'
Inlet Invert= 63.00', Outlet Invert= 61.00'



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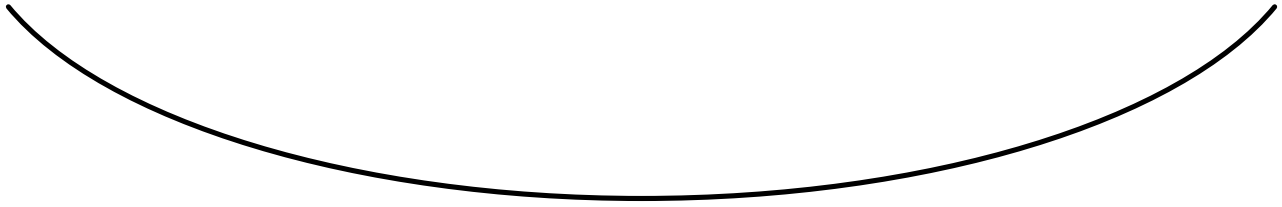
## Summary for Reach 6RA: Flow through 3S

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 6RB : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 464.76 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 35.0' Slope= 0.3429 '/'
Inlet Invert= 66.00', Outlet Invert= 54.00'



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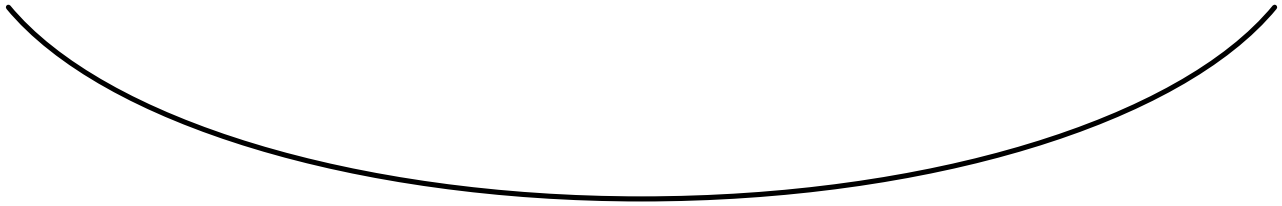
## Summary for Reach 6RB: Flow through 3S

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 6RC : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 127.08 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 39.0' Slope= 0.1026 '/'
Inlet Invert= 54.00', Outlet Invert= 50.00'



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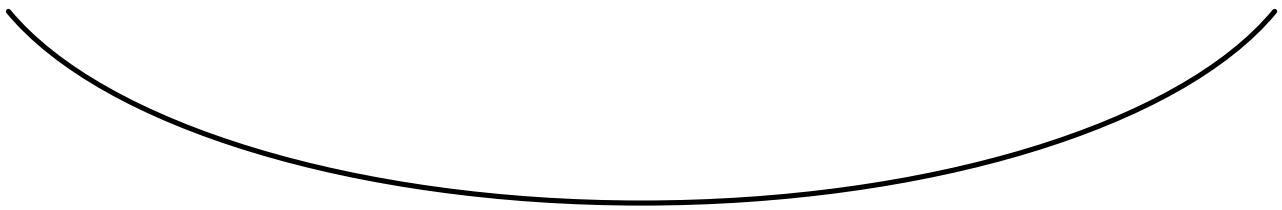
## Summary for Reach 6RC: Flow through 3S

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 409.88 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 45.0' Slope= 0.2667 '/'
Inlet Invert= 50.00', Outlet Invert= 38.00'



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## Summary for Reach 7R: Flow Through 3S

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr +15% event
Inflow = 1.53 cfs @ 12.19 hrs, Volume= 0.178 af
Outflow = 1.53 cfs @ 12.20 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.7 min
Routed to Reach 8R : Ditch on Tidewatch Property

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.52 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 3.4 min

Peak Storage= 96 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 3.77'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 66.79 cfs

3.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 220.0' Slope= 0.0909 '/'
Inlet Invert= 58.00', Outlet Invert= 38.00'

‡

## Summary for Reach 8R: Ditch on Tidewatch Property

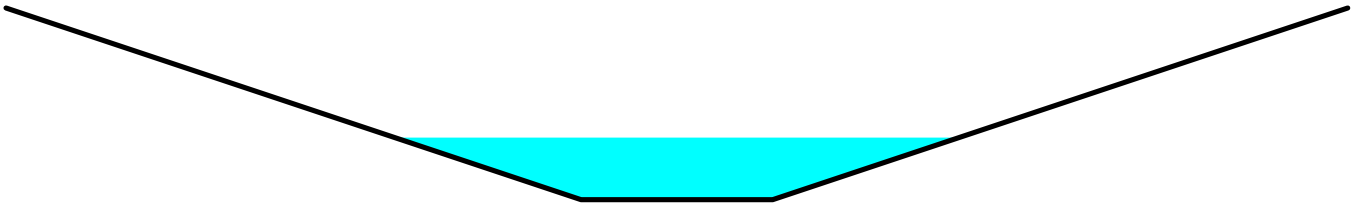
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.20' @ 12.20 hrs

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 3.96" for 10 Yr 24 Hr +15% event
Inflow = 1.53 cfs @ 12.20 hrs, Volume= 0.178 af
Outflow = 1.53 cfs @ 12.21 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.8 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.40 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 3.1 min

Peak Storage= 102 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 2.94'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 18.18 cfs

1.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 159.0' Slope= 0.0189 '/'
Inlet Invert= 38.00', Outlet Invert= 35.00'



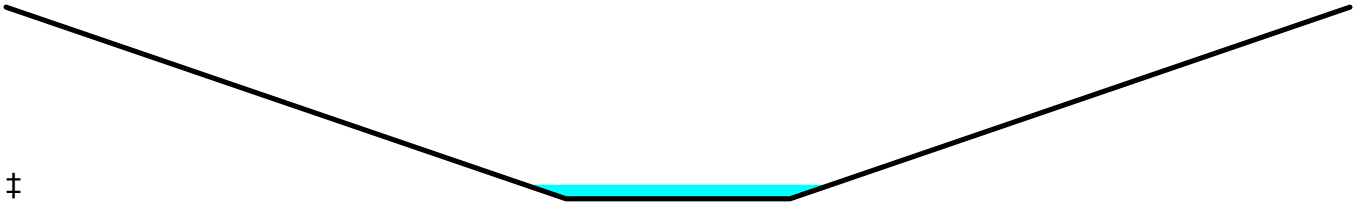
## Summary for Reach 9R: Flow through 19S

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.35" for 10 Yr 24 Hr +15% event
Inflow = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 1%, Lag= 0.6 min
Routed to Pond 1P : Bioretention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.71 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 2.8 min

Peak Storage= 5 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 4.10'
Bank-Full Depth= 0.50' Flow Area= 5.3 sf, Capacity= 16.36 cfs

3.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 15.0 '/' Top Width= 18.00'
Length= 39.0' Slope= 0.0205 '/'
Inlet Invert= 63.80', Outlet Invert= 63.00'



‡

## Summary for Reach 10Ra: Flow through 4S

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.35" for 10 Yr 24 Hr +15% event
Inflow = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.11 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 10Rb : Flow through 4S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.89 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.83 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 20.11'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 199.20 cfs

20.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 18.0' Slope= 0.3333 '/'
Inlet Invert= 64.00', Outlet Invert= 58.00'

‡

## Summary for Reach 10Rb: Flow through 4S

[61] Hint: Exceeded Reach 10Ra outlet invert by 0.01' @ 12.10 hrs

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.35" for 10 Yr 24 Hr +15% event
Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.12 hrs, Volume= 0.008 af, Atten= 1%, Lag= 0.7 min
Routed to Reach AP4 : Analysis Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.80 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 1.2 min

Peak Storage= 6 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 20.12'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 167.36 cfs

20.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 51.0' Slope= 0.2353 '/'
Inlet Invert= 58.00', Outlet Invert= 46.00'

‡

## Summary for Reach AP1: Analysis Point 1 (New CB)

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

Inflow Area = 0.414 ac, 46.45% Impervious, Inflow Depth > 3.92" for 10 Yr 24 Hr +15% event
Inflow = 1.83 cfs @ 12.09 hrs, Volume= 0.135 af
Outflow = 1.83 cfs @ 12.09 hrs, Volume= 0.135 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 = 0.040 ac, 0.00% Impervious, Inflow Depth > 2.86" for 10 Yr 24 Hr +15% event
Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af
Outflow = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flow across Map 222 Lot 20

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 = 1.560 ac, 15.65% Impervious, Inflow Depth > 3.12" for 10 Yr 24 Hr +15% event
Inflow = 4.12 cfs @ 12.17 hrs, Volume= 0.405 af
Outflow = 4.12 cfs @ 12.17 hrs, Volume= 0.405 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 = 0.482 ac, 8.04% Impervious, Inflow Depth > 3.13" for 10 Yr 24 Hr +15% event
Inflow = 1.63 cfs @ 12.11 hrs, Volume= 0.126 af
Outflow = 1.63 cfs @ 12.11 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

## Summary for Pond 1P: Bioretention Pond

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 3.97" for 10 Yr 24 Hr +15% event
Inflow = 2.33 cfs @ 12.09 hrs, Volume= 0.179 af
Outflow = 1.53 cfs @ 12.19 hrs, Volume= 0.178 af, Atten= 34%, Lag= 6.0 min
Primary = 1.53 cfs @ 12.19 hrs, Volume= 0.178 af
Routed to Reach 7R : Flow Through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 61.22' @ 12.19 hrs Surf.Area= 845 sf Storage= 411 cf

Plug-Flow detention time= 3.9 min calculated for 0.178 af (100% of inflow)
Center-of-Mass det. time= 2.6 min ( 792.5 - 789.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.09' | 2,583 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) |
|---|---|---|---|---|---|---|
| 58.09 | 117 | 48.0 | 0.0 | 0 | 0 | 117 |
| 58.10 | 117 | 48.0 | 40.0 | 0 | 0 | 117 |
| 59.09 | 117 | 48.0 | 40.0 | 46 | 47 | 165 |
| 59.10 | 117 | 48.0 | 15.0 | 0 | 47 | 165 |
| 60.59 | 117 | 48.0 | 15.0 | 26 | 73 | 237 |
| 60.60 | 117 | 48.0 | 100.0 | 1 | 74 | 237 |
| 61.00 | 764 | 120.0 | 100.0 | 157 | 232 | 1,201 |
| 62.00 | 1,157 | 143.0 | 100.0 | 954 | 1,185 | 1,700 |
| 63.00 | 1,618 | 164.0 | 100.0 | 1,381 | 2,566 | 2,235 |
| 63.01 | 1,618 | 164.0 | 100.0 | 16 | 2,583 | 2,237 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.35' | **12.0" Round Culvert**<br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 58.35' / 58.00' S= 0.0175 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 58.35' | **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 61.80' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=1.53 cfs @ 12.19 hrs HW=61.22' TW=58.13' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.53 cfs of 4.59 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.53 cfs @ 7.79 fps)
  └─**3=Orifice/Grate** ( Controls 0.00 cfs)

## Summary for Pond 1PF: Sediment Forebay

[43] Hint: Has no inflow (Outflow=Zero)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 61.00' | 272 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 61.00 | 9 | 0 | 0 |
| 62.00 | 119 | 64 | 64 |
| 63.00 | 297 | 208 | 272 |

## Summary for Pond 3P: Stone Under Deck

Ledge surface modelled 24" below original grade based on TP 13 (Bedrock found from 24" to 36". High existing contour within footprint of stone is 63.0 and therefore ledge surface modelled at 61.0

Inflow Area = 0.031 ac, 85.88% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.01 cfs @ 13.77 hrs, Volume= 0.010 af, Atten= 94%, Lag= 100.5 min
Discarded = 0.01 cfs @ 13.77 hrs, Volume= 0.010 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.72' @ 13.77 hrs Surf.Area= 0.006 ac Storage= 0.008 af

Plug-Flow detention time= 299.4 min calculated for 0.010 af (72% of inflow)
Center-of-Mass det. time= 208.6 min ( 955.0 - 746.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 61.73' | 0.009 af | **14.00'W x 20.00'L x 3.31'H Prismatoid**<br>0.021 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 65.04' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 61.73' | **0.300 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 61.00' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.01 cfs @ 13.77 hrs HW=64.72' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.01 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=61.73' TW=66.00' (Dynamic Tailwater)

## Summary for Pond 4P: Stone Under Deck

Ledge surface modelled 20" below original grade based on TP 12 (Bedrock ranging from 20" to 28". High existing grade within footprint of practice is 64.0 and therefore ledge surface modelled at 62.33

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Inflow Area = 0.031 ac, 85.88% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.014 af
Outflow = 0.06 cfs @ 12.32 hrs, Volume= 0.014 af, Atten= 61%, Lag= 13.8 min
Discarded = 0.06 cfs @ 12.32 hrs, Volume= 0.014 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 63.65' @ 12.32 hrs Surf.Area= 0.006 ac Storage= 0.003 af

Plug-Flow detention time= 35.4 min calculated for 0.014 af (99% of inflow)
Center-of-Mass det. time= 30.3 min ( 776.2 - 745.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 62.37' | 0.006 af | **14.00'W x 20.00'L x 2.41'H Prismatoid**<br>0.015 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 64.78' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 62.37' | **0.300 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 62.33' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.06 cfs @ 12.32 hrs HW=63.64' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.06 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=62.37' TW=66.00' (Dynamic Tailwater)

## Summary for Pond 5P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.5 min
Primary = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Routed to Pond 3P : Stone Under Deck
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.07' @ 12.09 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 1.4 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 1.1 min ( 746.9 - 745.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.00' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid** 0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 67.01' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Primary | 66.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 67.00' | **63.0' 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=0.09 cfs @ 12.09 hrs HW=66.07' TW=63.58' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.09 cfs @ 0.86 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=66.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Summary for Pond 6P: Lined Stone Drip Edge

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.5 min
Primary = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Routed to Pond 4P : Stone Under Deck
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.07' @ 12.09 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min ( 746.1 - 745.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.01' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 67.00' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.09 cfs @ 12.09 hrs HW=66.07' TW=63.33' (Dynamic Tailwater)
**1=Orifice/Grate** (Weir Controls 0.09 cfs @ 0.86 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.01' TW=66.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 7P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 1%, Lag= 1.1 min
Primary = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af
Routed to Reach 9R : Flow through 19S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.21' @ 12.10 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 6.6 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 4.8 min ( 750.6 - 745.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 64.00' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 64.00' | **6.0" Round Culvert**<br>L= 4.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 64.00' / 63.80' S= 0.0500 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Device 1 | 64.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Primary | 65.00' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.09 cfs @ 12.10 hrs HW=64.21' TW=63.84' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 0.09 cfs @ 1.22 fps)
- **2=Orifice/Grate** (Passes 0.09 cfs of 0.43 cfs potential flow)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 8P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 5.37" for 10 Yr 24 Hr +15% event
Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.008 af
Outflow = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af, Atten= 1%, Lag= 1.1 min
Primary = 0.09 cfs @ 12.10 hrs, Volume= 0.008 af
Routed to Reach 10ra : Flow through 4S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.71' @ 12.10 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 6.6 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 4.8 min ( 750.6 - 745.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 64.50' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 64.50' | **6.0" Round Culvert**<br>L= 4.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 64.50' / 64.00' S= 0.1250 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Device 1 | 64.50' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Primary | 65.50' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.09 cfs @ 12.10 hrs HW=64.71' TW=64.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.09 cfs @ 1.22 fps)
└─**2=Orifice/Grate** (Passes 0.09 cfs of 0.43 cfs potential flow)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond CB101: Catch Basin 101

Inflow Area = 0.130 ac, 59.12% Impervious, Inflow Depth > 4.29" for 10 Yr 24 Hr +15% event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.046 af
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.09 hrs, Volume= 0.046 af
Routed to Pond CB102 : Catch Basin 102

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 67.13' @ 12.09 hrs
Flood Elev= 70.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.60' | **12.0" Round Culvert**<br>L= 14.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 66.60' / 66.50' S= 0.0071 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.60 cfs @ 12.09 hrs HW=67.12' TW=66.95' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.60 cfs @ 2.12 fps)

## Summary for Pond CB102: Catch Basin 102

Inflow Area = 0.152 ac, 65.02% Impervious, Inflow Depth > 4.45" for 10 Yr 24 Hr +15% event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af
Routed to Pond CB104 : Catch Basin 104

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.96' @ 12.09 hrs
Flood Elev= 70.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.40' | **12.0" Round Culvert**<br>L= 84.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 66.40' / 65.90' S= 0.0060 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.71 cfs @ 12.09 hrs HW=66.95' TW=66.57' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.71 cfs @ 2.31 fps)

## Summary for Pond CB103: Catch Basin 103

Inflow Area = 0.155 ac, 64.18% Impervious, Inflow Depth > 4.40" for 10 Yr 24 Hr +15% event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.057 af
Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.09 hrs, Volume= 0.057 af
Routed to Pond CB104 : Catch Basin 104

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 68.09' @ 12.09 hrs
Flood Elev= 72.60'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 67.60' | **12.0" Round Culvert**<br>L= 42.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 67.60' / 67.30' S= 0.0071 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.71 cfs @ 12.09 hrs HW=68.09' TW=66.57' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 0.71 cfs @ 1.87 fps)

## Summary for Pond CB104: Catch Basin 104

Inflow Area = 0.314 ac, 65.44% Impervious, Inflow Depth > 4.45" for 10 Yr 24 Hr +15% event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.09 hrs, Volume= 0.116 af
Routed to Pond 1P : Bioretention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.58' @ 12.09 hrs
Flood Elev= 71.60'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 65.80' | **12.0" Round Culvert**<br>L= 31.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 65.80' / 65.60' S= 0.0065 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.46 cfs @ 12.09 hrs HW=66.57' TW=61.02' (Dynamic Tailwater)
**1=Culvert** (Barrel Controls 1.46 cfs @ 3.10 fps)

## Summary for Pond YD1: Yard Drain 1

Inflow Area = 0.105 ac, 49.42% Impervious, Inflow Depth > 4.04" for 10 Yr 24 Hr +15% event
Inflow = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Primary = 0.48 cfs @ 12.09 hrs, Volume= 0.035 af
Routed to Pond CB101 : Catch Basin 101

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 67.77' @ 12.09 hrs
Flood Elev= 69.30'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 67.30' | **8.0" Round Culvert**<br>L= 15.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 67.30' / 66.93' S= 0.0247 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.47 cfs @ 12.09 hrs HW=67.76' TW=67.12' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.47 cfs @ 1.82 fps)

## Summary for Pond YD2: Yard Drain 2

Inflow Area = 0.086 ac, 35.30% Impervious, Inflow Depth > 3.63" for 10 Yr 24 Hr +15% event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.026 af
Routed to Pond CB103 : Catch Basin 103

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 68.59' @ 12.09 hrs
Flood Elev= 70.20'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 68.20' | **8.0" Round Culvert**<br>L= 13.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 68.20' / 67.93' S= 0.0208 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.35 cfs @ 12.09 hrs HW=68.58' TW=68.09' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.35 cfs @ 1.67 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=16,321 sf 51.36% Impervious Runoff Depth>5.48"
Flow Length=186' Tc=6.0 min CN=86 Runoff=2.27 cfs 0.171 af

**Subcatchment2S: Subcatchment2S** Runoff Area=1,728 sf 0.00% Impervious Runoff Depth>4.14"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.19 cfs 0.014 af

**Subcatchment3S: Subcatchment3S** Runoff Area=44,463 sf 0.00% Impervious Runoff Depth>3.92"
Flow Length=447' Tc=11.9 min CN=72 Runoff=3.85 cfs 0.334 af

**Subcatchment4S: Subcatchment4S** Runoff Area=20,212 sf 5.43% Impervious Runoff Depth>4.36"
Flow Length=216' Tc=7.8 min CN=76 Runoff=2.20 cfs 0.169 af

**Subcatchment6S: Subcatchment6S** Runoff Area=1,084 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

**Subcatchment7S: Subcatchment7S** Runoff Area=954 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.013 af

**Subcatchment8S: Subcatchment8S** Runoff Area=3,011 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.47 cfs 0.040 af

**Subcatchment9S: Subcatchment9S** Runoff Area=325 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af

**Subcatchment11S: Subcatchment11S** Runoff Area=4,571 sf 49.42% Impervious Runoff Depth>5.48"
Flow Length=77' Slope=0.0396 '/' Tc=6.0 min CN=86 Runoff=0.64 cfs 0.048 af

**Subcatchment12S: Subcatchment12S** Runoff Area=3,734 sf 35.30% Impervious Runoff Depth>5.02"
Flow Length=50' Slope=0.0320 '/' Tc=6.0 min CN=82 Runoff=0.49 cfs 0.036 af

**Subcatchment13S: Subcatchment13S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

**Subcatchment14S: Subcatchment14S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

**Subcatchment15S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment16S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment17S: Subcatchment17S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment18S: Subcatchment18S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>6.88"
Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment19S: Subcatchment19S** Runoff Area=9,042 sf 12.11% Impervious Runoff Depth>4.47"
Flow Length=58' Tc=6.0 min CN=77 Runoff=1.06 cfs 0.077 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.03' Max Vel=0.79 fps Inflow=0.19 cfs 0.014 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.18 cfs 0.014 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.16' Max Vel=3.65 fps Inflow=2.45 cfs 0.185 af
n=0.016 L=45.0' S=0.0444 '/' Capacity=48.65 cfs Outflow=2.46 cfs 0.185 af

**Reach 6RA: Flow through 3S** Avg. Flow Depth=0.01' Max Vel=0.96 fps Inflow=0.06 cfs 0.002 af
n=0.030 L=35.0' S=0.3429 '/' Capacity=464.76 cfs Outflow=0.07 cfs 0.002 af

**Reach 6RB: Flow through 3S** Avg. Flow Depth=0.02' Max Vel=0.74 fps Inflow=0.07 cfs 0.002 af
n=0.030 L=39.0' S=0.1026 '/' Capacity=127.08 cfs Outflow=0.07 cfs 0.002 af

**Reach 6RC: Flow through 3S** Avg. Flow Depth=0.01' Max Vel=0.85 fps Inflow=0.07 cfs 0.002 af
n=0.030 L=45.0' S=0.2667 '/' Capacity=409.88 cfs Outflow=0.06 cfs 0.002 af

**Reach 7R: Flow Through 3S** Avg. Flow Depth=0.14' Max Vel=3.63 fps Inflow=1.67 cfs 0.242 af
n=0.030 L=220.0' S=0.0909 '/' Capacity=66.79 cfs Outflow=1.67 cfs 0.241 af

**Reach 8R: Ditch on Tidewatch Property** Avg. Flow Depth=0.34' Max Vel=2.46 fps Inflow=1.67 cfs 0.241 af
n=0.030 L=159.0' S=0.0189 '/' Capacity=18.18 cfs Outflow=1.67 cfs 0.241 af

**Reach 9R: Flow through 19S** Avg. Flow Depth=0.04' Max Vel=0.77 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=39.0' S=0.0205 '/' Capacity=16.36 cfs Outflow=0.12 cfs 0.010 af

**Reach 10Ra: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=1.00 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=18.0' S=0.3333 '/' Capacity=199.20 cfs Outflow=0.12 cfs 0.010 af

**Reach 10Rb: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=0.90 fps Inflow=0.12 cfs 0.010 af
n=0.030 L=51.0' S=0.2353 '/' Capacity=167.36 cfs Outflow=0.12 cfs 0.010 af

**Reach AP1: Analysis Point 1 (New CB)** Inflow=2.46 cfs 0.185 af
Outflow=2.46 cfs 0.185 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=5.49 cfs 0.577 af
Outflow=5.49 cfs 0.577 af

**Reach AP4: Analysis Point 4** Inflow=2.32 cfs 0.179 af
Outflow=2.32 cfs 0.179 af

**Pond 1P: Bioretention Pond** Peak Elev=61.73' Storage=886 cf Inflow=3.14 cfs 0.242 af
Outflow=1.67 cfs 0.242 af

**Pond 1PF: Sediment Forebay** Peak Elev=0.00' Storage=0 cf

**Pond 3P: Stone Under Deck** Peak Elev=65.04' Storage=0.009 af Inflow=0.21 cfs 0.018 af
Discarded=0.01 cfs 0.011 af Secondary=0.06 cfs 0.002 af Outflow=0.07 cfs 0.013 af

**Pond 4P: Stone Under Deck** Peak Elev=64.00' Storage=0.004 af Inflow=0.21 cfs 0.018 af
Discarded=0.08 cfs 0.017 af Secondary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.017 af

**Pond 5P: Lined Stone Drip Edge** Peak Elev=66.08' Storage=0.000 af Inflow=0.12 cfs 0.010 af
Primary=0.12 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.010 af

**Pond 6P: Lined Stone Drip Edge** Peak Elev=66.08' Storage=0.000 af Inflow=0.12 cfs 0.010 af
Primary=0.12 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.010 af

**Pond 7P: Lined Stone Drip Edge** Peak Elev=64.24' Storage=0.000 af Inflow=0.12 cfs 0.010 af
Outflow=0.12 cfs 0.010 af

**Pond 8P: Lined Stone Drip Edge** Peak Elev=64.74' Storage=0.000 af Inflow=0.12 cfs 0.010 af
Outflow=0.12 cfs 0.010 af

**Pond CB101: Catch Basin 101** Peak Elev=67.25' Inflow=0.81 cfs 0.062 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0071 '/' Outflow=0.81 cfs 0.062 af

**Pond CB102: Catch Basin 102** Peak Elev=67.09' Inflow=0.96 cfs 0.075 af
12.0" Round Culvert n=0.012 L=84.0' S=0.0060 '/' Outflow=0.96 cfs 0.075 af

**Pond CB103: Catch Basin 103** Peak Elev=68.18' Inflow=0.96 cfs 0.076 af
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=0.96 cfs 0.076 af

**Pond CB104: Catch Basin 104** Peak Elev=66.74' Inflow=1.96 cfs 0.154 af
12.0" Round Culvert n=0.012 L=31.0' S=0.0065 '/' Outflow=1.96 cfs 0.154 af

**Pond YD1: Yard Drain 1** Peak Elev=67.86' Inflow=0.64 cfs 0.048 af
8.0" Round Culvert n=0.012 L=15.0' S=0.0247 '/' Outflow=0.64 cfs 0.048 af

**Pond YD2: Yard Drain 2** Peak Elev=68.67' Inflow=0.49 cfs 0.036 af
8.0" Round Culvert n=0.012 L=13.0' S=0.0208 '/' Outflow=0.49 cfs 0.036 af

**Total Runoff Area = 2.518 ac Runoff Volume = 0.975 af Average Runoff Depth = 4.64"**
**79.02% Pervious = 1.990 ac 20.98% Impervious = 0.528 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=16,321 sf 51.36% Impervious Runoff Depth>6.84"
Flow Length=186' Tc=6.0 min CN=86 Runoff=2.81 cfs 0.214 af

**Subcatchment2S: Subcatchment2S** Runoff Area=1,728 sf 0.00% Impervious Runoff Depth>5.40"
Flow Length=20' Slope=0.1000 '/' Tc=6.0 min CN=74 Runoff=0.24 cfs 0.018 af

**Subcatchment3S: Subcatchment3S** Runoff Area=44,463 sf 0.00% Impervious Runoff Depth>5.15"
Flow Length=447' Tc=11.9 min CN=72 Runoff=5.05 cfs 0.438 af

**Subcatchment4S: Subcatchment4S** Runoff Area=20,212 sf 5.43% Impervious Runoff Depth>5.64"
Flow Length=216' Tc=7.8 min CN=76 Runoff=2.83 cfs 0.218 af

**Subcatchment6S: Subcatchment6S** Runoff Area=1,084 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.20 cfs 0.017 af

**Subcatchment7S: Subcatchment7S** Runoff Area=954 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af

**Subcatchment8S: Subcatchment8S** Runoff Area=3,011 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.57 cfs 0.048 af

**Subcatchment9S: Subcatchment9S** Runoff Area=325 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af

**Subcatchment11S: Subcatchment11S** Runoff Area=4,571 sf 49.42% Impervious Runoff Depth>6.84"
Flow Length=77' Slope=0.0396 '/' Tc=6.0 min CN=86 Runoff=0.79 cfs 0.060 af

**Subcatchment12S: Subcatchment12S** Runoff Area=3,734 sf 35.30% Impervious Runoff Depth>6.36"
Flow Length=50' Slope=0.0320 '/' Tc=6.0 min CN=82 Runoff=0.61 cfs 0.045 af

**Subcatchment13S: Subcatchment13S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

**Subcatchment14S: Subcatchment14S** Runoff Area=560 sf 100.00% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

**Subcatchment15S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

**Subcatchment16S: Subcatchment15S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

**Subcatchment17S: Subcatchment17S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

**Subcatchment18S: Subcatchment18S** Runoff Area=779 sf 75.74% Impervious Runoff Depth>8.28"
Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af

**Subcatchment19S: Subcatchment19S** Runoff Area=9,042 sf 12.11% Impervious Runoff Depth>5.76"
Flow Length=58' Tc=6.0 min CN=77 Runoff=1.36 cfs 0.100 af

**Reach 2R: Flow across Map 222 Lot 20** Avg. Flow Depth=0.03' Max Vel=0.86 fps Inflow=0.24 cfs 0.018 af
n=0.030 L=81.0' S=0.0494 '/' Capacity=88.18 cfs Outflow=0.24 cfs 0.018 af

**Reach 3R: Flow over Sagamore Ave** Avg. Flow Depth=0.18' Max Vel=3.85 fps Inflow=3.04 cfs 0.231 af
n=0.016 L=45.0' S=0.0444 '/' Capacity=48.65 cfs Outflow=3.05 cfs 0.231 af

**Reach 6RA: Flow through 3S** Avg. Flow Depth=0.01' Max Vel=1.21 fps Inflow=0.17 cfs 0.004 af
n=0.030 L=35.0' S=0.3429 '/' Capacity=464.76 cfs Outflow=0.16 cfs 0.004 af

**Reach 6RB: Flow through 3S** Avg. Flow Depth=0.02' Max Vel=0.97 fps Inflow=0.16 cfs 0.004 af
n=0.030 L=39.0' S=0.1026 '/' Capacity=127.08 cfs Outflow=0.15 cfs 0.004 af

**Reach 6RC: Flow through 3S** Avg. Flow Depth=0.01' Max Vel=1.12 fps Inflow=0.15 cfs 0.004 af
n=0.030 L=45.0' S=0.2667 '/' Capacity=409.88 cfs Outflow=0.16 cfs 0.004 af

**Reach 7R: Flow Through 3S** Avg. Flow Depth=0.18' Max Vel=4.33 fps Inflow=2.75 cfs 0.302 af
n=0.030 L=220.0' S=0.0909 '/' Capacity=66.79 cfs Outflow=2.82 cfs 0.302 af

**Reach 8R: Ditch on Tidewatch Property** Avg. Flow Depth=0.43' Max Vel=2.81 fps Inflow=2.82 cfs 0.302 af
n=0.030 L=159.0' S=0.0189 '/' Capacity=18.18 cfs Outflow=2.78 cfs 0.302 af

**Reach 9R: Flow through 19S** Avg. Flow Depth=0.05' Max Vel=0.82 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=39.0' S=0.0205 '/' Capacity=16.36 cfs Outflow=0.14 cfs 0.012 af

**Reach 10Ra: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=1.08 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=18.0' S=0.3333 '/' Capacity=199.20 cfs Outflow=0.14 cfs 0.012 af

**Reach 10Rb: Flow through 4S** Avg. Flow Depth=0.01' Max Vel=0.96 fps Inflow=0.14 cfs 0.012 af
n=0.030 L=51.0' S=0.2353 '/' Capacity=167.36 cfs Outflow=0.14 cfs 0.012 af

**Reach AP1: Analysis Point 1 (New CB)** Inflow=3.05 cfs 0.231 af
Outflow=3.05 cfs 0.231 af

**Reach AP2: Analysis Point 2** Inflow=0.24 cfs 0.018 af
Outflow=0.24 cfs 0.018 af

**Reach AP3: Analysis Point 3** Inflow=7.72 cfs 0.744 af
Outflow=7.72 cfs 0.744 af

**Reach AP4: Analysis Point 4** Inflow=2.97 cfs 0.230 af
Outflow=2.97 cfs 0.230 af

**Pond 1P: Bioretention Pond** Peak Elev=61.96' Storage=1,144 cf Inflow=3.90 cfs 0.302 af
Outflow=2.75 cfs 0.302 af

**Pond 1PF: Sediment Forebay** Peak Elev=0.00' Storage=0 cf

**Pond 3P: Stone Under Deck** Peak Elev=65.04' Storage=0.009 af Inflow=0.25 cfs 0.021 af
Discarded=0.01 cfs 0.012 af Secondary=0.17 cfs 0.004 af Outflow=0.18 cfs 0.016 af

**Pond 4P: Stone Under Deck** Peak Elev=64.34' Storage=0.005 af Inflow=0.25 cfs 0.021 af
Discarded=0.10 cfs 0.021 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.021 af

**Pond 5P: Lined Stone Drip Edge** Peak Elev=66.09' Storage=0.000 af Inflow=0.15 cfs 0.012 af
Primary=0.15 cfs 0.012 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.012 af

**Pond 6P: Lined Stone Drip Edge** Peak Elev=66.09' Storage=0.000 af Inflow=0.15 cfs 0.012 af
Primary=0.15 cfs 0.012 af Secondary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.012 af

**Pond 7P: Lined Stone Drip Edge** Peak Elev=64.26' Storage=0.000 af Inflow=0.15 cfs 0.012 af
Outflow=0.14 cfs 0.012 af

**Pond 8P: Lined Stone Drip Edge** Peak Elev=64.76' Storage=0.000 af Inflow=0.15 cfs 0.012 af
Outflow=0.14 cfs 0.012 af

**Pond CB101: Catch Basin 101** Peak Elev=67.39' Inflow=0.99 cfs 0.077 af
12.0" Round Culvert n=0.012 L=14.0' S=0.0071 '/' Outflow=0.99 cfs 0.077 af

**Pond CB102: Catch Basin 102** Peak Elev=67.24' Inflow=1.17 cfs 0.092 af
12.0" Round Culvert n=0.012 L=84.0' S=0.0060 '/' Outflow=1.17 cfs 0.092 af

**Pond CB103: Catch Basin 103** Peak Elev=68.25' Inflow=1.17 cfs 0.093 af
12.0" Round Culvert n=0.012 L=42.0' S=0.0071 '/' Outflow=1.17 cfs 0.093 af

**Pond CB104: Catch Basin 104** Peak Elev=66.94' Inflow=2.40 cfs 0.190 af
12.0" Round Culvert n=0.012 L=31.0' S=0.0065 '/' Outflow=2.40 cfs 0.190 af

**Pond YD1: Yard Drain 1** Peak Elev=67.98' Inflow=0.79 cfs 0.060 af
8.0" Round Culvert n=0.012 L=15.0' S=0.0247 '/' Outflow=0.79 cfs 0.060 af

**Pond YD2: Yard Drain 2** Peak Elev=68.75' Inflow=0.61 cfs 0.045 af
8.0" Round Culvert n=0.012 L=13.0' S=0.0208 '/' Outflow=0.61 cfs 0.045 af

**Total Runoff Area = 2.518 ac Runoff Volume = 1.245 af Average Runoff Depth = 5.93"**
**79.02% Pervious = 1.990 ac 20.98% Impervious = 0.528 ac**

## Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 2.81 cfs @ 12.09 hrs, Volume= 0.214 af, Depth> 6.84"
Routed to Reach 3R : Flow over Sagamore Ave

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 6,930 | 98 | Paved parking, HSG C |
| 7,938 | 74 | >75% Grass cover, Good, HSG C |
| 1,453 | 98 | Roofs, HSG C |
| 16,321 | 86 | Weighted Average |
| 7,938 | | 48.64% Pervious Area |
| 8,383 | | 51.36% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 50 | 0.1250 | 0.33 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.0 | 6 | 0.1250 | 2.47 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.3 | 30 | 0.0670 | 1.81 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 0.4 | 100 | 0.0360 | 3.85 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 3.2 | 186 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 5.40"
Routed to Reach AP2 : Analysis Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 1,728 | 74 | >75% Grass cover, Good, HSG C |
| 1,728 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.3 | 20 | 0.1000 | 0.25 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 1.3 | 20 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 5.05 cfs @ 12.17 hrs, Volume= 0.438 af, Depth> 5.15"
Routed to Reach AP3 : Analysis Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 14,740 | 74 | >75% Grass cover, Good, HSG C |
| | 28,306 | 70 | Woods, Good, HSG C |
| * | 1,417 | 96 | Ledge, HSG C |
| | 44,463 | 72 | Weighted Average |
| | 44,463 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 8.6 | 50 | 0.0415 | 0.10 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.7 | 62 | 0.0968 | 1.56 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.7 | 54 | 0.0741 | 1.36 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.3 | 122 | 0.1000 | 1.58 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.6 | 159 | 0.0189 | 4.55 | 18.20 | **Trap/Vee/Rect Channel Flow,** Bot.W=1.00' D=1.00' Z= 3.0 '/' Top.W=7.00' n= 0.030 Short grass |
| 11.9 | 447 | Total | | | |

## Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 2.83 cfs @ 12.11 hrs, Volume= 0.218 af, Depth> 5.64"
Routed to Reach AP4 : Analysis Point 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 9,377 | 74 | >75% Grass cover, Good, HSG C |
| | 8,075 | 70 | Woods, Good, HSG C |
| | 1,097 | 98 | Roofs, HSG C |
| * | 1,663 | 96 | Ledge, HSG C |
| | 20,212 | 76 | Weighted Average |
| | 19,115 | | 94.57% Pervious Area |
| | 1,097 | | 5.43% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 1.9 | 14 | 0.0210 | 0.13 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.2 | 36 | 0.1280 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.70" |
| 0.5 | 50 | 0.1280 | 1.79 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.0 | 87 | 0.0800 | 1.41 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 0.2 | 29 | 0.2860 | 2.67 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 7.8 | 216 | Total | | | |

## Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 8.28"
Routed to Pond CB101 : Catch Basin 101

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 1,084 | 98 | Paved parking, HSG C |
| 1,084 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 8.28"
Routed to Pond CB102 : Catch Basin 102

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 954 | 98 | Paved parking, HSG C |
| 954 | | 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: Subcatchment 8S

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 8.28"
Routed to Pond CB103 : Catch Basin 103

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 2,554 | 98 | Paved parking, HSG C |
| 457 | 98 | Roofs, HSG C |
| 3,011 | 98 | Weighted Average |
| 3,011 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 8.28"
Routed to Pond CB104 : Catch Basin 104

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 325 | 98 | Paved parking, HSG C |
| 325 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.060 af, Depth> 6.84"
Routed to Pond YD1 : Yard Drain 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 1,998 | 98 | Roofs, HSG C |
| 2,312 | 74 | >75% Grass cover, Good, HSG C |
| 261 | 98 | Paved parking, HSG C |
| 4,571 | 86 | Weighted Average |
| 2,312 | | 50.58% Pervious Area |
| 2,259 | | 49.42% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.0 | 50 | 0.0396 | 0.21 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.3 | 27 | 0.0396 | 1.39 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 4.3 | 77 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 12S: Subcatchment 12S

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af, Depth> 6.36"
Routed to Pond YD2 : Yard Drain 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 1,318 | 98 | Roofs, HSG C |
| 2,416 | 74 | >75% Grass cover, Good, HSG C |
| 3,734 | 82 | Weighted Average |
| 2,416 | | 64.70% Pervious Area |
| 1,318 | | 35.30% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.3 | 50 | 0.0320 | 0.19 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 4.3 | 50 | Total, Increased to minimum Tc = 6.0 min | | | |

## Summary for Subcatchment 13S: Subcatchment 13S

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 8.28"
Routed to Pond 3P : Stone Under Deck

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 560 | 98 | Roofs, HSG C |
| 560 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 14S: Subcatchment 14S

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 8.28"
Routed to Pond 4P : Stone Under Deck

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 560 | 98 | Roofs, HSG C |
| 560 | | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 15S: Subcatchment 15S

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 8.28"
Routed to Pond 5P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 16S: Subcatchment 15S

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 8.28"
Routed to Pond 6P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 17S: Subcatchment 17S

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 8.28"
Routed to Pond 7P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 18S: Subcatchment 18S

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 8.28"
Routed to Pond 8P : Lined Stone Drip Edge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 590 | 98 | Roofs, HSG C |
| 189 | 98 | Water Surface, 0% imp, HSG C |
| 779 | 98 | Weighted Average |
| 189 | | 24.26% Pervious Area |
| 590 | | 75.74% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Summary for Subcatchment 19S: Subcatchment 19S

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 5.76"
Routed to Pond 1P : Bioretention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Yr 24 Hr +15% Rainfall=8.53"

| Area (sf) | CN | Description |
|---|---|---|
| 7,947 | 74 | >75% Grass cover, Good, HSG C |
| 695 | 98 | Roofs, HSG C |
| 400 | 98 | Paved parking, HSG C |
| 9,042 | 77 | Weighted Average |
| 7,947 | | 87.89% Pervious Area |
| 1,095 | | 12.11% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 2.5 | 43 | 0.0930 | 0.29 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.4 | 7 | 0.3333 | 0.33 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 3.70" |
| 0.0 | 8 | 0.3333 | 4.04 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 2.9 | 58 | Total, Increased to minimum Tc = 6.0 min | | | |

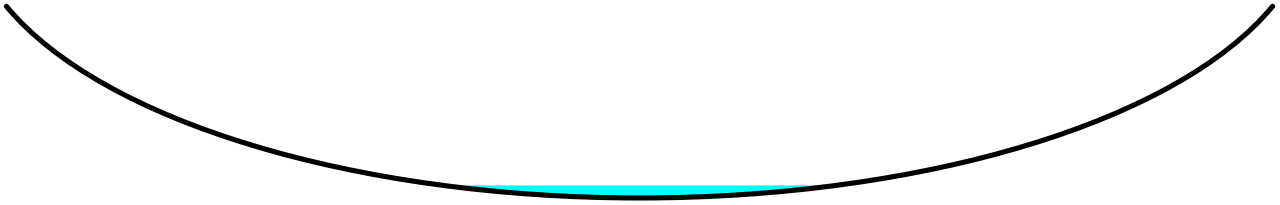
## Summary for Reach 2R: Flow across Map 222 Lot 20

Inflow Area = 0.040 ac, 0.00% Impervious, Inflow Depth > 5.40" for 50 Yr 24 Hr +15% event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.24 cfs @ 12.11 hrs, Volume= 0.018 af, Atten= 2%, Lag= 1.1 min
Routed to Reach 3R : Flow over Sagamore Ave

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.86 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 4.3 min

Peak Storage= 23 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 12.77'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 88.18 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Short grass
Length= 81.0' Slope= 0.0494 '/'
Inlet Invert= 66.00', Outlet Invert= 62.00'



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## Summary for Reach 3R: Flow over Sagamore Ave

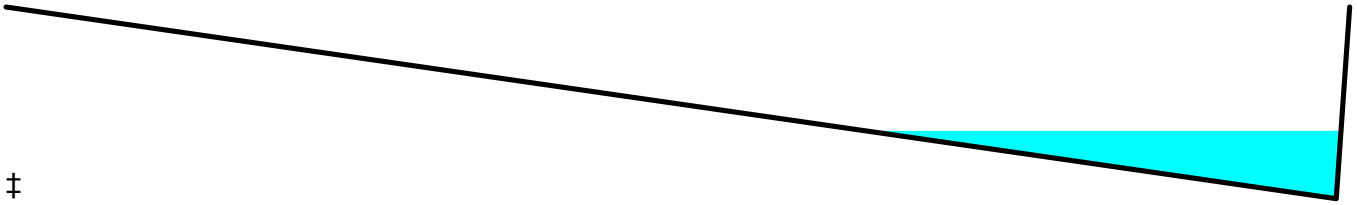
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[62] Hint: Exceeded Reach 2R OUTLET depth by 1.14' @ 12.10 hrs
[64] Warning: Exceeded Reach 2R outlet bank by 0.68' @ 12.09 hrs

Inflow Area = 0.414 ac, 46.45% Impervious, Inflow Depth > 6.70" for 50 Yr 24 Hr +15% event
Inflow = 3.04 cfs @ 12.09 hrs, Volume= 0.231 af
Outflow = 3.05 cfs @ 12.09 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.2 min
Routed to Reach AP1 : Analysis Point 1 (New CB)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 3.85 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.51 fps, Avg. Travel Time= 0.5 min

Peak Storage= 36 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 8.94'
Bank-Full Depth= 0.50' Flow Area= 6.3 sf, Capacity= 48.65 cfs

0.00' x 0.50' deep channel, n= 0.016 Asphalt, rough
Side Slope Z-value= 50.0 0.5 '/' Top Width= 25.25'
Length= 45.0' Slope= 0.0444 '/'
Inlet Invert= 63.00', Outlet Invert= 61.00'



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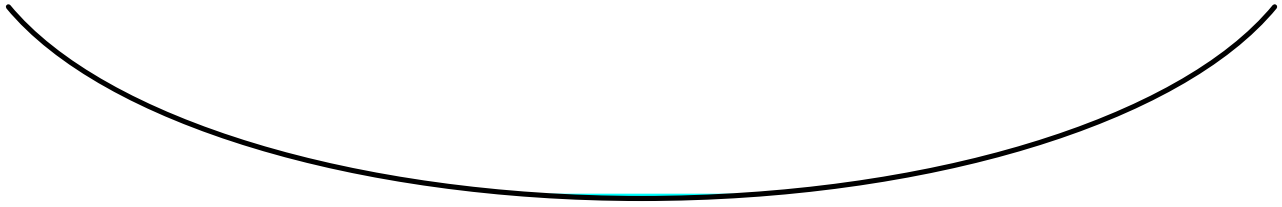
## Summary for Reach 6RA: Flow through 3S

Inflow = 0.17 cfs @ 12.21 hrs, Volume= 0.004 af
Outflow = 0.16 cfs @ 12.22 hrs, Volume= 0.004 af, Atten= 2%, Lag= 0.4 min
Routed to Reach 6RB : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.21 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 15.86'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 464.76 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 35.0' Slope= 0.3429 '/'
Inlet Invert= 66.00', Outlet Invert= 54.00'



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## Summary for Reach 6RB: Flow through 3S

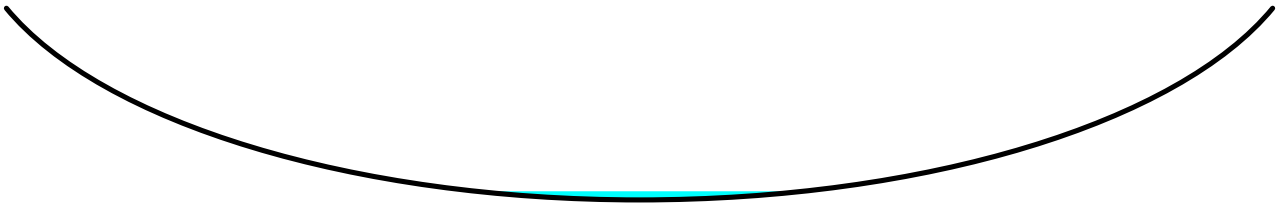
[62] Hint: Exceeded Reach 6RA OUTLET depth by 0.01' @ 12.25 hrs

Inflow = 0.16 cfs @ 12.22 hrs, Volume= 0.004 af
Outflow = 0.15 cfs @ 12.24 hrs, Volume= 0.004 af, Atten= 5%, Lag= 1.3 min
Routed to Reach 6RC : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.97 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 1.4 min

Peak Storage= 6 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 10.59'
Bank-Full Depth= 0.50' Flow Area= 16.7 sf, Capacity= 127.08 cfs

50.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 39.0' Slope= 0.1026 '/'
Inlet Invert= 54.00', Outlet Invert= 50.00'



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## Summary for Reach 6RC: Flow through 3S

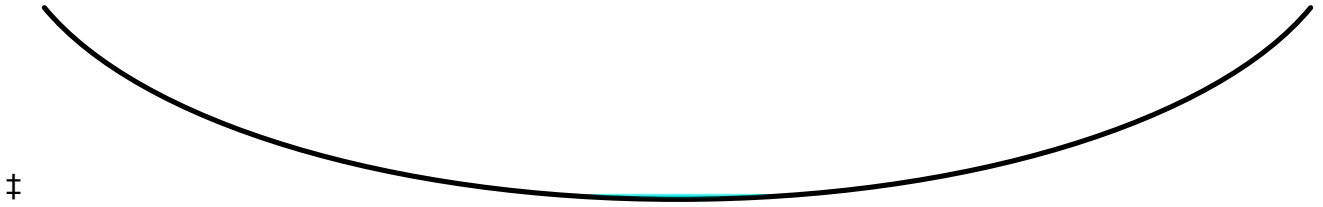
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[61] Hint: Exceeded Reach 6RB outlet invert by 0.01' @ 12.25 hrs

Inflow = 0.15 cfs @ 12.24 hrs, Volume= 0.004 af
Outflow = 0.16 cfs @ 12.25 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.7 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.12 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 1.2 min

Peak Storage= 6 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 16.23'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 409.88 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.030 Stream, clean & straight
Length= 45.0' Slope= 0.2667 '/'
Inlet Invert= 50.00', Outlet Invert= 38.00'



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## Summary for Reach 7R: Flow Through 3S

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 6.72" for 50 Yr 24 Hr +15% event
Inflow = 2.75 cfs @ 12.18 hrs, Volume= 0.302 af
Outflow = 2.82 cfs @ 12.20 hrs, Volume= 0.302 af, Atten= 0%, Lag= 1.2 min
Routed to Reach 8R : Ditch on Tidewatch Property

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 4.33 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 2.9 min

Peak Storage= 143 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 4.10'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 66.79 cfs

3.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 220.0' Slope= 0.0909 '/'
Inlet Invert= 58.00', Outlet Invert= 38.00'

‡

## Summary for Reach 8R: Ditch on Tidewatch Property

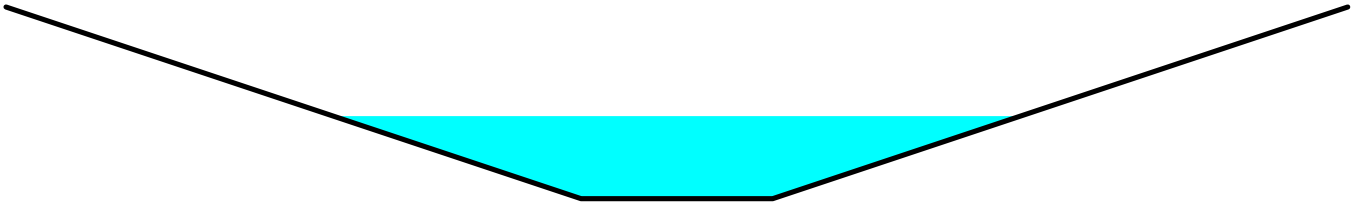
[62] Hint: Exceeded Reach 7R OUTLET depth by 0.25' @ 12.20 hrs

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 6.71" for 50 Yr 24 Hr +15% event
Inflow = 2.82 cfs @ 12.20 hrs, Volume= 0.302 af
Outflow = 2.78 cfs @ 12.21 hrs, Volume= 0.302 af, Atten= 1%, Lag= 0.7 min
Routed to Reach AP3 : Analysis Point 3

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 2.81 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 2.6 min

Peak Storage= 157 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 3.59'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 18.18 cfs

1.00' x 1.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 159.0' Slope= 0.0189 '/'
Inlet Invert= 38.00', Outlet Invert= 35.00'



## Summary for Reach 9R: Flow through 19S

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.27" for 50 Yr 24 Hr +15% event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.11 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.6 min
Routed to Pond 1P : Bioretention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.82 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 2.6 min

Peak Storage= 7 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 4.41'
Bank-Full Depth= 0.50' Flow Area= 5.3 sf, Capacity= 16.36 cfs

3.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 15.0 '/' Top Width= 18.00'
Length= 39.0' Slope= 0.0205 '/'
Inlet Invert= 63.80', Outlet Invert= 63.00'

‡

## Summary for Reach 10Ra: Flow through 4S

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.27" for 50 Yr 24 Hr +15% event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.2 min
Routed to Reach 10Rb : Flow through 4S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 1.08 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 20.13'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 199.20 cfs

20.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 18.0' Slope= 0.3333 '/'
Inlet Invert= 64.00', Outlet Invert= 58.00'

‡

## Summary for Reach 10Rb: Flow through 4S

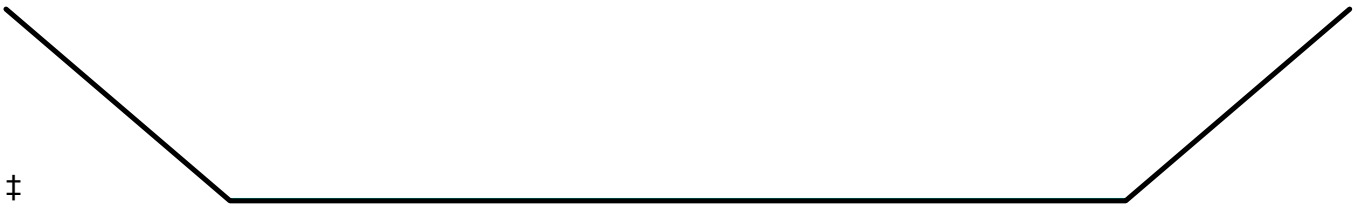
[61] Hint: Exceeded Reach 10Ra outlet invert by 0.01' @ 12.10 hrs

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.27" for 50 Yr 24 Hr +15% event
Inflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.11 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.6 min
Routed to Reach AP4 : Analysis Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.96 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 1.2 min

Peak Storage= 8 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 20.15'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 167.36 cfs

20.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 51.0' Slope= 0.2353 '/'
Inlet Invert= 58.00', Outlet Invert= 46.00'



‡

## Summary for Reach AP1: Analysis Point 1 (New CB)

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

Inflow Area = 0.414 ac, 46.45% Impervious, Inflow Depth > 6.70" for 50 Yr 24 Hr +15% event
Inflow = 3.05 cfs @ 12.09 hrs, Volume= 0.231 af
Outflow = 3.05 cfs @ 12.09 hrs, Volume= 0.231 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 = 0.040 ac, 0.00% Impervious, Inflow Depth > 5.40" for 50 Yr 24 Hr +15% event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flow across Map 222 Lot 20

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 = 1.560 ac, 15.65% Impervious, Inflow Depth > 5.72" for 50 Yr 24 Hr +15% event
Inflow = 7.72 cfs @ 12.19 hrs, Volume= 0.744 af
Outflow = 7.72 cfs @ 12.19 hrs, Volume= 0.744 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 = 0.482 ac, 8.04% Impervious, Inflow Depth > 5.73" for 50 Yr 24 Hr +15% event
Inflow = 2.97 cfs @ 12.11 hrs, Volume= 0.230 af
Outflow = 2.97 cfs @ 12.11 hrs, Volume= 0.230 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

## Summary for Pond 1P: Bioretention Pond

Inflow Area = 0.539 ac, 45.26% Impervious, Inflow Depth > 6.73" for 50 Yr 24 Hr +15% event
Inflow = 3.90 cfs @ 12.09 hrs, Volume= 0.302 af
Outflow = 2.75 cfs @ 12.18 hrs, Volume= 0.302 af, Atten= 30%, Lag= 5.3 min
Primary = 2.75 cfs @ 12.18 hrs, Volume= 0.302 af
Routed to Reach 7R : Flow Through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 61.96' @ 12.18 hrs Surf.Area= 1,141 sf Storage= 1,144 cf

Plug-Flow detention time= 4.4 min calculated for 0.302 af (100% of inflow)
Center-of-Mass det. time= 3.6 min ( 783.1 - 779.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 58.09' | 2,583 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) |
|---|---|---|---|---|---|---|
| 58.09 | 117 | 48.0 | 0.0 | 0 | 0 | 117 |
| 58.10 | 117 | 48.0 | 40.0 | 0 | 0 | 117 |
| 59.09 | 117 | 48.0 | 40.0 | 46 | 47 | 165 |
| 59.10 | 117 | 48.0 | 15.0 | 0 | 47 | 165 |
| 60.59 | 117 | 48.0 | 15.0 | 26 | 73 | 237 |
| 60.60 | 117 | 48.0 | 100.0 | 1 | 74 | 237 |
| 61.00 | 764 | 120.0 | 100.0 | 157 | 232 | 1,201 |
| 62.00 | 1,157 | 143.0 | 100.0 | 954 | 1,185 | 1,700 |
| 63.00 | 1,618 | 164.0 | 100.0 | 1,381 | 2,566 | 2,235 |
| 63.01 | 1,618 | 164.0 | 100.0 | 16 | 2,583 | 2,237 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 58.35' | **12.0" Round Culvert**<br>L= 20.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 58.35' / 58.00' S= 0.0175 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 58.35' | **6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 61.80' | **18.0" Horiz. Orifice/Grate** C= 0.600<br>Limited to weir flow at low heads |

**Primary OutFlow** Max=2.69 cfs @ 12.18 hrs HW=61.96' TW=58.18' (Dynamic Tailwater)
↑**1=Culvert** (Passes 2.69 cfs of 5.26 cfs potential flow)
↑**2=Orifice/Grate** (Orifice Controls 1.73 cfs @ 8.82 fps)
**3=Orifice/Grate** (Weir Controls 0.95 cfs @ 1.29 fps)

## Summary for Pond 1PF: Sediment Forebay

[43] Hint: Has no inflow (Outflow=Zero)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 61.00' | 272 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 61.00 | 9 | 0 | 0 |
| 62.00 | 119 | 64 | 64 |
| 63.00 | 297 | 208 | 272 |

## Summary for Pond 3P: Stone Under Deck

Ledge surface modelled 24" below original grade based on TP 13 (Bedrock found from 24" to 36". High existing contour within footprint of stone is 63.0 and therefore ledge surface modelled at 61.0

Inflow Area = 0.031 ac, 85.88% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.18 cfs @ 12.21 hrs, Volume= 0.016 af, Atten= 30%, Lag= 7.2 min
Discarded = 0.01 cfs @ 12.15 hrs, Volume= 0.012 af
Secondary = 0.17 cfs @ 12.21 hrs, Volume= 0.004 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 65.04' @ 12.15 hrs Surf.Area= 0.006 ac Storage= 0.009 af

Plug-Flow detention time= 232.7 min calculated for 0.016 af (76% of inflow)
Center-of-Mass det. time= 148.6 min ( 889.2 - 740.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 61.73' | 0.009 af | **14.00'W x 20.00'L x 3.31'H Prismatoid**<br>0.021 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 65.04' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 61.73' | **0.300 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 61.00' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.01 cfs @ 12.15 hrs HW=65.04' (Free Discharge)
↑**1=Exfiltration** ( Controls 0.01 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 12.21 hrs HW=65.04' TW=66.01' (Dynamic Tailwater)

## Summary for Pond 4P: Stone Under Deck

Ledge surface modelled 20" below original grade based on TP 12 (Bedrock ranging from 20" to 28". High existing grade within footprint of practice is 64.0 and therefore ledge surface modelled at 62.33

Inflow Area = 0.031 ac, 85.88% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.10 cfs @ 12.32 hrs, Volume= 0.021 af, Atten= 61%, Lag= 13.8 min
Discarded = 0.10 cfs @ 12.32 hrs, Volume= 0.021 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.34' @ 12.32 hrs Surf.Area= 0.006 ac Storage= 0.005 af

Plug-Flow detention time= 35.1 min calculated for 0.021 af (99% of inflow)
Center-of-Mass det. time= 30.7 min ( 771.0 - 740.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 62.37' | 0.006 af | **14.00'W x 20.00'L x 2.41'H Prismatoid**<br>0.015 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 64.78' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 62.37' | **0.300 in/hr Exfiltration over Surface area**<br>Conductivity to Groundwater Elevation = 62.33' Phase-In= 0.10' |

**Discarded OutFlow** Max=0.10 cfs @ 12.32 hrs HW=64.33' (Free Discharge)
↑—**1=Exfiltration** ( Controls 0.10 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=62.37' TW=66.00' (Dynamic Tailwater)

## Summary for Pond 5P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.4 min
Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Routed to Pond 3P : Stone Under Deck
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.09' @ 12.09 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 1.3 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 1.0 min ( 741.0 - 740.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.00' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Secondary | 67.01' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Primary | 66.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 67.00' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.14 cfs @ 12.09 hrs HW=66.09' TW=64.75' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.14 cfs @ 0.99 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.00' TW=66.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Summary for Pond 6P: Lined Stone Drip Edge

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.4 min
Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Routed to Pond 4P : Stone Under Deck
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 6RA : Flow through 3S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.09' @ 12.09 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min ( 740.4 - 740.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.01' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #2 | Secondary | 67.00' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.14 cfs @ 12.09 hrs HW=66.09' TW=63.85' (Dynamic Tailwater)
**1=Orifice/Grate** (Weir Controls 0.14 cfs @ 0.99 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.01' TW=66.00' (Dynamic Tailwater)
**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 7P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.9 min
Primary = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Routed to Reach 9R : Flow through 19S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.26' @ 12.10 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 5.5 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 4.0 min ( 744.0 - 740.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 64.00' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 64.00' | **6.0" Round Culvert**<br>L= 4.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 64.00' / 63.80' S= 0.0500 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Device 1 | 64.00' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Primary | 65.00' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.14 cfs @ 12.10 hrs HW=64.26' TW=63.85' (Dynamic Tailwater)
- **1=Culvert** (Inlet Controls 0.14 cfs @ 1.38 fps)
- **2=Orifice/Grate** (Passes 0.14 cfs of 0.48 cfs potential flow)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond 8P: Lined Stone Drip Edge

Inflow Area = 0.018 ac, 75.74% Impervious, Inflow Depth > 8.28" for 50 Yr 24 Hr +15% event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.9 min
Primary = 0.14 cfs @ 12.10 hrs, Volume= 0.012 af
Routed to Reach 10ra : Flow through 4S

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 64.76' @ 12.10 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 5.5 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 4.0 min ( 744.0 - 740.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 64.50' | 0.001 af | **2.00'W x 63.00'L x 1.01'H Prismatoid**<br>0.003 af Overall x 40.0% Voids |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 64.50' | **6.0" Round Culvert**<br>L= 4.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 64.50' / 64.00' S= 0.1250 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.20 sf |
| #2 | Device 1 | 64.50' | **6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Primary | 65.50' | **63.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>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<br>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=0.14 cfs @ 12.10 hrs HW=64.76' TW=64.01' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.14 cfs @ 1.38 fps)
└─**2=Orifice/Grate** (Passes 0.14 cfs of 0.48 cfs potential flow)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Summary for Pond CB101: Catch Basin 101

Inflow Area = 0.130 ac, 59.12% Impervious, Inflow Depth > 7.12" for 50 Yr 24 Hr +15% event
Inflow = 0.99 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 0.99 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.09 hrs, Volume= 0.077 af
Routed to Pond CB102 : Catch Basin 102

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 67.39' @ 12.09 hrs
Flood Elev= 70.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.60' | **12.0" Round Culvert**<br>L= 14.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 66.60' / 66.50' S= 0.0071 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.97 cfs @ 12.09 hrs HW=67.37' TW=67.22' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.97 cfs @ 1.49 fps)

## Summary for Pond CB102: Catch Basin 102

Inflow Area = 0.152 ac, 65.02% Impervious, Inflow Depth > 7.29" for 50 Yr 24 Hr +15% event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.092 af
Outflow = 1.17 cfs @ 12.09 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.09 hrs, Volume= 0.092 af
Routed to Pond CB104 : Catch Basin 104

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 67.24' @ 12.09 hrs
Flood Elev= 70.10'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 66.40' | **12.0" Round Culvert**<br>L= 84.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 66.40' / 65.90' S= 0.0060 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.14 cfs @ 12.09 hrs HW=67.22' TW=66.92' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.14 cfs @ 2.26 fps)

## Summary for Pond CB103: Catch Basin 103

Inflow Area = 0.155 ac, 64.18% Impervious, Inflow Depth > 7.22" for 50 Yr 24 Hr +15% event
Inflow = 1.17 cfs @ 12.09 hrs, Volume= 0.093 af
Outflow = 1.17 cfs @ 12.09 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.09 hrs, Volume= 0.093 af
Routed to Pond CB104 : Catch Basin 104

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 68.25' @ 12.09 hrs
Flood Elev= 72.60'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 67.60' | **12.0" Round Culvert**<br>L= 42.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 67.60' / 67.30' S= 0.0071 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=1.14 cfs @ 12.09 hrs HW=68.24' TW=66.92' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 1.14 cfs @ 2.15 fps)

## Summary for Pond CB104: Catch Basin 104

Inflow Area = 0.314 ac, 65.44% Impervious, Inflow Depth > 7.28" for 50 Yr 24 Hr +15% event
Inflow = 2.40 cfs @ 12.09 hrs, Volume= 0.190 af
Outflow = 2.40 cfs @ 12.09 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min
Primary = 2.40 cfs @ 12.09 hrs, Volume= 0.190 af
Routed to Pond 1P : Bioretention Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 66.94' @ 12.09 hrs
Flood Elev= 71.60'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 65.80' | **12.0" Round Culvert**<br>L= 31.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 65.80' / 65.60' S= 0.0065 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=2.34 cfs @ 12.09 hrs HW=66.92' TW=61.64' (Dynamic Tailwater)
**1=Culvert** (Inlet Controls 2.34 cfs @ 2.98 fps)

## Summary for Pond YD1: Yard Drain 1

Inflow Area = 0.105 ac, 49.42% Impervious, Inflow Depth > 6.84" for 50 Yr 24 Hr +15% event
Inflow = 0.79 cfs @ 12.09 hrs, Volume= 0.060 af
Outflow = 0.79 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.09 hrs, Volume= 0.060 af
Routed to Pond CB101 : Catch Basin 101

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 67.98' @ 12.09 hrs
Flood Elev= 69.30'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 67.30' | **8.0" Round Culvert**<br>L= 15.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 67.30' / 66.93' S= 0.0247 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.77 cfs @ 12.09 hrs HW=67.97' TW=67.37' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.77 cfs @ 2.19 fps)

## Summary for Pond YD2: Yard Drain 2

Inflow Area = 0.086 ac, 35.30% Impervious, Inflow Depth > 6.36" for 50 Yr 24 Hr +15% event
Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.09 hrs, Volume= 0.045 af
Routed to Pond CB103 : Catch Basin 103

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 68.75' @ 12.09 hrs
Flood Elev= 70.20'

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 68.20' | **8.0" Round Culvert**<br>L= 13.0' CPP, projecting, no headwall, Ke= 0.900<br>Inlet / Outlet Invert= 68.20' / 67.93' S= 0.0208 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.59 cfs @ 12.09 hrs HW=68.74' TW=68.24' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.59 cfs @ 1.97 fps)

# APPENDIX III

**Test Pit Logs**

GOVE ENVIRONMENTAL SERVICES, INC.

# TEST PIT DATA

Project 635 Sagamore Ave
Client 635 Sagamore Development LLC
GES Project No. GES 2021307
MM/DD/YY Staff 3-18-2022 JPG

**Test Pit No. 1**
ESHWT: n/a
Termination @ 15”
Refusal: 15” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–5” | 10YR 3/2 | FSL | GR | FR | NONE |
| 5–15” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 2**
ESHWT: n/a
Termination @ 25”
Refusal: 25” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–5” | 10YR 3/2 | FSL | GR | FR | NONE |
| 5–25” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 3**
ESHWT: n/a
Termination @ 25”
Refusal: 25” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–6” | 10YR 3/2 | FSL | GR | FR | NONE |
| 6–25” | 10YR 5/6 | FSL | GR | FR | NONE |

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*info@gesinc.biz*
*www.gesinc.biz*

**Test Pit No. 4**
ESHWT: n/a
Termination @ 15”
Refusal: 15” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–15” | 10YR 3/2 | FSL | GR | FR | NONE |

**Test Pit No. 5**
ESHWT: 30”
Termination @ 36”
Refusal: 36” SCS Soil: Chatfield variant
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–8” | 10YR 3/2 | FSL | GR | FR | NONE |
| 8–30” | 10YR 4/6 | FSL | GR | FR | NONE |
| 30–36” | 2.5Y 5/3 | FSL | GR | FR | 10% Distinct |

**Test Pit No. 6**
ESHWT: n/a
Termination @ 12”
Refusal: 12” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–12” | 10YR 3/2 | FSL | GR | FR | NONE |

**Test Pit No. 7**
ESHWT: n/a
Termination @ 27”
Refusal: 27” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–4” | 10YR 3/2 | FSL | GR | FR | NONE |
| 4–27” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 8**
ESHWT: 35”
Termination @ 40”
Refusal: 40” SCS Soil: Chatfield variant
Obs. Water: none

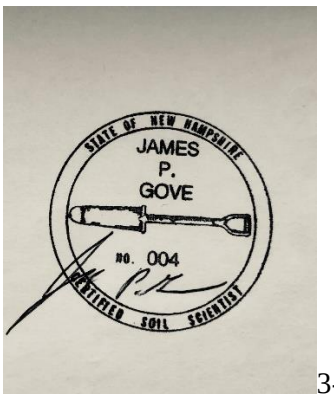
| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–6” | 10YR 3/2 | FSL | GR | FR | NONE |
| 6–35” | 10YR 5/6 | FSL | GR | FR | NONE |
| 35–40” | 2.5Y 5/3 | FSL | OM | FI | 10% Distinct |

**Test Pit No. 9**
ESHWT: n/a
Termination @ 27”
Refusal: 27” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–4” | 10YR 3/2 | FSL | GR | FR | NONE |
| 4–27” | 10YR 5/6 | FSL | GR | FR | NONE |

**Test Pit No. 10**
ESHWT: 35
Termination @ 62”
Refusal: 62” SCS Soil: Scituate
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–10” | 10YR 3/2 | FSL | GR | FR | NONE |
| 10–35” | 10YR 5/6 | FSL | GR | FR | NONE |
| 35–62” | 2.5Y 5/3 | FSL | PL | FI | 10%, Distinct |



3-21-2022

Legend:

FSL = fine sandy loam
GR = granular
PL = platy
FI = firm

GOVE ENVIRONMENTAL SERVICES, INC.

# TEST PIT DATA

Project 635 Sagamore Ave., Portsmouth NH
Client 635 Sagamore Development LLC
GES Project No. 2021308
MM/DD/YY Staff 07-24-2024 James Gove, CSS#004

Witnessed by: David Desfosses, City of Portsmouth

| | | | |
|---|---|---|---|
| **Test Pit No.** | **11** | Soils Series: | Udorthents |
| ESHWT:: | none | Landscape: | Paved |
| Termination @ | 32” | Slope: | B |
| Refusal: | 32” | Parent Material: | Fill over till |
| Obs. Water: | None | Hydrologic Soil Group: | Impervious |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| Fill 1, 0-8” | 10YR4/4 | fine sandy loam | massive-friable-none |
| Fill 2, 8-19” | 10YR2/1 | ground pavement | massive-firm-none |
| Bw 18-32” | 10YR5/6 | fine sandy loam | granular-friable-none |

| | | | |
|---|---|---|---|
| **Test Pit No.** | **12** | Soils Series: | Chatfield |
| ESHWT:: | none | Landscape: | Hillside |
| Termination @ | 28” | Slope: | C |
| Refusal: | 28” | Parent Material: | Bedrock Till |
| Obs. Water: | None | Hydrologic Soil Group: | B |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| A 0-6” | 10YR3/2 | fine sandy loam | granular-friable-none |
| Bw 6-28” | 10YR5/6 | fine sandy loam | granular-friable-none |

Bedrock ranges from 20” to 28” in test pit.

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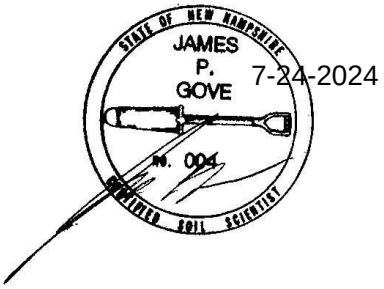
| | | | |
|---|---|---|---|
| **Test Pit No.** | **13** | Soils Series: | Chatfield |
| ESHWT:: | none | Landscape: | Hillside |
| Termination @ | 36” | Slope: | C |
| Refusal: | 36” | Parent Material: | Bedrock Till |
| Obs. Water: | None | Hydrologic Soil Group: | B |

| Horizon | Color (Munsell) | Texture | Structure-Consistence-Redox |
|---|---|---|---|
| A 0-6” | 10YR3/2 | fine sandy loam | granular-friable-none |
| Bw 6-24” | 10YR4/6 | fine sandy loam | granular-friable-none |
| C 24-36” | 2.5Y5/3 | fine sandy loam | granular-friable-none |

Bedrock ranges from 24” to 36” in test pit.

Note: Site should be calculated as HSG C, due to the limited infiltration in thin soil layers above the bedrock.



# APPENDIX IV

**Site Specific Soil Survey Report and Map**

GOVE ENVIRONMENTAL SERVICES, INC

**SITE-SPECIFIC SOIL SURVEY REPORT**
**For**
**635 Sagamore Avenue, Portsmouth, NH**
**By**
**GES, Inc.**
**Project # 2021308**
**Date: 02-20-2024**

## 1. MAPPING STANDARDS

*Site-Specific Soil Mapping Standards for New Hampshire and Vermont*. SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 2-20-2024; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 20'.

Contours Interval: 2 feet

## 2. LANDFORMS & EXISTING CONDITIONS:

The site is located on sloping hillside that is bedrock controlled. Rock outcrops are numerous. At the top of the hill, adjacent Sagamore Avenue, is an existing commercial building and paved areas. Behind the impervious areas to the south, the hillside slopes downward. The area is forested in white pines. There are no wetlands on the site.

## 3. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 3-18-2022

Date(s) of test pits: 3-18-2922

Test pits recorded by: JP Gove, CSS # 004

## 4. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Portsmouth, NH

Location: Tax Map 222 Lot 19

Size of area: Approximately 2 acres

Was the map for the entire lot? Yes

If no, where was the mapping conducted on the parcel: n/a

## 5. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? No

If no, what was the purpose of the map? City of Portsmouth requirements

Who was the map prepared for? Jones & Beach Engineers, Inc.

## 6. SOIL IDENTIFICATION LEGEND

| Map Unit Symbol | Map Unit Name | HISS Symbol | Hydrologic Soil Group |
|---|---|---|---|
| 41 | Chatfield-Hollis-Rock Outcrop complex | 228 | B |
| 289 | Chatfield Variant (moderately well drained) | 327 | B |
| 699 | Urban Land | n/a | Impervious |

SLOPE PHASE:

| | | | | | |
|---|---|---|---|---|---|
| 0-8% | B | 8-15% | C | 15-25% | D |
| 25%-50% | E | 50%+ | F | | |

## 7. NARRATIVE MAP UNIT DESCRIPTIONS

SITE-SPECIFIC MAP UNIT: 41

CORRELATED SOIL SERIES: Chatfield-Hollis-Rock Outcrop complex

LANDSCAPE SETTING: Sloping to very steep hillside.

CHARACTERISTIC SURFACE FEATURES: Numerous rock outcrops

DRAINAGE CLASS: Well drained

PARENT MATERIAL: Glacial Till

NATURE OF DISSIMILAR INCLUSIONS: With a complex, several similar soils are present. While the major soil is the moderately deep Chatfield, the shallow Hollis and the exposed ledge of the Rock Outcrop, are large minor components. Chatfield is 50%, Hollis is 25%, and Rock Outcrop is 25%. A few deeper soil areas are present in hollow in the bedrock.

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: less than 5%.

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

**Test Pit No. 3**
ESHWT: n/a
Termination @ 25”
Refusal: 25” SCS Soil: Chatfield
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–6” | 10YR 3/2 | FSL | GR | FR | NONE |
| 6–25” | 10YR 5/6 | FSL | GR | FR | NONE |

No OBSWT, no ESHWT, lithic contact at 25”, 20% rock fragments.

**Test Pit No. 1**
ESHWT: n/a
Termination @ 15”
Refusal: 15” SCS Soil: Hollis
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–5” | 10YR 3/2 | FSL | GR | FR | NONE |
| 5–15” | 10YR 5/6 | FSL | GR | FR | NONE |

No OBSWT, no ESHWT, lithic contact at 15”, 20% rock fragments.

SITE-SPECIFIC MAP UNIT: 289

CORRELATED SOIL SERIES: Chatfield Variant (moderately well drained)

LANDSCAPE SETTING: At the top of the slope, a slightly deeper soil area on the northwest corner of the site.

CHARACTERISTIC SURFACE FEATURES: Fewer outcrops than the rest of the site.

DRAINAGE CLASS: Moderately well drained.

PARENT MATERIAL: Glacial till.

NATURE OF DISSIMILAR INCLUSIONS: Scituate soils with a hard pan above the bedrock,

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

**Test Pit No. 5**
ESHWT: 30”
Termination @ 36”
Refusal: 36” SCS Soil: Chatfield variant
Obs. Water: none

| Depth | Color | Texture | Structure | Consistence | Redox; Quantity/Contrast |
|---|---|---|---|---|---|
| 0–8” | 10YR 3/2 | FSL | GR | FR | NONE |
| 8–30” | 10YR 4/6 | FSL | GR | FR | NONE |
| 30–36” | 2.5Y 5/3 | FSL | GR | FR | 10% Distinct |

ESHWT is 30”, no OBSWT, lithic contact at 36”, 20% rock fragments.

SITE-SPECIFIC MAP UNIT: 699

CORRELATED SOIL SERIES: Urban land

LANDSCAPE SETTING: Top of slope adjacent to Sagamore Avenue.

CHARACTERISTIC SURFACE FEATURES: Impervious.

DRAINAGE CLASS: N/A

PARENT MATERIAL: N/A

NATURE OF DISSIMILAR INCLUSIONS: N/A

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: N/A

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

N/A ---- Pavement and buildings.

## 8. RESPONSIBLE SOIL SCIENTIST

Name: James Gove

Certified Soil Scientist Number: 004

## 9. OTHER DISTINGUISHING FEATURES OF SITE

Is the site in a natural condition? Yes, with exception of existing development.

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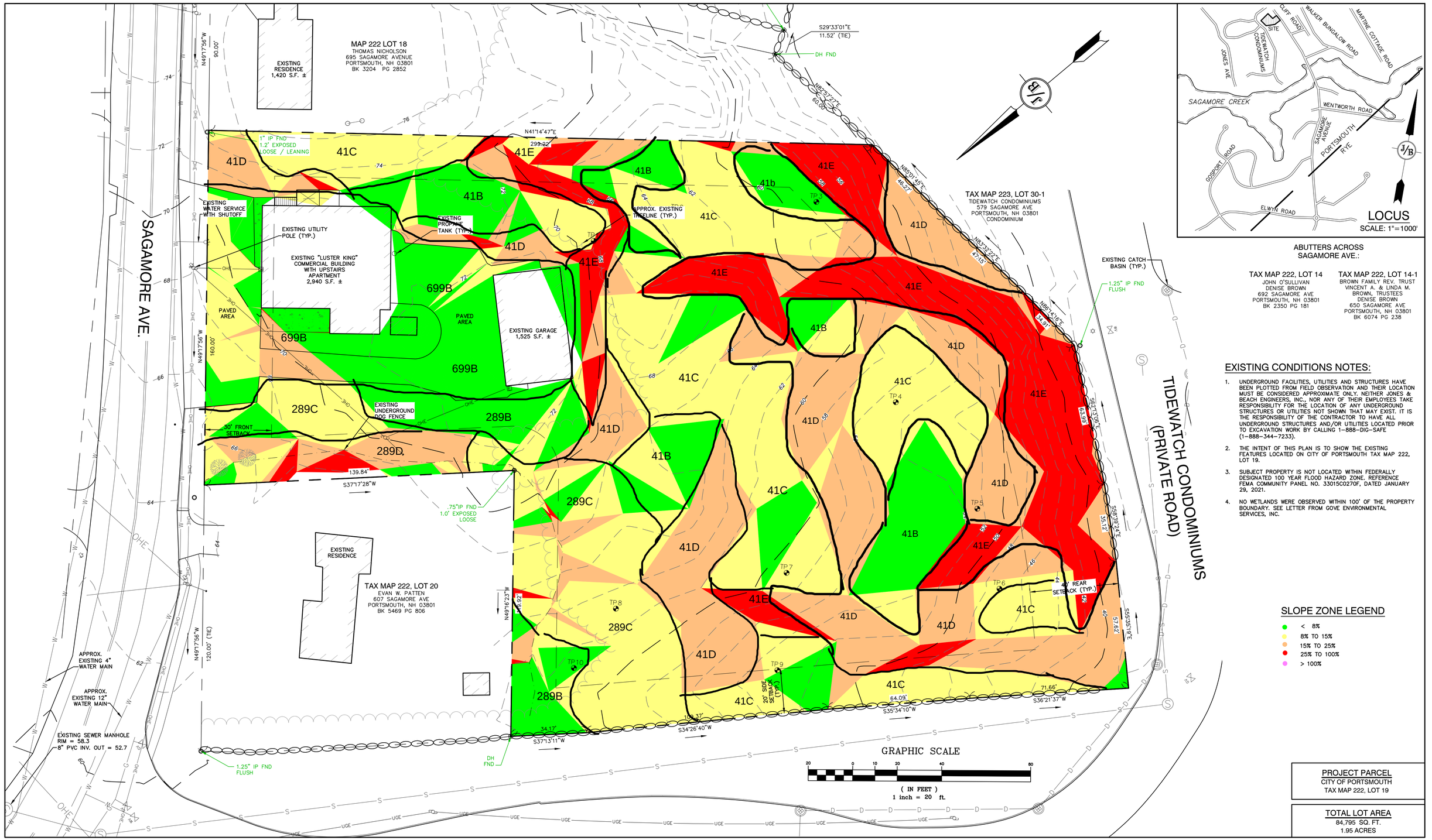
*info@gesinc.biz*




ABUTTERS ACROSS SAGAMORE AVE.:

TAX MAP 222, LOT 14
JOHN O'SULLIVAN
DENISE BROWN
692 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 2350 PG 181

TAX MAP 222, LOT 14-1
BROWN FAMILY REV. TRUST
VINCENT A. & LINDA M. BROWN, TRUSTEES
DENISE BROWN
650 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 6074 PG 238

## EXISTING CONDITIONS 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 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).
2. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING FEATURES LOCATED ON CITY OF PORTSMOUTH TAX MAP 222, LOT 19.
3. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
4. NO WETLANDS WERE OBSERVED WITHIN 100' OF THE PROPERTY BOUNDARY. SEE LETTER FROM GOVE ENVIRONMENTAL SERVICES, INC.

## SLOPE ZONE LEGEND

- < 8%
- 8% TO 15%
- 15% TO 25%
- 25% TO 100%
- > 100%

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: JAC | Draft: DJM | Date: 12/07/2021 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134-CONCEPT-8.dwg | | |



| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 11 | 1/31/24 | MINOR REVISIONS TO SIGHT DISTANCE PLAN AND PROFILE | DJM |
| 10 | 10/27/23 | MINOR REVISIONS | DJM |
| 9 | 10/20/23 | MINOR REVISIONS | DJM |
| 8 | 9/27/23 | REVISED PER TAC COMMENTS | DJM |
| 7 | 9/5/23 | ISSUED TO TAC | DJM |

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN

Project: 4-UNIT RESIDENTIAL SITE
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT, LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
C1
SHEET 2 OF 8
JBE PROJECT NO. 18134.1

# APPENDIX V

**NRCS Soil Map**

Soil Map—Rockingham County, New Hampshire
(635 Sagamore Ave.)


Map Scale: 1:893 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 140B | Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky | 0.7 | 30.5% |
| 140D | Chatfield-Hollis-Canton complex, 15 to 35 percent slopes, rocky | 1.6 | 69.5% |
| **Totals for Area of Interest** | | **2.3** | **100.0%** |

# APPENDIX VI

## Extreme Precipitation Estimates

# Extreme Precipitation in New York & New England

***An Interactive Web Tool for Extreme Precipitation Analysis***

About this Project | Data & Products | Daily Monitoring | Documentation

**Select Product**

- Extreme Precipitation Tables - HTML
- Extreme Precipitation Tables - Text/CSV
- Partial Duration Series - by Point
- Partial Duration Series - by Station
- Distribution Curves - Graphical
- Distribution Curves - Text/TBL
- Intensity Frequency Duration Graphs
- Precipitation Frequency Duration Graphs
- GIS Data Files
- Regional/State Maps

**Select Location** *Double-click map to place a marker, or enter address or latitude/longitude.*

Hybrid | Map | Satellite | Terrain

Locate by Address: 635 Sagamore Avenue,

Locate by Lat/Lon: 43.05 °N -70.75 °W

Locate by State/County:


**Select Options**

Smoothing: Yes

Delivery: Popup

Submit

Version 2.0 Copyright 2010-2022
This project is a joint collaboration between:
Northeast Regional Climate Center (NRCC)
Natural Resources Conservation Service (NRCS)
Cornell University
Contact: precip@cornell.edu

# Extreme Precipitation Tables

## Northeast Regional Climate Center

*Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.*

**Metadata for Point**

| | |
|---|---|
| **Smoothing** | Yes |
| **State** | |
| **Location** | |
| **Latitude** | 43.058 degrees North |
| **Longitude** | 70.753 degrees West |
| **Elevation** | 10 feet |
| **Date/Time** | Wed Feb 21 2024 09:41:54 GMT-0500 (Eastern Standard Time) |

+15% due to location in Coastal/Great Bay Region
2yr: 3.22*1.15 = 3.70 in
10yr: 4.88*1.15 = 5.16 in
25yr: 6.19*1.15 = 7.12 in
50yr: 7.42*1.15 = 8.53 in

## 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** | 0.70 | 0.98 | 1.21 | 1.56 | 2.03 | 2.67 | 2.94 | **1yr** | 2.36 | 2.82 | 3.24 | 3.96 | 4.57 |
| **2yr** | 0.32 | 0.50 | 0.62 | 0.82 | 1.03 | 1.30 | **2yr** | 0.89 | 1.18 | 1.52 | 1.94 | 2.49 | 3.22 | 3.58 | **2yr** | 2.85 | 3.45 | 3.95 | 4.70 | 5.35 |
| **5yr** | 0.37 | 0.58 | 0.73 | 0.98 | 1.25 | 1.61 | **5yr** | 1.08 | 1.47 | 1.89 | 2.44 | 3.15 | 4.08 | 4.60 | **5yr** | 3.61 | 4.42 | 5.07 | 5.96 | 6.73 |
| **10yr** | 0.41 | 0.65 | 0.82 | 1.12 | 1.46 | 1.90 | **10yr** | 1.26 | 1.73 | 2.24 | 2.90 | 3.76 | 4.88 | 5.55 | **10yr** | 4.32 | 5.34 | 6.12 | 7.14 | 8.01 |
| **25yr** | 0.48 | 0.76 | 0.97 | 1.34 | 1.78 | 2.35 | **25yr** | 1.54 | 2.15 | 2.79 | 3.65 | 4.76 | 6.19 | 7.13 | **25yr** | 5.48 | 6.86 | 7.85 | 9.07 | 10.09 |
| **50yr** | 0.54 | 0.86 | 1.11 | 1.55 | 2.08 | 2.77 | **50yr** | 1.80 | 2.54 | 3.31 | 4.35 | 5.69 | 7.42 | 8.62 | **50yr** | 6.57 | 8.29 | 9.48 | 10.87 | 12.02 |
| **100yr** | 0.60 | 0.97 | 1.25 | 1.78 | 2.43 | 3.28 | **100yr** | 2.10 | 2.99 | 3.93 | 5.19 | 6.80 | 8.89 | 10.42 | **100yr** | 7.87 | 10.02 | 11.46 | 13.04 | 14.33 |
| **200yr** | 0.68 | 1.11 | 1.44 | 2.06 | 2.85 | 3.86 | **200yr** | 2.46 | 3.54 | 4.65 | 6.17 | 8.12 | 10.65 | 12.60 | **200yr** | 9.43 | 12.12 | 13.85 | 15.64 | 17.09 |
| **500yr** | 0.81 | 1.33 | 1.73 | 2.51 | 3.51 | 4.80 | **500yr** | 3.03 | 4.41 | 5.81 | 7.76 | 10.28 | 13.54 | 16.21 | **500yr** | 11.98 | 15.59 | 17.81 | 19.90 | 21.58 |

## Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.23 | 0.36 | 0.44 | 0.59 | 0.72 | 0.88 | **1yr** | 0.62 | 0.86 | 0.93 | 1.33 | 1.69 | 2.26 | 2.51 | **1yr** | 2.00 | 2.41 | 2.88 | 3.20 | 3.93 |
| **2yr** | 0.32 | 0.49 | 0.60 | 0.81 | 1.00 | 1.19 | **2yr** | 0.86 | 1.16 | 1.37 | 1.82 | 2.33 | 3.07 | 3.47 | **2yr** | 2.72 | 3.33 | 3.84 | 4.56 | 5.11 |
| **5yr** | 0.35 | 0.54 | 0.67 | 0.92 | 1.17 | 1.40 | **5yr** | 1.01 | 1.37 | 1.61 | 2.11 | 2.73 | 3.80 | 4.21 | **5yr** | 3.36 | 4.05 | 4.74 | 5.56 | 6.27 |
| **10yr** | 0.39 | 0.59 | 0.74 | 1.03 | 1.33 | 1.60 | **10yr** | 1.15 | 1.57 | 1.81 | 2.38 | 3.05 | 4.39 | 4.88 | **10yr** | 3.88 | 4.70 | 5.48 | 6.45 | 7.23 |
| **25yr** | 0.44 | 0.67 | 0.83 | 1.19 | 1.57 | 1.90 | **25yr** | 1.35 | 1.86 | 2.10 | 2.74 | 3.52 | 4.77 | 5.92 | **25yr** | 4.22 | 5.70 | 6.70 | 7.85 | 8.73 |
| **50yr** | 0.48 | 0.73 | 0.92 | 1.32 | 1.77 | 2.17 | **50yr** | 1.53 | 2.12 | 2.35 | 3.06 | 3.91 | 5.40 | 6.84 | **50yr** | 4.78 | 6.58 | 7.79 | 9.11 | 10.08 |
| **100yr** | 0.54 | 0.81 | 1.02 | 1.47 | 2.02 | 2.47 | **100yr** | 1.74 | 2.42 | 2.63 | 3.39 | 4.33 | 6.08 | 7.90 | **100yr** | 5.38 | 7.60 | 9.07 | 10.60 | 11.64 |
| **200yr** | 0.59 | 0.89 | 1.13 | 1.64 | 2.29 | 2.82 | **200yr** | 1.97 | 2.75 | 2.94 | 3.75 | 4.76 | 6.83 | 9.12 | **200yr** | 6.05 | 8.77 | 10.54 | 12.34 | 13.47 |
| **500yr** | 0.69 | 1.02 | 1.32 | 1.92 | 2.72 | 3.37 | **500yr** | 2.35 | 3.29 | 3.42 | 4.28 | 5.41 | 7.97 | 11.03 | **500yr** | 7.06 | 10.61 | 12.87 | 15.13 | 16.32 |

## 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 | 1.08 | **1yr** | 0.77 | 1.06 | 1.26 | 1.74 | 2.20 | 2.99 | 3.18 | **1yr** | 2.64 | 3.05 | 3.59 | 4.38 | 5.06 |
| **2yr** | 0.34 | 0.52 | 0.64 | 0.87 | 1.07 | 1.27 | **2yr** | 0.92 | 1.24 | 1.48 | 1.96 | 2.51 | 3.43 | 3.72 | **2yr** | 3.03 | 3.57 | 4.10 | 4.86 | 5.64 |
| **5yr** | 0.40 | 0.62 | 0.77 | 1.05 | 1.34 | 1.63 | **5yr** | 1.16 | 1.59 | 1.89 | 2.54 | 3.25 | 4.36 | 4.98 | **5yr** | 3.85 | 4.79 | 5.40 | 6.40 | 7.18 |
| **10yr** | 0.47 | 0.72 | 0.89 | 1.25 | 1.61 | 1.98 | **10yr** | 1.39 | 1.94 | 2.29 | 3.11 | 3.96 | 5.36 | 6.22 | **10yr** | 4.74 | 5.98 | 6.84 | 7.87 | 8.78 |
| **25yr** | 0.58 | 0.88 | 1.09 | 1.56 | 2.06 | 2.58 | **25yr** | 1.77 | 2.52 | 2.96 | 4.08 | 5.17 | 7.77 | 8.36 | **25yr** | 6.87 | 8.04 | 9.18 | 10.37 | 11.44 |
| **50yr** | 0.67 | 1.03 | 1.28 | 1.84 | 2.48 | 3.15 | **50yr** | 2.14 | 3.08 | 3.61 | 5.01 | 6.35 | 9.71 | 10.48 | **50yr** | 8.60 | 10.08 | 11.48 | 12.76 | 14.00 |
| **100yr** | 0.80 | 1.20 | 1.51 | 2.17 | 2.98 | 3.83 | **100yr** | 2.57 | 3.75 | 4.39 | 6.18 | 7.80 | 12.14 | 13.13 | **100yr** | 10.74 | 12.62 | 14.35 | 15.74 | 17.13 |
| **200yr** | 0.93 | 1.40 | 1.78 | 2.57 | 3.58 | 4.69 | **200yr** | 3.09 | 4.58 | 5.36 | 7.61 | 9.60 | 15.22 | 16.46 | **200yr** | 13.47 | 15.83 | 17.96 | 19.40 | 20.96 |
| **500yr** | 1.16 | 1.72 | 2.22 | 3.22 | 4.58 | 6.09 | **500yr** | 3.95 | 5.95 | 6.96 | 10.07 | 12.65 | 20.54 | 22.22 | **500yr** | 18.18 | 21.36 | 24.18 | 25.57 | 27.38 |

Powered by ACIS Northeast Regional Climate Center

# APPENDIX VII

**Rip Rap Calculations**

**RIP RAP CALCULATIONS**
"Luster Cluster"
635 Sagamore Ave.
Portsmouth, NH

**Jones & Beach Engineers, Inc.**
P.O. Box 219
Stratham, NH 03885
3/14/2024 REVISED 4/19/2024 REVISED 8/8/2024 REVISED 9/16/2024

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 10-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) |
|---|---|---|---|---|---|---|
| 1P Outlet Pipe | 0.39 | 1.67 | 1 | 10.0 | 13 | 0.10 |

---

**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) |
|---|---|---|---|---|---|---|
| CB104 Outlet Pipe | 0.59 | 1.96 | 1 | 12.9 | 8 | 0.08 |

| 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**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

# FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

**Type/Node Name:** **Bioretention Pond (1P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

| | | | |
|---|---|---|---|
| Yes | | Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a). | |
| 0.54 | ac | A = Area draining to the practice | |
| 0.24 | ac | $A_I$ = Impervious area draining to the practice | |
| 0.45 | decimal | I = Percent impervious area draining to the practice, in decimal form | |
| 0.46 | unitless | Rv = Runoff coefficient = 0.05 + (0.9 x I) | |
| 0.25 | ac-in | WQV= 1" x Rv x A | |
| 895 | cf | WQV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |
| 224 | cf | 25% x WQV (check calc for sediment forebay volume) | |
| 671 | cf | 75% x WQV (check calc for surface sand filter volume) | |
| Sediment Forebay | | Method of Pretreatment? (not required for clean or roof runoff) | |
| 272 | cf | $V_{SED}$ = Sediment forebay volume, if used for pretreatment | ≥ 25%WQV |
| Calculate time to drain if system IS NOT underdrained: | | | |
| | sf | $A_{SA}$ = Surface area of the practice | |
| | iph | $Ksat_{DESIGN}$ = Design infiltration rate[1] | |
| | | If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? | |
| | Yes/No | (Use the calculations below) | |
| - | hours | $T_{DRAIN}$ = Drain time = V / ($A_{SA}$ * $I_{DESIGN}$) | ≤ 72-hrs |
| Calculate time to drain if system IS underdrained: | | | |
| 61.78 | ft | $E_{WQV}$ = Elevation of WQV (attach stage-storage table) | |
| 1.69 | cfs | $Q_{WQV}$ = Discharge at the $E_{WQV}$ (attach stage-discharge table) | |
| 0.29 | hours | $T_{DRAIN}$ = Drain time = 2WQV/$Q_{WQV}$ | ≤ 72-hrs |
| 59.10 | feet | $E_{FC}$ = Elevation of the bottom of the filter course material[2] | |
| 58.35 | feet | $E_{UD}$ = Invert elevation of the underdrain (UD), if applicable | |
| 58.08 | feet | $E_{SHWT}$ = Elevation of SHWT (if none found, enter the lowest elevation of the test pit) | |
| 57.67 | feet | $E_{ROCK}$ = Elevation of bedrock (if none found, enter the lowest elevation of the test pit) | |
| 0.75 | feet | $D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course | ≥ 1' |
| 1.43 | feet | $D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course | ≥ 1' |
| 1.02 | feet | $D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course | ≥ 1' |
| 61.96 | ft | Peak elevation of the 50-year storm event (infiltration can be used in analysis) | |
| 63.00 | ft | Elevation of the top of the practice | |
| YES | | 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** |
| 905 | 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 | D4 | Note what sheet in the plan set contains the planting plans and surface cover | |
| **If porous pavement is proposed:** | | | |
| | | Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.) | |
| | acres | $A_{SA}$ = Surface area of the pervious pavement | |
| | :1 | Ratio of the contributing area to the pervious surface area | **≤ 5:1** |
| | inches | $D_{FC}$ = Filter course thickness | **12", or 18" if within GPA mod. 304.1 (see spec)** |
| Sheet | | Note what sheet in the plan set contains the filter course spec. | |

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

## Stage-Area-Storage for Pond 1P: Bioretention Pond

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 58.09 | 117 | 0 |
| 58.14 | 117 | 2 |
| 58.19 | 117 | 5 |
| 58.24 | 117 | 7 |
| 58.29 | 117 | 9 |
| 58.34 | 117 | 12 |
| 58.39 | 117 | 14 |
| 58.44 | 117 | 16 |
| 58.49 | 117 | 19 |
| 58.54 | 117 | 21 |
| 58.59 | 117 | 23 |
| 58.64 | 117 | 26 |
| 58.69 | 117 | 28 |
| 58.74 | 117 | 30 |
| 58.79 | 117 | 33 |
| 58.84 | 117 | 35 |
| 58.89 | 117 | 37 |
| 58.94 | 117 | 40 |
| 58.99 | 117 | 42 |
| 59.04 | 117 | 44 |
| 59.09 | 117 | 47 |
| 59.14 | 117 | 48 |
| 59.19 | 117 | 49 |
| 59.24 | 117 | 49 |
| 59.29 | 117 | 50 |
| 59.34 | 117 | 51 |
| 59.39 | 117 | 52 |
| 59.44 | 117 | 53 |
| 59.49 | 117 | 54 |
| 59.54 | 117 | 55 |
| 59.59 | 117 | 56 |
| 59.64 | 117 | 56 |
| 59.69 | 117 | 57 |
| 59.74 | 117 | 58 |
| 59.79 | 117 | 59 |
| 59.84 | 117 | 60 |
| 59.89 | 117 | 61 |
| 59.94 | 117 | 62 |
| 59.99 | 117 | 63 |
| 60.04 | 117 | 63 |
| 60.09 | 117 | 64 |
| 60.14 | 117 | 65 |
| 60.19 | 117 | 66 |
| 60.24 | 117 | 67 |
| 60.29 | 117 | 68 |
| 60.34 | 117 | 69 |
| 60.39 | 117 | 70 |
| 60.44 | 117 | 70 |
| 60.49 | 117 | 71 |
| 60.54 | 117 | 72 |
| 60.59 | 117 | 73 |
| 60.64 | 156 | 80 |
| 60.69 | 213 | 89 |
| 60.74 | 279 | 101 |
| 60.79 | 354 | 117 |
| 60.84 | 437 | 137 |
| 60.89 | 530 | 161 |
| 60.94 | 631 | 190 |
| 60.99 | 741 | 224 |
| 61.04 | 778 | 262 |
| 61.09 | 796 | 302 |
| 61.14 | 814 | 342 |
| 61.19 | 832 | 383 |
| 61.24 | 851 | 425 |
| 61.29 | 870 | 468 |
| 61.34 | 889 | 512 |
| 61.39 | 908 | 557 |
| 61.44 | 927 | 603 |
| 61.49 | 946 | 650 |
| 61.54 | 966 | 698 |
| 61.59 | 986 | 746 |
| 61.64 | 1,006 | 796 |
| 61.69 | 1,026 | 847 |
| 61.74 | 1,047 | 899 |
| 61.79 | 1,068 | 952 |
| 61.84 | 1,089 | 1,006 |
| 61.89 | 1,110 | 1,061 |
| 61.94 | 1,131 | 1,117 |
| 61.99 | 1,153 | 1,174 |
| 62.04 | 1,174 | 1,232 |
| 62.09 | 1,195 | 1,291 |
| 62.14 | 1,217 | 1,352 |
| 62.19 | 1,239 | 1,413 |
| 62.24 | 1,261 | 1,475 |
| 62.29 | 1,283 | 1,539 |
| 62.34 | 1,305 | 1,604 |
| 62.39 | 1,328 | 1,669 |
| 62.44 | 1,350 | 1,736 |
| 62.49 | 1,373 | 1,805 |
| 62.54 | 1,396 | 1,874 |
| 62.59 | 1,420 | 1,944 |
| 62.64 | 1,443 | 2,016 |
| 62.69 | 1,467 | 2,088 |
| 62.74 | 1,491 | 2,162 |
| 62.79 | 1,515 | 2,238 |
| 62.84 | 1,539 | 2,314 |
| 62.89 | 1,564 | 2,391 |
| 62.94 | 1,588 | 2,470 |
| 62.99 | **1,613** | **2,550** |

Bottom of filter course = 59.1
Vol. below = 47 cf

Volume below E(WQV) = Volume of stone voids + Required WQV = 47+895 = 942 cf

E(WQV) = 61.78 by interpolation

Overflow el. = 61.8
Vol. below = 952 cf
Storage volume provided = 952-47 = 905 cf > 895 cf

## Stage-Discharge for Pond 1P: Bioretention Pond

| Elevation (feet) | Primary (cfs) | Elevation (feet) | Primary (cfs) |
|---|---|---|---|
| 58.09 | 0.00 | 60.69 | 1.37 |
| 58.14 | 0.00 | 60.74 | 1.38 |
| 58.19 | 0.00 | 60.79 | 1.40 |
| 58.24 | 0.00 | 60.84 | 1.41 |
| 58.29 | 0.00 | 60.89 | 1.43 |
| 58.34 | 0.00 | 60.94 | 1.45 |
| 58.39 | 0.01 | 60.99 | 1.46 |
| 58.44 | 0.02 | 61.04 | 1.48 |
| 58.49 | 0.06 | 61.09 | 1.49 |
| 58.54 | 0.10 | 61.14 | 1.51 |
| 58.59 | 0.16 | 61.19 | 1.52 |
| 58.64 | 0.22 | 61.24 | 1.54 |
| 58.69 | 0.28 | 61.29 | 1.55 |
| 58.74 | 0.35 | 61.34 | 1.56 |
| 58.79 | 0.41 | 61.39 | 1.58 |
| 58.84 | 0.47 | 61.44 | 1.59 |
| 58.89 | 0.51 | 61.49 | 1.61 |
| 58.94 | 0.55 | 61.54 | 1.62 |
| 58.99 | 0.59 | 61.59 | 1.63 |
| 59.04 | 0.63 | 61.64 | 1.65 |
| 59.09 | 0.66 | 61.69 | 1.66 |
| 59.14 | 0.69 | 61.74 | 1.68 |
| 59.19 | 0.73 | 61.79 | 1.69 |
| 59.24 | 0.76 | 61.84 | 1.83 |
| 59.29 | 0.79 | 61.89 | 2.13 |
| 59.34 | 0.81 | 61.94 | 2.54 |
| 59.39 | 0.84 | 61.99 | 3.02 |
| 59.44 | 0.87 | 62.04 | 3.57 |
| 59.49 | 0.89 | 62.09 | 4.17 |
| 59.54 | 0.92 | 62.14 | 4.83 |
| 59.59 | 0.94 | 62.19 | 5.46 |
| 59.64 | 0.96 | 62.24 | 5.50 |
| 59.69 | 0.99 | 62.29 | 5.54 |
| 59.74 | 1.01 | 62.34 | 5.58 |
| 59.79 | 1.03 | 62.39 | 5.62 |
| 59.84 | 1.05 | 62.44 | 5.66 |
| 59.89 | 1.07 | 62.49 | 5.70 |
| 59.94 | 1.09 | 62.54 | 5.74 |
| 59.99 | 1.11 | 62.59 | 5.77 |
| 60.04 | 1.13 | 62.64 | 5.81 |
| 60.09 | 1.15 | 62.69 | 5.85 |
| 60.14 | 1.17 | 62.74 | 5.89 |
| 60.19 | 1.19 | 62.79 | 5.93 |
| 60.24 | 1.21 | 62.84 | 5.96 |
| 60.29 | 1.23 | 62.89 | 6.00 |
| 60.34 | 1.25 | 62.94 | 6.04 |
| 60.39 | 1.26 | 62.99 | **6.07** |
| 60.44 | 1.28 | | |
| 60.49 | 1.30 | | |
| 60.54 | 1.32 | | |
| 60.59 | 1.33 | | |
| 60.64 | 1.35 | | |

E(WQV) = 61.78
Q(WQV) = 1.69 cfs

# GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

| | | | |
|---|---|---|---|
| | ac | Area of HSG A soil that was replaced by impervious cover | 0.40" |
| 0.12 | ac | Area of HSG B soil that was replaced by impervious cover | 0.25" |
| | ac | Area of HSG C soil that was replaced by impervious cover | 0.10" |
| | ac | Area of HSG D soil or impervious cover that was replaced by impervious cover | 0.0" |
| 0.25 | inches | Rd = Weighted groundwater recharge depth | |
| 0.031 | ac-in | GRV = AI * Rd | |
| 113 | cf | GRV conversion (ac-in x 43,560 sf/ac x 1ft/12") | |

**Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):**

Stone Beneath Unit 3 deck: (14 ft * 20 ft * 2.4 ft)*0.4 = 269 cf

Stone Beneath Unit 4 deck: (14 ft * 20 ft *3.3 ft)*0.4 = 370 cf

269+370 = 639 cf > 113 cf

# APPENDIX IX

**Pollutant Removal Calculations**

# POLLUTANT REMOVAL CALCULATIONS

| BMP | Drip Edge | Bioretention | None | Total | Required |
|---|---|---|---|---|---|
| Acres Impervious | 0.053 | 0.244 | 0.039 | 0.335 | |
| **TSS Removal (%)** | 90% | 90% | 0% | **80%** | **80%** |
| **TN Removal (%)** | 55% | 65% | 0% | **67%** | **50%** |

**Calculations are based on post-construction impervious surfaces directed toward AP3 and AP4. Post-construction impervious surfaces directed toward AP1 are handled offsite via the City's drainage system, and the amount of impervious surface directed toward AP1 is being decreased post-construction.**

**Stone underneath decks are assumed to provide similar treatment to a stone drip edge.**

**TSS removal of 80% provided meets 80% requirement**

**TN removal of 67% provided exceeds 50% requirement**

| Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis | | | | Values Accepted for Loading Analyses | | |
|---|---|---|---|---|---|---|
| **BMP Type** | **BMP** | **Notes** | **Lit. Ref.** | **TSS** | **TN** | **TP** |
| Stormwater Ponds | Wet Pond | | B, F | 70% | 35% | 45% |
| | Wet Extended Detention Pond | | A, B | 80% | 55% | 68% |
| | Micropool Extended Detention Pond | TBA | | | | |
| | Multiple Pond System | TBA | | | | |
| | Pocket Pond | TBA | | | | |
| Stormwater Wetlands | Shallow Wetland | | A, B, F, I | 80% | 55% | 45% |
| | Extended Detention Wetland | | A, B, F, I | 80% | 55% | 45% |
| | Pond/Wetland System | TBA | | | | |
| | Gravel Wetland | | H | 95% | 85% | 64% |
| Infiltration Practices | Infiltration Trench (≥75 ft from surface water) | | B, D, I | 90% | 55% | 60% |
| | Infiltration Trench (<75 ft from surface water) | | B, D, I | 90% | 10% | 60% |
| | Infiltration Basin (≥75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Infiltration Basin (<75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Dry Wells | | | 90% | 55% | 60% |
| | Drip Edges | | | 90% | 55% | 60% |
| Filtering Practices | Aboveground or Underground Sand Filter that infiltrates WQV (≥75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Aboveground or Underground Sand Filter that infiltrates WQV (<75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Aboveground or Underground Sand Filter with underdrain | | A, I, F, G, H | 85% | 10% | 45% |
| | Tree Box Filter | TBA | | | | |
| | Bioretention System | | I, G, H | 90% | 65% | 65% |
| | Permeable Pavement that infiltrates WQV (≥75 ft from surface water) | | A, F, B, D, I | 90% | 60% | 65% |
| | Permeable Pavement that infiltrates WQV (<75 ft from surface water) | | A, F, B, D, I | 90% | 10% | 65% |
| | Permeable Pavement with underdrain | | Use TN and TP values for sand filter w/ underdrain and outlet pipe | 90% | 10% | 45% |

| Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis | | | | Values Accepted for Loading Analyses | | |
|---|---|---|---|---|---|---|
| **BMP Type** | **BMP** | **Notes** | **Lit. Ref.** | **TSS** | **TN** | **TP** |
| Treatment Swales | Flow Through Treatment Swale | TBA | | | | |
| Vegetated Buffers | Vegetated Buffers | | A, B, I | 73% | 40% | 45% |
| Pre-Treatment Practices | Sediment Forebay | TBA | | | | |
| | Vegetated Filter Strip | | A, B, I | 73% | 40% | 45% |
| | Vegetated Swale | | A, B, C, F, H, I | 65% | 20% | 25% |
| | Flow-Through Device - Hydrodynamic Separator | | A, B, G, H | 35% | 10% | 5% |
| | Flow-Through Device - ADS Underground Multichamber Water Quality Unit (WQU) | | G, H | 72% | 10% | 9% |
| | Other Flow-Through Devices | TBA | | | | |
| | Off-line Deep Sump Catch Basin | | J, K, L, M | 15% | 5% | 5% |

# APPENDIX X

**Infiltration Testing Data**

**Front of Site - Test #1**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 6.2 | 105 | 0.5 | 0.008333 | 78120.0 | 82.4947 | 32.4782 |
| 9.9 | 105 | 1 | 0.016667 | 62370.0 | 65.8627 | 25.9302 |
| 13.5 | 105 | 1.5 | 0.025 | 56700.0 | 59.8752 | 23.5729 |

| | |
|---|---|
| Mean | **27.3271** |
| σ (Std. Dev.) | **3.7674** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 22.3 iph (Test #3)

With factor of safety of two = 11.15 iph

**Front of Site - Test #2**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 6.7 | 105 | 0.5 | 0.008333 | 84420.0 | 89.1475 | 35.0974 |
| 11.2 | 105 | 1 | 0.016667 | 70560.0 | 74.5114 | 29.3352 |
| 16.1 | 105 | 1.5 | 0.025 | 67620.0 | 71.4067 | 28.1129 |

| | |
|---|---|
| Mean | **30.8485** |
| σ (Std. Dev.) | **3.0456** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 22.3 iph (Test #3)

With factor of safety of two = 11.15 iph

**Front of Site - Test #3**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 4.8 | 105 | 0.5 | 0.008333 | 60480.0 | 63.8669 | 25.1444 |
| 8.3 | 105 | 1 | 0.016667 | 52290.0 | 55.2182 | 21.7395 |
| 11.4 | 105 | 1.5 | 0.025 | 47880.0 | 50.5613 | 19.9060 |

| | |
|---|---|
| Mean | **22.2633** |
| σ (Std. Dev.) | **2.1704** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 22.3 iph (Test #3)

With factor of safety of two = 11.15 iph

**Bioretention - Test #1**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 2.9 | 105 | 0.5 | 0.008333 | 36540.0 | 38.5862 | 15.1914 |
| 5.7 | 105 | 1 | 0.016667 | 35910.0 | 37.9210 | 14.9295 |
| 8 | 105 | 1.5 | 0.025 | 33600.0 | 35.4816 | 13.9691 |
| 10.65 | 105 | 2 | 0.033333 | 33547.5 | 35.4262 | 13.9473 |
| 14.7 | 105 | 2.5 | 0.041667 | 37044.0 | 39.1185 | 15.4010 |
| 17.9 | 105 | 3 | 0.05 | 37590.0 | 39.6950 | 15.6280 |

| | |
|---|---|
| Mean | **14.8444** |
| σ (Std. Dev.) | **0.6611** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 14.8 iph (Test #1)

With factor of safety of two = 7.4 iph

**Bioretention - Test #2**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 6.8 | 105 | 0.5 | 0.008333 | 85680.0 | 90.4781 | 35.6213 |
| 13 | 105 | 1 | 0.016667 | 81900.0 | 86.4864 | 34.0498 |
| 17.5 | 105 | 1.5 | 0.025 | 73500.0 | 77.6160 | 30.5575 |

| | |
|---|---|
| Mean | **33.4095** |
| σ (Std. Dev.) | **2.1163** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 14.8 iph (Test #1)

With factor of safety of two = 7.4 iph

**Bioretention - Test #3**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 12.6 | 105 | 0.5 | 0.008333 | 158760.0 | 167.6506 | 66.0042 |
| 25 | 105 | 1 | 0.016667 | 157500.0 | 166.3200 | 65.4803 |

| | |
|---|---|
| Mean | **65.7422** |
| σ (Std. Dev.) | **0.2619** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 14.8 iph (Test #1)

With factor of safety of two = 7.4 iph

**Unit 4 - Test #1**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 6.5 | 105 | 0.5 | 0.008333 | 81900.0 | 86.4864 | 34.0498 |
| 11.7 | 105 | 1 | 0.016667 | 73710.0 | 77.8378 | 30.6448 |
| 15.6 | 105 | 1.5 | 0.025 | 65520.0 | 69.1891 | 27.2398 |

| | |
|---|---|
| Mean | **30.6448** |
| σ (Std. Dev.) | **2.7802** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 25.4 iph (Test #2)

With factor of safety of two = 12.7 iph

**Unit 4 - Test #2**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 5.6 | 105 | 0.5 | 0.008333 | 70560.0 | 74.5114 | 29.3352 |
| 9.5 | 105 | 1 | 0.016667 | 59850.0 | 63.2016 | 24.8825 |
| 12.6 | 105 | 1.5 | 0.025 | 52920.0 | 55.8835 | 22.0014 |

| | |
|---|---|
| Mean | **25.4064** |
| σ (Std. Dev.) | **3.0168** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 25.4 iph (Test #2)

With factor of safety of two = 12.7 iph

**Unit 4 - Test #3**

| Height | Constant | Time | | Outflow | Rate ($K_{sat}$) | |
|---|---|---|---|---|---|---|
| cm | $cm^2$ | Minutes | Hours | $cm^3/hr$ | cm/hr | in/hr |
| **0** | | | | | | |
| 8.4 | 105 | 0.5 | 0.008333 | 105840.0 | 111.7670 | 44.0028 |
| 13.6 | 105 | 1 | 0.016667 | 85680.0 | 90.4781 | 35.6213 |
| 18.5 | 105 | 1.5 | 0.025 | 77700.0 | 82.0512 | 32.3036 |

| | |
|---|---|
| Mean | **37.3092** |
| σ (Std. Dev.) | **4.9230** |

| | | |
|---|---|---|
| Constant | 105 | cm^2 |
| Glover Coefficient: | 0.001056 | $1/cm^2$ |

**Calculations:**

Constant = 20 cm^2 for one tube, 105 cm^2 for two tubes (two tubes used)

Hours = Minutes / 60

Outflow = (Height*Constant)/Hours

Ksat = Outflow*Glover Coefficient

Lowest Mean Ksat = 25.4 iph (Test #2)

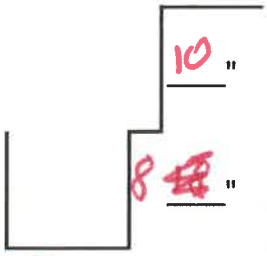
With factor of safety of two = 12.7 iph

# AMOOZEMETER DATA SHEET

**Project #:** 18134.1
**Test Pit #:** Front - #2
**Permeameter Test #:** 1
**Date:** 7/2/24
**Location:** 635 Sag
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

JONES&BEACH ENGINEERS INC.

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr

Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

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Discard - error

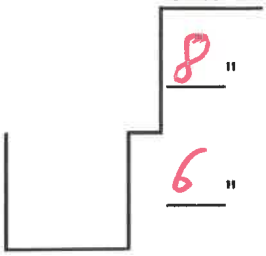
Start ↓ last

# AMOOZEMETER DATA SHEET

JONES&BEACH ENGINEERS INC.

**Project #:** 18134 Lot 1
**Test Pit #:** Front Pit 2
**Permeameter Test #:**
**Date:** 7/2/24
**Location:** 635 Bay
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

Test hole profile:




Discard - Saturated

| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr

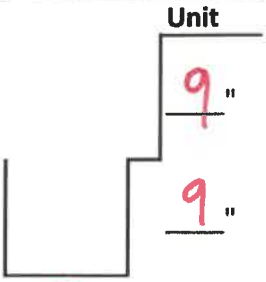
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

# AMOOZEMETER DATA SHEET

JONES&BEACH ENGINEERS INC.

**Project #:** 18134.1
**Test Pit #:** ~~#~~ Front
**Permeameter Test #:** 3
**Date:** 7/2/24
**Location:** 635 Say
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
| | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr

Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

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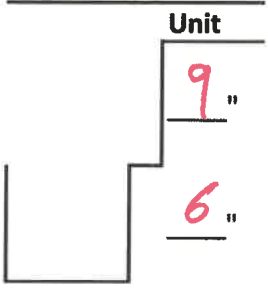
# AMOOZEMETER DATA SHEET

JONES&BEACH ENGINEERS INC.

**Project #:** 18179.1
**Test Pit #:** Bioretention
**Permeameter Test #:** 1
**Date:** 7/24/24
**Location:** 635 Sab
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
| | | | | | | | |
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**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

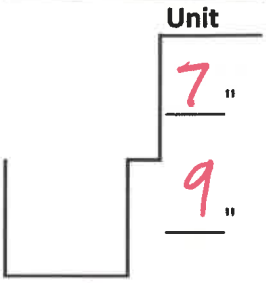
**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

# AMOOZEMETER DATA SHEET

JONES&BEACH ENGINEERS INC.

**Project #:** 18134.1
**Test Pit #:** Bioretention 1
**Permeameter Test #:** 2
**Date:** 7/2/24
**Location:** 635 Sag
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr



Discard

X Discard

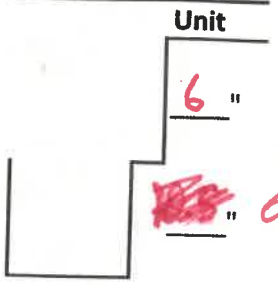
Start

# AMOOZEMETER DATA SHEET

JONES & BEACH ENGINEERS INC.

**Project #:** 18134.1
**Test Pit #:** Bioretention #1
**Permeameter Test #:** 3
**Date:** 7/2/24
**Location:** 63 Sag
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow ( Q ) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr

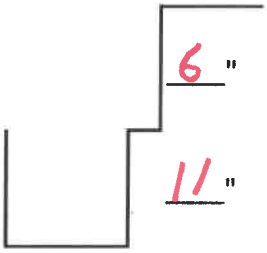
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

# AMOOZEMETER DATA SHEET

**Project #:** 18134.1
**Test Pit #:** Unit 4
**Permeameter Test #:** 1
**Date:** 7/2/2024
**Location:** 635 Say
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

JONES & BEACH ENGINEERS INC.

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | C | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr

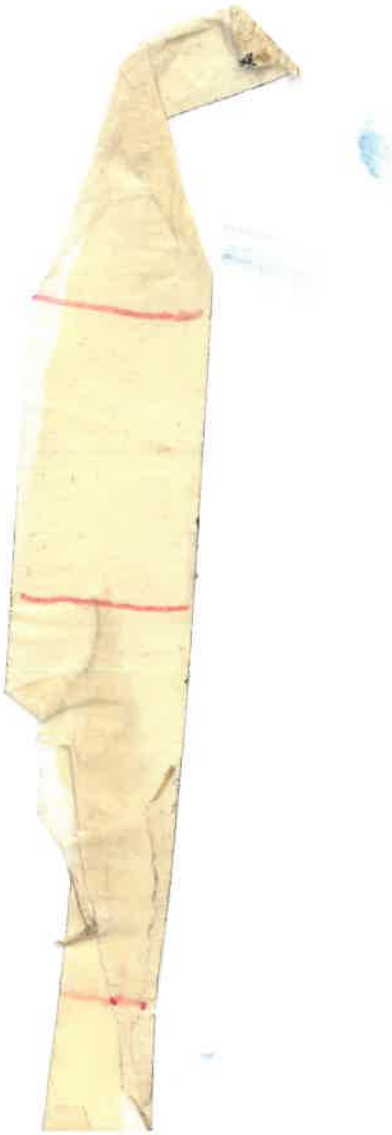
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

F:\Forms, Apps, Regs\Templates\Amoozemeter\Amoozemeter Data Sheet.xlsx

Discard

Discard

Start →

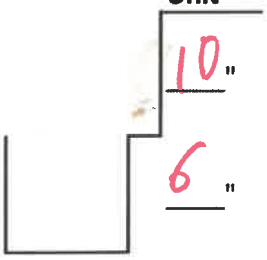


# AMOOZEMETER DATA SHEET

**Project #:** 18134.1
**Test Pit #:** Unit 4
**Permeameter Test #:** 2
**Date:** 7/2/2024
**Location:** 635 Say
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

JONES & BEACH ENGINEERS INC.

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") Both ("2 on") <-- "B"

**Associated Conversion Factor:** ( = 20.0cm$^2$) ( = 105.0 cm^2)

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

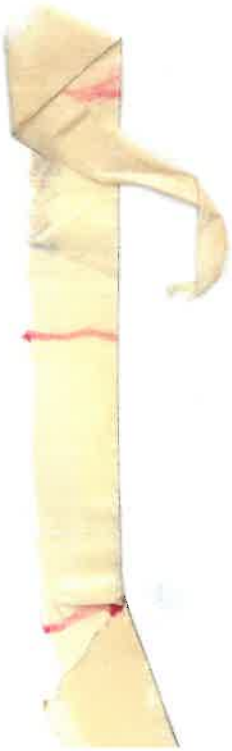
E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr



Dig Each
Dig Grid
Stack

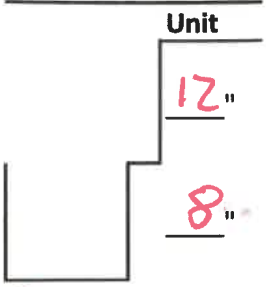


# AMOOZEMETER DATA SHEET

**Project #:** 18134.1
**Test Pit #:** Unit 4
**Permeameter Test #:** 3
**Date:** 7/2/24
**Location:** 635 Sag
**Soil Map Unit Series:**
**Horizon:** B / C (circle one)

JONES & BEACH ENGINEERS INC.

Test hole profile:




| Set-Up Calculation | |
|---|---|
| Hole Depth (cm): | |
| Distance From Bottom of Bubble: | |
| Tube to Soil Surface (cm): | |
| Desired Water Depth In Hole (cm): | |
| = CHT Tube Setting (cm): | |

**Outflow Chamber(s) Used (circle one) :** Small ("1 on") ( = 20.0cm$^2$) | Both ("2 on") ( = 105.0 cm^2) <-- "B"

**Associated Conversion Factor:**

| A | B | | | | D | E | F |
|---|---|---|---|---|---|---|---|
| Drop In Water Level | Outflow Chamber | Clock Time | Elapsed Time | | Outflow (Q) | Saturated Hydraulic Conductivity (Ksat) | |
| | | | | C | | | |
| (cm) | (C.F.) | (hr : min) | (min) | (min/hr) | (cm$^3$/hr) | (cm/hr) | (in/hr) |
| *Example:* | *20* | *10:17* | *15* | *0.25* | *392* | *0.4139* | *0.1629* |
| Start (0) | | | | | | | |
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| | | | | | Mean Ksat | | |

**Calculation Formulas:**

D = (AxB)/C

E = D x 0.001056

F = E / 2.54

**Notes:** Mulitply "D" by 0.001056 for a conversion from cm$^3$/hr to cm/hr
Multiply "E" by 0.393701 for conversion fro cm/hr to in/hr

# APPENDIX XI

**Stormwater Operations and Maintenance Manual**

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

# STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE MANUAL

**Luster Cluster**
**635 Sagamore Ave.**
**Portsmouth, NH 03801**
**Tax Map 222, Lot 19**

**Prepared for:**

**635 Sagamore Development LLC**
**3612 Lafayette Rd., Dept 4**
**Portsmouth, NH 03801**

**Prepared by:**
**Jones & Beach Engineers, Inc.**
**85 Portsmouth Avenue**
**P.O. Box 219**
**Stratham, NH 03885**
**(603) 772-4746**
**March 18, 2024**
**Revised April 15, 2024**
**Revised August 8, 2024**
**Revised October 22, 2024**
**JBE Project No. 18134.1**

# 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, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

## 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. Sediment Forebay
    d. Bioretention system
    e. Catch Basins & Yard Drains
    f. Stone Drip Edges
    g. Stone Underneath Decks
    h. Culverts
    i. Rip-Rap Outlet Protection Aprons
    j. Sand Absorption Areas

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 before 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. Cleaning Criteria for all Sedimentation Forebays: Sediment shall be removed from the sedimentation chamber (forebay) when it accumulates to a depth of more than 12 inches (30 cm) or 10 percent of the pretreatment volume. The sedimentation forebay shall be cleaned of vegetation if persistent standing water and wetland vegetation becomes dominant. The cleaning interval is once every year. A dry sedimentation forebay is the optimal condition while in practice this condition is rarely achieved. The sedimentation chamber, forebay, and treatment cell outlet devices shall be cleaned when drawdown

times exceed 60 to 72 hours. Materials can be removed with heavy construction equipment; however, this equipment shall not track on the wetland surface. Revegetate disturbed areas as necessary. Removed sediments shall be dewatered (if necessary) and disposed of in an acceptable manner.

d. 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), the land owner or Association shall 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.
- Any debris and sediment accumulations shall be removed from the outlet structures, overflow risers, and emergency spillways and disposed of properly.
- Inspect outlet structure for deterioration and or clogging.
- If erosion is evident on the berm or emergency spillway, stabilize the affected area by seeding. Trees must not be allowed to grow in these areas.
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHALL NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

e. **Annual inspection** of catch basins and yard drains to determine if they need to be cleaned. Catch basins and yard drains are to be cleaned if the depth of deposits is greater than one-half the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin. If a catch basin or yard drain significantly exceeds the one-half depth standard during the inspection, then it shall be cleaned more frequently. If woody debris or trash accumulates in the catch basin or yard drain, then it shall be cleaned on a weekly basis. The catch basin or yard drain can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials shall be stored, treated, and disposed. Grease hoods are to be

wiped clean and the rags disposed of properly. Debris obscuring the grate inlet shall also be removed.

f. Stone drip edges:

Units 3 & 4 feature stone drip edges to collect roof runoff into a pipe in order to direct it into the stone areas underneath the unit decks. These practices shall be lined and are not intended for infiltration. The following course of action 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 shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation shall not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones

g. Stone underneath decks:

Units 3 and 4 feature stone areas underneath their associated rear decks for infiltration of roof runoff. The following guidelines will help ensure proper functioning of the system.

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 shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation shall not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones.

h. **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.

i. Rock riprap shall be **inspected annually** in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation must 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 shall be kept clear of obstructions, debris, and sediment deposits

j. There are two sand absorption areas intended to infiltrate foundation drain effluent to the extent practicable. One is located approximately 34'-45' past the end of the shared driveway near the southeast property line of the site in order to handle foundation drain effluent for Units 1 and 2. The other is located between the backyards of Units 3 and 4 in order to handle foundation drain effluent for Units 3 and 4. The foundation drain outfalls shall be **inspected monthly** and more frequently during autumn in order to ensure that there is no debris or leaf buildup. Any debris or leaves that is either clogging or appears that it may clog the outlets must be removed **immediately** and disposed of properly.

During these inspections, additionally check for sediment buildup and standing water in the small ponding areas for these devices. If more than 1" of standing water is persistently present in these systems, contact a professional engineer to evaluate the issue. Remedies may range from cleaning the overflow spillway to replacing the sand media.

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, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

| **Construction Activity** | **Date of Inspection** | **Who Inspected** | **Findings of Inspector** |
|---|---|---|---|
| Roadway and Driveways | | | |
| Vegetation and Landscaping | | | |
| Sediment Forebay | | | |
| Bioretention Pond | | | |
| Catch Basins & Yard Drains | | | |

| | | | |
|---|---|---|---|
| Unit 3 Stone Drip Edge | | | |
| Unit 4 Stone Drip Edge | | | |
| Stone underneath unit 3 deck | | | |
| Stone underneath unit 4 deck | | | |
| Culverts | | | |
| Rip Rap Outlet Protection | | | |
| Units 1&2 Foundation drain outfall sand absorption area | | | |

| | | | |
|---|---|---|---|
| Units 3&4 Foundation drain outfall sand absorption area | | | |
| Swale | | | |
| 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.<br>**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<br>few inches of discolored material. Till or rake remaining material as needed. | |
| Check inlets and outlets for leaves and debris.<br>**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<br>**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<br>**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.<br>**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.<br>**Remedy**: Repair or replace any damaged structural parts, inlets, outlets, sidewalls. | Annually |
| Check for robust vegetation coverage throughout the system.<br>**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.<br>**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 |

# CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location: Inspector:

Date: Time: Site Conditions:

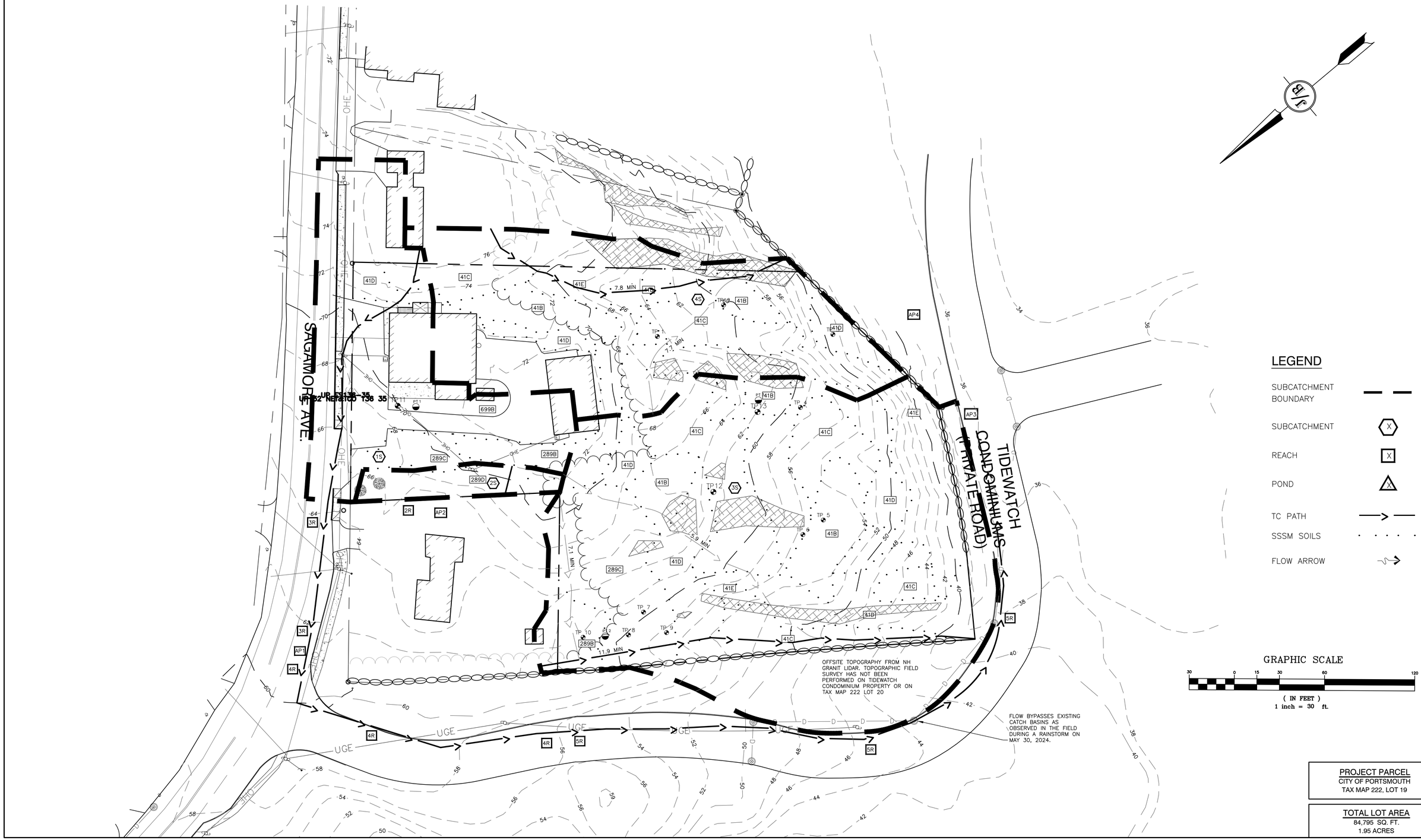
Date Since Last Rain Event:

| 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. | | | |

1/15/2011, University of New Hampshire Stormwater Center

# APPENDIX XII

**Pre- and Post-Construction Watershed Plans**




PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: DJM | Date: 2/26/2024 |
| Checked: PSL | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134-WATERSHED.dwg | | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ No. 18152
LICENSED PROFESSIONAL ENGINEER
10/23/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 4 | 10/17/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/16/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |
| 0 | 3/8/24 | ISSUED FOR REVIEW | DJM |

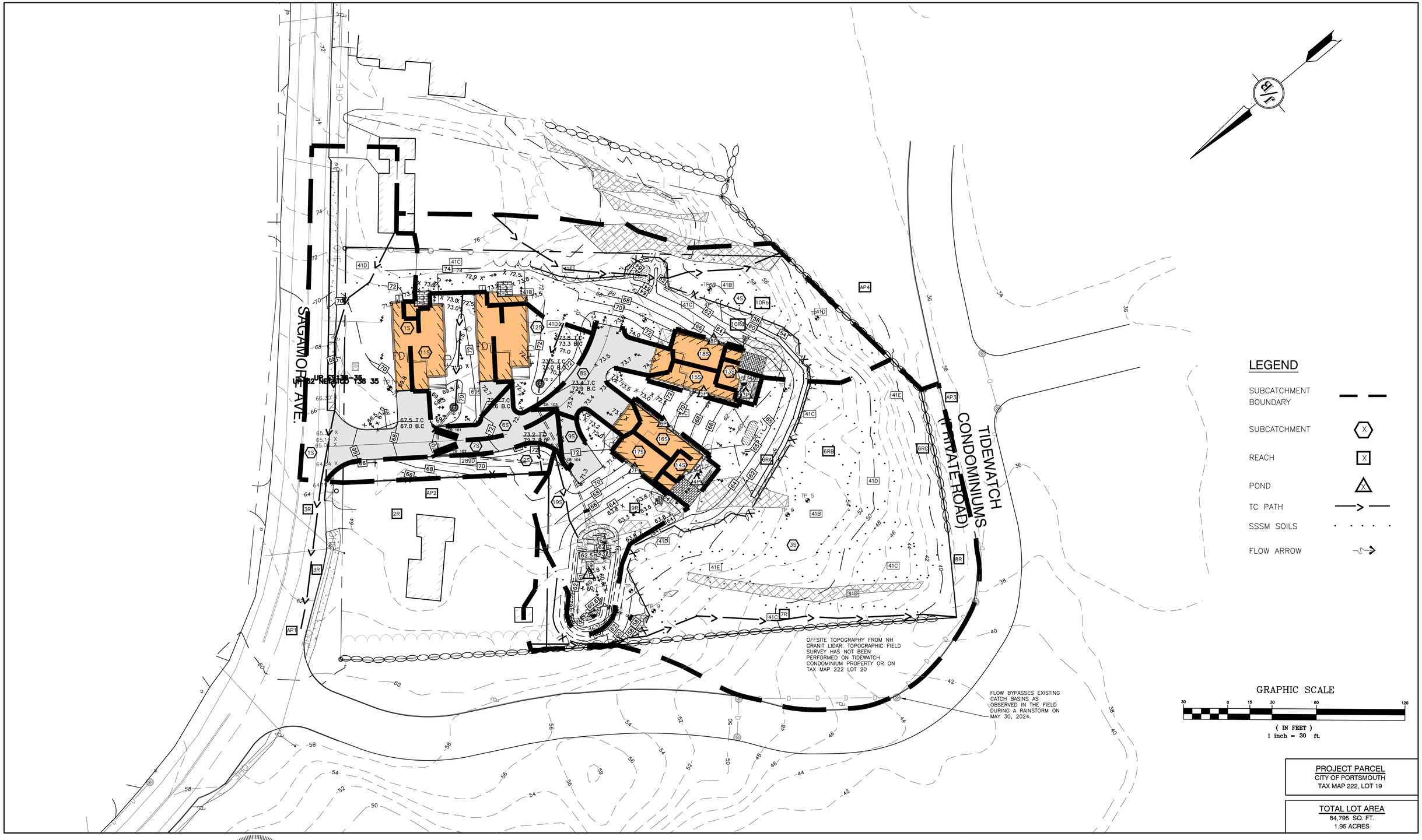
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING WATERSHED PLAN

Project: "LUSTER CLUSTER"
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 18134.1




PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: DJM | Date: 2/26/2024 |
| Checked: PSL | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134-WATERSHED.dwg | | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
10/23/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 4 | 10/17/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
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| 0 | 3/8/24 | ISSUED FOR REVIEW | 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
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: PROPOSED WATERSHED PLAN
Project: "LUSTER CLUSTER"
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 18134.1

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

# STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE MANUAL

**Luster Cluster**
**635 Sagamore Ave.**
**Portsmouth, NH 03801**
**Tax Map 222, Lot 19**

**Prepared for:**

**635 Sagamore Development LLC**
**3612 Lafayette Rd., Dept 4**
**Portsmouth, NH 03801**

**Prepared by:**
**Jones & Beach Engineers, Inc.**
**85 Portsmouth Avenue**
**P.O. Box 219**
**Stratham, NH 03885**
**(603) 772-4746**
**March 18, 2024**
**Revised April 15, 2024**
**Revised August 8, 2024**
**Revised October 22, 2024**
**Revised November 19, 2024**
**JBE Project No. 18134.1**

# 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, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

## 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. Sediment Forebay
    d. Bioretention system
    e. Catch Basins & Yard Drains
    f. Stone Drip Edges
    g. Stone Underneath Decks
    h. Culverts
    i. Rip-Rap Outlet Protection Aprons
    j. Sand Absorption Areas

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 before 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. Cleaning Criteria for all Sedimentation Forebays: Sediment shall be removed from the sedimentation chamber (forebay) when it accumulates to a depth of more than 12 inches (30 cm) or 10 percent of the pretreatment volume. The sedimentation forebay shall be cleaned of vegetation if persistent standing water and wetland vegetation becomes dominant. The cleaning interval is once every year. A dry sedimentation forebay is the optimal condition while in practice this condition is rarely achieved. The sedimentation chamber, forebay, and treatment cell outlet devices shall be cleaned when drawdown

times exceed 60 to 72 hours. Materials can be removed with heavy construction equipment; however, this equipment shall not track on the wetland surface. Revegetate disturbed areas as necessary. Removed sediments shall be dewatered (if necessary) and disposed of in an acceptable manner. Remove excessive vegetative growth with the exception of grass.

d. 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), the land owner or Association shall 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.
- Any debris and sediment accumulations shall be removed from the outlet structures, overflow risers, and emergency spillways and disposed of properly.
- Inspect outlet structure for deterioration and or clogging.
- If erosion is evident on the berm or emergency spillway, stabilize the affected area by seeding. Trees must not be allowed to grow in these areas.
- Remove excessive vegetative growth with the exception of grass.
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHALL NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

e. **Annual inspection** of catch basins and yard drains to determine if they need to be cleaned. Catch basins and yard drains are to be cleaned if the depth of deposits is greater than one-half the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin. If a catch basin or yard drain significantly exceeds the one-half depth standard during the inspection, then it shall be cleaned more frequently. If woody debris or trash accumulates in the catch basin or yard drain, then it shall be cleaned on a weekly basis. The catch basin or yard drain can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if

the materials meet the EPA criteria for hazardous waste. This will help determine how the materials shall be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet shall also be removed.

f. Stone drip edges:

Units 3 & 4 feature stone drip edges to collect roof runoff into a pipe in order to direct it into the stone areas underneath the unit decks. These practices shall be lined and are not intended for infiltration. The following course of action 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 shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation shall not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones. Remove any excessive vegetation that grows in the voids of the stones.

g. Stone underneath decks:

Units 3 and 4 feature stone areas underneath their associated rear decks for infiltration of roof runoff. The following guidelines will help ensure proper functioning of the system.

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 shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation shall not be allowed to become established in stone areas, and/or any debris removed from the void spaces between the stones. Remove any excessive vegetation that grows in the voids of the stones.

h. **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.

i. Rock riprap shall be **inspected annually** in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock shall be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation must not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. Remove any excessive vegetation that grows in the voids of the stone. If the

riprap is adjacent to a stream or other waterbody, the water shall be kept clear of obstructions, debris, and sediment deposits.

j. There are two sand absorption areas intended to infiltrate foundation drain effluent to the extent practicable. One is located approximately 34'-45' past the end of the shared driveway near the southeast property line of the site in order to handle foundation drain effluent for Units 1 and 2. The other is located between the backyards of Units 3 and 4 in order to handle foundation drain effluent for Units 3 and 4. The homeowner for the respective unit or landscape company shall regularly observe the foundation drain outfalls, particularly during autumn and winter, to keep them free of snow, debris or leaves. Any debris or leaves that is either clogging or appears that it may clog the outlets must be removed **immediately** and disposed of properly.

**Quarterly**, check for sediment buildup and standing water in the small ponding areas for these devices. If more than 1" of standing water is persistently present in these systems, contact a professional engineer to evaluate the issue. Remedies may range from cleaning the overflow spillway to replacing the sand media. Remove any vegetation that grows within the sand absorption areas.

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, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form and shall submit an Operations and Maintenance report on a yearly basis to the Portsmouth Planning Department.

| Construction Activity | Date of Inspection | Who Inspected | Findings of Inspector |
|---|---|---|---|
| Roadway and Driveways | | | |
| Vegetation and Landscaping | | | |
| Sediment Forebay | | | |
| Bioretention Pond | | | |
| Catch Basins & Yard Drains | | | |

| | | | |
|---|---|---|---|
| Unit 3 Stone Drip Edge | | | |
| Unit 4 Stone Drip Edge | | | |
| Stone underneath unit 3 deck | | | |
| Stone underneath unit 4 deck | | | |
| Culverts | | | |
| Rip Rap Outlet Protection | | | |
| Units 1&2 Foundation drain outfall sand absorption area | | | |

| | | | |
|---|---|---|---|
| Units 3&4 Foundation drain outfall sand absorption area | | | |
| Swale | | | |
| 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.<br>**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<br>few inches of discolored material. Till or rake remaining material as needed. | |
| Check inlets and outlets for leaves and debris.<br>**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<br>**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<br>**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.<br>**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.<br>**Remedy**: Repair or replace any damaged structural parts, inlets, outlets, sidewalls. | Annually |
| Check for robust vegetation coverage throughout the system.<br>**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.<br>**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 |

# 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. | | | |

1/15/2011, University of New Hampshire Stormwater Center

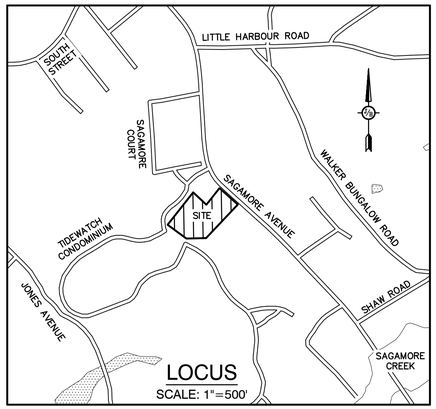
JONES&BEACH ENGINEERS INC.

# SINGLE FAMILY CONDOMINIUM
# "LUSTER CLUSTER"
## TAX MAP 222, LOT 19
## 635 SAGAMORE AVE., PORTSMOUTH, NH

Know what's **below**
**811** before you dig

### GENERAL LEGEND

| EXISTING | PROPOSED | DESCRIPTION |
|---|---|---|
| | | PROPERTY LINES |
| | | SETBACK LINES |
| | | CENTERLINE |
| | | TREE LINE |
| | | STONEWALL |
| | | BARBED WIRE |
| | | FENCE |
| | | SOIL BOUNDARY |
| | | EASEMENT |
| 100 | 100 | MAJOR CONTOUR |
| 98 | 98 | MINOR CONTOUR |
| VGC | VGC | EDGE OF PAVEMENT |
| SGC | SGC | VERTICAL GRANITE CURB |
| | | SLOPE GRANITE CURB |
| | | FIBER BERM |
| | | DRAINAGE LINE |
| | | SEWER LINE |
| | | SEWER FORCE MAIN |
| | | GAS LINE |
| | | WATER LINE |
| | | WATER SERVICE |
| | | OVERHEAD ELECTRIC |
| | | UNDERGROUND ELECTRIC |
| | | UNDERDRAIN |
| | | THRUST BLOCK |
| | | IRON PIPE/IRON ROD |
| | | DRILL HOLE |
| | | IRON ROD/DRILL HOLE |
| 100x0 | 100x0 | STONE/GRANITE BOUND |
| 100.00 | 100.00 | SPOT GRADE |
| 100.00 | 100.00 | PAVEMENT SPOT GRADE |
| 99.50 | 99.50 | CURB SPOT GRADE |
| | | BENCHMARK (TBM) |
| | | DOUBLE POST SIGN |
| | | SINGLE POST SIGN |
| | | WELL |
| | | TEST PIT |
| | | TREES AND BUSHES |
| | | UTILITY POLE |
| | | DRAIN MANHOLE |
| | | SEWER MANHOLE |
| | | HYDRANT |
| | | WATER GATE VALVE |
| | | WATER SHUT OFF |
| | | REDUCER |
| | | SINGLE GRATE CATCH BASIN |
| | | TRANSFORMER |
| | | CULVERT W/FLARED END SECTION |
| | | CULVERT W/STRAIGHT HEADWALL |
| | | STONE CHECK DAM |
| | | DRAINAGE FLOW DIRECTION |
| | | RIPRAP |
| | | PAVEMENT HATCH |
| | | STABILIZED CONSTRUCTION ENTRANCE |
| | | CONCRETE |
| | | GRAVEL |
| | | SNOW STORAGE |
| | | RETAINING WALL |




### SHEET INDEX




**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

**TRAFFIC ENGINEER**
STEPHEN G. PERNAW & COMPANY, INC.
P.O. BOX 1721
CONCORD, NH 03302
(603) 731-8500
CONTACT: STEPHEN PERNAW

**SOILS CONSULTANT**
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DRIVE, 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 PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
(603) 427-1530

**SEWER**
CITY OF PORTSMOUTH
DEPARTMENT OF PUBLIC WORKS
SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
(603) 766-1421

**LIGHTING DESIGN**
EXPOSURE LIGHTING
501 ISLINGTON STREET,UNIT 1A
PORTSMOUTH, NH 03801
CONTACT: KEN SWEENEY

**ELECTRIC**
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
(800) 662-7764

**TELEPHONE**
CONSOLIDATED COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(800) 427-5525

**CABLE TV**
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695


**PROJECT PARCEL**
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON _____ DATE _____

| | |
|---|---|
| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Drawing Name: 18134.1-PLAN.dwg | Date: 2/26/2024 |
| | Project No.: 18134.1 |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED
PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |


Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
*Civil Engineering Services*
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM


| | |
|---|---|
| Plan Name: | COVER SHEET |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.
**CS**
SHEET 1 OF 21
JBE PROJECT NO. 18134.1

635 SAGAMORE AVE, PORTSMOUTH, NH
JBE # 18134.1 REVISION 5: 11/25/24

## PLAN REFERENCES:

1. "PLAN OF LAND FOR WILLIAM HINES, PORTSMOUTH, N.H." DATED AUGUST 31, 1979. PREPARED BY EMERY ENGINEERING. R.C.R.D. 9456.
2. "SKETCH OF LOT, 781 SAGAMORE AVE, PORTSMOUTH, N.H.: DATED DECEMBER 1938. PREPARED BY JOHN W. DURGIN. R.C.R.D. 0879.
3. "BOUNDARY SURVEY LOCATED IN PORTSMOUTH, NH. PREPARED FOR TIDEWATCH ASSOCIATES, INC. DATED MARCH 13, 1986. PREPARED BY KIMBALL CHASE COMPANY, INC. R.C.R.D. 14771.

## SOIL NOTE

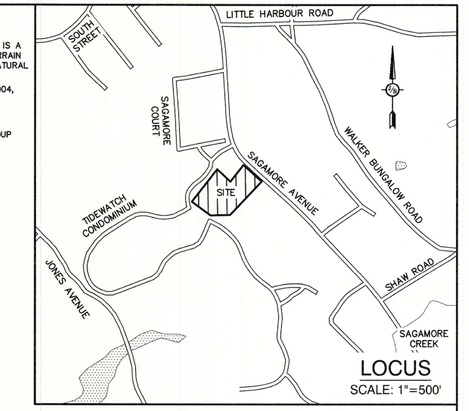
THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL MAP WAS PRODUCED 2-20-2024, AND WAS PREPARED BY JAMES P. GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC.

SOIL IDENTIFICATION LEGEND

| MAP UNIT SYMBOL | MAP UNIT NAME | HISS SYMBOL | HYDROLOGIC SOIL GROUP |
|---|---|---|---|
| 41 | CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX | 228 | B |
| 289 | CHATFIELD VARIANT (MODERATELY WELL DRAINED) | 327 | B |
| 699 | URBAN LAND N/A | IMPERVIOUS | |

SLOPE PHASE:
0-8% B 8-15% C 15-25% D
25%-50% E 50%+ F




## ABUTTERS ACROSS 635 SAGAMORE AVE.:

**TAX MAP 222, LOT 14**
JOHN O'SULLIVAN
DENISE BROWN
692 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 2350 PG 181

**TAX MAP 222, LOT 14-1**
BROWN FAMILY REV. TRUST
VINCENT A. & LINDA M. BROWN, TRUSTEES
DENISE BROWN
650 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 6074 PG 238

## EXISTING CONDITIONS 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 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).
2. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING FEATURES LOCATED ON CITY OF PORTSMOUTH TAX MAP 222, LOT 19.
3. VERTICAL DATUM: NAVD88. HORIZONTAL DATUM: NH STATE PLANE
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. 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.

## 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.

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 — LAND SURVEYOR
SIGNATURE

11/25/24
MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

**PROJECT PARCEL**
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

GRAPHIC SCALE
20 0 10 20 40 80
( IN FEET )
1 inch = 20 ft.

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



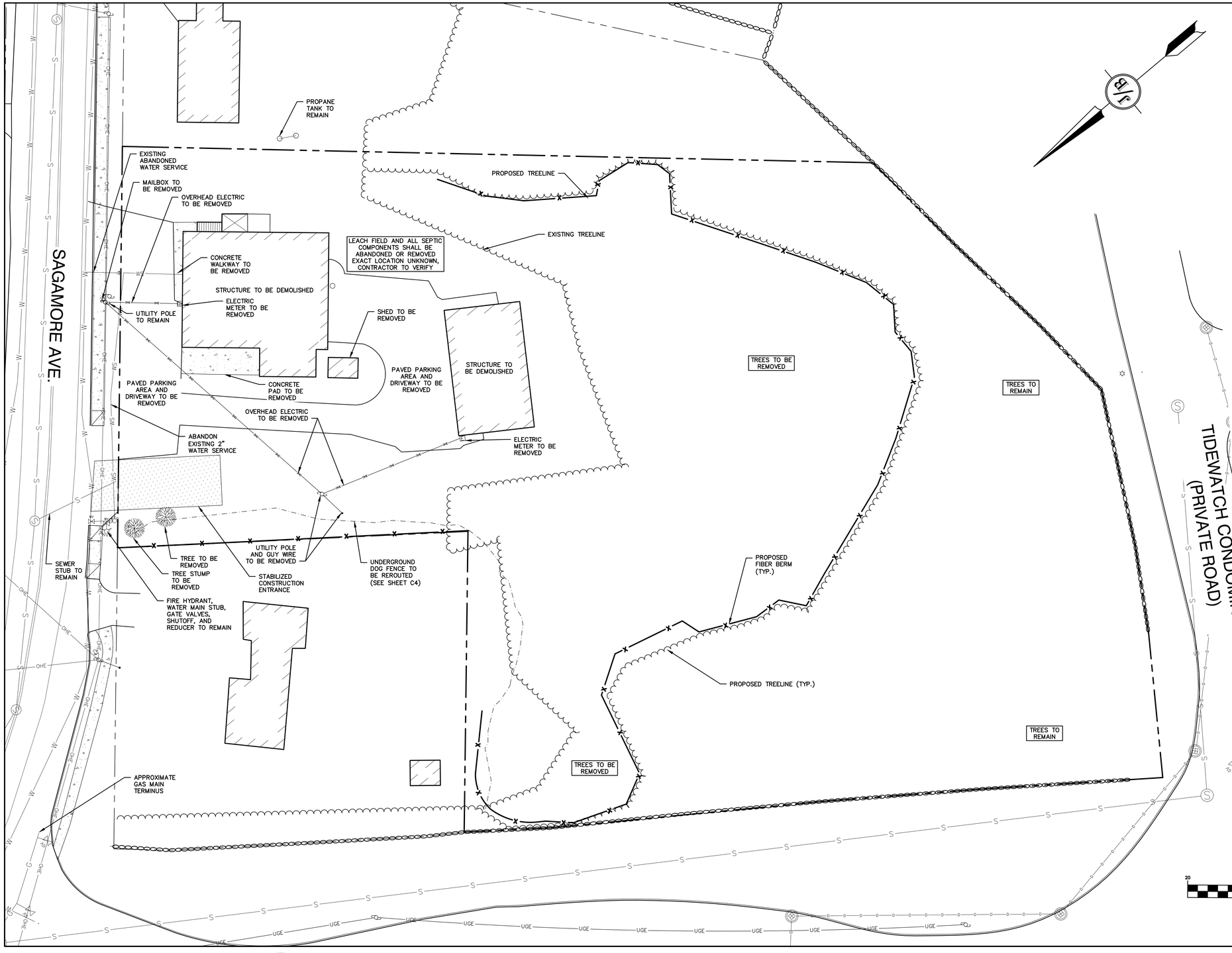
DANIEL JAMES MEDITZ No.18152 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE
10/23/2024

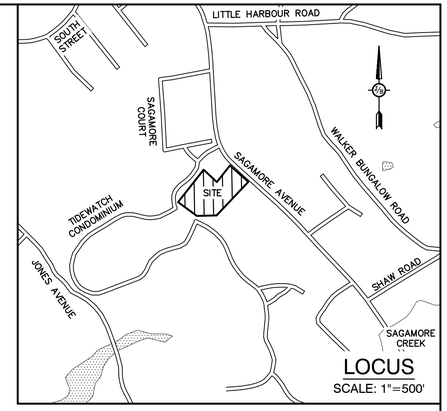
| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |
| 0 | 3/18/24 | ISSUED FOR REVIEW | KDR |

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
C1
SHEET 2 OF 21
JBE PROJECT NO. 18134.1




## 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.
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. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
5. 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).
6. THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
7. 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.
8. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. FIBER BERM SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
9. 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 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

| | |
|---|---|
| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Drawing Name: 18134.1-PLAN.dwg | |

Date: 2/26/2024
Project No.: 18134.1



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
PROFESSIONAL ENGINEER
LICENSED
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

Designed and Produced in NH
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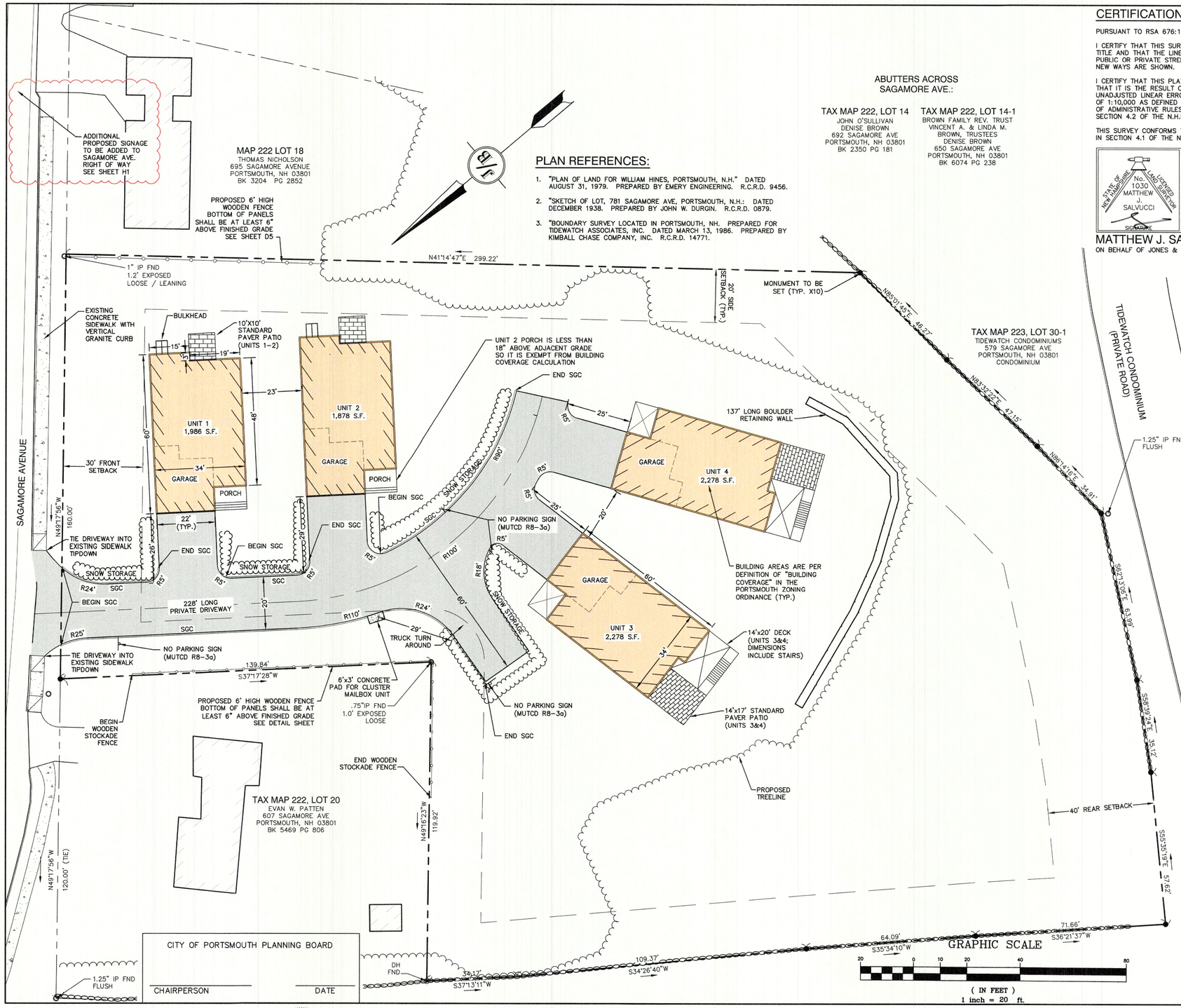
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

| | |
|---|---|
| Plan Name: | DEMOLITION PLAN |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.
**DM-1**
SHEET 3 OF21
JBE PROJECT NO. 18134.1




## 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.

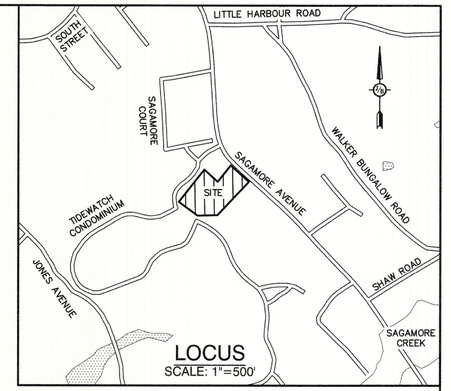
THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LICENSED LAND SURVEYOR — SIGNATURE

4/25/24

MATTHEW J. SALVUCCI, LLS 1030 — DATE:

ON BEHALF OF JONES & BEACH ENGINEERS, INC.




## SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE EXISTING STRUCTURES AND CONSTRUCT A 4–UNIT MULTI–FAMILY RESIDENTIAL DEVELOPMENT.
2. ZONING DISTRICT: SINGLE RESIDENCE A (SRA)
   LOT AREA MINIMUM = 1 ACRE
   LOT FRONTAGE MINIMUM = 150'
   LOT DEPTH MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 30'
   SIDE SETBACK = 20'
   REAR SETBACK = 40'
   WETLAND SETBACK = 100' FROM WETLANDS GREATER THAN 10,000 S.F.
   MAX. BUILDING HEIGHT = 35' FOR SLOPED ROOF; 30' FOR FLAT ROOF
   MAX. BUILDING COVERAGE = 10%
   BUILDING COVERAGE PROPOSED = 8,420 S.F. = 9.9%
   MAX. DENSITY = 1 DWELLING UNIT / ACRE
   DENSITY PROPOSED = 4 DWELLING UNITS / 1.947 AC. = 2.05 UNITS / ACRE
   (1 UNIT / 21,248 S.F.)
   MIN. OPEN SPACE = 50%
   OPEN SPACE PROPOSED = 68,700 S.F. = 80.0%
3. PARKING CALCULATIONS:
   DWELLING UNIT FLOOR AREA OVER 750 S.F. – 1.3 SPACES REQUIRED PER UNIT
   1.3 * 4 DWELLING UNITS = 5.2 SPACES REQUIRED
   2 SPACES IN GARAGE + 2 SPACES IN DRIVEWAY PER UNIT = 4 SPACES PER UNIT * 4 UNITS
   16 SPACES PROVIDED
   ONE BICYCLE SPACE PROVIDED IN EACH GARAGE (1 REQUIRED FOR EVERY 5 DWELLING UNITS PER ZONING)
4. ON MAY 23, 2023, THE PORTSMOUTH, NH ZONING BOARD OF ADJUSTMENT VOTED TO APPROVE VARIANCES FROM THE FOLLOWING SECTIONS OF THE ZONING ORDINANCE:
   A) SECTION 10.513 – TO PERMIT MORE THAN ONE FREE–STANDING DWELLING ON A LOT
   B) SECTION 10.521 – TO PERMIT LESS THAN ONE ACRE PER DWELLING UNIT
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
6. AS DETERMINED IN THE FIELD BY BRENDEN WALDEN, CWS AND MIKE CUOMO, CWS, THE WETLAND ON THE TIDEWATCH CONDOMINIUM PROPERTY IS FAR OFFSITE AND IT IS APPARENT THAT THE PROPOSED DISTURBANCE WILL BE OUTSIDE OF ITS ASSOCIATED 100 FOOT BUFFER.
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. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
11. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
12. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
13. ALL 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 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.
15. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
16. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
17. 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.
18. 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.
19. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
20. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
21. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
22. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A WELLHEAD PROTECTION OR AQUIFER PROTECTION AREA PER NHDES ONESTOP DATA.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE — DANIEL JAMES MEDITZ No.18152 — LICENSED PROFESSIONAL ENGINEER
10/23/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
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603-772-4746
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Plan Name: SITE PLAN

Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
C2
SHEET 4 OF 21
JBE PROJECT NO. 18134.1

ABUTTERS ACROSS SAGAMORE AVE.:

TAX MAP 222, LOT 14
JOHN O'SULLIVAN
DENISE BROWN
692 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 2350 PG 181

TAX MAP 222, LOT 14-1
BROWN FAMILY REV. TRUST
VINCENT A. & LINDA M. BROWN, TRUSTEES
DENISE BROWN
650 SAGAMORE AVE
PORTSMOUTH, NH 03801
BK 6074 PG 238

MAP 222 LOT 18
THOMAS NICHOLSON
695 SAGAMORE AVENUE
PORTSMOUTH, NH 03801
BK 3204 PG 2852

## PLAN REFERENCES:

1. "PLAN OF LAND FOR WILLIAM HINES, PORTSMOUTH, N.H." DATED AUGUST 31, 1979. PREPARED BY EMERY ENGINEERING. R.C.R.D. 9456.
2. "SKETCH OF LOT, 781 SAGAMORE AVE, PORTSMOUTH, N.H.; DATED DECEMBER 1938. PREPARED BY JOHN W. DURGIN. R.C.R.D. 0879.
3. "BOUNDARY SURVEY LOCATED IN PORTSMOUTH, NH. PREPARED FOR TIDEWATCH ASSOCIATES, INC. DATED MARCH 13, 1986. PREPARED BY KIMBALL CHASE COMPANY, INC. R.C.R.D. 14771.

## GENERAL LEGEND

- EXISTING PROPERTY LINE
- ABUTTER PROPERTY LINE
- PROPERTY LINE SETBACK
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- PROPOSED ROAD CENTERLINE
- IRON PIPE / IRON ROD
- DRILL HOLE
- IRON ROD TO BE SET

## CONDOMINIUM SITE PLAN CERTIFICATION:

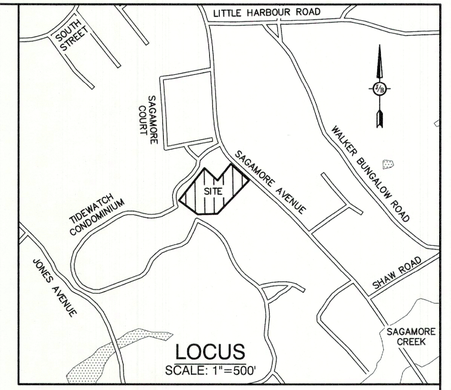
I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND TO THE EXTEND FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT UNITS 1-4 ARE NOT YET BEGUN AND THIS PLAN COMPLIES WITH NH RSA 356-B20 (1).

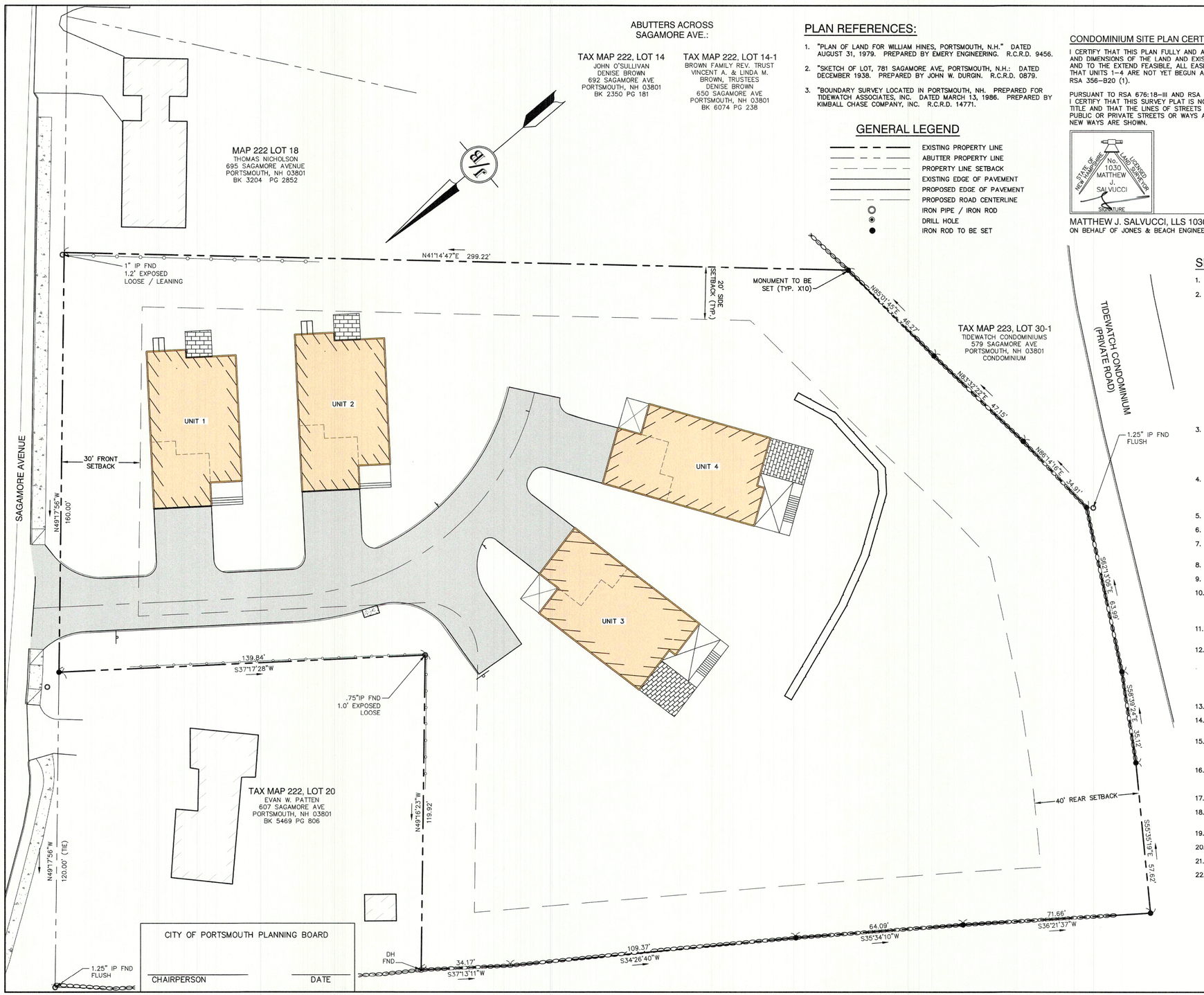
PURSUANT TO RSA 676:18-III AND RSA 672:14
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LICENSED LAND SURVEYOR — SIGNATURE

11/25/24

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.




CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON _____ DATE _____

## SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO REMOVE EXISTING STRUCTURES AND CONSTRUCT A 4-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT.
2. ZONING DISTRICT: SINGLE RESIDENCE A (SRA)
   LOT AREA MINIMUM = 1 ACRE
   LOT FRONTAGE MINIMUM = 150'
   LOT DEPTH MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 30'
   SIDE SETBACK = 20'
   REAR SETBACK = 40'
   WETLAND SETBACK = 100' FROM WETLANDS GREATER THAN 10,000 S.F.
   MAX. BUILDING HEIGHT = 35' FOR SLOPED ROOF; 30' FOR FLAT ROOF
   MAX. BUILDING COVERAGE = 10%
   BUILDING COVERAGE PROPOSED = 8,476 S.F. = JUST UNDER 10%
   MAX. DENSITY = 1 DWELLING UNIT / ACRE
   DENSITY PROPOSED = 4 DWELLING UNITS / 1.947 AC. = 2.05 UNITS / ACRE
   (1 UNIT / 21,248 S.F.)
   MIN. OPEN SPACE = 50%
   OPEN SPACE PROPOSED = 68,700 S.F. = 80.0%
3. PARKING CALCULATIONS:
   DWELLING UNIT FLOOR AREA OVER 750 S.F. - 1.3 SPACES REQUIRED PER UNIT
   1.3 * 4 DWELLING UNITS = 5.2 SPACES REQUIRED
   2 SPACES IN GARAGE + 2 SPACES IN DRIVEWAY PER UNIT = 4 SPACES PER UNIT * 4 UNITS
   16 SPACES PROVIDED
   ONE BICYCLE SPACE PROVIDED IN EACH GARAGE (1 REQUIRED FOR EVERY 5 DWELLING UNITS PER ZONING)
4. ON MAY 23, 2023, THE PORTSMOUTH, NH ZONING BOARD OF ADJUSTMENT VOTED TO APPROVE VARIANCES FROM THE FOLLOWING SECTIONS OF THE ZONING ORDINANCE:
   A) SECTION 10.513 - TO PERMIT MORE THAN ONE FREE-STANDING DWELLING ON A LOT
   B) SECTION 10.521 - TO PERMIT LESS THAN ONE ACRE PER DWELLING UNIT
5. NHDES SEWER CONNECTION PERMIT NO. , DATED .
6. AS-BUILT CONDOMINIUM SITE AND FLOOR PLANS SHALL BE RECORDED.
7. BASIS OF BEARING:
   HORIZONTAL - NH STATE PLANE. VERTICAL - NAVD88.
8. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
9. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY MUST ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY
12. 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.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000
14. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
15. 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.
16. 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.
17. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
18. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
19. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.
20. THE SUBJECT PARCEL IS NOT LOCATED WITHIN A WELLHEAD PROTECTION OR AQUIFER PROTECTION AREA PER NHDES ONESTOP DATA.
21. THE IMPROVEMENTS SHOWN HEREON HAVE NOT YET BEEN CONSTRUCTED.
22. LIMITED COMMON AREAS TO BE DESCRIBED IN THE CONDOMINIUM DOCUMENTS.

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE — DANIEL JAMES MEDITZ No.18152 — LICENSED PROFESSIONAL ENGINEER — 10/23/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |
| 0 | 3/18/24 | ISSUED FOR REVIEW | KDR |

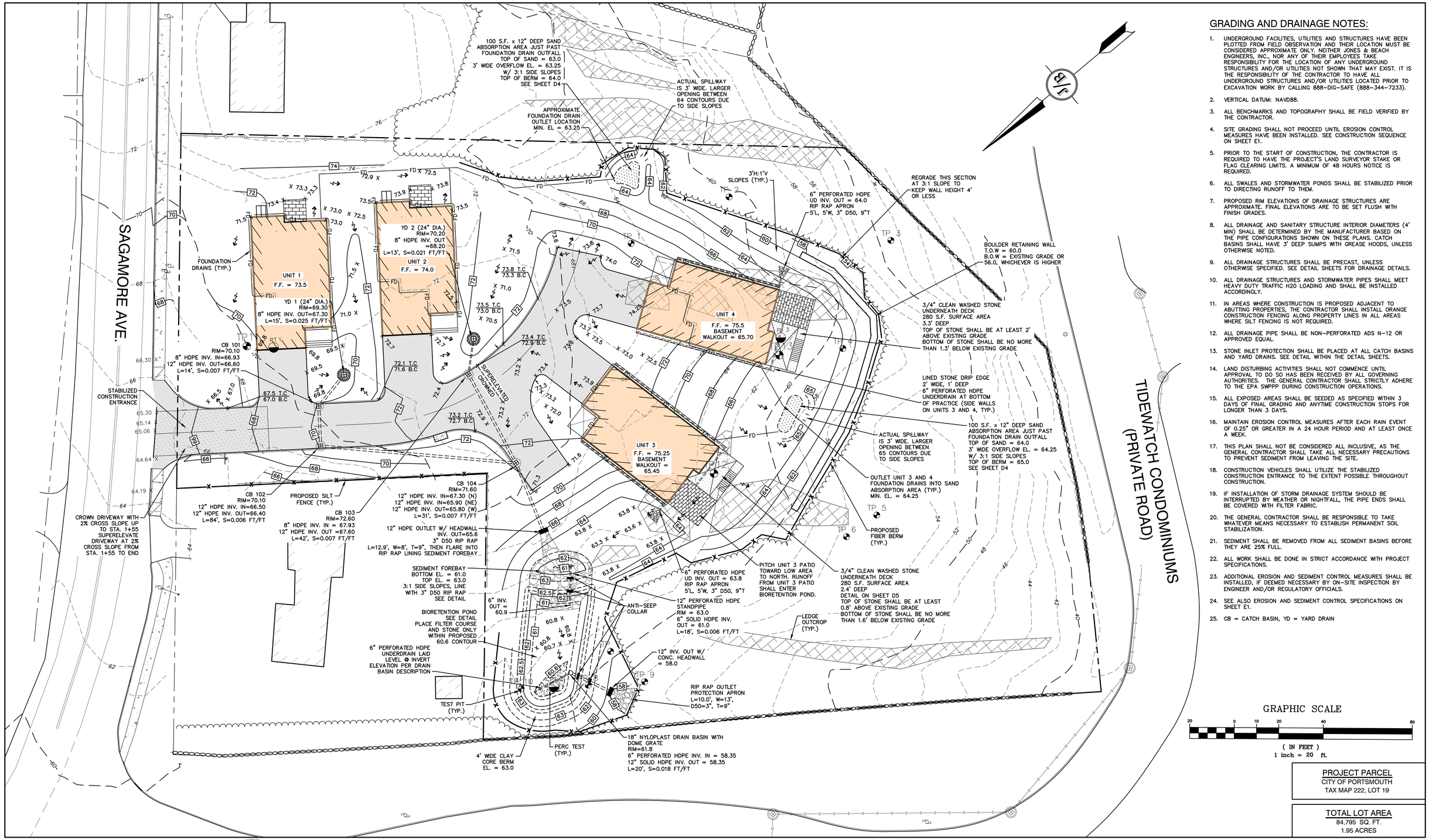
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: CONDOMINIUM SITE PLAN

Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
CS1
SHEET 5 OF 21
JBE PROJECT NO. 18134.1




## 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. VERTICAL DATUM: NAVD88.
3. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
4. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
5. 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.
6. ALL SWALES AND STORMWATER PONDS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
7. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
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. 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. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
13. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS AND YARD DRAINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
14. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
15. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING AND ANYTIME CONSTRUCTION STOPS FOR LONGER THAN 3 DAYS.
16. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.25" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
17. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
18. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
19. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
20. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
21. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
22. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
23. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
24. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
25. CB = CATCH BASIN, YD = YARD DRAIN

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

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STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ No.18152
PROFESSIONAL ENGINEER
LICENSED
11/25/2024

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603-772-4746
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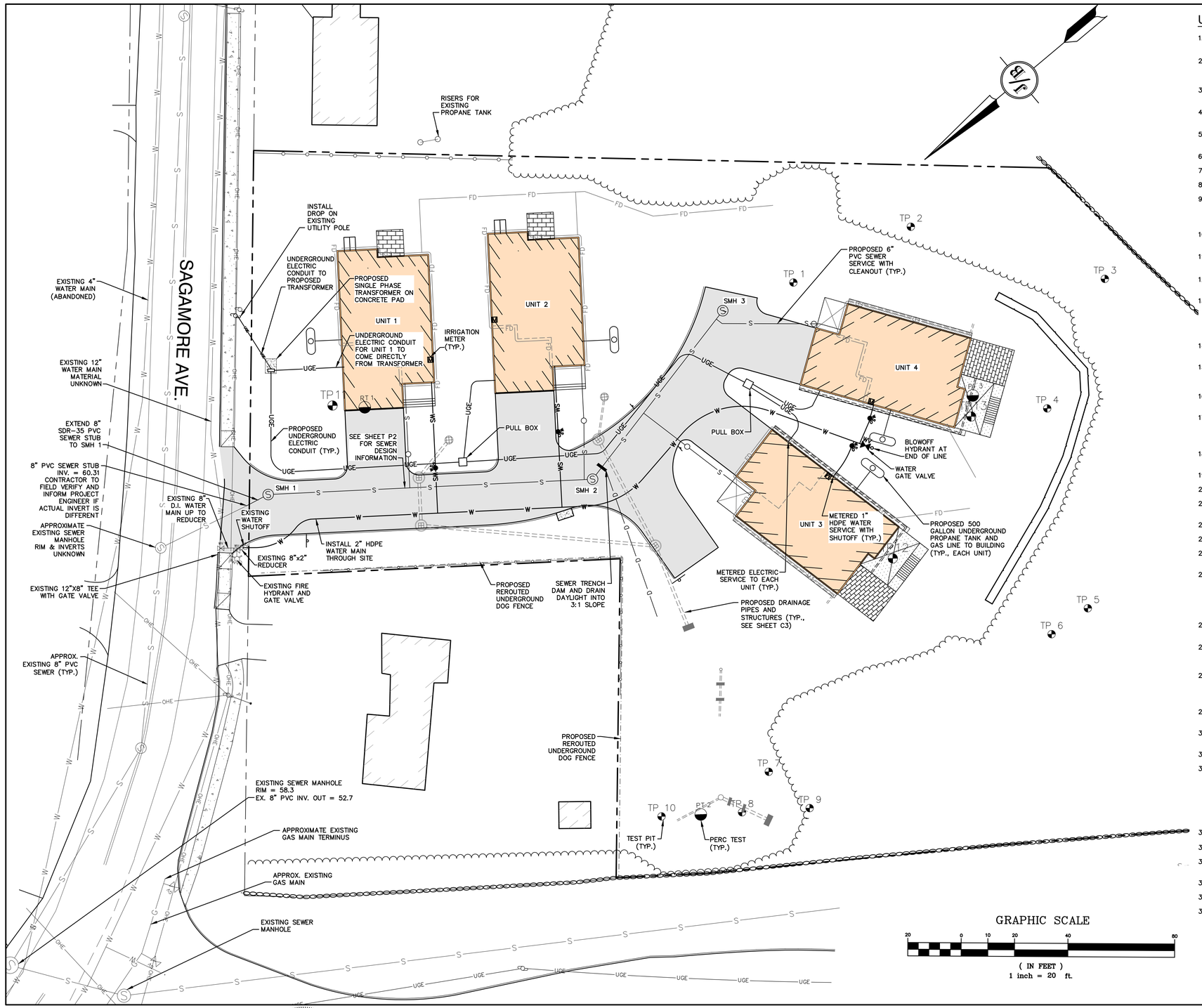
Plan Name: GRADING AND DRAINAGE PLAN
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
C3
SHEET 6 OF 21
JBE PROJECT NO. 18134.1




## 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, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE CITY STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDINGS TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
9. 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.
10. 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.
11. 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. (THIS APPLIES TO SMH 1)
12. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
13. SANITARY SEWER FLOW CALCULATIONS:
    4 – FOUR BEDROOM UNITS. ASSUME 5 PEOPLE IN 4–BEDROOM UNITS.
    PER METCALF & EDDY TABLE 3-2: 61 GPD/PERSON IN 5 PERSON HOUSE
    (61 GPD * 5 PEOPLE * 4) = 1,220 GPD.
    1,000 GPD ADDITIONAL ESTIMATED WATER USE FOR IRRIGATION
14. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
15. 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, AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
16. 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.
17. 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.
18. 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.
19. WATER LINE TO BE DEFLECTED IN LIEU OF THRUST BLOCKS AT BENDS.
20. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
21. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
22. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
23. ALL WATER LINES SHALL HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
30. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
31. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
32. 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
33. DOMESTIC SHUTOFFS & VALVES SHALL BE PAINTED BLUE.
34. SEWER TRENCH DAMS SHALL BE INSTALLED EVERY 75' ALONG GRAVITY SEWER PIPE.
35. 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.
36. WATER LINE TO BE CONSTRUCTED PER CITY OF PORTSMOUTH SPECIFICATIONS.
37. AN AS-BUILT PLAN OF THE WATER LINE IS TO BE PREPARED AND SUBMITTED TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.
38. IRRIGATION METERS SHALL BE USED IF IRRIGATION IS DESIRED. IF USED, THEY SHALL BE ABOVE GROUND AND INSIDE OF A STRUCTURE, AND SHALL HAVE BACKFLOW ENCLOSURES.

**PROJECT PARCEL**
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

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STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
11/25/2024

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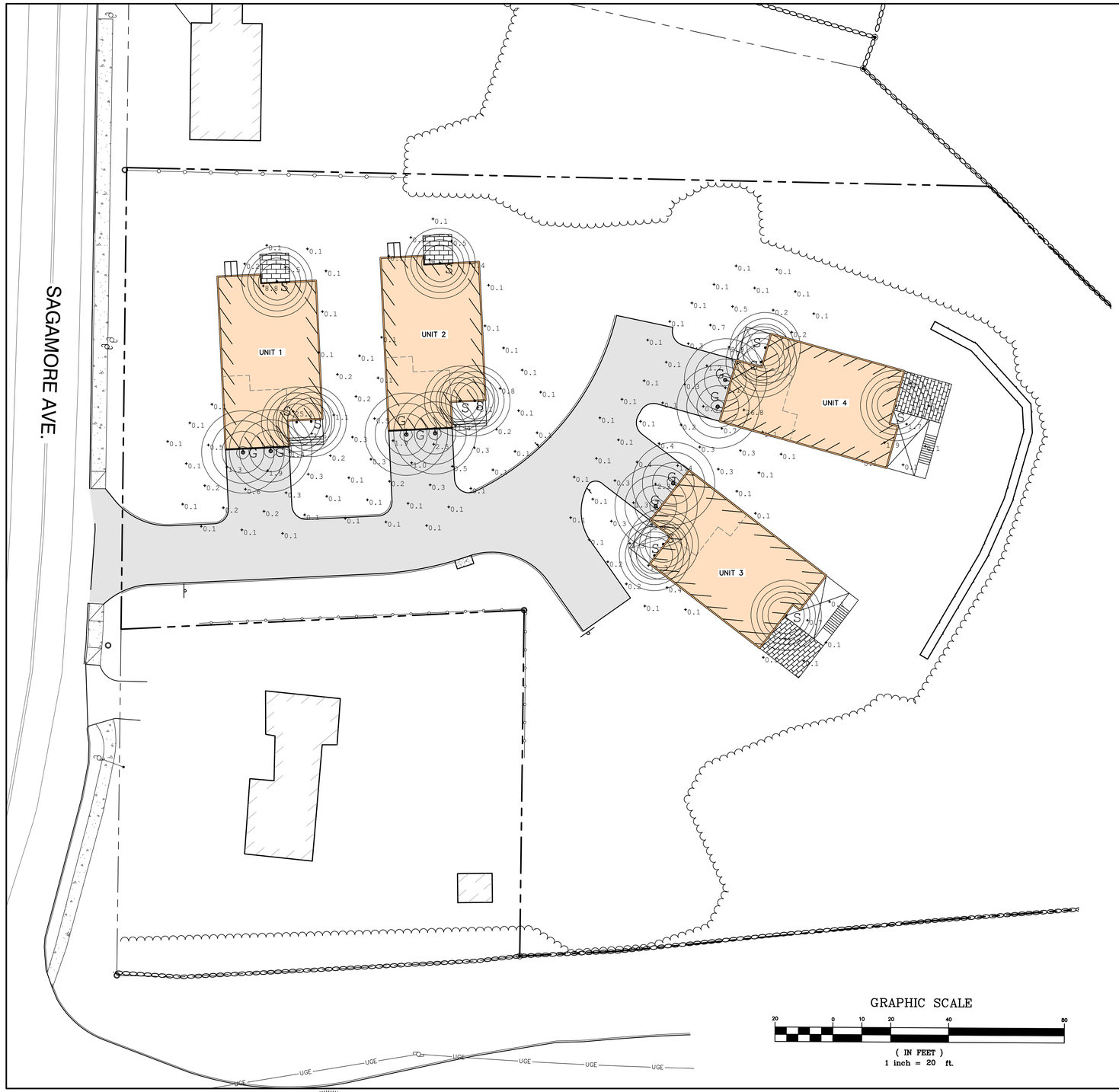
| | |
|---|---|
| Plan Name: | UTILITY PLAN |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.
C4
SHEET 7 OF 21
JBE PROJECT NO. 18134.1



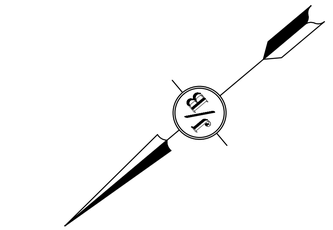

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

## LIGHTING AND ELECTRICAL NOTES:

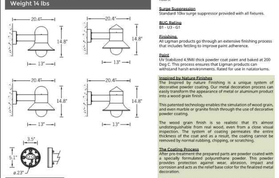
1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO TOWN REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
4. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
5. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
6. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
7. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
8. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY EXPOSURE LIGHTING, 501 ISLINGTON ST, UNIT 1A, PORTSMOUTH, NH 03801, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHALL BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.



## UAA-30146
Atlantic 7 Small Shade Surface

LIGMAN LIGHTING USA

29w COB 1105 Lumens
IP55 - Suitable For Wet Locations
IK04 - Impact Resistant
Weight 14 lbs




**Construction**

**Aluminum:**
Less than 0.1% copper content - Marine Grade 6060 extruded & 1,500 Aluminum High Pressure die casting provides excellent mechanical strength, complex detailed product lines and excellent heat dissipation.

**Fine paint:**
A two-stage grease and phosphate process that includes: degreasing and etching as well as a zinc and nickel phosphate process before product painting.

**Memory Retentive - Silicon Gasket:**
Silicone gasket is engineered for its excellent "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

**Thermal management:**
Cast aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman engineers maintains the LED's junction temperature below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life. Lumen burning less than 10% lumen depreciation at 50,000 hours.

**Surge Suppression:**
Standard 10kv surge suppressor provided with all fixtures.

**NLIC Rating:**
BY - UO - U3

**Finishing:**
All Ligman products go through an extensive finishing process that includes testing to improve paint adherence.

**Glass:**
ON Duplicated 4.5Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

**Inspired by Nature Finishes**
The Inspired by Nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, granite, limestone or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

**The Coating Process**
After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a period of time under heat and pressure in specially designed ovens. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a wood timber look on aluminum remains.

Wood grain coating can create beautiful wood-looking products in a wide range of colors, designs, etc. Wood grains can be made with different colors currently in use. Wood grains can be made with different colors, designs, etc.

Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

Added Benefits:
- Resistant to salt-acid room, accelerated aging
- Boiling water, lime and condensed water resistant
- Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
- Anti-Fingerprint (Anti-Smudge)
- TUGC free (non-toxic)

**Hardware**
Provided Hardware is Marine grade 316 Stainless steel.

**Anti Seize Screw Holes**
Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to: electrolysis from heat, corrosive atmospheres and moisture.

**Clear Borosilicate Glass Lens**
Provided with opal borosilicate impact resistant glass.

**Optics & LED**
Precise optic design provides exceptional light control and precise distribution of light.
LED CRI: > 80

**Lumen / Maintenance Life**
L70 (50,000 hours) - This means that at least 90% of the LED still achieve 90% of their original flux)

**Classic urban neighborhood wall-mounted luminaire family. Timeless lines coupled with unparalleled build quality, flexibility and performance.**

A small and medium size shade decorative wall lantern with symmetrical light distribution. Developed to complement the Atlantic bollard and Atlantic pillar light. Designed for lighting of entrances and footpaths.
Custom wattages can be provided to suit customer and Title 24 requirements. (Specify total watts per fixture)

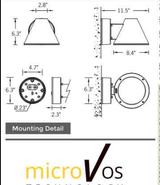
All Ligman fixtures can be manufactured using a special pre-treatment and coating process that ensures the fixture can be installed in natatoriums as well as environments with high concentrations of chlorine or salt and still maintain the 5 year warranty. For this natatorium rated process please specify NAT in options.

Ligman Lighting USA reserves the right to change specifications without prior notice, please contact factory for latest information. Due to the continual improvements in LED technology data and components may change without notice.

## UCI-30131
Cinati Type I, II, III & IV Surface

LIGMAN LIGHTING USA

10w LED 2595 Lumens | 30w LED 3848 Lumens
21w COB 1984 Lumens
IP65 - Suitable For Wet Locations
IK08 - Impact Resistant (Vandal Resistant)
Weight 8 lbs




**Construction**

**Aluminum:**
Less than 0.1% copper content - Marine Grade 6060 extruded & 1,500 Aluminum High Pressure die casting provides excellent mechanical strength, complex detailed product lines and excellent heat dissipation.

**Fine paint:**
A two-stage grease and phosphate process that includes: degreasing and etching as well as a zinc and nickel phosphate process before product painting.

**Memory Retentive - Silicon Gasket:**
Silicone gasket is engineered for its excellent "fit for purpose" long life high temperature memory retentive silicon gaskets. Maintains the gaskets exact profile and seal over years of use and compression.

**Thermal management:**
Cast aluminum is used for its excellent mechanical strength and thermal dissipation properties in low and high ambient temperatures. The superior thermal heat sink design by Ligman engineers maintains the LED's junction temperature below critical temperature range to ensure maximum luminous flux output, as well as providing long LED service life. Lumen burning less than 10% lumen depreciation at 50,000 hours.

**Surge Suppression:**
Standard 10kv surge suppressor provided with all fixtures.

**NLIC Rating:**
BY - UO - U3

**Finishing:**
All Ligman products go through an extensive finishing process that includes testing to improve paint adherence.

**Glass:**
ON Duplicated 4.5Mil thick powder coat paint and baked at 200 Deg C. This process ensures that Ligman products can withstand harsh environments. Rated for use in natatoriums.

**Inspired by Nature Finishes**
The Inspired by Nature Finishing is a unique system of decorative powder coating. Our metal decoration process can easily transform the appearance of metal or aluminum product into a wood grain finish.

This patented technology enables the simulation of wood grain, granite, limestone or granite finish through the use of decorative powder coating.

The wood grain finish is so realistic that it's almost undistinguishable from real wood, even from a close visual inspection. The system of coating permeates the entire thickness of the coat and as a result, the coating cannot be removed by normal rubbing, chipping, or scratching.

**The Coating Process**
After pre-treatment the prepared parts are powder coated with a specially formulated polyurethane powder. This powder provides protection against wear, abrasion, impact and corrosion and acts as the relief base color for the finalized metal decoration.

The component is then wrapped with a sheet of non-porous film with the selected decoration pattern printed on it using special high temperature inks.

This printed film transfer is vacuum-sealed to the surface for a period of time under heat and pressure in specially designed ovens. The oven transforms the ink into different forms within the paint layer before it becomes solid. Finally, the film is removed, and a wood timber look on aluminum remains.

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Our powder coatings are certified for indoor and outdoor applications and are backed by a comprehensive warranty. These coatings rise to the highest conceivable standard of performance excellence and design innovation.

Added Benefits:
- Resistant to salt-acid room, accelerated aging
- Boiling water, lime and condensed water resistant
- Anti-Graffiti, Anti-Slip, Anti-Microbial, Anti-Scratch
- Anti-Fingerprint (Anti-Smudge)
- TUGC free (non-toxic)

**Hardware**
Provided Hardware is Marine grade 316 Stainless steel.

**Anti Seize Screw Holes**
Tapped holes are infused with a special anti seize compound designed to prevent seizure of threaded connections, due to: electrolysis from heat, corrosive atmospheres and moisture.

**Crystal Clear Low Iron Glass Lens**
Provided with low iron/clear impact resistant crystal clear low-iron glass ensuring no green glass cast.

**Optics & LED**
Precise optic design provides exceptional light control and precise distribution of light.
LED CRI: > 80

**Lumen / Maintenance Life**
L70 (50,000 hours) - This means that at least 90% of the LED still achieve 90% of their original flux)

**Cone-shaped wall-mounted downlight fixtures. Simple clean form hiding multiple high-performance glare free optic choices.**

A cone shaped wall wash luminaire. Suitable for outdoor up, or down light applications. This luminaire is provided with precision optics and high powered LEDs, to provide narrow, medium, wide and very wide distributions. The vandal resistant tempered glass is available in clear or lightly frosted versions.

This product is suitable for commercial, as well as residential applications and with the selection of optics available can provide an excellent lighting solution. Integral electronic driver. Fixture is mounted over a 3" octagonal junction box.

To meet International Dark Sky criteria, 3000k or warmer LEDs must be selected and luminaire fix mounted (+/- 15° allowable to permit leveling).

**Additional Options (Consult Factory For Pricing)**


SCBT
Surface Conduit Box Trim

NOTE: This trim covers a shallow single-gang surface-mount junction box. Provided by customer(s).
Example: Hubbell - 5312-0 - 1-Gang Weatherproof Box, Five 1/2" in. Knockouts - 5312-1 - 1-Gang Weatherproof Box, Five 3/4 in. Threaded Outlets

Ligman Lighting USA reserves the right to change specifications without prior notice, please contact Factory for latest information. Due to the continual improvements in LED technology data and components may change without notice.

| Luminaire Schedule | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | Qty | Label | Arrangement | Description | Tag | [MANUFAC] |
| | 8 | G | Single | UAA-30146-29W-2-1-W27-01 | MOUNTED OVER GARAGE DOORS | LIGMAN |
| | 12 | S | Single | UCI-30131-21W-VW-W27-01 | MOUNTED AT HOUSE DOORS | LIGMAN |

**PROJECT PARCEL**
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

| | |
|---|---|
| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Date: 2/26/2024 | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED
PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

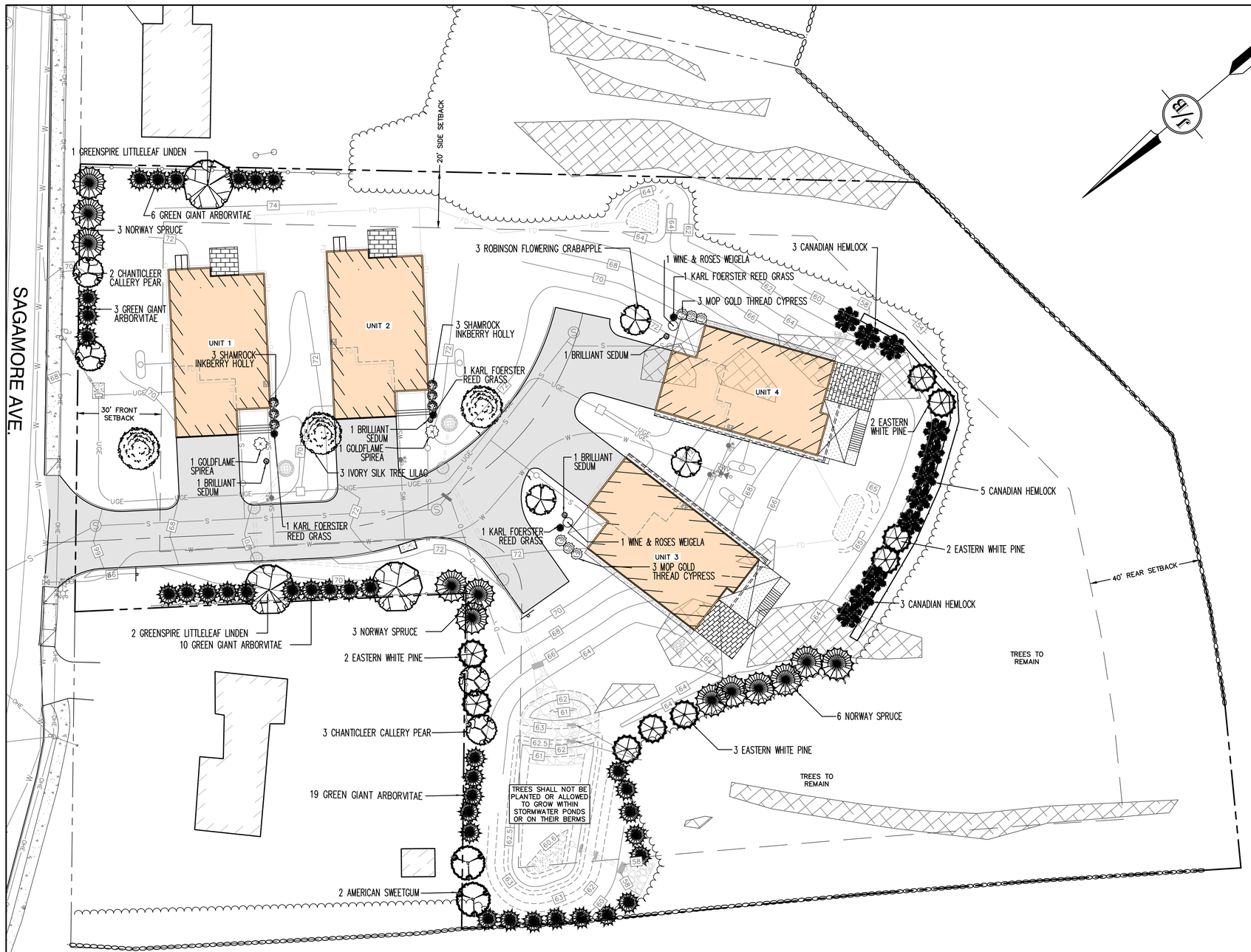
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LIGHTING PLAN

Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
L1
SHEET 8 OF 21
JBE PROJECT NO. 18134.1




GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

## 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. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN COMPLETED.
7. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
8. 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.
9. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
10. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
11. 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.
12. 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.
13. 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.
14. 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.
15. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
16. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
17. WITH AUTHORIZATION OF THE PROJECT ENGINEER, PROPOSED TREES ALONG EDGE OF WOODED BUFFER SHALL BE PLACED WHEREVER NECESSARY IN ORDER TO COVER GAPS IN EXISTING WOODED BUFFER IN ORDER TO BLOCK VISIBILITY FROM TIDEWATCH CONDOMINIUM PROPERTY.
18. TREES SHALL NOT BE PLANTED ON BERMS OF STORMWATER PONDS.
19. ALL PLANTING SHALL ADHERE TO THE GENERAL REQUIREMENTS OUTLINED IN SECTION 6.3 AND THE PLANTING REQUIREMENTS OUTLINED IN SECTION 6.4 OF THE PORTSMOUTH SITE PLAN REVIEW REGULATIONS.
20. ALL PLANTING SHALL FOLLOW THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPLANTING (AS AMENDED).
21. LEDGE SHALL BE REMOVED TO AT LEAST 3 FEET BELOW ALL PROPOSED PLANTINGS, OR PLANTS SHALL BE PLACED ON MOUNDS THAT IN A WAY THAT DOES NOT OBSTRUCT DRAINAGE FLOW TO AN ELEVATION AT LEAST 3 FEET ABOVE THE LEDGE SURFACE, FOR SURVIVABILITY.

| Quantity | Botanical Name | Common Name | Size | Growth Habits |
|---|---|---|---|---|
| 4 | Calamagrostis x acutiflora 'Karl Foerster' | KARL FOERSTER REED GRASS ** | 2 Gallon | 5' tall narrow grass |
| 6 | Chamaecyparis pisifera 'Mop' | MOP GOLD THREAD CYPRESS ** | 5 Gallon | 4'x5' spreading conifer shrub |
| 6 | Ilex glabra 'Shamrock' | SHAMROCK INKBERRY HOLLY ** | 5 Gallon | 5'x4' evergreen shrub |
| 2 | Liquidambar styraciflua | AMERICAN SWEETGUM ** | 3" Caliper | 60'x40' upright tree |
| 3 | Malus x 'Robinson' | ROBINSON FLOWERING CRABAPPLE ** | 2" Caliper | 20'x20' spreading tree |
| 12 | Picea abies | NORWAY SPRUCE | 8-9 Ft. Ht. | 60'x30' conifer tree |
| 9 | Pinus strobus | EASTERN WHITE PINE | 8-9 Ft. Ht. | 60'x30' conifer tree |
| 4 | Pyrus calleryana 'Chanticleer' | CHANTICLEER CALLERY PEAR ** | 2.5" Caliper | 30'x15' upright flowering tree |
| 4 | Sedum spectabile 'Brilliant' | BRILLIANT SEDUM ** | 1 Gallon | 18" late season color perennial |
| 2 | Spiraea japonica 'Goldflame' | GOLDFLAME SPIREA ** | 5 Gallon | 3'x4' flowering shrub |
| 3 | Syringa reticulata 'Ivory Silk' | IVORY SILK TREE LILAC | 2" Caliper | 30'x20' upright flowering tree |
| 38 | Thuja plicata 'Green Giant' | GREEN GIANT ARBORVITAE ** | 7-8 Ft. Ht. | 30'x15' conifer tree |
| 3 | Tilia cordata 'Greenspire' | GREENSPIRE LITTLELEAF LINDEN ** | 3" Caliper | 50'x35' upright tree |
| 11 | Tsuga canadensis | CANADIAN HEMLOCK | 8-9 Ft. Ht. | 60'x30' conifer tree |
| 2 | Weigela florida 'Alexandra' | WINE & ROSES WEIGELA | 5 Gallon | 4'x5' flowering shrub |
| | | | | |
| ** | Denotes plants that are tolerant of urban conditions including road salt, soil compaction, drought, heat, and air pollution. | | | |

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
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STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
11/25/2024

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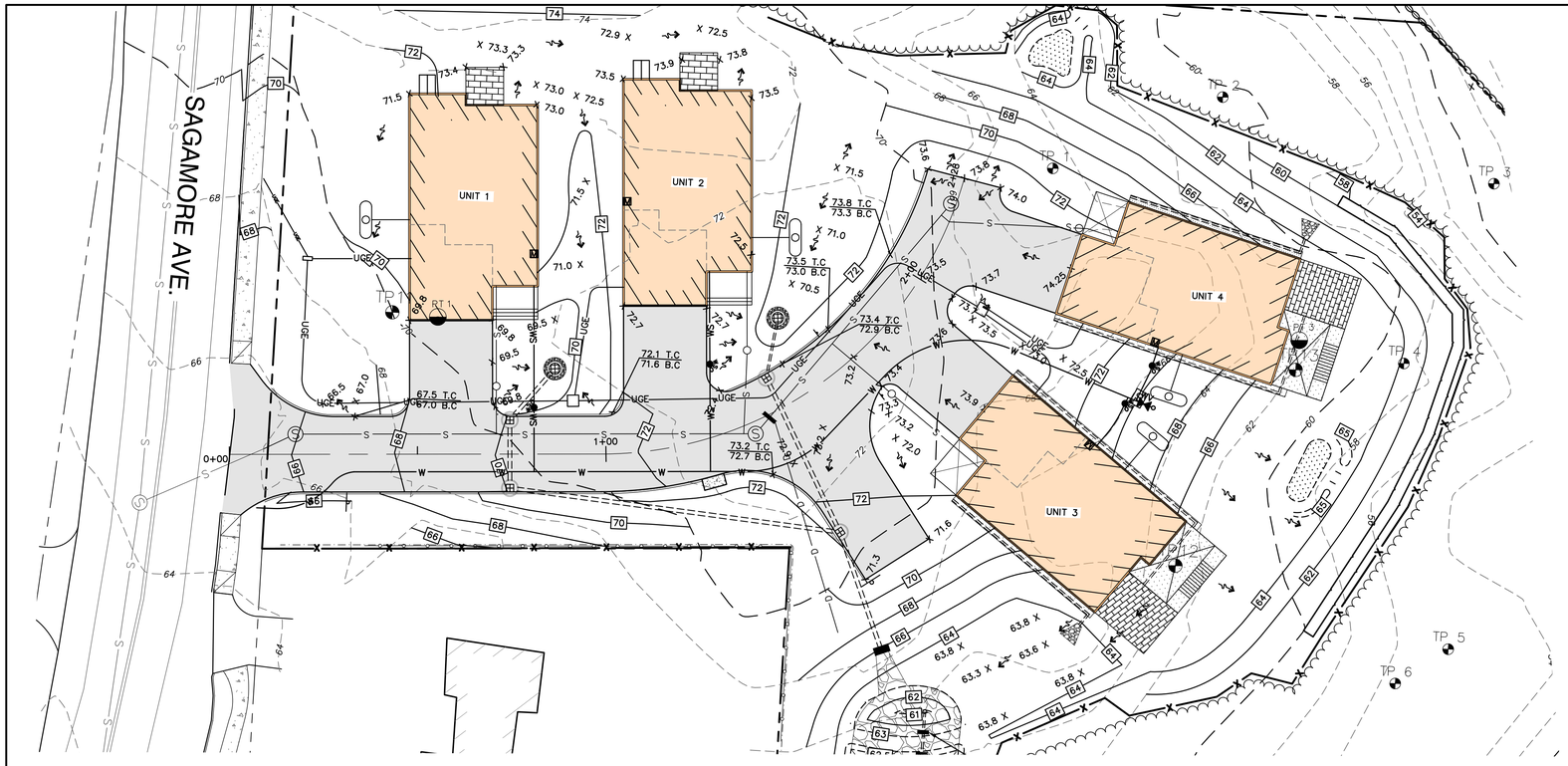
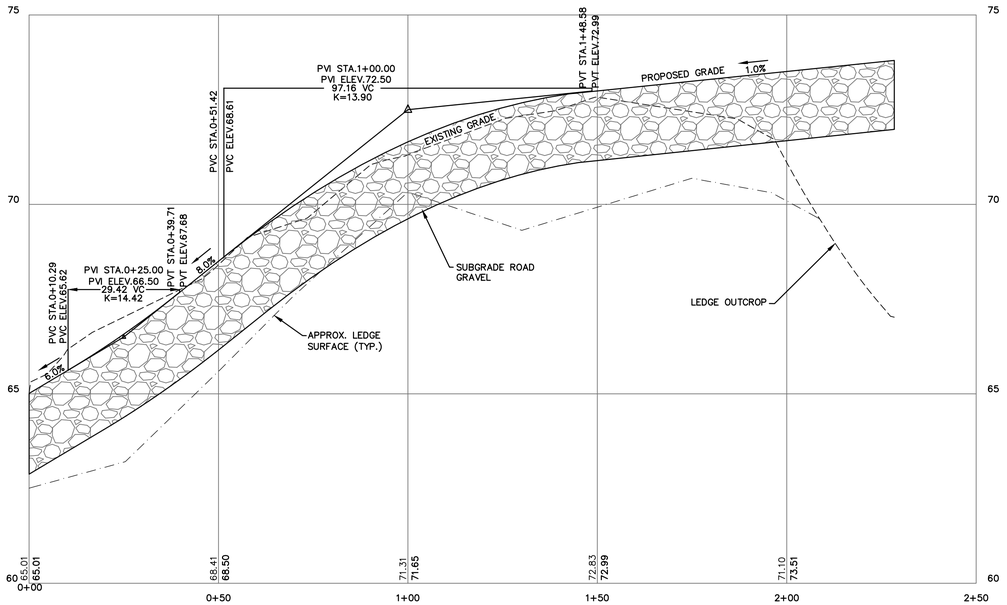
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: LANDSCAPE PLAN
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

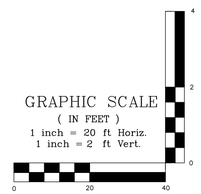
DRAWING No.
L2
SHEET 9 OF 21
JBE PROJECT NO. 18134.1




## 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).
2. 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.
3. AS-BUILT PLANS TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE ROADWAY.
4. CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.
5. 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.
6. 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.
7. ALL DISTURBED AREAS NOT STABILIZED BY OCTOBER 15TH SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
8. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
9. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
10. 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. SEDIMENT BUILD UP IN SWALES WILL BE REMOVED IF IT IS DEEPER THAN SIX INCHES, AND IS TO BE REMOVED FROM SUMPS BELOW THE INLET OF CULVERTS SEMIANNUALLY, AS WELL AS FROM CATCH BASINS. FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE, TRASH TRACK AND EMERGENCY SPILL WAY. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.
11. ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.
12. BIORETENTION PONDS REQUIRE TIMELY MAINTENANCE AND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM EVENT, AS WELL AS FREQUENTLY DURING THE FIRST YEAR OF OPERATION, AND ANNUALLY THEREAFTER. EVERY FIVE YEARS, THE SERVICES OF A PROFESSIONAL ENGINEER SHOULD BE RETAINED TO PERFORM A THOROUGH INSPECTION OF THE BIORETENTION POND AND ITS INFRASTRUCTURE. ANY DEBRIS AND SEDIMENT ACCUMULATIONS SHOULD BE REMOVED FROM THE OUTLET STRUCTURE(S) AND EMERGENCY SPILLWAY(S) AND DISPOSED OF PROPERLY. BIORETENTION POND BERMS SHOULD BE MOWED AT LEAST ONCE ANNUALLY SO AS TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION. TREES SHOULD NEVER BE ALLOWED TO GROW ON A BIORETENTION POND BERM, AS THEY MAY DESTABILIZE THE STRUCTURE AND INCREASE THE POTENTIAL FOR FAILURE. AREAS SHOWING SIGNS OF EROSION OR THIN OR DYING VEGETATION SHOULD BE REPAIRED IMMEDIATELY BY WHATEVER MEANS NECESSARY, WITH THE EXCEPTION OF FERTILIZER. RODENT BORROWS SHOULD BE REPAIRED IMMEDIATELY AND THE ANIMALS SHOULD BE TRAPPED AND RELOCATED IF THE PROBLEM PERSISTS.
13. IN THOSE AREAS WHERE THE BERMS OF THE BIORETENTION SYSTEMS MUST BE CONSTRUCTED BY THE PLACEMENT OF FILL, THE ENTIRE EMBANKMENT AREA OF THE BIORETENTION PONDS SHALL BE EXCAVATED TO PROPOSED GRADE, STRIPPED OF ALL ORGANIC MATERIALS, COMPACTED TO AT LEAST 95% AND SCARIFIED PRIOR TO THE PLACEMENT OF THE EMBANKMENT MATERIAL. IN THE EVENT THE FOUNDATION MATERIAL EXPOSED DOES NOT ALLOW THE SPECIFIED COMPACTION, AN ADDITIONAL ONE FOOT (1') OF EXCAVATION AND THE PLACEMENT OF A ONE FOOT (1') THICK, TWELVE FOOT (12') WIDE PAD OF THE MATERIAL DESCRIBED IN THE NOTE BELOW, COMPACTED TO 95% OF ASTM D-1557 MAY BE NECESSARY. PLACEMENT AND COMPACTION SHOULD OCCUR AT A MOISTURE CONTENT OF OPTIMUM PLUS OR MINUS 3%, AND NO FROZEN OR ORGANIC MATERIAL SHOULD BE PLACED WITHIN FOR ANY REASON.
14. EMBANKMENT IS TO HAVE 3:1 SIDE SLOPES (MAX.) AND IS TO BE BROUGHT TO SPECIFIED GRADES PRIOR TO THE ADDITION OF LOAM (4" MINIMUM) SO AS TO ALLOW FOR THE COMPACTION OF THE STRUCTURE OVER TIME WHILE MAINTAINING THE PROPER BERM ELEVATION.
15. 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 AND ON EVERY LIFT OF NEWLY PLACED MATERIAL.




| | |
|---|---|
| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Drawing Name: 18134.1-PLAN.dwg | |

Date: 2/26/2024
Project No.: 18134.1



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

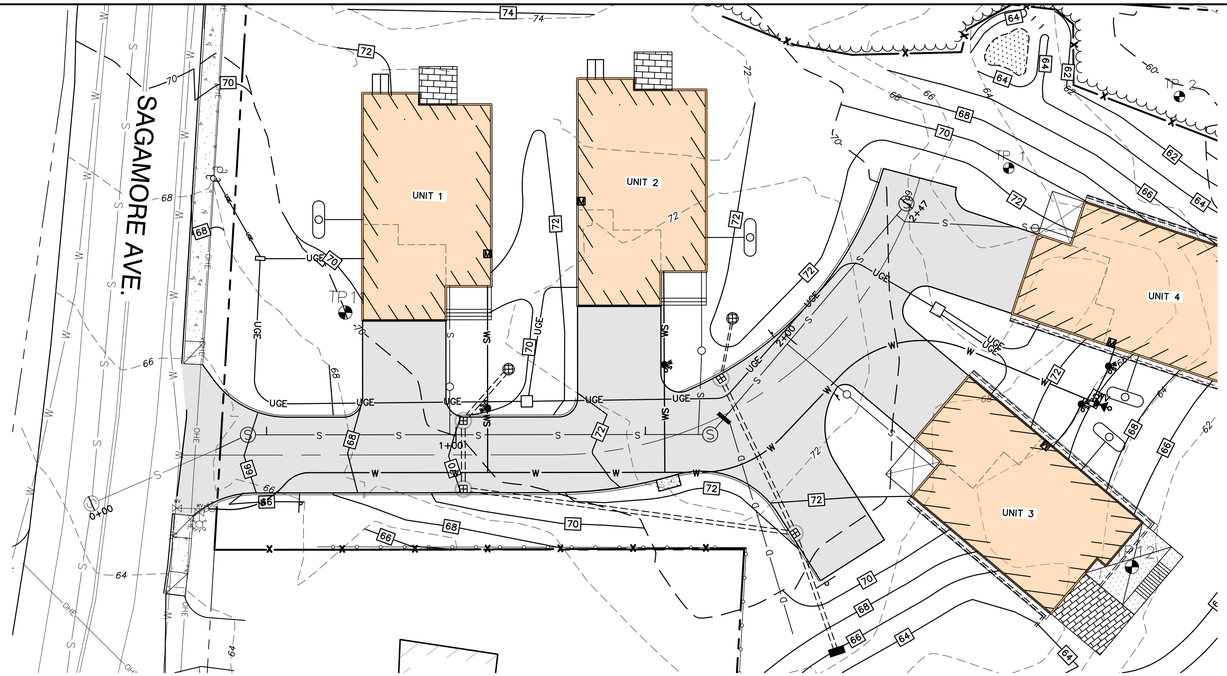
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

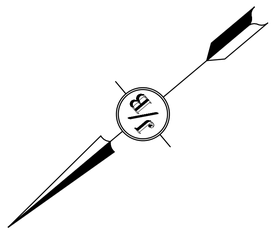
Plan Name: DRIVEWAY PLAN AND PROFILE

Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

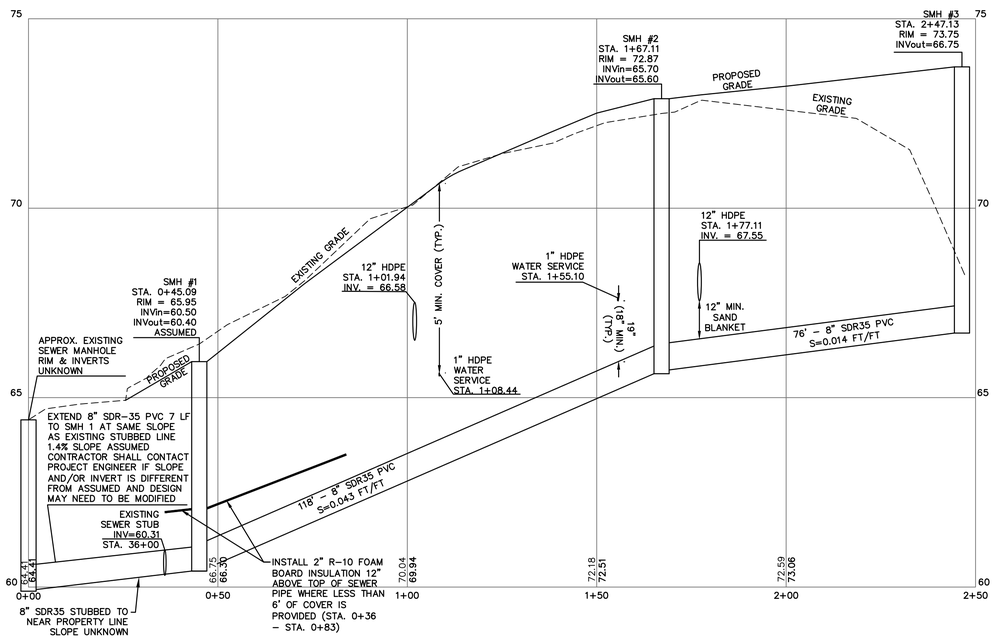
DRAWING No.
P1
SHEET 10 OF 21
JBE PROJECT NO. 18134.1

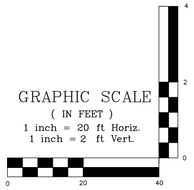


## NOTES:

1. PROPOSED GRADES SHOWN HEREON ARE APPROXIMATE. REFER TO SHEETS C3 AND P1 FOR GRADING OF SITE AND DRIVEWAY. SET RIM ELEVATIONS OF SEWER STRUCTURES FLUSH WITH PROPOSED GRADE.
2. STATIONS REFER TO CENTERLINE OF SEWER STRUCTURE OR CROSSING DRAINAGE/WATER PIPE.
3. CONTRACTOR TO CONFIRM ACTUAL EXISTING INVERT OF STUB IN THE FIELD AND NOTIFY ENGINEER IF IT IS MORE THAN 0.1' DIFFERENT FROM THE STATED INVERT.




| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE
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11/25/2024

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| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

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85 Portsmouth Ave.
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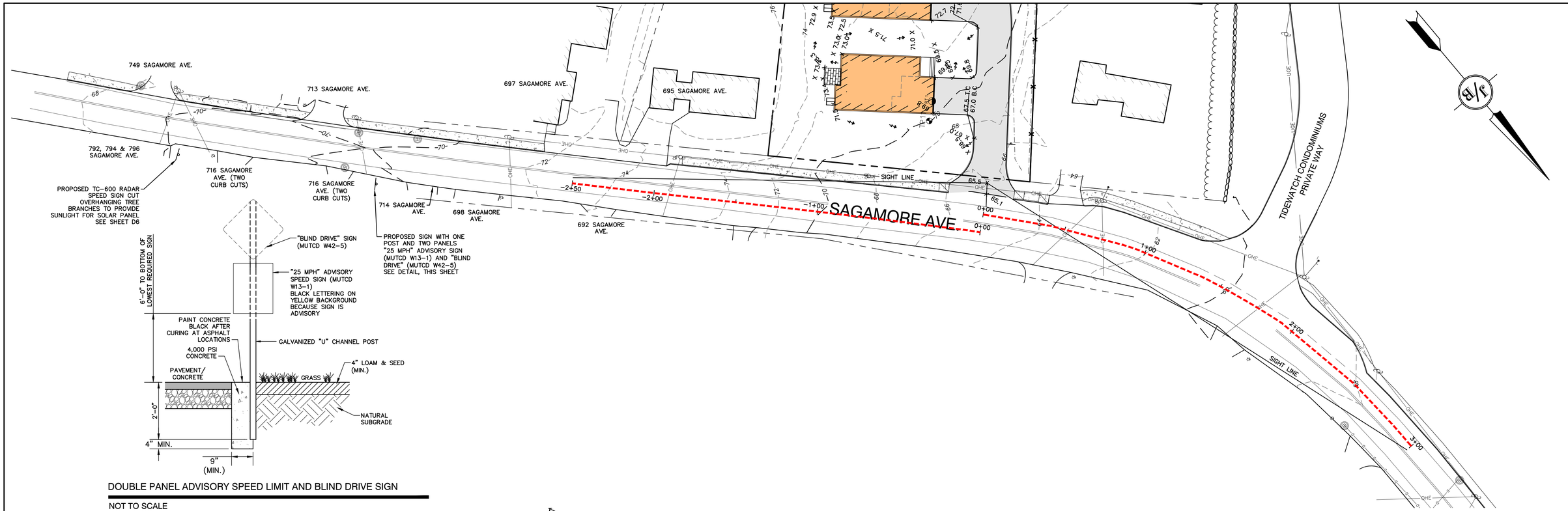
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

| | |
|---|---|
| Plan Name: | SEWER PLAN AND PROFILE |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.

**P2**




DOUBLE PANEL ADVISORY SPEED LIMIT AND BLIND DRIVE SIGN

NOT TO SCALE

$$S = 1.47V(2.5) + \frac{V^2}{30\left[0.347826 \pm \left(\frac{G}{100}\right)\right]}$$

**Where:**

$S$ = Stopping sight distance on grade (ft)

$V$ = Design speed (mph)

$G$ = Grade (%)

## Stopping Sight Distance on Grades

***Exhibit 1260-3***

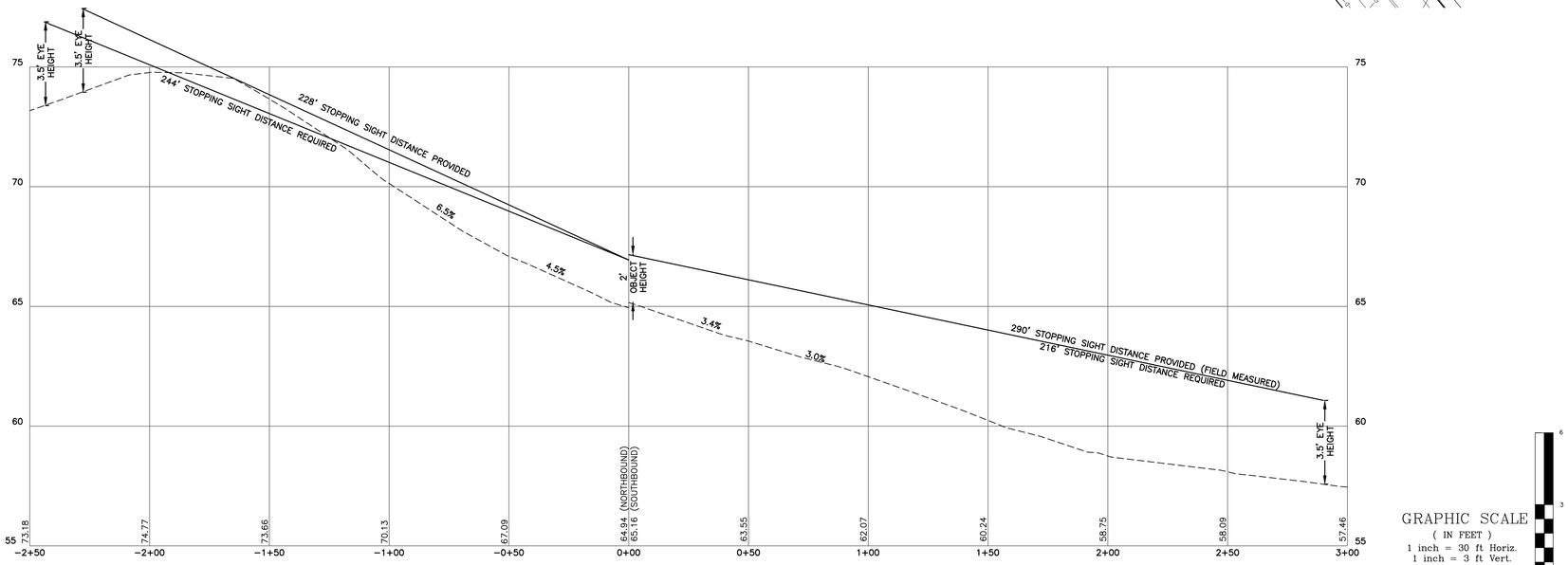
PER AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS:

NORTHBOUND APPROACH
DESIGN SPEED: 33 MPH
AVERAGE ROAD GRADE OVER FIRST 100 FEET: -5.2% (5.2' DROP OVER 100 FEET)
REQUIRED SIGHT DISTANCE:
1.47(33)(2.5)+((33)^2/(30*(0.347826-(5.2/100)))) = 244' SIGHT DISTANCE REQUIRED

SOUTHBOUND APPROACH
DESIGN SPEED: 33 MPH
AVERAGE ROAD GRADE OVER FIRST 100 FEET: 3.3% (3.3' GAIN OVER 100 FEET)
REQUIRED SIGHT DISTANCE:
1.47(33)(2.5)+((33)^2/(30*(0.347826+(3.3/100)))) = 216' SIGHT DISTANCE REQUIRED

PORTSMOUTH SITE PLAN REVIEW REGULATIONS SECTION 3.3.2.1

ACCESSWAYS AND DRIVEWAYS SHALL, WHERE PRACTICAL, HAVE AN ALL-SEASON SAFE SIGHT DISTANCE (ACCORDING TO AASHTO STANDARDS) IN BOTH DIRECTIONS ALONG THE PUBLIC STREET. WHERE ONLY A LESSER SIGHT DISTANCE IS OBTAINABLE, NO MORE THAN ONE ACCESSWAY PER SINGLE PARCEL SHALL BE ALLOWED.




STOPPING SIGHT DISTANCE PLAN & PROFILE

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
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LICENSED
11/25/2024

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*Civil Engineering Services*
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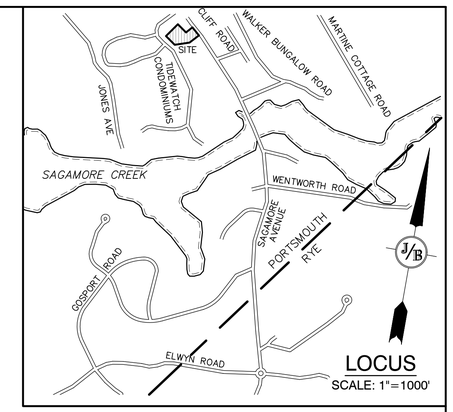
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

| | |
|---|---|
| Plan Name: | HIGHWAY ACCESS PLAN |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.

**H1**

SHEET 12 OF 21
JBE PROJECT NO. 18134.1

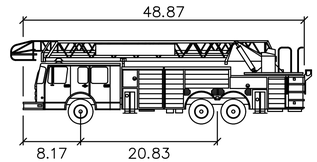



LOCUS
SCALE: 1"=1000'

SAGAMORE AVE.

TIDEWATCH CONDOMINIUMS (PRIVATE ROAD)

Portsmouth Fire Truck
Width 8.50
Track 6.91
Lock to Lock Time 6.0
Steering Angle 38.7




Portsmouth Fire Truck

| | feet |
|---|---|
| Width | : 8.50 |
| Track | : 6.91 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 38.7 |

GRAPHIC SCALE
20 0 10 20 40 80
( IN FEET )
1 inch = 20 ft.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

TOTAL LOT AREA
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED PROFESSIONAL ENGINEER
11/25/2024

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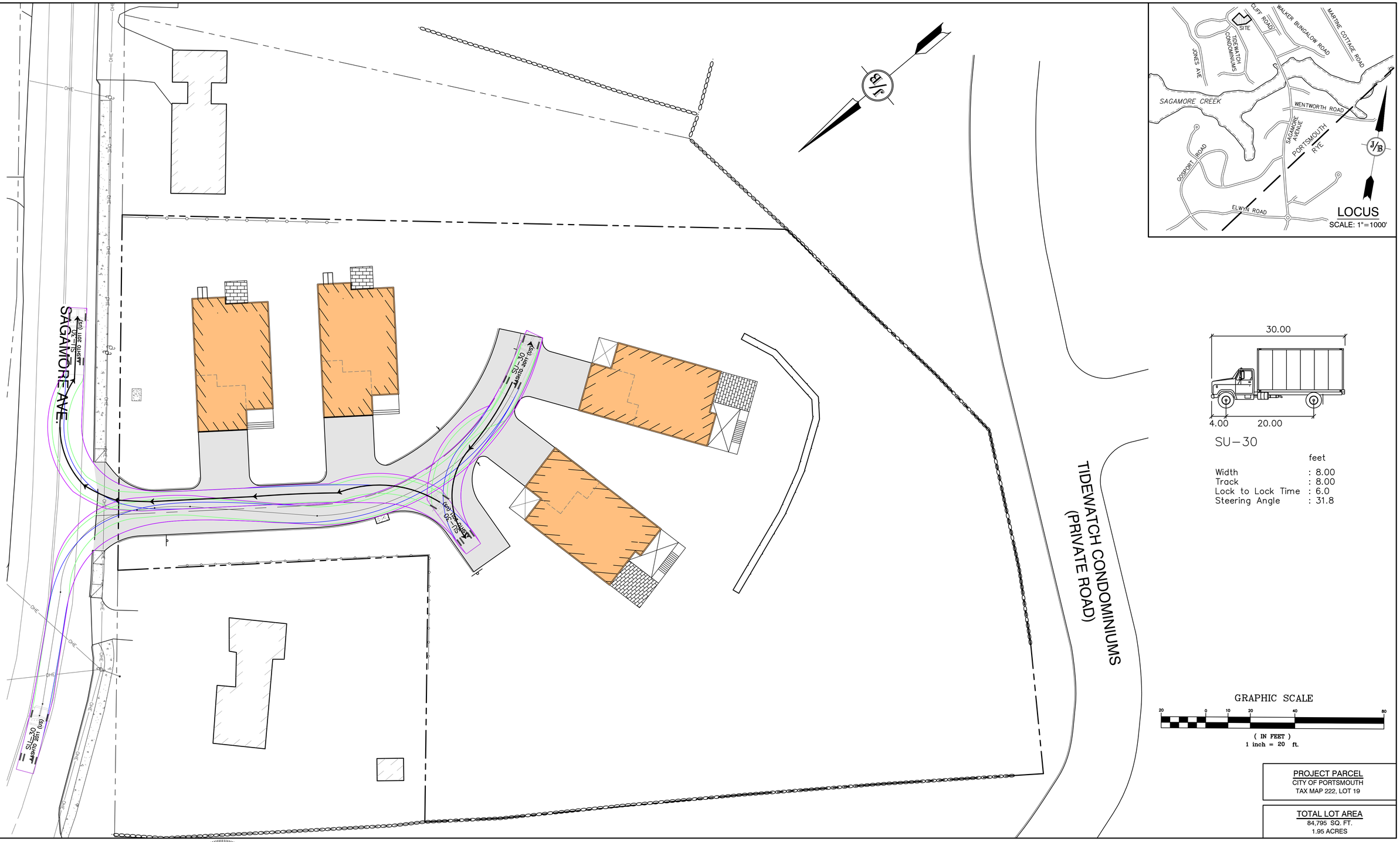
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

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: TRUCK TURNING PLAN
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
T1
SHEET 13 OF 21
JBE PROJECT NO. 18134.1










SU-30

| | feet |
|---|---|
| Width | : 8.00 |
| Track | : 8.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 31.8 |

GRAPHIC SCALE

20 0 10 20 40 80

( IN FEET )
1 inch = 20 ft.

**PROJECT PARCEL**
CITY OF PORTSMOUTH
TAX MAP 222, LOT 19

**TOTAL LOT AREA**
84,795 SQ. FT.
1.95 ACRES

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No.18152
LICENSED
PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
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*Civil Engineering Services*
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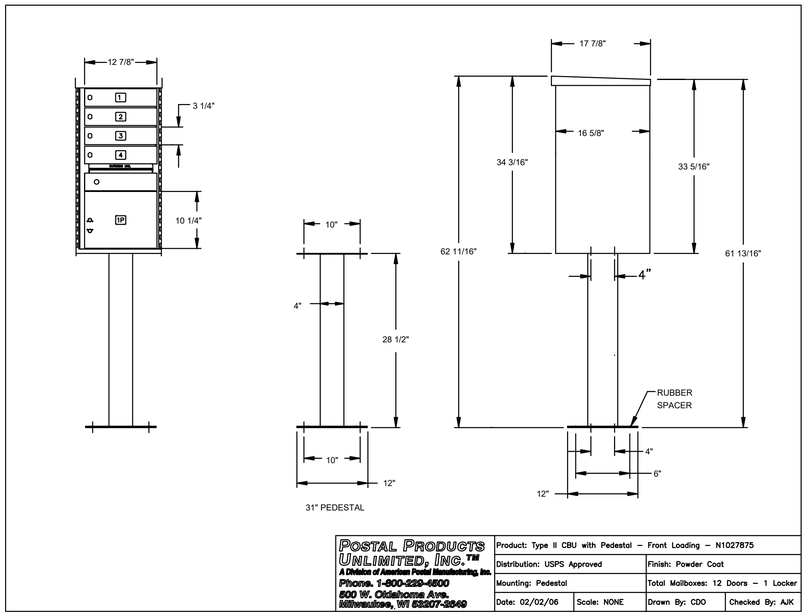
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

| | |
|---|---|
| Plan Name: | TRUCK TURNING PLAN |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

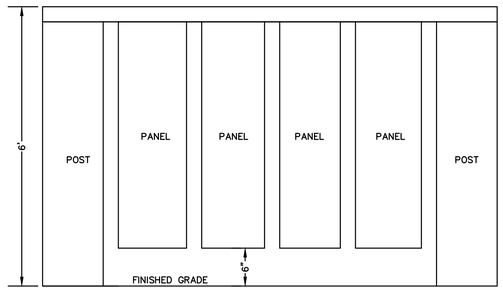
DRAWING No.
**T2**
SHEET 14 OF 21
JBE PROJECT NO. 18134.1




| POSTAL PRODUCTS UNLIMITED, INC.™ A Division of American Postal Manufacturing, Inc. Phone: 1-800-229-4500 600 W. Oklahoma Ave. Milwaukee, WI 53207-3249 | 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

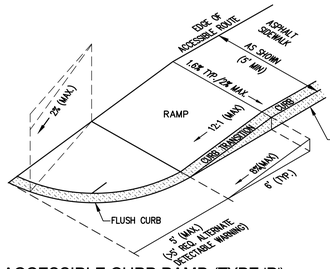
NOT TO SCALE




1. THE INTENT OF THIS DETAIL IS TO SHOW THE REQUIRED CLEARANCE FROM FINISHED GRADE TO THE BOTTOM OF THE WOODEN PANELS ON THE PROPOSED FENCE. THIS DETAIL SHALL NOT CONSTRUE A REQUIREMENT WITH REGARDS TO POST OR PANEL PLACEMENT ALONG THE LENGTH OF THE FENCE.

## 6' HIGH WOODEN STOCKADE FENCE DETAIL

NOT TO SCALE

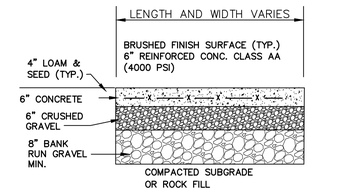



NHDOT ITEM 609.01
VERTICAL GRANITE CURB

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%.
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.

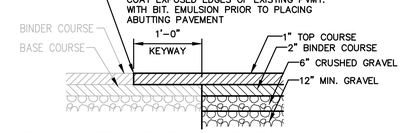
## ACCESSIBLE CURB RAMP (TYPE 'B')

NOT TO SCALE



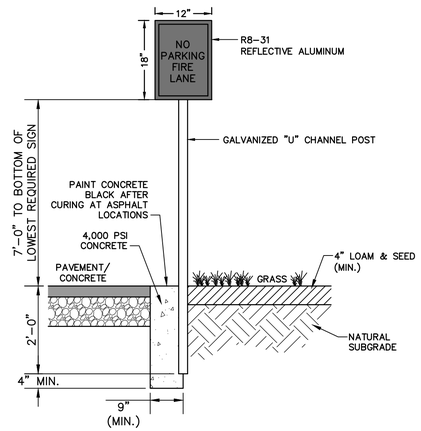

## CONCRETE PAD DETAIL

NOT TO SCALE



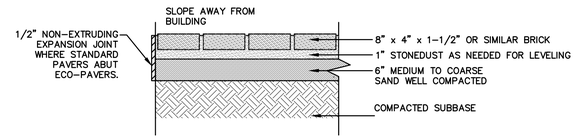

## KEYWAY DETAIL FOR CONNECTION TO EXISTING PAVEMENT

NOT TO SCALE



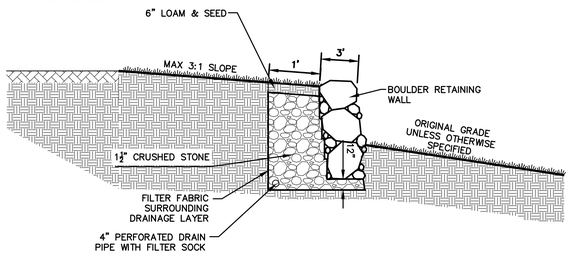

## "NO PARKING" SIGN (MUTCD R8-31)

NOT TO SCALE




## STANDARD BRICK PAVER

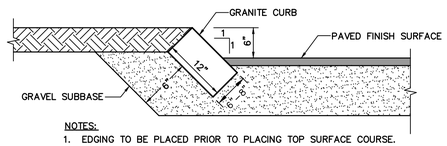
NOT TO SCALE




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.

## BOULDER RETAINING WALL CROSS SECTION

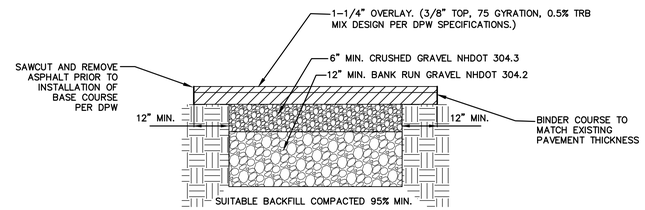
NOT TO SCALE




NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. SALVAGE GRANITE CURBS ON-SITE AND RESET TO THE EXTENT POSSIBLE.

## SLOPED GRANITE CURB

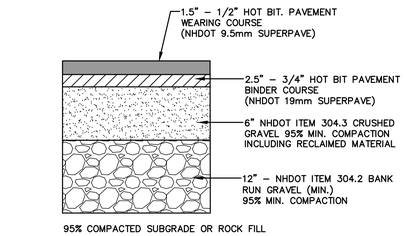
NOT TO SCALE




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




## TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE

| Design: DJM | Draft: KDR | Date: 2/26/2024 |
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| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



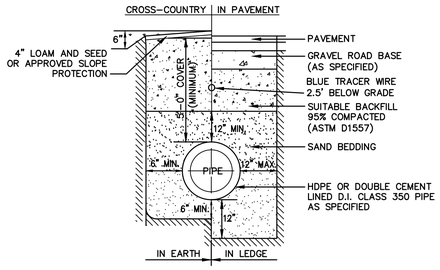
STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | 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
E-MAIL: JBE@JONESANDBEACH.COM

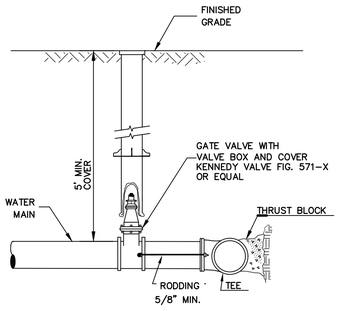
| | |
|---|---|
| Plan Name: | DETAIL SHEET |
| Project: | LUSTER CLUSTER 635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC 3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.
D1
SHEET 15 OF 21
JBE PROJECT NO. 18134.1



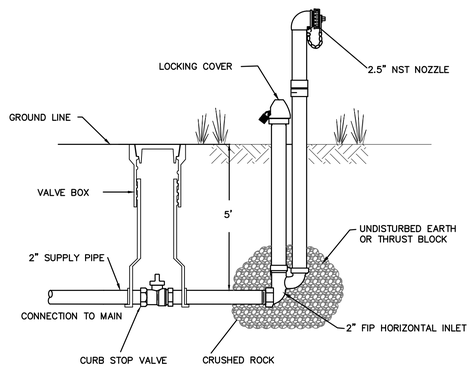

## WATER SYSTEM TRENCH

NOT TO SCALE




## BURIED GATE VALVE DETAIL

NOT TO SCALE

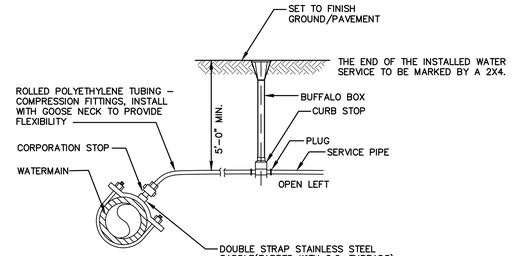



POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A 5' BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP HORIZONTAL INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN LEFT. BRONZE OPERATING MECHANISM AND ALUMINUM PLUNGER. DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST. HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE AS MANUFACTURED BY KUPFERLE FOUNDRY CO., ST. LOUIS, MO, OR APPROVED EQUAL.

| INLET PRESSURE (PSI) | FLOW RATE (GPM) |
|---|---|
| 75 | 675 |
| 100 | 742 |
| 125 | 800 |
| 150 | 856 |

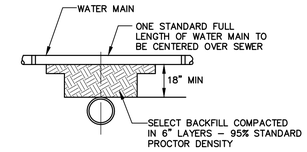
## BLOW-OFF HYDRANT DETAIL

NOT TO SCALE




## WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE

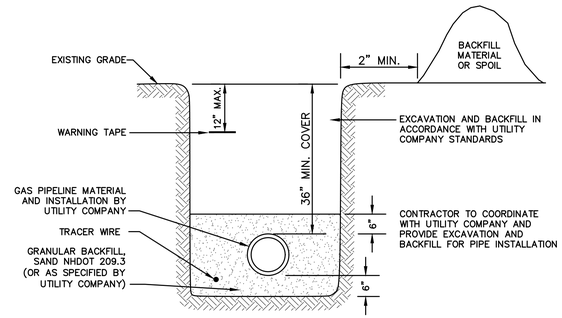



SEPARATION NOTES:

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




## GAS TRENCH

NOT TO SCALE

SUBMITTALS
SHOP DRAWINGS, INCLUDING SPECIFICATIONS, CATALOG CUTS, DATA SHEETS, DRAWINGS AND OTHER DESCRIPTIVE MATERIAL SHALL BE SUPPLIED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. A CERTIFICATE OF COMPLIANCE FROM THE MANUFACTURER INDICATING CONFORMANCE WITH THE SPECIFIED REQUIREMENTS FOR DUCTILE IRON PIPE SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

DELIVERY, HANDLING, AND STORAGE
ALL PIPE AND APPURTENANCES ARE SUBJECT TO INSPECTION BY THE ENGINEER AT THE POINT OF DELIVERY. MATERIAL FOUND TO BE DEFECTIVE DUE TO MANUFACTURE OR DAMAGE IN SHIPMENT SHALL BE REJECTED OR RECORDED ON THE BILL OF LADING AND REMOVED FROM THE JOB SITE. ALL MATERIALS, IF STORED, SHALL BE KEPT SAFE FROM ANY POTENTIAL DAMAGE.

SAND BEDDING
SAND BLANKET SHALL CONSIST OF CLEAN SAND THAT IS FREE FROM ORGANIC MATTER AND GRADED SO THAT 90-100% PASSES A 1/2" SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE.

BACKFILL
SUITABLE MATERIAL FOR BACKFILL IN ROADS, ROAD SHOULDERS, AND WALKWAYS SHALL BE THE NATURAL MATERIAL REMOVED DURING THE COURSE OF TRENCH EXCAVATION, BUT SHALL EXCLUDE ANY DEBRIS, PAVEMENT, ORGANIC MATTER, LOAM, WET OR SOFT MUCK, PEAT, OR CLAY. BACKFILL MATERIAL SHALL BE PLACED IN 6" LIFTS AND SHALL BE COMPACTED TO 95% OF ASTM-1557 AT OPTIMUM MOISTURE CONTENT.

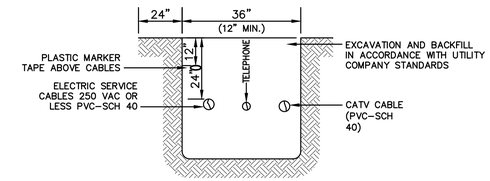
DUCTILE IRON PIPE-CLASS 52
JOINTS SHALL BE OF "PUSH-ON" TYPE UNLESS OTHERWISE SPECIFIED. PIPE SHALL HAVE A DOUBLE CEMENT LINING WITH SEAL COATING INSIDE AND BITUMINOUS COATING OUTSIDE THAT MEETS OR EXCEEDS THE REQUIREMENTS OF AWWA/ANSI C104/A21.4. GASKETS FOR DUCTILE IRON PIPE SHALL BE OIL-RESISTANT RUBBER WHICH MEETS OR EXCEEDS THE REQUIREMENTS OF AWWA/ANSI C111/A21.11. PIPE SHALL BE FURNISHED COMPLETE WITH ALL GASKETS AND LUBRICANT.

WATERMAIN TESTING
ALL WATER MAINS WILL BE CLEANED AND HYDROSTATICALLY TESTED AT A MINIMUM PRESSURE OF 150psi AT THE HIGHEST POINT ALONG THE TEST SECTION. THE HYDROSTATIC TEST SHALL BE CONDUCTED FOR A MINIMUM OF TWO HOURS DURING WHICH TEST PRESSURE SHALL NOT VARY MORE THAN ±5psi. LEAKAGE CALCULATIONS WILL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN WATER WORKS ASSOCIATION. DISINFECTION WILL BE REQUIRED PER THE SPECIFICATIONS OF ANSI/AWWA C651. WITHIN 24 HOURS OF DISINFECTION, ALL NEWLY INSTALLED MAINS SHALL BE FLUSHED.

## WATER LINE TECHNICAL SPECIFICATIONS

NOTES

1. CONTRACTOR TO INSTALL 2" RIGID INSULATION BETWEEN THE PROPOSED WATERMAIN(S) AND DRAINAGE LINES IN ALL AREAS WHERE SEPARATION IS TO BE IN 4' OR LESS.
2. ALL PIPE, FITTINGS, HYDRANTS, AND WORKMANSHIP SHALL BE INSPECTED AND APPROVED BY THE MUNICIPAL WATER/SEWER DEPARTMENT.
4. ALL CONSTRUCTION AND TESTING SHALL COMPLY WITH THE REGULATIONS OF THE MUNICIPAL, THE STATE, AND THE AMERICAN WATER WORKS ASSOCIATION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UNFORESEEN UTILITY FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION. ANY APPROPRIATE REMEDIAL ACTION MUST BE AGREED TO BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS BEFORE DIGGING.
6. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 2000 PSI AFTER 28 DAYS.
7. CONTRACTOR TO INSTALL CORPORATION FITTINGS AT EACH CONNECTION TO THE WATER MAIN FOR TESTING PURPOSES. CORPORATIONS SHALL BE REMOVED AND PLUGGED AT THE COMPLETION OF TESTING.
8. CONTRACTOR TO OBSERVE ALL APPROPRIATE BEST MANAGEMENT PRACTICES.
9. ALL GATE VALVES TO BE MUELLER RESILIENT WEDGE (OPEN RIGHT).
10. ALL TEES TO BE ANCHOR TEES.
11. THE TERMINAL 36' OF ALL "DEAD END" WATERMAINS AND ALL BENDS AND TEES ARE TO BE FITTED WITH MECHANICAL RESTRAINING JOINTS, "MEGALUG" OR APPROVED EQUAL AND THRUST BLOCKS.
12. INSTALL THRUST BLOCKS AT ALL TEES, BENDS, AND FITTINGS.




NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

## UTILITY TRENCH

NOT TO SCALE

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE - DANIEL JAMES MEDITZ No.18152 - LICENSED PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
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| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

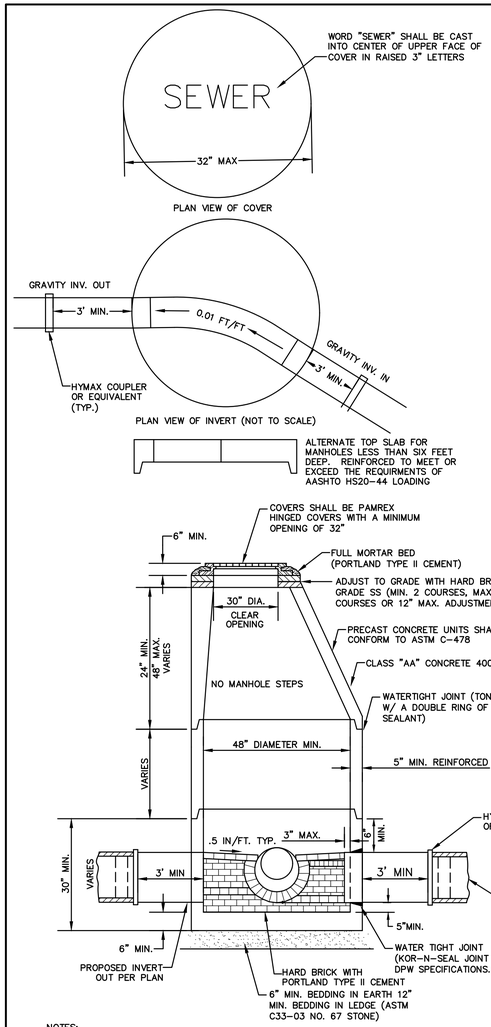
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: DETAIL SHEET

Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
D2
SHEET 16 OF 21
JBE PROJECT NO. 18134.1

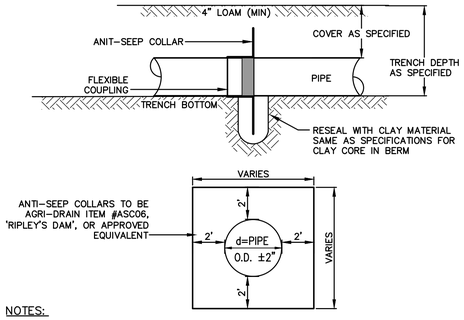



NOTES:

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 'STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES';
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 'STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES';
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).

## PORTSMOUTH SEWER MANHOLE

NOT TO SCALE

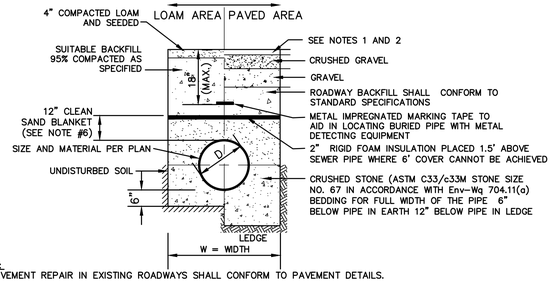



NOTES:

1. CONTRACTOR SHALL INSTALL COLLAR(S) PER MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR SHALL ENSURE A WATERTIGHT SEAL BETWEEN THE COLLAR(S) AND PIPE(S).
3. ANTI-SEEP COLLARS SHALL BE PLACED ±15' AND ±25' DOWNSTREAM OF THE CULVERT INLETS, UNLESS OTHERWISE SPECIFIED. WHEN A CLAY CORE IS SPECIFIED, A COLLAR SHALL BE INSTALLED ON BOTH SIDES OF THE CORE.

## ANTI-SEEP COLLAR

NOT TO SCALE

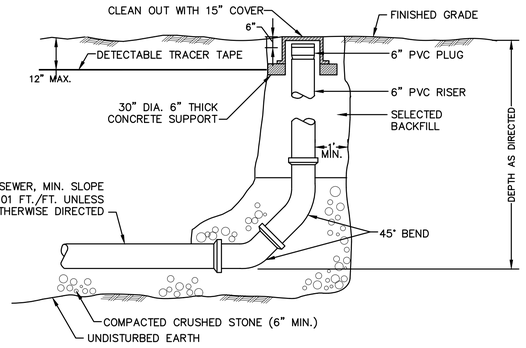



NOTES:

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).
8. PVC PIPE SHALL CONFORM WITH ASTM D3034 AND ASTM D2412.

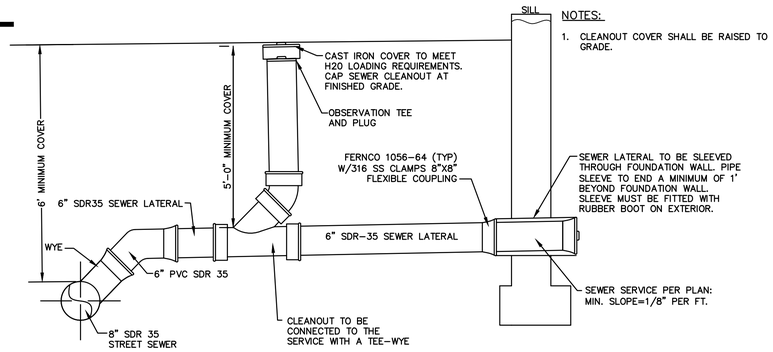
## GRAVITY SEWER TRENCH

NOT TO SCALE



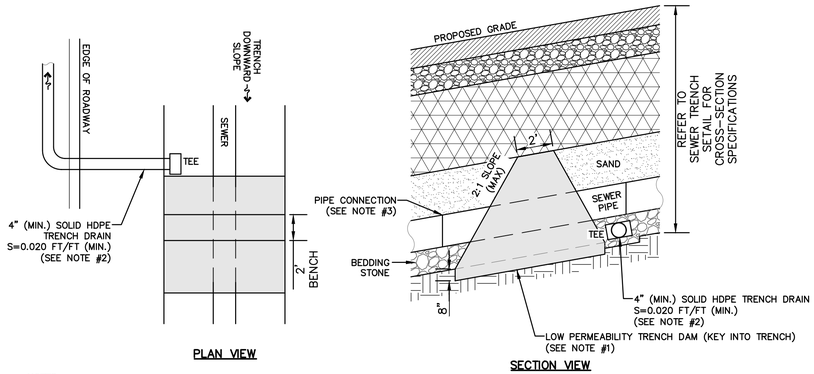

## SEWER CLEAN OUT

NOT TO SCALE




## HOUSE SEWER SERVICE

NOT TO SCALE




NOTES:

1. LOW PERMEABILITY SOIL USED FOR TRENCH DAM SHALL MEET THE FOLLOWING SPECIFICATION: CLAYEY SOIL – MIN. 15% PASSING THE #200 SEIVE AND A MIN. PERMEABILITY OF $1x10^{-5}$ CM/SEC
2. DRAINS SHALL DAYLIGHT TO NEAREST AT-GRADE POINT, TIE INTO A DRAINAGE STRUCTURE, OR INTO A NETWORK OR TRENCH DRAINS.
3. CONTRACTOR SHALL NOT LOCATE A PIPE CONNECTION WITHIN THE LIMITS OF THE TRENCH DAM. A 2' SEPARATION BETWEEN LIMIT OF TRENCH DAM AND CONNECTION IS RECOMMENDED.
4. CONTRACTOR SHALL INSTALL DAMS & DRAINS AT A MAXIMUM. 75' SPACING. REFER TO PROJECT PLANS.

## SEWER TRENCH DAM & DRAIN

NOT TO SCALE

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| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Drawing Name: 18134.1-PLAN.dwg | |

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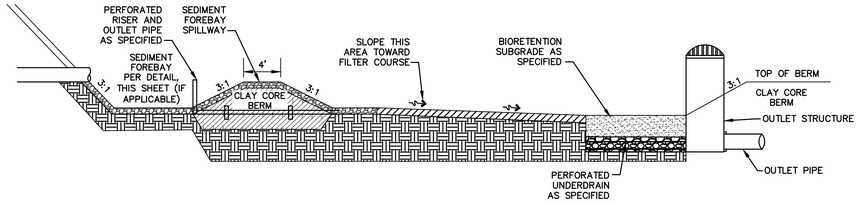
DRAWING No.
D3
SHEET 17 OF21
JBE PROJECT NO. 18134.1

| BIORETENTION SYSTEM ELEVATIONS | |
|---|---|
| ELEVATION | SYSTEM #1 |
| A | 63.00 |
| B | 60.60 |
| C | 59.10 |
| D | 58.85 |
| E | 58.10 |
| BOTTOM SURFACE AREA (S.F.) | 117 |




1. REFER TO SEDIMENT FOREBAY SPILLWAY, BIORETENTION SYSTEM WITH UNDERDRAIN, PERFORATED SEDIMENT FOREBAY STANDPIPE, AND NYLOPLAST DRAIN BASIN DETAILS ON THIS SHEET. SPECIFICATIONS ON THOSE DETAILS SHALL TAKE PRECEDENCE OVER WHAT IS VISUALLY SHOWN ON THIS CROSS SECTION.

## TYPICAL BIORETENTION OVERVIEW CROSS SECTION

NOT TO SCALE

**SAND SPECIFICATION**

| SIEVE SIZE | % BY WEIGHT |
|---|---|
| ⅜" | 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**

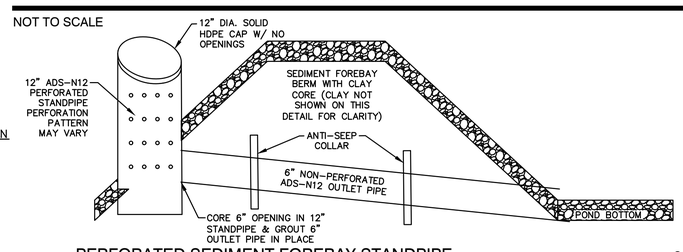
MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

**PEA GRAVEL SPECIFICATION**

| SIEVE SIZE | % BY WEIGHT |
|---|---|
| ⅜" | 100 |
| ¼" | 85–100 |
| #4 | 10–30 |
| #8 | 0–10 |
| #16 | 0–15 |

**COARSE GRAVEL SPECIFICATION**

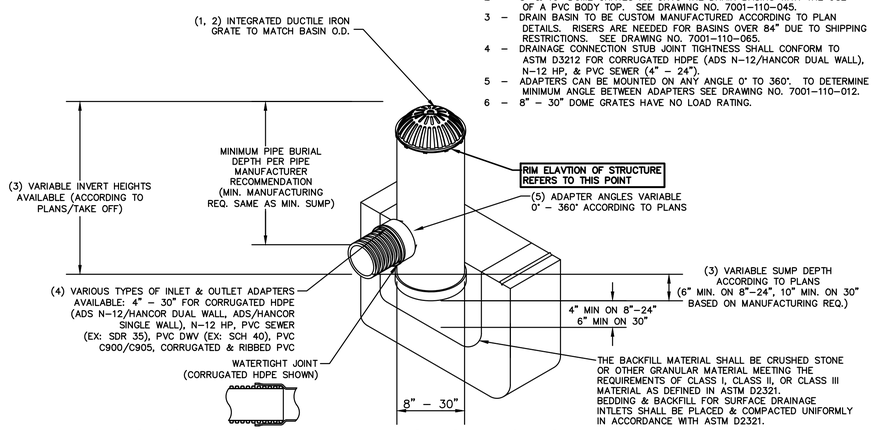
| SIEVE SIZE | % BY WEIGHT |
|---|---|
| 1" | 90–100 |
| ¾" | 75–100 |
| #4 | 50–100 |
| #20 | 15–80 |
| #50 | 0–15 |
| #200 | 0–5 |




## PERFORATED SEDIMENT FOREBAY STANDPIPE

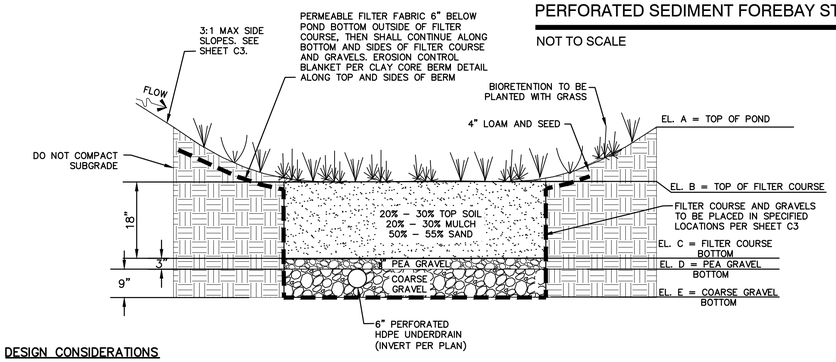
NOT TO SCALE

NOTES:
1 – 8" – 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70–50–05.
2 – 8" & 10" DOME GRATES FIT ONTO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001–110–045.
3 – DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001–110–065.
4 – DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N–12/HANCOR DUAL WALL), N–12 HP, & PVC SEWER (4" – 24").
5 – ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001–110–012.
6 – 8" – 30" DOME GRATES HAVE NO LOAD RATING.




## 24" DIA. NYLOPLAST DRAIN BASIN (YARD DRAIN & POND OUTLET STRUCTURE SPECIFICATION)

NOT TO SCALE




### DESIGN CONSIDERATIONS

1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
4. REMOVE LEDGE TO AT LEAST TWO FEET BELOW BOTTOM OF COARSE GRAVEL LAYER IF ENCOUNTERED.
5. IN ADDITION TO DESIGN CRITERIA LISTED HERE, REFER TO GUIDELINES LISTED IN UNIVERSITY OF NEW HAMPSHIRE (UNH) STORMWATER CENTER BIORETENTION SOIL SPECIFICATION.
6. THE EXISTING NATIVE SUBGRADE MATERIAL BENEATH THE FILTER COURSE AND GRAVEL LAYERS SHALL NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO STONE PLACEMENT. IF SOIL MEDIA OR SUBGRADE IS OVER COMPACTED, DISTURBED, OR CONTAMINATED BY FOREIGN OR DELETERIOUS MATERIALS OR LIQUIDS, REMOVE THE SOIL MEDIA AND CONTAMINATION; RESTORE THE SUBGRADE AS DIRECTED BY ENGINEER AND REPLACE CONTAMINATED SOIL MEDIA WITH NEW SOIL MEDIA.

### MAINTENANCE REQUIREMENTS:

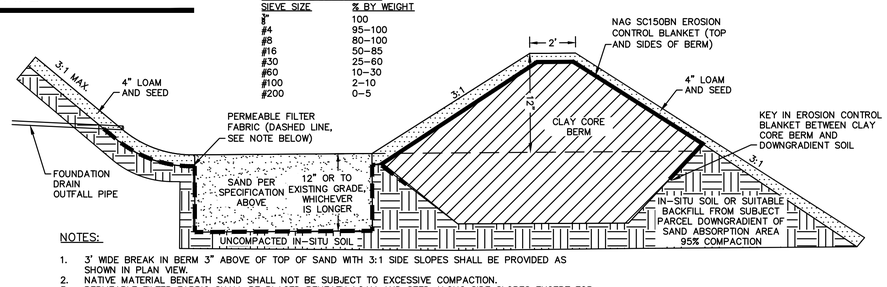
1. SYSTEMS SHALL BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHALL BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. TRASH AND DEBRIS SHALL BE REMOVED AT EACH INSPECTION.
4. AT LEAST ONCE ANNUALLY, SYSTEM SHALL BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHALL ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION, INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
5. VEGETATION SHALL BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.
6. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.

## BIORETENTION SYSTEM WITH UNDERDRAIN

NOT TO SCALE

**SAND SPECIFICATION**

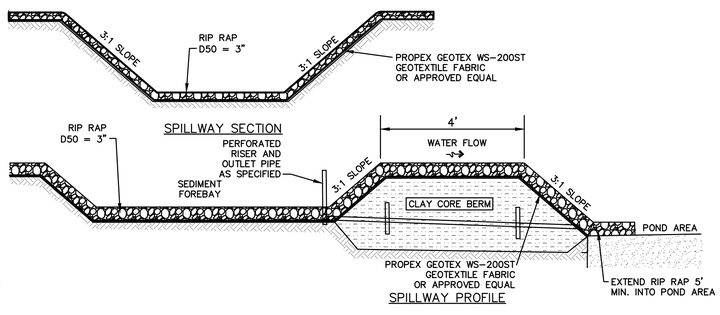
| SIEVE SIZE | % BY WEIGHT |
|---|---|
| ⅜" | 100 |
| #4 | 95–100 |
| #8 | 80–100 |
| #16 | 50–85 |
| #30 | 25–60 |
| #60 | 10–30 |
| #100 | 2–10 |
| #200 | 0–5 |




NOTES:
1. 3' WIDE BREAK IN BERM 3" ABOVE OF TOP OF SAND WITH 3:1 SIDE SLOPES SHALL BE PROVIDED AS SHOWN IN PLAN VIEW.
2. NATIVE MATERIAL BENEATH SAND SHALL NOT BE SUBJECT TO EXCESSIVE COMPACTION.
3. PERMEABLE FILTER FABRIC SHALL BE PLACED BENEATH LOAM AND SEED ALONG SIDE SLOPES EXCEPT FOR BERM, AND ALONG BOTTOM AND SIDES OF SAND IN ABSORPTION AREA. NAG SC150BN EROSION CONTROL BLANKET ALONG CLAY CORE BERM.
4. PERFORM A TEST PIT WITHIN SAND ABSORPTION AREA FOR UNITS 1 AND 2 FOUNDATION DRAINS TO VERIFY DEPTH TO LEDGE AND SEASONAL HIGH WATER TABLE PRIOR TO CONSTRUCTION. REMOVE LEDGE TO AT LEAST 1' BELOW BOTTOM OF PRACTICE IF ENCOUNTERED. SEASONAL HIGH WATER TABLE (SHWT) IS NOT ANTICIPATED AT THIS DEPTH, BUT CONTACT ENGINEER OF RECORD IF SHWT IS ENCOUNTERED LESS THAN 12" BELOW THE BOTTOM OF SAND.

## SAND ABSORPTION AREA

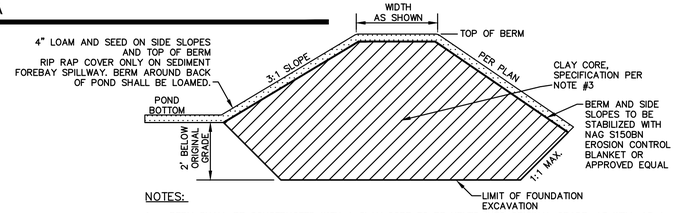
NOT TO SCALE




GRADE OF SEDIMENT FOREBAY SPILLWAY IS EQUAL TO GRADE OF BERM OF POND IN THIS CASE.

## SEDIMENT FOREBAY SPILLWAY

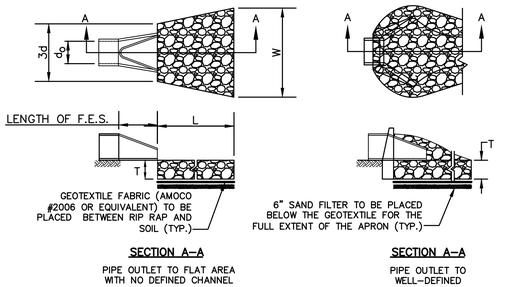
NOT TO SCALE




NOTES:
1. BERM SHALL BE CONSTRUCTED WITH A CLAY CORE TO BE KEYED INTO ORIGINAL GRADE, AS WELL AS A FINE GEOTEXTILE, TO AVOID WATER SEEPAGE AND SOIL PIPING THROUGH THE EARTHEN DIVIDER.
2. THE ENTIRE EMBANKMENT AREA OF THE POND AREAS SHALL BE EXCAVATED TO 2' BELOW ORIGINAL GRADE, STRIPPED OF ALL ORGANIC MATERIALS, COMPACTED TO AT LEAST 92% OF ASTM D–1557, AND SCARIFIED PRIOR TO THE PLACEMENT OF THE EMBANKMENT MATERIAL. PLACEMENT AND COMPACTION SHOULD OCCUR AT A MOISTURE CONTENT OF OPTIMUM PLUS OR MINUS 3%, AND NO FROZEN OR ORGANIC MATERIAL SHOULD BE PLACED FOR ANY REASON.
3. CLAY CORE MATERIAL SHALL BE CLEAN SILTY–CLAY BORROW FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER THREE INCHES (3") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D–1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: 6" PASSING 100%, #4 SIEVE 95–100%, #40 SIEVE 60–90%, #100 SIEVE 40–60%, #200 SIEVE 25–45% (OF THE FRACTION PASSING THE #4 SIEVE). THE CLAY COMPONENT SHALL HAVE A PLASTICITY INDEX OF AT LEAST 8 AND A HYDRAULIC CONDUCTIVITY OF 10 TO THE –6 CM/SEC.
4. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.
5. REMOVE LEDGE TO AT LEAST 2' OUTSIDE AND EBLOW LIMITS OF CLAY CORE.

## CLAY CORE BERM

NOT TO SCALE




**SECTION A–A**

PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

**SECTION A–A**

PIPE OUTLET TO WELL–DEFINED CHANNEL

| TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES | | |
|---|---|---|
| THICKNESS OF RIP RAP = 0.75 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

| Design: DJM | Draft: KDR | Date: 2/26/2024 |
|---|---|---|
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No.18152 – LICENSED PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
|---|---|---|---|
| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
| 4 | 10/22/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 3 | 9/16/24 | REVISED PER ALTUS AND TAC COMMENTS | DJM |
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

Designed and Produced in NH
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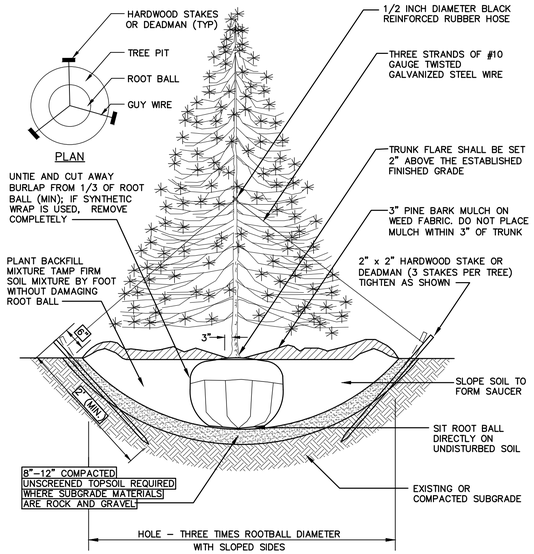
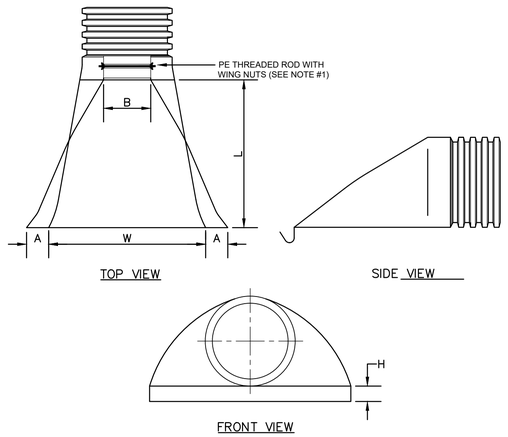
| | |
|---|---|
| Plan Name: | DETAIL SHEET |
| Project: | LUSTER CLUSTER<br>635 SAGAMORE AVE., PORTSMOUTH, NH |
| Owner of Record: | 635 SAGAMORE DEVELOPMENT LLC<br>3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158 |

DRAWING No.
D4
SHEET 18 OF 21
JBE PROJECT NO. 18134.1




## EVERGREEN PLANTING

NOT TO SCALE



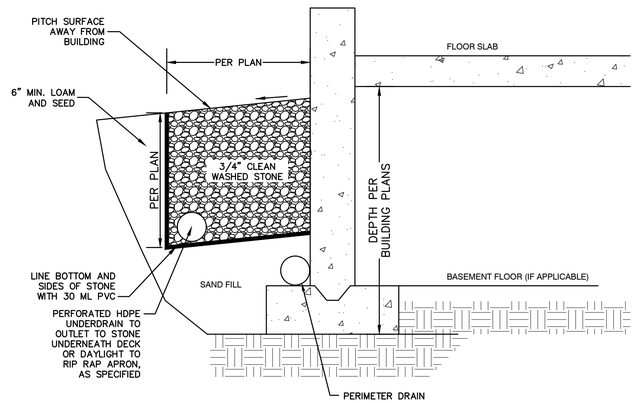

| PART NO. | PIPE SIZE | A | B (MAX) | H | L | W |
|---|---|---|---|---|---|---|
| 1210-NP | 12" | 6.5" | 10" | 6.5" | 25" | 29" |
| 1510-NP | 15" | 6.5" | 10" | 6.5" | 25" | 29" |
| 1810-NP | 18" | 7.5" | 15" | 6.5" | 32" | 35" |
| 2410-NP | 24" | 7.5" | 18" | 6.5" | 36" | 45" |
| 3010-NP | 30" | 10.5" | N/A | 7.0" | 53" | 68" |
| 3610-NP | 36" | 10.5" | N/A | 7.0" | 53" | 68" |

NOTES:

1. PE THREADED ROD WITH WING NUTS PROVIDED FOR END SECTIONS 12"-24". 30" AND 36" END SECTIONS TO BE WELDED PER MANUFACTURER'S RECOMMENDATIONS.
2. ALL DIMENSIONS ARE NOMINAL.

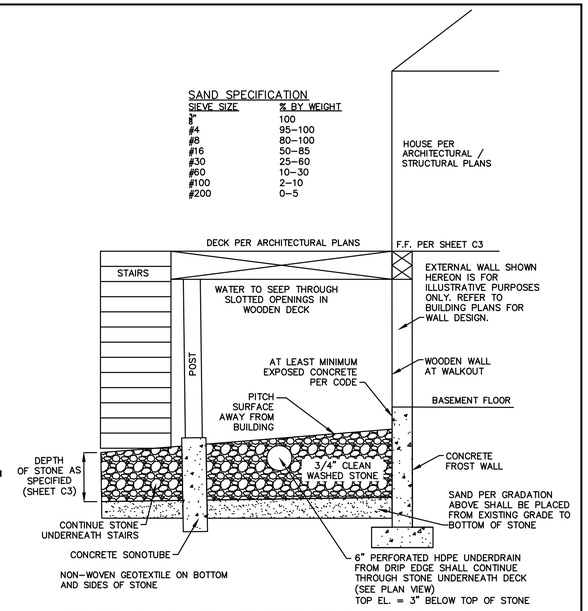
## ADS N-12 FLARED END SECTION

NOT TO SCALE




## LINED STONE DRIP EDGE DETAIL

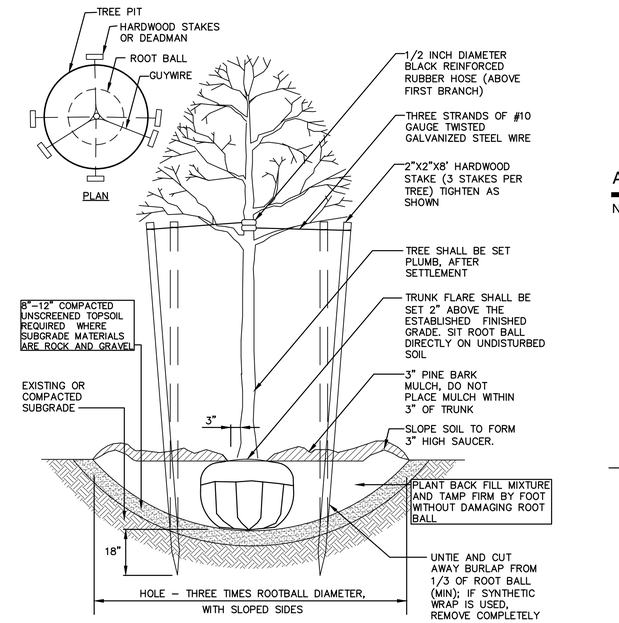
NOT TO SCALE




- INFILTRATION STONE SHALL BE PLACED UNDER DECKS AND STAIRS AS SHOWN ON SHEET C3
- UNITS 3 AND 4 SHALL HAVE A PERIMETER DRAIN ON THE FRONT AND SIDES, BUT NOT IN THE BACK WHERE THE WALKOUT AND STONE INFILTRATION BED ARE PROPOSED.
- REMOVE UNSUITABLE MATERIALS AND DEBRIS FROM SUBGRADE. DO NOT SUBJECT SUBGRADE TO EXCESSIVE COMPACTION. VERIFY THAT SUBGRADE HAS NOT BEEN EXCESSIVELY COMPACTED PRIOR TO PLACEMENT OF SAND BACKFILL AND STONE.
- REMOVE LEDGE TO A MINIMUM DEPTH OF 2' BELOW EXISTING GRADE WITHIN FOOTPRINT OF PROPOSED DECKS AND STAIRS IF ENCOUNTERED, OR DEEPER IF NECESSARY FOR BUILDING CONSTRUCTION.

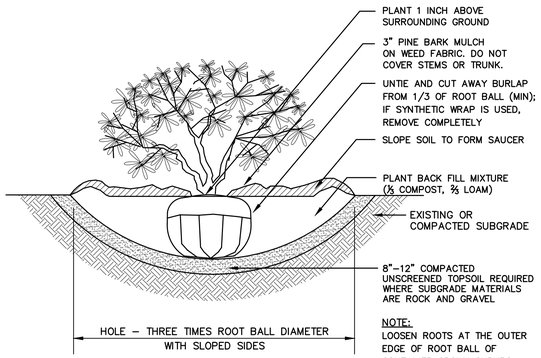
## INFILTRATION STONE UNDERNEATH DECK

NOT TO SCALE




## TREE PLANTING (FOR TREES UNDER 4" CALIPER)

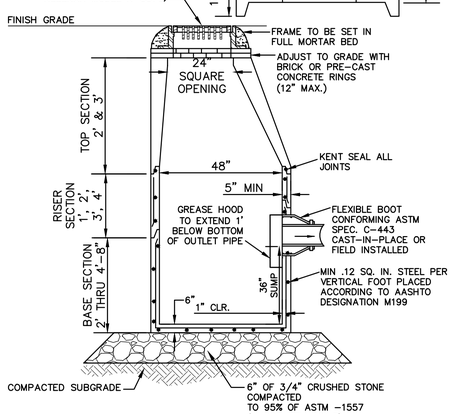
NOT TO SCALE




NOTE:
LOOSEN ROOTS AT THE OUTER EDGE OF ROOT BALL OF CONTAINER GROWN SHRUBS.

## SHRUB PLANTING

NOT TO SCALE

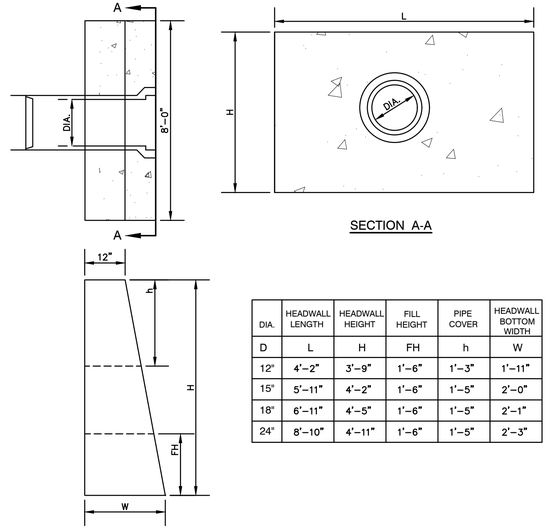



NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. STANDARD CATCH BASIN FRAME AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.
8. CATCH BASINS SHALL HAVE A 36" MINIMUM SUMP AS SHOWN.

## CATCH BASIN

NOT TO SCALE




LONGITUDINAL SECTION

| DIA. | HEADWALL LENGTH | HEADWALL HEIGHT | FILL HEIGHT | PIPE COVER | HEADWALL BOTTOM WIDTH |
|---|---|---|---|---|---|
| D | L | H | FH | h | W |
| 12" | 4'-2" | 3'-9" | 1'-6" | 1'-3" | 1'-11" |
| 15" | 5'-11" | 4'-2" | 1'-6" | 1'-5" | 2'-0" |
| 18" | 6'-11" | 4'-5" | 1'-6" | 1'-5" | 2'-1" |
| 24" | 8'-10" | 4'-11" | 1'-6" | 1'-5" | 2'-3" |

NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

## PRECAST CONCRETE HEADWALL

NOT TO SCALE

| | |
|---|---|
| Design: DJM | Draft: KDR |
| Checked: JAC | Scale: AS NOTED |
| Drawing Name: 18134.1-PLAN.dwg | Date: 2/26/2024 |
| | Project No.: 18134.1 |



STATE OF NEW HAMPSHIRE
DANIEL JAMES MEDITZ
No. 18152
LICENSED PROFESSIONAL ENGINEER
11/25/2024

| REV. | DATE | REVISION | BY |
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| | |
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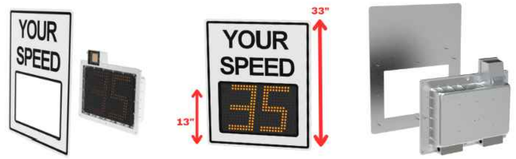
DRAWING No.
D5
SHEET 19 OF 21
JBE PROJECT NO. 18134.1

radarsign
MAKING ROADS SAFER

# TC-600 RADAR SPEED SIGN




**LED DISPLAY**
- Speed Display Numbers: 13" tall speed display numbers; capable of showcasing 2 or 3 digits, with readability up to 600 feet
- Ideal Speed Range: Ideal for roads with traffic speeds ranging from 5 to 60 mph
- LED Configuration: Super bright amber LEDs in full matrix design; Life up to 100,000 hours
- Enhanced Visibility Design: Laser cut flat black mask enhances visibility of LED display when illuminated; Ensures completely dark display when LEDs are off
- Adjustable Display Brightness: Display brightness fully automatic or user adjustable

**SPEED VIOLATOR ALERTS**
- Standard Alerts: SPEED with 3 flash rate options; Enhanced font; SLOW DOWN; TOO FAST
- Alert Options: Display speed and word message alerts alternately or individually based on speed settings
- Speed Display Flash Rates: MUTCD flash (approx. 55-60 fpm); slow flash (approx. 90 fpm); fast flash (approx. 140 fpm)
- ~~Optional Message Alerts: Available options include SHARP CURVE; right or left facing chevrons; SCHOOL ZONE; smiley face; FINE $$$~~ (not available with cellular signs)
- ~~Optional Strobe Alerts: Available options include red strobe alert; blue strobe alert; alternating red/blue strobe alert (police flash); white strobe alert (capable of simulating a camera flash)~~

**YOUR SPEED FACEPLATE**
- Dimensions: 28"W x 33"H with 4" high lettering; ~~Optional oversized 30"W x 36"H YOUR SPEED faceplate available~~
- Available in white, yellow, fluorescent yellow/green, and safety orange

**SOLAR POWER MODEL**
- Operation: Operates 24/7 with solar power supply
- Power Supply: Two 12-volt,18 amp/hour AGM batteries (UL recognized); Provides up to 14 days of back-up operation on fully charged batteries
- Power Consumption: < 2.0 amps (24w) at maximum display intensity; Idle mode: < 1/2 watt
- Circuit Breaker: Multi-circuit; 3 x 10 amp fuses
- Battery Status Monitoring: Check battery charge levels and solar amperage via Wi-Fi or cellular
- Low battery cut-off feature provides intelligent battery management, optimizing the performance and longevity of the battery
- Charger and battery characteristics matched to operate within the sign's operating temperature range
- Solar Panel Output: 50 watt standard
- Solar Charger: Fully integrated charge controller that continuously monitors and logs data regarding solar output and battery charge status

**AC POWER MODEL**
- Operation: Operates 24/7 with AC power supply
- Power Supply: Hard wire to 100 VAC-240 VAC
- Power Consumption: < 2.0 amps (24w) at maximum display intensity; Idle mode: < 1/2 watt
- Circuit Breaker: Multi-circuit, 10 amp fuse

**ELECTRONICS**
- All power inputs are fused and reverse polarity protected
- All circuit boards are conformally coated for extra protection
- Automatic reset and watch-dog circuitry ensure the sign returns to normal operation without the need for user intervention

Certified Quality System ISO 9001:2015 | MUTCD Compliant Radar Speed Signs | Proudly Engineered & Manufactured in the USA

info@radarsign.com radarsign.com 678-965-4814

TC-600 Radar Speed Sign Spec Sheet MK0023 V24.01

**RADAR**
- Type: K Band, single direction Doppler radar; FCC part 15 compliant; No license required
- Sensor Range: Detects vehicles up to 1200 feet
- Beam Width: 12 degrees, +/- 2 degrees
- Operating Frequency: 24.125 GHz, +/- 50 MHz
- Accuracy: +/- 1.0 mph
- Speed Detection Range: 5-127 mph; 8-198 kph

**RADAR SPEED SIGN HOUSING**
- Industrial Design: Single-piece cast aluminum housing; Seamless construction with no welding; Provides maximum protection from the elements and vandalism
- Thickness: Constructed from 0.1875" thick heavy-duty aluminum
- Compliance Standards: IP65 compliant; NEMA 4 level compliant
- Humidity Maximum: 100%; Non-sealed and ventilated
- Provides maximum protection from the elements and vandalism
- Dimensions: 18.5"H x 26.25" W x 5.0"D
- Mounting Bracket: Stainless steel mounting hardware included for poles up to 4.5" OD

**WEIGHT & OPERATING TEMPERATURE**
- TC-600 Solar Power Model : Weight 67 lbs.
- TC-600 AC Power Model: Weight 42 lbs.
- Operating temperature: -40°F to +160°F

## STANDARD FEATURES ON ALL RADARSIGN MODELS

**BASHPLATE™ WITH INTEGRATED LED REFLECTOR CONES**
- Heavy duty aluminum shield over LED display to protect components from abuse or vandalism
- Radarsign's proprietary directional beam technology includes custom reflectors positioned around each LED. This unique design magnifies the intensity of the light, ensuring the highest quality viewable display with minimal energy usage.

**POLYCARBONATE DISPLAY COVER**
- .25" thick protective sheet covers entire display area
- Abrasion, graffiti and shatter resistant; Provides UV protection

**WI-FI ENABLED**
- Radar speed sign emits it's own Wi-Fi signal, eliminating the need for an internet connection. Manage sign with smart phone, tablet, or laptop; Allows for quick, easy sign operation and data download from most web enabled devices.
- Connection range up to 300 feet from sign
- WPA2 encrypted security; Unique password protected
- OTA Software Updates (over-the-air): Allow the wireless delivery of software updates and upgrades directly to the radar sign
- Speed is 10x faster and has 10x the range of Bluetooth

**STANDARD PROGRAMMING**
- Setup Functions: Easy-to-navigate digital menu; No mechanical switches to operate
- Daily Timers: Allow up to 5 on/off timer settings per day, including 4 customizable timers in addition to the standard setting. Settings allow for lower speed limits for school zone times.
- Stealth Mode: This feature allows the display to be turned off while still allowing continuous traffic data collection. This ensures data monitoring even when the display is not active.
- Possum Switch™: In the event of a forceful attack, the sign can simulate inactivity or "play dead" for a duration of 30 minutes. This feature helps protect the sign from malicious tampering or damage.
- Maximum Speed Cutoff: Designed to prevent the sign from displaying excessively high speeds, this feature curbs any attempts at speeding towards or "racing" the sign. Users have the option to choose between flashing dashes or an LED display cutoff.

**WARRANTY :** 2 years on parts and labor including batteries; Exceptions: Does not cover malicious abuse, theft, or damage due to unauthorized modification.

## OPTIONAL DATA REPORTING, MANAGEMENT AND SCHEDULING FEATURES

**STREETSMART TRAFFIC DATA COLLECTION & REPORTING SOFTWARE:** This feature comes with a lifetime license for a one-time charge, eliminating recurring fees. It is licensed per sign and allows the download, reporting, organization, and analysis of speed and traffic data recorded by the radar speed sign. Users can generate 35 charts and graphs with Excel™ macro. The Traffic Data Storage Capacity allows data storage for up to 5 million vehicles, retaining data for 12 months in the sign before overwriting the oldest data first.

**CLOUD SERVICE:** The built-in cellular modem allows cloud accessibility from anywhere with an internet connection. It enables remote management of sign settings for your entire network of signs. Additionally, it uploads daily traffic statistics to the Radarsign Cloud server (requires the purchase of a Streetsmart data license). This feature also provides alerts in case of low battery or interrupted connection.

**ADVANCED SCHEDULER:** Date-driven program enables the pre-programming of multiple years and schedules for radar speed signs. This functionality is particularly beneficial for scheduling in school zones or areas where events occur regularly.

radarsign
MAKING ROADS SAFER

## Pole and Base Options

Radarsign offers a round aluminum or decorative black fluted aluminum pole for use with our radar speed signs. Our selection of pole bases includes square or octagonal aluminum bases, or a black decorative base for a more architectural look. All Radarsign pole bases have a breakaway design that meets FHWA crash test guidelines.

| Pole Style | Round aluminum | Round aluminum | Decorative black fluted |
|---|---|---|---|
| Pole OD (outside diameter) | 4.5" | 4.5" | 4" |
| Pole Length | Choice of 12', 13', 14', 15', or 16' | Choice of 12', 13', 14', 15', or 16' | 12' |
| Base Style | Square | Octagonal | Decorative black |
| Base Anchor Meth | Cement pad with concrete form kit or anchor bolt cage kit | Cement pad with concrete form kit or anchor bolt cage kit | 2.5" x 2.5" sleeve in cement |

### Installation Form Kits

**Concrete Form Kit**
The concrete form kit, customized for the aluminum pole bases with the round aluminum poles, makes base and pole installation easy. The kit includes a prefabricated concrete pole base form, four anchor bolts, a rebar base cap, and a rebar sample. *(Not compatible with decorative black pole).*

**Anchor Bolt Cage Kit**
The anchor bolt cage kit is a pre-fabricated form guide for pole footing installation. The kit includes an anchor bolt cage with hardware and (4) 18" x 3/4" J bolts.

Certified Quality System ISO 9001:2015 | MUTCD Compliant Radar Speed Signs | Proudly Engineered & Manufactured in the USA

info@radarsign.com radarsign.com 678-965-4814



Pole and Base Options MK0003 v22.01

| | | |
|---|---|---|
| Design: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE – DANIEL JAMES MEDITZ No. 18152 – LICENSED PROFESSIONAL ENGINEER – 11/25/2024

| REV. | DATE | REVISION | BY |
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| 5 | 11/25/24 | REVISED PER ALTUS COMMENTS | DJM |
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| 1 | 4/19/24 | REVISED PER TAC COMMENTS | 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
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: TC-600 RADAR SPEED SIGN SPECIFICATIONS

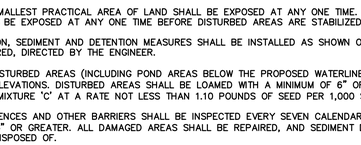
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH

Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

DRAWING No.
D6
SHEET 20 OF 21
JBE PROJECT NO. 18134.1

## TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 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.

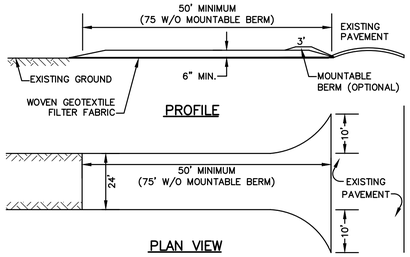



NOTES:

1. ORGANIC FILTER BERMS SHALL BE UTILIZED IN LIEU OF SILT FENCE.
2. THE EROSION CONTROL MIX USED IN THE FILTER BERMS SHALL BE A WELL-GRADED MIXTURE OF PARTICLE SIZES, MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, OR ACCEPTABEL MANUFACTURED PRODUCTS, AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH, AND SHALL MEET THE FOLLOWING STANDARDS:
    a) THE ORGANIC CONTENT SHALL BE 25-65% OF DRY WEIGHT.
    b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 3" SCREEN, 90-100% PASSING A 1" SCREEN, 70-100& PASSING A 0.75" SCREEN, AND 30-75% PASSING A 0.25" SCREEN.
    c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
    d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
    e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
    f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES STEEPER THAN 3:1, UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE), AND A MINIMUM OF 36" WIDE. ON LONGER OR STEEPER SLOPES, THE BERM SHALL BE WIDER TO ACCOMMODATE THE POTENTIAL ADDITIONAL RUNOFF.
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
7. STRUCTURES MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED.

## ORGANIC FILTER BERM / FIBER BERM

NOT TO SCALE




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

## 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.

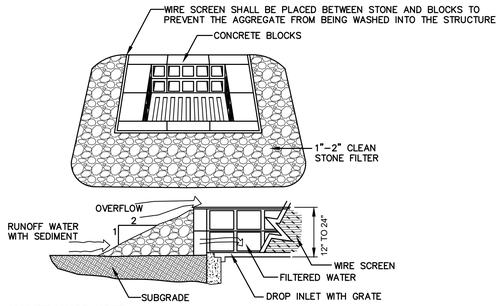
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

## 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 FIBER BERM, 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 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. 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.
9. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
10. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
11. 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.
12. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
13. PAVE ROADWAY AND DRIVEWAYS WITH INITIAL 'BASE COURSE'.
14. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
15. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
16. FINISH PAVING ROADWAY AND DRIVEWAYS WITH 'FINISH' COURSE.
17. ROADWAY AND DRIVEWAYS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
18. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
20. 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.
21. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
22. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
23. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY QUARTER-INCH OF RAINFALL.
24. 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: DJM | Draft: KDR | Date: 2/26/2024 |
| Checked: JAC | Scale: AS NOTED | Project No.: 18134.1 |
| Drawing Name: 18134.1-PLAN.dwg | | |



STATE OF NEW HAMPSHIRE - DANIEL JAMES MEDITZ No.18152 - LICENSED PROFESSIONAL ENGINEER
11/25/2024

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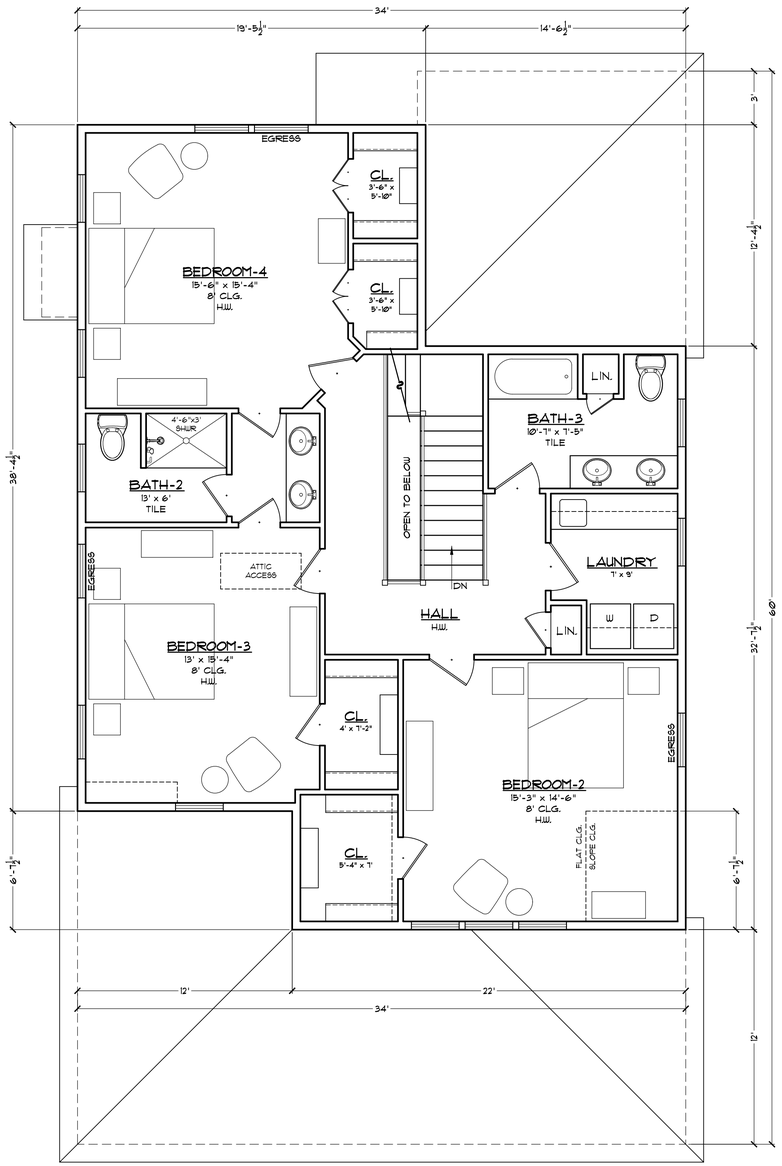
| 2 | 8/14/24 | REVISED PER CITY REVIEW ENGINEER COMMENTS | DJM |
| 1 | 4/19/24 | REVISED PER TAC COMMENTS | DJM |

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EROSION AND SEDIMENT CONTROL DETAILS
Project: LUSTER CLUSTER
635 SAGAMORE AVE., PORTSMOUTH, NH
Owner of Record: 635 SAGAMORE DEVELOPMENT LLC
3612 LAFAYETTE RD., DEPT 4, PORTSMOUTH, NH 03801 BK 6332 PG 1158

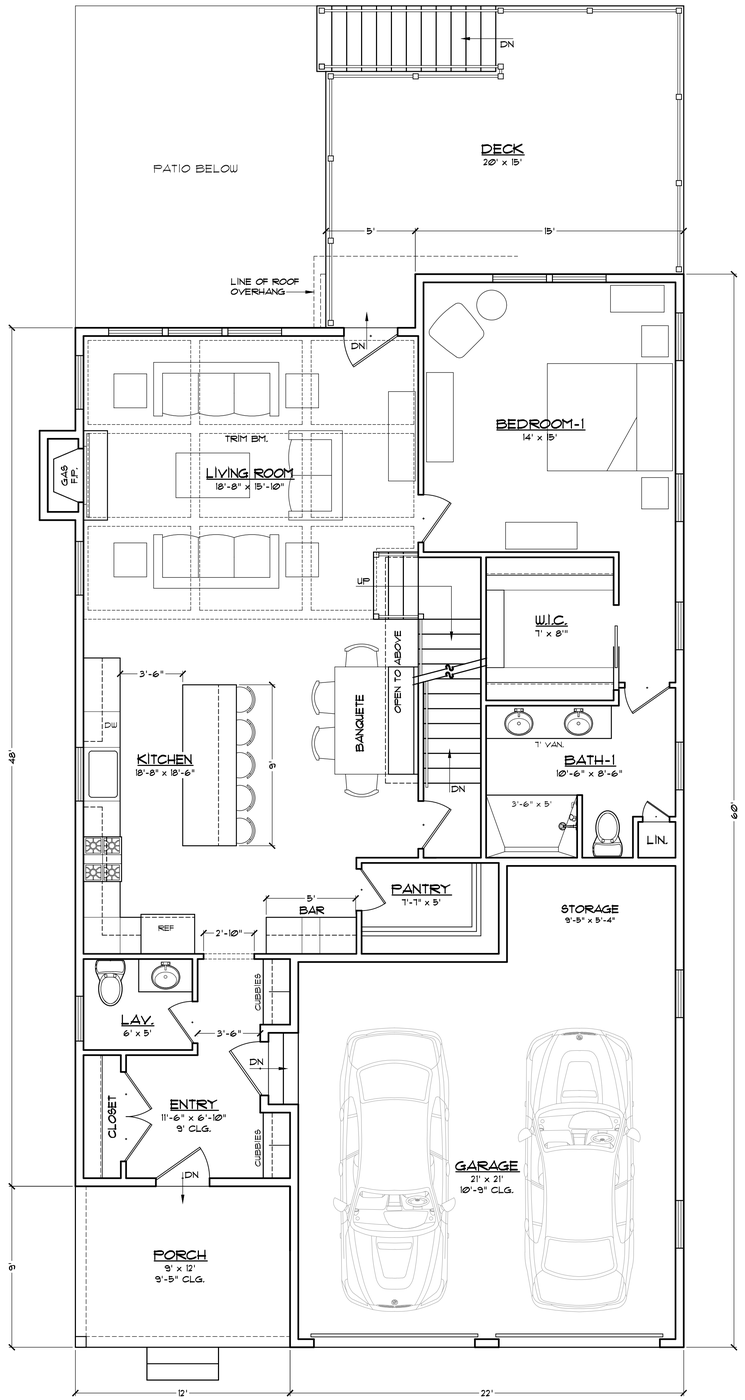
DRAWING No.
E1
SHEET 21 OF 21
JBE PROJECT NO. 18134.1




## SECOND FLOOR PLAN

¼"=1'-0"

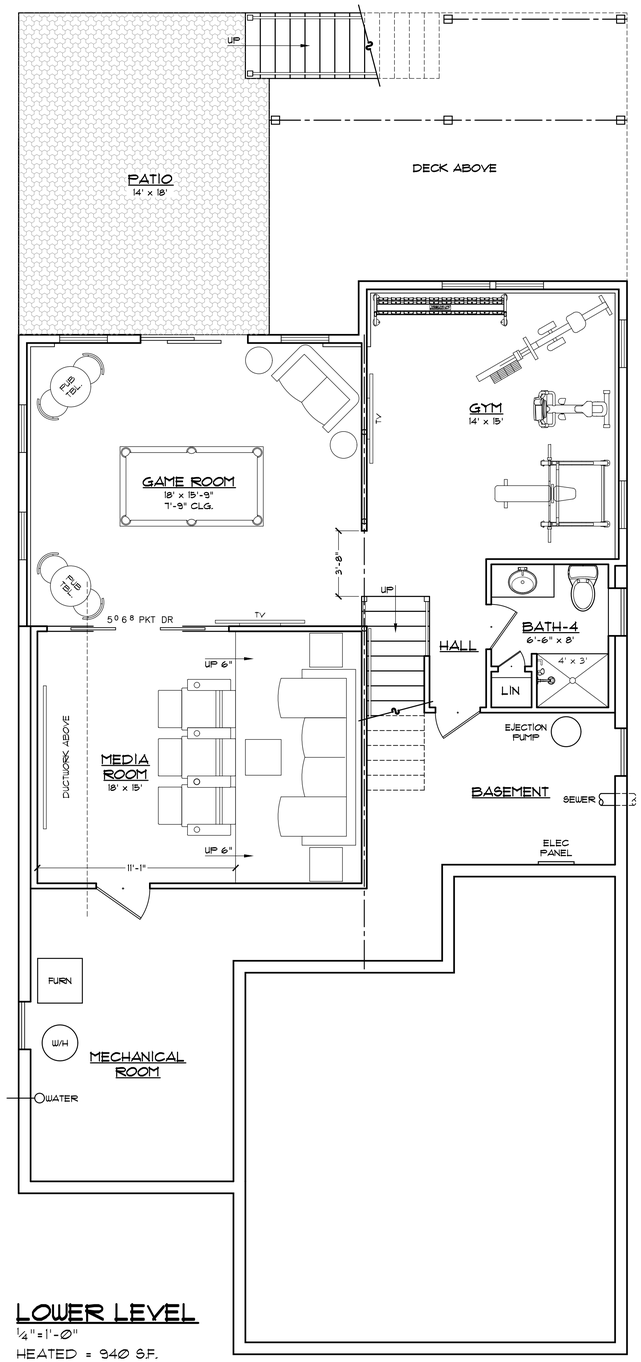
HEATED = 1270 S.F.
(INCLUDES 67 S.F. OF STAIRWELL)




## FIRST FLOOR PLAN

¼"=1'-0"

HEATED = 1,347 S.F.
GARAGE = 528 S.F.
FRONT PORCH = 108 S.F.
DECK = 280 S.F.
TOTAL HEATED =3,557 S.F.




## LOWER LEVEL

¼"=1'-0"

HEATED = 940 S.F.
PATIO = 248 S.F.

# WALK-OUT CONCEPT

PROJECT:
The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801


E-mail: tech-1112@comcast.net
Phone: 603-964-1300
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
196 Bunker Hill Ave.
Stratham, NH 03885


DATE: 1-30-24
REVISED:
DWG. NO. 3

C:\TI-INC\2024\Oaks Walk-OutBD


RIGHT SIDE ELEVATION

1/4"=1'-0"

UNIT #2
ROOF MIDPOINT
25'-3"
PROPOSED AVERAGE GRADE 73.1
EXISTING AVERAGE GRADE 72.25

UNIT #1 - F.F. = 73.5
UNIT #2 - F.F. = 74.0
UNIT #3 - F.F. = 75.25
W/O = 65.45
UNIT #4 - F.F. = 75.5
W/O = 65.70

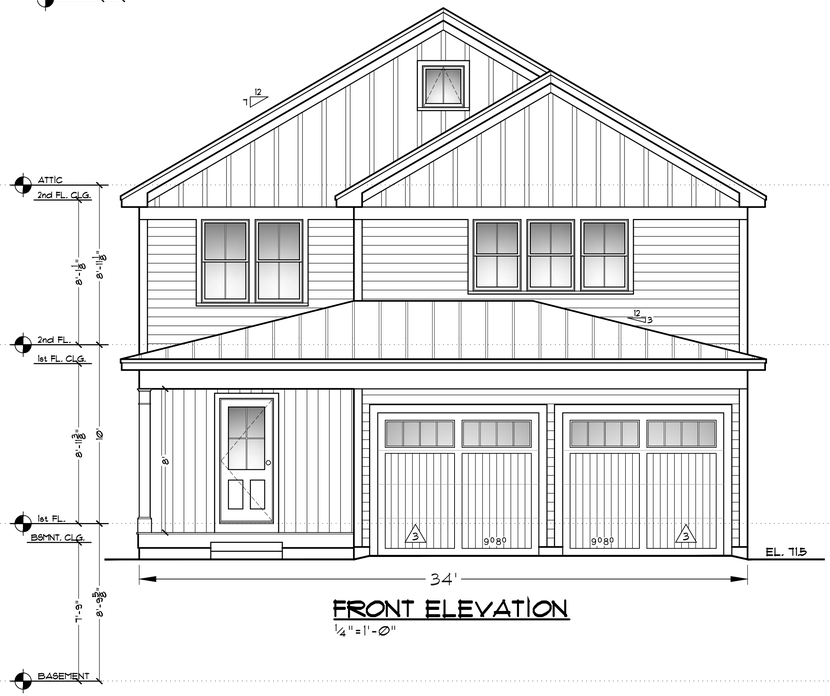

REAR ELEVATION

1/4"=1'-0"


LEFT SIDE ELEVATION

1/4"=1'-0"

UNIT #1
ROOF MIDPOINT
26'-3"
F.F. 73.5
PROPOSED AVERAGE GRADE 71.5
EXISTING AVERAGE GRADE 71




FRONT ELEVATION

1/4"=1'-0"

# UNITS 1&2

C:\TI-INC\2024\Oaks80

PROJECT:
The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801

E-mail: tech-ill2@comcast.net
Phone: 603-964-1300
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
196 Bunker Hill Ave.
Stratham, NH 03885

DATE: 10-21-24
REVISED:
DWG. NO. 1


## RIGHT SIDE ELEVATION

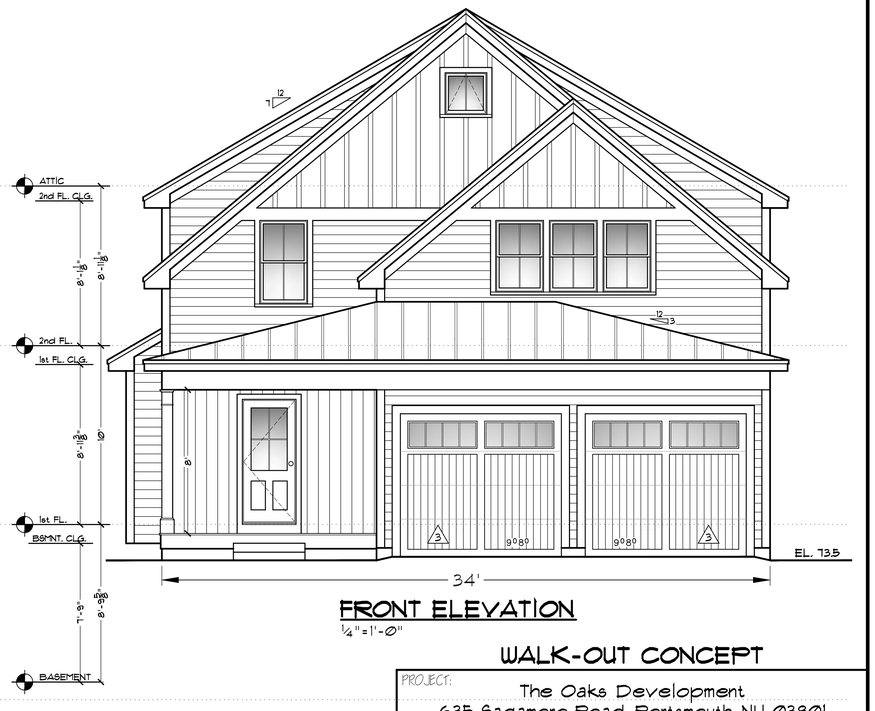
¼"=1'-0"


## REAR ELEVATION

¼"=1'-0"


## LEFT SIDE ELEVATION

¼"=1'-0"




## FRONT ELEVATION

¼"=1'-0"

# UNITS 3&4

## WALK-OUT CONCEPT

UNIT #1 - F.F. = 73.5
UNIT #2 - F.F. = 74.0
UNIT #3 - F.F. = 75.25
W/O = 65.45
UNIT #4 - F.F. = 73.5
W/O = 65.70

PROJECT:
The Oaks Development
635 Sagamore Road, Portsmouth, NH 03801

E-mail: tech-ill2@comcast.net
Phone: 603-964-1300
Fax: 603-580-1414
Technical Illustrations
ARCHITECTURAL DRAFTING SERVICE
196 Bunker Hill Ave.
Stratham, NH 03885

DATE: 10-21-24
REVISED:
DWG. NO. 1

C:\TI-INC\2024\Oaks Walk-Out\BD

HOEFLE, PHOENIX, GORMLEY & ROBERTS, PLLC
ATTORNEYS AT LAW

127 Parrott Avenue | Portsmouth, NH, 03801
Telephone: 603.436.0666 | Facsimile: 603.431.0879 | www.hpgrlaw.com

**MEMORANDUM**

February 13, 2025

**UPLOADED TO VIEWPOINT/ HAND DELIVERY**

**To:** Portsmouth Planning Board
**From:** R. Timothy Phoenix, Esq.
**Re:** Site Plan Approval
635 Sagamore Development, LLC
635 Sagamore Ave. Tax Map 222 Lot 209/LU-22-209

Dear Chair Chellman and Planning Board Members:

On behalf of 635 Sagamore Development, LLC ("635 Sagamore" or "Applicant") this Memorandum and exhibits are respectfully submitted in order to aid and support the Planning Board ("PB" or "Planning Board") granting Site Plan approval at February 20, 2025 hearing. A Site Walk is scheduled for 3:00 PM on the same day, prior to the scheduled hearing.

## I. EXHIBITS

1. 5/23/23 Zoning Board of Adjustment ("ZBA") Notice of Decision ("NOD") granting variances to convert mixed-use commercial property (apartment, auto detailing, autobody shop) to zoning compliant residential use
2. 4/3/24 Article, Portsmouth Herald, Re: development
3. 11/5/24 Technical Advisory Committee Notice of Decision/Action Sheet/Minutes- unanimously approving recommendation for Site Plan Approval to Planning Board
4. 12/5/24 Letter re: Drainage from Altus Engineering (City Review Engineer) to Peter Stith, Planning Manager.
5. 12/19/24 Planning Board Minutes.
6. City of Portsmouth ("City") Site Review Regulation ("SRR" or "Regulations") Section 3.3.2.1.

## II. HISTORY

635 Sagamore Ave. is a 54795s.f. lot with +/- 160 feet of frontage, all of which has traditionally been open access from end to end, located in the SRA zoning district. Historically, the lot provided access and parking for an apartment and commercial automobile reconditioning

operation located in the front/southerly building, with a large commercial metal-building automobile repair and body shop to the rear. By any estimation, the site does not comply with zoning in this predominantly residential neighborhood. Its furthermore aesthetically poor and functionally obsolete with respect to image, operation and access. Due to the predominantly commercial nature of the site, with comparatively numerous "trips per day" and its lengthy open "curb cut", access to and from Sagamore Avenue is trafitionally more intensive than now proposed.

635 Sagamore purchased the property on September 24, 2021. Thereafter, it began the lengthy process of converting the property from non-permitted commercial use in the SRA zone to permitted strictly residential use. The preliminary proposal was for six (6) stand-alone units, reduced to four (4) ZBA approved units through the permitting process, to permit primarily, four (4) dwelling units on a single lot, granted on May 23, 2023 (**Exhibit 1**). Thereafter, 635 Sagamore began preparation for Planning Board approval.

It is noteworthy that in the interim, for approximately two (2) years after obtaining zoning relief in May, 2023, 635 Sagamore voluntarily and without requesting compensation, permitted the City and its contractor(s) to use the parking lot at the site for a lay-down and staging area in support of the City's sewer line replacement and related work on Sagamore Avenue.

Beginning in early 2024, 635 Sagamore began the site review process, starting with preliminary review by the Planning Board via a several meeting process with TAC (4/2/24; 9/3/24; 10/1/24, 11/5/24). 635 Sagamore, through its engineers, Jones & Beach ("J&B") and other experts addressed questions and concerns on behalf of the City by expert members of TAC, including, without limitation; construction; drainage/storm water; access; sightlines; and traffic. Through that process 635 Sagamore improved traffic safety by limiting access to a single in/out curb cut at the best location designed by Jones and Beach in collaboration with Stephen Pernaw P.TO.E. and recommended by TAC. Indeed, the entire proposal was unanimously approved by TAC on November 5, 2024 (**Exhibit 3**). [1]

On behalf of the PB, drainage in particular was reviewed by review engineer Altus

---

[1] The Planning Board members are encouraged to view the 10/1/24 and 11/5/24 TAC videos to glean the discussion and TAC members' acknowledgment that the project complies with City requirements. (See also 11/5/24 TAC meeting video starting at minute 43:50).

Engineering ("Altus") over a five-plus month period. On December 5, 2024, Altus issued its letter report to the PB through the Planning Manager, concluding "The revised submissions satisfactorily addresses our concerns with the exception of the following housekeeping items." The self-explanatory general comments include adding key elevations, and recommendations for site work details with respect to fill. **(Exhibit 4).** With respect to traffic the 8/8/23 Pernaw report submitted with 11/22/24 Jones & Beach Site Plan Application noted reduced trips compared to historical use of site.

Following TAC approval, on December 19, 2024, Jones & Beach presented the project to the Planning Board, seeking Site Plan Approval for "demolition of the existing structures and construction of four single family dwellings with associated site improvements" (Minutes-**Exhibit 5**). At the hearing, identified in greater detail below, the development team addressed preliminary questions and concerns of the Planning Board and comments of the public, primarily a few residents of Tidewatch Condominium at 579 Sagamore Ave.

At the December 19, 2024 hearing, issues raised and discussed included *inter alia*:

i. Drainage (addressed above);
ii. Grading with respect to steepness of the driveway as it joins Sagamore Road (addressed by J&B).
iii. Operation & Maintenance Plan (addressed by J & B).
iv. Monthly v. Quarterly inspections(J&B).
v. Traffic/ Sightlines (via J&B, Peer Review, TAC, process, and below).

Most of the issues raised at the hearing were/will be addressed by 635 Sagamore's technical team. The specific issues considered in this memo are addressed below. The December 19, 2024 hearing was continued to January 16, 2025, then continued again to the hearing now scheduled for February 20, 2025.

## III. ISSUES ADDRESSED HEREIN

### A. TAC Process

The purpose of Portsmouth's Technical Advisory Committee ("TAC"), comprised of numerous city staff with expertise in a variety of subjects (Planning, Construction/DPW, Engineering, Fire, Building Inspection and Transportation Engineering), is to review all Site Plan Review applications and, via their collective expertise make recommendations to the Planning Board with respect to each project before it. TAC met in several meetings over a five (5) month

period, before unanimously recommending project approval to the Planning Board. (**Exhibit 3, footnote 1**).

Thus, while the Planning Board provides independent review and makes the final decision on approval of the project, the recommendations of TAC must be given significant weight and consideration with respect to Planning Board review and decision-making

Reference is made to the comments of City Council members, staff and Planning Board members in a 4/3/24 Portsmouth Herald article (**Exhibit 2**). Comments noted the requirement of City Boards to *inter alia* follow the City's Zoning Ordinance, the requirement to proceed through TAC, and as it is regulated by State law, the rules must be followed by the Planning Board. This is precisely the situation now before the Planning Board. All required variances are fully vested. The project meets requirements of the ordinance and regulations. TAC has fully reviewed, opined, and unanimously recommended approval subject to addressing final details with the Planning Board.

**B. Stopping Site Distance**

The Planning Board asked questions/expressed concern regarding the stopping sight distance from the single curb cut driveway to the crest of the hill to the south. Again noting the history of this project, to that end, including as recommended moving the curb cut from the southerly to the northerly end of the parcel, the following clearly demonstrates that sightline concerns have been addressed:

- The full width curb cut has been reduced to single in/out at the southerly end of the property as recommended.
- Sight distance has been thoroughly reviewed by TAC, after peer review, and has unanimously recommended approval to the Planning Board (**Exhibit 3**).
- At 228 feet, the sight stopping distance provided is very close (93.44%) to the AASHTO requirement of 244 feet.
- At its expense, as requested by TAC, 635 Sagamore has agreed to the installation of illuminated signage, addressing speed and driveways below the crest of the hill
- While the driveway location is compliant as recommended by TAC, based upon actual speeds in the area, reduction in posted speed limit(s) and enforcement will further benefit not only the project but the other parcels/residents in the area.
- Additionally, reference is made to SRR§3.3.2.1, Access Way And Driveway Design And Location:

> Accessways and driveways shall, where practical, have an all-season safety sight distance (according to AASHTO standards) in both directions along the public street. Where only a lesser sight distance is obtainable, no more than one accessway per single parcel shall be allowed. (emphasis added)

Here, there has traditionally been a mixed but primarily commercial operation on the site with greater trip generation than the proposed four residences. See Report of expert Traffic Engineer Stephen Pernaw, P.E., P.T.O.E. included in the 11/22/24 Jones and Beach PB submission. The 160 linear foot open curb cut along the entire lot, which has existed for decades, is now reduced to a single entry/exit driveway located as recommended by peer review and TAC, essentially as far from the crest of the southerly hill as is reasonably possible. Since "only a lesser sight distance is obtainable" and is still quite significant, the project meets the regulation requirement of only one accessway per single parcel, a significant improvement over traditional conditions.

## IV. CONCLUSION

For all of the reasons provided herein, together with TAC recommendations, Peer Review and the Team's technical responses to issues raised, 635 Sagamore Development, LLC respectfully requests Planning Board Site Review approval on February 20, 2025.

Respectfully submitted,

R. Timothy Phoenix

cc: Client
Jones & Beach Engineers
Garrepy Consulting

EXHIBIT 1


# CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801

(603) 610-7216


**ZONING BOARD OF ADJUSTMENT**

May 23, 2023

635 Sagamore Development, LLC
3612 Lafayette Rd Dept 4
Portsmouth, New Hampshire 03801

RE: **Board of Adjustment request for property located at 635 Sagamore Avenue (LU-22-209)**

Dear Property Owner:

The Zoning Board of Adjustment, at its regularly scheduled meeting of **Tuesday, May 16, 2023**, considered your application for the removal of existing structures and constructing 4 single family dwellings which requires the following: 1) A Variance from Section 10.513 to allow four free-standing dwellings where one is permitted. 2) A Variance from Section 10.521 to allow a lot area per dwelling unit of 21,198 square feet per dwelling where 43,560 square feet is required. Said property is shown on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. As a result of said consideration, the Board voted to **deny** the request initially because the proposed plan did not meet the hardship criteria. This motion failed. The Board then voted to **approve** the variances for the project as presented with the following **condition:**

The Board's decision may be appealed up to thirty (30) days after the vote. Please contact the Planning Department for more details about the appeals process.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Phyllis Eldridge

Phyllis Eldridge, Chair of the Zoning Board of Adjustment

cc:

Joseph Coronati, Jones & Beach
R. Timothy Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC

# Findings of Fact | Variance
## City of Portsmouth Zoning Board of Adjustment

Date: 5-16-2023

Property Address: 635 Sagamore Avenue

Application #: LU-22-209

Decision: **Grant**

**Findings of Fact:**

Effective August 23, 2022, amended RSA 676:3, I now reads as follows: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. **The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval.** If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of the all conditions necessary to obtain final approval.

The proposed application meets/does not meet the following purposes for granting a Variance:

| **Section 10.233 Variance Evaluation Criteria** | **Finding** (Meets Criteria) | **Relevant Facts** |
|---|---|---|
| 10.233.21 Granting the variance would not be contrary to the public interest. | **YES** | • Having more conforming structures on the parcel is much better than the existing condition. |
| 10.233.22 Granting the variance would observe the spirit of the Ordinance. | **YES** | • The SRA zone limits one dwelling unit per acre, and the applicant is asking for four units on nearly two acres, which would be directly across the street, the SRB zone.<br>• Comparing the four dwelling units at 21,200 square feet per unit to Tidewatch's 122 units at 19,300 square feet per unit, the project would be less dense. |
| 10.233.23 Granting the variance would do substantial justice. | **YES** | • The project would have no effect on anything across the street or at Tidewatch because one wouldn't even see the properties. |

| | | |
|---|---|---|
| 10.233.24 Granting the variance would not diminish the values of surrounding properties. | **YES** | • The project would have no effect on anything across the street or at Tidewatch because one wouldn't even see the properties.<br>• The project would not alter the essential characteristics of the neighborhood because the large lot could not reasonably be subdivided based on its irregular shape and street frontage. |
| 10.233.25 Literal enforcement of the provisions of the Ordinance would result in an unnecessary hardship.<br><br>(a)The property has special Conditions that distinguish it from other properties in the area. AND<br>(b)Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one. OR<br>Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it. | **YES** | • The property has special conditions of being an oversized lot for the area as well as an angled and elevated one, and only so much of it is usable.<br>• Limiting the lot to a single-family home would be a hardship and four single-family units on nearly two acres was a more than reasonable use and a huge improvement to the existing property. |

| **Stipulations** |
|---|
| 1. *The design and location of the dwellings may change as a result of Planning Board review and approval.* |

## II. OLD BUSINESS

**A.** The request of **635 Sagamore Development LLC (Owner)**, for property located at **635 Sagamore Avenue** whereas relief is needed to remove existing structures and construct 4 single family dwellings which requires the following: 1) A Variance from Section 10.513 to allow four free-standing dwellings where one is permitted. 2) A Variance from Section 10.521 to allow a lot area per dwelling unit of 21,198 square feet per dwelling where 43,560 square feet is required. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District.

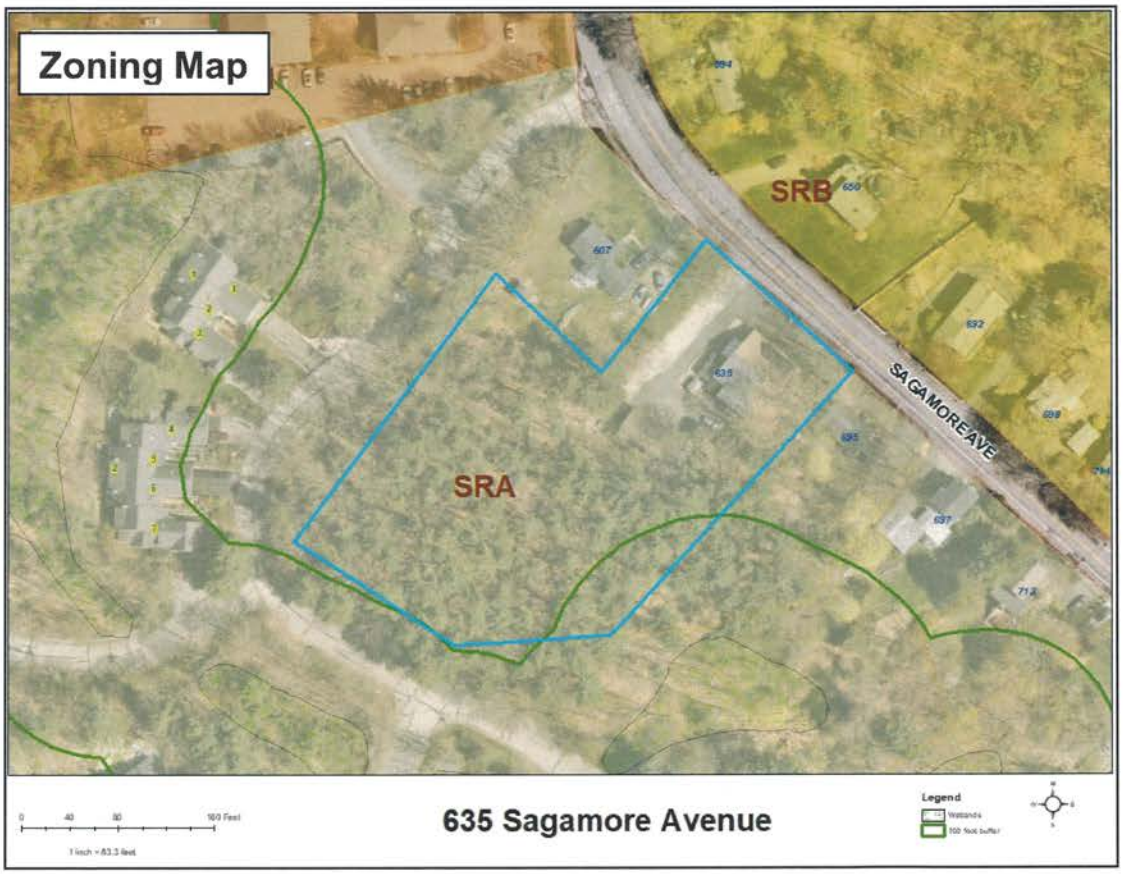
### Existing & Proposed Conditions

| | Existing | Proposed | Permitted / Required | |
|---|---|---|---|---|
| Land Use: | Commercial w/ 1 apartment | **4 single family dwellings** | Primarily residential | |
| Lot area (sq. ft.): | 84,795 | 84,795 | 43,560 | min. |
| Lot Area per Dwelling Unit (sq. ft.): | 84,795 | **21,198** | 43,560 | min. |
| Lot depth (ft): | 358 | 358 | 200 | min. |
| Street Frontage (ft.): | 160 | 160 | 150 | min. |
| Primary Front Yard (ft.): | 28 | >30 | 30 | min. |
| Right Yard (ft.): | 60 | >20 | 20 | min. |
| Left Yard (ft.): | 30 | 21 | 20 | |
| Rear Yard (ft.): | 219 | >40 | 40 | min. |
| Height (ft.): | <35 | <35 | 35 | max. |
| Building Coverage (%): | 4 | 9.2 | 10 | max. |
| Open Space Coverage (%): | >50 | 81 | 50 | min. |
| Parking: | 4+ | 16 | 6 | |
| Estimated Age of Structure: | 1950 | Variance request(s) shown in red. | | |

### Other Permits/Approvals Required

- TAC/Planning Board – Site Plan Review

## Neighborhood Context

**Previous Board of Adjustment Actions**

**April 19, 2022** – The BOA considered your application for remove existing commercial structure and construct 5 new single-family dwellings which requires the following: 1) A Variance from Section 10.513 to allow 5 principal structures on a lot where only 1 is permitted. 2) A Variance from Section 10.521 to allow a lot area per dwelling unit of 22,389 square feet where 1 acre per dwelling is required. The Board granted your request to **postpone** to the May meeting.
**May 17, 2022** – The Board **granted** a request to postpone to the June meeting.
**June 22, 2022** – The Board voted to acknowledge the **withdrawal** of the application.
**November 15, 2022** - The Board **granted** a request to postpone to the June meeting.
**December 20, 2022** - The Board **granted** a request to postpone to the June meeting.
**January 17, 2023** - The Board **granted** a request to postpone to the March meeting.

**Planning Department Comments**

As shown in the history above, the applicant was before the Board this past spring with a proposal to construct 5 single family dwellings on one lot. Due to concerns from the abutters, the application was withdrawn so they could work on addressing concerns from the abutters. The new application proposes to demolish the existing structures and construct 4 free-standing single-family dwellings. The SRA zone requires 1 acre per dwelling unit and only allows 1 principal structure on a single lot. With 4 dwellings, the proposed lot area per dwelling will be 21,198, where 43,560 is required. With the exception of the density, all other dimensional requirements are in compliance with the proposed layout. This will require site plan review before TAC and Planning Board if the variances are granted. If granted approval, staff recommends the following stipulation for consideration:

**1. The design and location of the dwellings may change as a result of Planning Board review and approval.**

**Review Criteria**

This application must meet all five of the statutory tests for a **variance** (see Section 10.233 of the Zoning Ordinance):

1. *Granting the variance would not be contrary to the public interest.*
2. *Granting the variance would observe the spirit of the Ordinance.*
3. *Granting the variance would do substantial justice.*
4. *Granting the variance would not diminish the values of surrounding properties.*
5. *The "unnecessary hardship" test:*
   *(a) The property has special conditions that distinguish it from other properties in the area.*
   ***AND***
   *(b) Owing to these special conditions, a fair and substantial relationship does not exist between the general public purposes of the Ordinance provision and the specific application of that provision to the property; and the proposed use is a reasonable one.*
   ***OR***
   *Owing to these special conditions, the property cannot be reasonably used in strict conformance with the Ordinance, and a variance is therefore necessary to enable a reasonable use of it.*

**10.235 Certain Representations Deemed Conditions**

Representations made at public hearings or materials submitted to the Board by an applicant for a special exception or variance concerning features of proposed buildings, structures, parking or uses which are subject to regulations pursuant to Subsection 10.232 or 10.233 shall be deemed conditions upon such special exception or variance.

EXHIBIT 2

# Portsmouth leaders: Think there's too much development? Work on zoning, master plan

## Planning board members encourage residents to get involved with the new master plan process

*April 3, 2024* by Jeff McMenemy-Portsmouth Herald (https://www.nhbr.com/author/jeff-mcmenemy-portsmouth-herald/)

Several city Planning Board members — along with Mayor Deaglan McEachern — strongly disagreed with claims by Jayne Begala the board has become a "virtual rubber stamp" for developers.

Begala, who resigned after last week's board meeting, stated that the Planning Board has become "a totally ineffective, almost powerless body."

She pointed to recent development in Portsmouth and stated the Planning Board "has approved many new luxury and market rate condos, some with penthouses, many new hotel rooms, and very little actual affordable workforce housing that City Council claims is their big priority. … Many parts of Portsmouth are losing their historic character, and are starting to look like a suburb of Boston."

Reached Wednesday, McEachern said, "I would disagree with that" when asked about Begala's comments that the board was ineffective and a rubber stamp for developers.

"The complete opposite is true," he said. "I was disappointed obviously that Miss Begala … couldn't complete her term."

McEachern stressed Planning Board members must follow the city's zoning ordinance and approve proposed projects that meet its guidelines, regardless of how they personally feel about a project.

"We have rules, their job is to follow those rules," McEachern said. "The idea that the Planning Board is somehow going to stop private property owners that follow the rules for zoning, that's a take-your-ball-and-go-home sort of attitude."

He encouraged Begala — and any other city residents who disagree with current zoning — to work with the City Council to change it.

"If we're tired of seeing hotels instead of affordable housing, let's talk about that," McEachern said. "But to believe somehow we can just not follow our own rules that we set, it's not how government works."

He also encouraged residents to participate in the upcoming process to craft a new master plan for Portsmouth "that we can all be proud of."

**Portsmouth residents who want changes need to look at zoning and master plan, chairman says**

Planning Board Chairman Rick Chellman, who was appointed to serve on the volunteer board by former Mayor Rick Becksted, disagreed with Begala's statements, calling them "untrue."

He stated that Begala showed "a fundamental misunderstanding of the role she had," adding she was "not happy obviously and frustrated and angry."

Chellman explained once zoning rules "are in place, there's not a lot of discretion" left for board members voting on a project.

"There's some permits, conditional use permits being one, where there's a small amount of discretion," Chellman said, but board members must judge projects based on the zoning that's in place.

He noted too that applicants — particularly on larger projects — "spend a lot of time and money on a multi-disciplinary team" making sure the project is in top shape."

Before projects come before the Planning Board, they must first meet with the city's Site Plan Review Technical Advisory Committee, he said.

The committee, which is made up of city staff, including multiple members of the Planning Department, work to iron out all the technical details to make sure a project is ready for Planning Board consideration.

"By the time it (a project) gets to the Planning Board, there shouldn't be significant technical problems with the application," Chellman said.

Reviewing applications also involves "Constitutional property rights, both for the applicants and for abutters," Chellman said.

Making "whimsical decisions based on who you like and who you don't like aren't good for anybody," he said.

Chellman explained board members are "supposed to have some decorum and treat everybody fairly, and that's what we try to do."

He also encouraged residents to get involved with the new master plan process.

"We really want significant public involvement and not just the usual suspects," he said. "The master plan is the constitution for all the land-use regulations. If the public wants Portsmouth to do different things, the master plan is the place to start."

**Catering to developers? Former mayor says it's happening**

Former Mayor Rick Becksted appointed Begala to her second term on the Planning Board as a regular member, after she was first appointed as an alternate, he said.

Asked about her comments, Becksted said, "Do I believe we tend to cater to developers? Yes I do."

He added, "We're having residents leave at a rapid rate," because of what they see as overdevelopment.

He too acknowledged that "you could see the frustration" with Begala at recent board meetings.

"All residents have a right to their beliefs," he said about her comments.

Becksted believes the city's land use boards "need to be more balanced," to "basically have some diversity so not everyone is agreeing on everything."

That's why he appointed different members to land-use boards when he was mayor in a term that concluded at the end of 2021.

"Right now we're seeing all high-end stuff and all rentals and development is happening at a rapid rate," Becksted said. He said he has been hearing from a growing number of people who have either left Portsmouth or are planning to leave.

"It's just not their town anymore, it doesn't feel like home anymore," Becksted said.

**Board regulated by state law**

City Manager Karen Conard, who serves on the Planning Board, said, "I don't share her opinion and I'm not sure that other members do as well," when asked about Begala's comments.

She noted that the Planning Board "is regulated by state law … and has sets of rules and findings we need to follow."

"What is set forth in terms of what controls growth and land use and development in Portsmouth and any community … is the zoning you have in place," Conard said.

If you don't like the growth and development in Portsmouth, "you modify the zoning," she said.

She stressed Planning Board members must follow the established zoning regulations.

"If a developer is following the zoning and understands how to build and redevelop, then the Planning Board has to recognize and honor that," Conard said. "If there's nothing to challenge, then it's fairly black and white."

Conard credited the work of Technical Advisory Committee members for sometimes holding several meetings to address any zoning or technical issues before a project gets to the Planning Board.

"The staff here maintains the same level of professionalism day in and day out as part of those meetings," she said.

The work done by city staff on the Technical Advisory Committee often leads to the creation of "better projects that come before our board," Conard said.

**'You can't freeze Portsmouth in time'**

Joe Almeida is the city's facilities manager and also serves on the Planning Board.

He formerly served on the Historic District Commission, where he was chair for five years.

He acknowledged he was "very surprised" by Begala's comments and "couldn't disagree with them more."

"I think the board is doing a great job," he said Thursday. "I have full confidence in our chair and vice chair (Greg Mahanna). We're a board that has to respect the laws and property owners' rights. They have to be scrutinized in a very real way."

He believes it takes "a lot of work to educate yourself for any individual application, never mind the topic itself."

"It's a huge amount of work to understand the process, the zoning, the laws, the requirements," Almeida said. "I understand that most people don't have that amount of time to study it, but it's frustrating to be on a board and have people come to the podium without really understanding the process and fine details."

His more than 12 years on city land-use boards have taught him that it's "not realistic," for "someone who wants to freeze Portsmouth in a particular time and not see any change at all."

"It's a city, the very definition of a city is change," he added.



He encourages residents "to embrace and shape that change and be part of guiding it."

Almeida does not see development in Portsmouth "slowing down at all."

"The region is so special and the secret is out, it's just a very desirable place to live," he said.

Planning Board member Andrew Samonas sat next to Begala at board meetings for 18 months.

He came away from that experience "with not only a great deal of respect for Jayne, but for everyone else on the board," he said Thursday.



A real estate developer himself, he acknowledged their actions are governed by zoning rules and regulations.

"While we do want to have discretion and authority over these projects, we are at the will of our zoning code, which we are constantly updating, revising and modernizing," he said.

He understand how residents can be frustrated with development in the city.

"If they want to be engaged, reach out to folks on the City Council and Planning Board to understand the zoning ordinance," he suggested.

Samonas also encouraged people to participate in the new master plan process.

"We don't need endless hours of involvement, we just want to hear their opinions and insight," he said.

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EXHIBIT 3


# CITY OF PORTSMOUTH

Planning & Sustainability
Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216


**TECHNICAL ADVISORY COMMITTEE**

November 8, 2024

635 Sagamore Development, LLC
3612 Lafayette Rd Dept 4
Portsmouth, New Hampshire 03801

RE: Site Plan Approval request for property located at 635 Sagamore Avenue, Portsmouth, NH (LU-22-209)

Dear Property Owner:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, November 5, 2024 , considered your application for Site Plan approval for the removal of the existing structures and construction of 4 single-family dwellings on one lot with associated site improvements. Said property is shown on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. As a result of said consideration, the Committee voted to **recommend approval** to the Planning Board with the following **conditions**:

**The following changes will be made prior to Planning Board submission:**

1. The stormwater maintenance manual shall be updated for the submission to the Planning Board.

**Conditions:**

1. Trees to remain are clearly marked before site work can commence.

2. Monthly and annual reporting of stormwater and drainage infrastructure as defined in the stormwater maintenance manual to the Department of Public Works.

3. Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.

4. Developer to pay for the installation of the fire hydrant extended to the site. The hydrant was installed exclusively for the benefit of this site. The cost to install was $20,900.

5. Developer to provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, December 19, 2024**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning

& Sustainability Department and uploaded to the online permit system no later than **Wednesday, November 27, 2024**.

*Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:*

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*
- *Traffic Studies*
- *Etc.*

***All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.***

The minutes and audio recording of this meeting are available by contacting the Planning & Sustainability Department.

Very truly yours,

Peter Britz,
Planning and Sustainability Director

cc: Joseph Coronati, Jones & Beach
cc: R. Timothy Phoenix, Hoefle, Phoenix, Gormley & Roberts, PLLC

**SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE**
**PORTSMOUTH, NEW HAMPSHIRE**

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

**2:00 PM** **November 5, 2024**

## ACTION SHEET

## I. APPROVAL OF MINUTES

**A.** Approval of minutes from October 1, 2024 Site Plan Review Technical Advisory Committee Meeting.

*The Committee voted to approve the October 1, 2024 minutes as amended.*

***Motion**: P. Britz, **Second**: D. Desfosses*

## II. OLD BUSINESS

**A.** The request of **635 Sagamore Development LLC (Owner),** For property located at **635 Sagamore Avenue** requesting Site Plan approval for the removal of the existing structures and construction of 4 single-family dwellings on one lot with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. (LU-22-209)

*The Committee voted to **recommend approval** to the Planning Board with the following **conditions**:*

**The following changes will be made prior to Planning Board submission:**

1. *The stormwater maintenance manual shall be updated for the submission to the Planning Board.*

**Conditions:**

1. *Trees to remain are clearly marked before site work can commence.*
2. *Monthly and annual reporting of stormwater and drainage infrastructure as defined in the stormwater maintenance manual to the Department of Public Works.*
3. *Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.*
4. *Developer to pay for the installation of the fire hydrant extended to the site. The hydrant was installed exclusively for the benefit of this site. The cost to install was $20,900.*

5. *Developer to provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.*

***Motion**: D. Desfosses, **Second**: P. Britz*

B. The request of **Oak Street Real Estate Capital (Owner), 100 Durgin Lane Owner, LLC (Applicant),** for property located at **100 Durgin Lane** requesting Subdivision approval of a lot line adjustment and Site Plan Review approval for the demolition of the existing buildings and the construction of 360 rental housing units in a mix of 3-story and 4-story buildings with associated site improvements including parking, pedestrian access, community spaces, utilities, stormwater management, lighting, and landscaping. Said property is located on Assessor Map 239 Lot 18 and lies within the Gateway Corridor (G1) District. (LU-24-62)

*The Committee voted to **recommend approval** to the Planning Board with the following **conditions**:*

**The following changes will be made prior to Planning Board submission:**

1. *R4-7b Keep Right signs to be used at traffic circle, and place signs inside the raised median island, not on the right-hand side of the roadway.*

2. *NO PARKING signs must be installed at the head of each handicap parking space access aisle that is 8 feet wide, in a location that does not block the accessible route.*

3. *When W11-2 signs are used at crosswalks, they must also include a W16-7P sign below them.*

4. *Detail highlighting changes in wetland buffer impacts since conservation commission approval will be included.*

**Conditions:**

1. *A CMMP will be required for construction. Portions of that plan will be a proposed utility and access sequencing plan for the two nearby lots that are dependent on this parcel for their utility and access needs. The Department of PW will need to sign off on the proposed plan prior to the CMMP being authorized.*

2. *Applicant must replace the 6" water main in Woodbury Avenue from Gosling Road to the 16" main on Woodbury Avenue with a new 12" DI pipe installed to City standards.*

3. *A 10' multi-use path on Durgin Lane must be constructed by the developer all the way to Woodbury Avenue. Multi-use path tip downs are to be concrete with tactile panels as appropriate. Developer will provide a final layout, drainage and striping plan for final review.*

4. *Continue narrowing Durgin Lane to 28' to provide a grass strip along the road in the area adjacent to the Durgin Plaza parking lot.*

5. *Third party oversite engineer is required.*

***Motion**: P. Britz, **Second**: D. Desfosses*

C. The request of **Francis E. Mouflouze Revocable Trust of 2015 (Owner),** for property located at **550 Sagamore Avenue** requesting a subdivision and site review approval to demolition the existing single-family residence and subdivide the lot into three new parcels, each with a single-family dwelling, and associated site improvements, including a private roadway, stormwater management, utilities, and landscaping. Said property is located on Assessor Map 222 Lot 11 and lies within the Single Residence B (SRB) District. (LU-24-166)

*The Committee voted to **recommend approval** to Planning Board with the following **conditions**:*

**The following changes will be made prior to Planning Board submission:**

1. *Applicant to provide a letter demonstrating compliance with Site Plan Review Regulations 6.2.1, 6.3.4, 6.3.8, 6.3.9, 6.3.14, 6.4, and 6.11.*

**Condition Precedent:**

1. *Trees to remain are clearly marked and erosion controls in place before site work can commence.*

**Conditions:**

1. *Applicant will provide a maintenance agreement for right of way.*
2. *Sewer will require NHDES sewer extension application.*
3. *A W14-2a sign will be used rather than a W14-2.*
4. *Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.*

***Motion**: D. Desfosses, **Second**: P. Britz*

## 6. NEW BUISINESS

**A.** The request of **Shaines & McEachern Company (Owner),** for property located at **282 Corporate Drive** requesting site review approval from the Pease Development Authority for site improvements related to a new commercial use, including stormwater management, utilities, lighting, and landscaping. Said property is located on Assessor Map 315 Lot 2 and lies within the Airport Business Commercial (ABC) District. (LU-24-169)

*The Committee voted to recommend that the Planning Board recommend approval to the Pease Development Authority with the following **conditions**:*

1. *Plans will be updated to reflect NO PARKING signs will be installed at the head of each handicapped parking space access aisle that is 8 feet wide, in a location that does not block the access route.*

2. *Plans will be updated to reflect any disturbance in roadway aprons will result in reinstalled aprons as they currently exist to ensure that the sidewalk system stays ADA compliant.*

3. *Applicant will coordinate with grease trap compliance at DPW.*

4. *Plans will be edited to reflect accurate plan grades in right of way.*

5. *A PDA Conditional Use Permit will be submitted to the Portsmouth Conservation Commission and Planning Board for review and recommendation.*

***Motion**: P. Britz, **Second**: S. Wolph*

**B.** The request of **Go-Lo Inc (Owner),** and **Peter and Michael Labrie (Applicants),** for property located at **2059 Lafayette Road** requesting to demolish the existing mixed use building and construct a new 8-unit residential building. Said property is located on Assessor Map 268 Lot 13 and lies within the Mixed Residential Business (MRB) District. (LU-23-191)

*The Committee voted to **recommend approval** to Planning Board with the following **conditions**:*

**The following changes will be made prior to Planning Board submission:**

1. *A CUP will be needed to provide 175% of required parking.*

2. *Applicant will include existing vegetation and trees on landscape plan (what is to remain and what is to be removed) and demonstrate compliance with Section 6.2.1 of the Site Plan Review Regulations.*

3. *Applicant will demonstrate compliance with Site Plan Review Regulation 6.11 and note landscape irrigation source and plans.*

4. *Install new 5.5' asphalt sidewalk on Hoover Drive from Lafayette Road to Coolidge Drive to the satisfaction of DPW.*

5. *Change proposed drain manhole on Hoover Drive to in-line catch basin with sump.*

6. *Note added to plan reflecting MEP engineer to determine sizes of proposed fire and domestic water services.*

7. *NO PARKING signs must be installed at the head of each handicap parking space access aisle that is 8 feet wide, in a location that does not block the accessible route.*

8. *Plans updated to reflect tactile panels at the ends of the multi-use path must extend the full width of the path.*

9. *Plans will be updated to reflect the current preferred alternative route for the DOT Route 1 project provides for a 10-foot-wide multi-use path along the site, not 8 feet.*

10. *Applicant will consider bike racks that provide two points of contact with bikes.*

11. *All plans reflect compliance with the City's most up to date building codes.*

12. *Offsite plans will be provided for Hoover Drive that is approved by DPW.*

**Conditions:**

1. *Trees to remain clearly marked and fenced in before site work to commence.*

2. *Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.*

3. *Access to utility room will be provided to DPW for water meter access.*

4. *New plantings will not block sight lines at driveway and vegetation will be cleared within Hoover Drive ROW to provide necessary sight lines.*

***Motion**: D. Defosses, **Second**: P. Britz*

**C.** The request of **City of Portsmouth (Owner),** for property located at **680 Peverly Hill Road** requesting TAC input for two building additions and associated site improvements related to stormwater, lighting and utilities. Said property is located on Assessor Map 254 Lot 8 and lies within the Industrial (I) and Municipal (M) Districts. (LU-24-189)

*TAC provided feedback for this City project, no recommendation required.*

## 7. ADJOURNMENT

*The meeting adjourned at 4:09 p.m.*

**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** **November 5, 2024**

**MEMBERS PRESENT:**

Peter Stith, Chairperson, Planning Manager; David Desfosses, Construction Technician Supervisor; Peter Britz, Director of Planning & Sustainability; Chad Putney, Fire Prevention Officer; Zachary Cronin, Assistant City Engineer; Eric Eby, Parking and Transportation Engineer; Mike Maloney; Deputy Police Chief, Vincent Hayes; Planner I

**MEMBERS ABSENT**: Patrick Howe, Deputy Fire Chief; Shanti Wolph, Chief Building Inspector

**ADDITIONAL STAFF PRESENT:** Stefanie Casella, Planner II; Kate Homet, Environmental Planner

## MINUTES

## I. APPROVAL OF MINUTES

**A.** Approval of minutes from October 1, 2024 Site Plan Review Technical Advisory Committee Meeting.

[8:01] P. Britz proposed an edit to the October minutes to include himself as present in the attendance list. He then made a motion to recommend approval of the minutes with the one edit. D. Desfosses seconded the motion. The motion passed unanimously.

## II. OLD BUSINESS

**A.** The request of **635 Sagamore Development LLC (Owner),** For property located at **635 Sagamore Avenue** requesting Site Plan approval for the removal of the existing structures and construction of 4 single-family dwellings on one lot with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. LU-22-209)

**SPEAKING TO THE APPLICATION**

[9:12] Mike Garrepy from Garrepy Planning Consultants came to present this application. He noted that his team had received the comments from Altus and are okay with them. He went on to address the concerns from Altus about the retaining wall. He noted Altus and staff's concerns with the sand system maintenance and stated that monthly or seasonal maintenance would be a responsibility of the future landscaping company.

[13:22] P. Britz asked about the inspection of the sand system and the possibility of building a different type of stormwater system that would not require this level of maintenance. A discussion continued about the maintenance schedule and how to enforce it.

**PUBLIC HEARING**

[16:33] P. Stith opened the public hearing.
[16:58] Tim McNamara of 579 Sagamore Avenue Unit 19 came to speak. Mr. McNamara noted his concerns about traffic, a potential error in the scale bar on the plans, concern about the positions of buildings 3 and 4 and the Board of Adjustment's analysis of this. Additionally, he mentioned concerns over possible radon levels from blasting, the accuracy of the proposed tree line if there are scale bar issues, increased stormwater intake at Tidewatch, trees, parking, rooflines, drainage and concerns about the aesthetics of the proposed boulder wall.

[36:41] P. Stith closed the public hearing.

**DISCUSSION AND DECISION OF THE BOARD**

[37:01] P. Britz addressed some of the public comments made during the public hearing.

[38:40] S. Wolph commented on his initial concerns about parking and noted how important it would be for residents to utilize their garage spaces to meet the parking rules.

[40:37] V. Hayes asked if it would be helpful to have a condition precedent that requires clearly marking out the existing tree line that is to remain prior to the commencement of site work. P. Britz and D. Desfosses discussed the handling of the sand filtration system and proposed maintenance.

[43:50] D. Desfosses made a motion to recommend approval of the application to the Planning Board with the following stipulations:

**The following changes will be made prior to Planning Board submission:**

1. *The stormwater maintenance manual shall be updated for the submission to the Planning Board.*

**Conditions:**

1. *Trees to remain are clearly marked before site work can commence.*

2. *Monthly and annual reporting of stormwater and drainage infrastructure as defined in the stormwater maintenance manual to the Department of Public Works.*

3. *Engineer to certify that stormwater mitigation system was monitored during construction, is installed as designed and that the system will function in compliance with the proposed drainage study and plan.*

4. *Developer to pay for the installation of the fire hydrant extended to the site. The hydrant was installed exclusively for the benefit of this site. The cost to install was $20,900.*
5. *Developer to provide fair share contribution for catch basin installed up gradient to the Tidewatch intersection. The catch basin was installed partially for the benefit of this site. The fair share contribution is $15,208.*

P. Britz seconded the motion. The motion passed unanimously.

**B.** The request of ~~**Oak Street Real Estate Capital (Owner), 100 Durgin Lane Owner, LLC (Applicant),**~~ for property located at **100 Durgin Lane** requesting Subdivision approval of a lot line adjustment and Site Plan Review approval for the demolition of the existing buildings and the construction of 360 rental housing units in a mix of 3-story and 4-story buildings with associated site improvements including parking, pedestrian access, community spaces, utilities, stormwater management, lighting, and landscaping. Said property is located on Assessor Map 239 Lot 18 and lies within the Gateway Corridor (G1) District. (LU-24-62)

**SPEAKING TO THE APPLICATION**

[48:16] Neil Hansen (Tighe & Bond), Brett Bentson (architect), Andrew Hayes (owner representative) and Patrick Crimmins (Tigh & Bond) came to present this application. Mr. Hansen proceeded to go through the staff comments and address them.

[50:29] P. Britz asked about the offsite hotel and whether the applicants have spoken to the hotel owners about needing to amend their own site plans for the proposed access changes. Mr. Hayes said that they were aware. C. Putney asked about the existing fire hydrant on that property that was not shown on the plans, and he wondered whether or not it would be staying. Mr. Hansen responded that they were not planning to remove any hydrants from the Hampton Inn property.

[51:42] P. Stith asked if the applicants had confirmed with Weston & Sampson on the sewer, Mr. Hansen responded yes.

**PUBLIC HEARING**

[52:01] P. Stith opened the public hearing.

[52:16] Tim Phoenix from Hoefle, Phoenix, Gormley & Roberts came to speak on behalf of the New Frontiers church. He mentioned that the church is working with the developer on access and sewer easements that need to be cleaned up or replaced. In addition, the church is concerned about

EXHIBIT 4

ALTUS ENGINEERING

*Civil*
*Site Planning*
*Environmental*
*Engineering*

133 Court Street
Portsmouth, NH
03801-4413

December 5, 2024

Peter Stith, Planning Manager
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: Peer Review #5
"Luster Cluster" Residential Development
Tax Map 222, Lot 19
Altus Project 5583

Transmitted via email to: pmstith@cityofportsmouth.com

Dear Peter,

On May 21, 2024, Altus Engineering (Altus) received the executed three-party contract to provide peer review of the Luster Cluster multi-family development at 635 Sagamore Avenue.

This review has been conducted to determine conformance with City of Portsmouth Stormwater Regulations as well as the City's expectations, good engineering practices, and specifically the items identified in Exhibit A, Task 1 of the Agreement including the following:

- Conduct a site visit to observe current site conditions to assess that JBE's assumptions are accurate.
- Review the drainage study and site design as it relates to the short term and long-term drainage scenarios.
- Review the Stormwater Management Operation and Maintenance Manual.
- Review the design for conformance to City Regulations, City expectations, and standard engineering practices.

On May 30, 2024, Altus walked the property with Michael Garrepy, the owner's representative and Paige Libbey, the project engineer from Jones & Beach Engineers, Inc. (JBE). Altus issued review letters on June 4th, August 28th, October 7th, and October 29, 2024.

On August 26, 2024, Altus performed a follow up visit to confirm the existing site conditions.

On November 25, 2024, JBE submitted a revised plan set dated November 25, 2024, updated Stormwater Management Operations and Maintenance Manual, and a supporting cover letter. Their October 14, 2024 Drainage Analysis remains valid.

The revised submission satisfactorily addresses our concerns with the exception of the following housekeeping items.

## GENERAL COMMENTS

1. Key elevations should be added to the stone infiltration basins under the decks for Units 3 and 4. Notes should be added to the plan requiring inspection of the subgrade by the City to ensure that the design criteria is met.

2. The sitework details for both the sand absorption area and the infiltration stone underneath deck specify uncompacted in-situ soil or suitable backfill from subject parcel native material is placed beneath and adjacent to the systems. It is Altus' opinion that the Designer should provide gradation, compaction, and infiltration rate requirements for the placement of the fill adjacent, below and down gradient of the infiltration practice. The sand absorption area for unit 3 is in 5-foot fill section. The detail should include a minimum depth of native material below the treatment area as well as down gradient.

Altus is available to meet with the City and/or the applicant's engineer to further discuss this review. Please feel free to contact us at any time at (603) 433-2335.

Respectfully submitted,

**Altus Engineering, LLC**

Eric D. Weinrieb, PE
President

Ecopy: David Desfosses, Portsmouth DPW
Zach Cronin, Portsmouth DPW
Mike Garrepy
Daniel Meditz, JBE

Wde/5583 rev 4.docx

EXHIBIT 5

**PLANNING BOARD**
**PORTSMOUTH, NEW HAMPSHIRE**

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

**7:00 PM Public Hearings begin** **December 19, 2024**

| | |
|---|---|
| **MEMBERS PRESENT:** | Rick Chellman, Chairman; Greg Mahanna, Vice Chair; Karen Conard, City Manager; Joseph Almeida, Facilities Manager; Beth Moreau, City Councilor; James Hewitt; Paul Giuliano; Andrew Samonas; Anthony Coviello; and William Bowen, Alternate |
| **ALSO PRESENT:** | Peter Stith, Planning Department Manager |
| **MEMBERS ABSENT:** | None. |

## I. APPROVAL OF MINUTES

**A.** Approval of the November 21, 2024 meeting minutes.

*Mr. Giuliano moved to **approve** the minutes as presented, seconded by Mr. Samonas. The motion **passed** with all in favor.*

## II. DETERMINATIONS OF COMPLETENESS

### SUBDIVISION REVIEW

~~**Note:** the following two items were considered together.~~

**A.** The request of **Frances E. Mouflouze Revocable Trust of 2015 (Owner),** for property located at **550 Sagamore Avenue** requesting Subdivision and Site Plan Review Approval to demolish the existing single-family residence and subdivide the lot into four new parcels with associated site improvements, including three single-family homes, a private roadway lot, stormwater management, utilities, and landscaping. Said property is located on Assessor Map 222 Lot 11 and lies within the Single Residence B (SRB) District.

**B.** The request of **Oak Street Invest GRD NET (Owner),** and **Oak Street Real Estate Capital (Owner)** and **Durgin Lane LLC (Applicant),** for property located at **100 Durgin Lane** requesting Subdivision approval for a Lot Line Adjustment of the three existing parcels, a Wetland conditional use permit in accordance with Section 10.1017.50, a conditional use permit from the Highway Noise Overlay District (HNOD) in accordance with Section 10.613.60, a conditional use permit for a Development Site in accordance with Section 10.5B41.10, and Site Plan Review Approval for the demolition of the existing buildings and the construction of 360 rental housing units in a mix of 3-story and 4-story buildings with associated site improvements including parking, pedestrian access,

community spaces, utilities, stormwater management, lighting, and landscaping. Said property is located on Assessor Map 239 Lots 13-2, 16 & 18 and lies within the Gateway Corridor (G1) and Highway Noise Overlay Districts.

1) *Councilor Moreau moved that the Board determine that Items A & B are complete according to the Subdivision Review Regulations (contingent on the granting of any required waivers under Section IV of the agenda) and to accept the applications for consideration. Ms. Conard seconded. The motion* ***passed*** *with all in favor.*

**SITE PLAN REVIEW**

**Note:** Items A through E were considered together.

**A.** The request of **Shaines and McEachern Company (Owner),** for property located at **282 Corporate Drive** requesting Site Plan Review Approval and a Wetland Conditional Use Permit in accordance with Article 304 - A.08 of the Pease Development Authority Ordinance for the renovation of the existing space with associated site improvements including paving, striping curbing, stormwater management and utilities. Said property is located on Assessor Map 315 Lot 2 and lies within the Airport Business Commercial (ABC) District.

**B.** The request of **635 Sagamore Development LLC (Owner),** for property located at **635 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing structures and construction of 4 single family dwellings with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District.

**C.** The request of **Go-Lo Inc (Owner),** for property located at **2059 Lafayette Road** requesting Site Plan Review Approval to demolish the existing mixed-use building and construct a new 8-unit residential building. Said property is located on Assessor Map 268 Lots 12 & 13 and lie within the Mixed Residential Business (MRB) District.

**D.** The request of **Frances E. Mouflouze Revocable Trust of 2015 (Owner),** for property located at **550 Sagamore Avenue** requesting Subdivision and Site Plan Review Approval to demolish the existing single-family residence and subdivide the lot into four new parcels with associated site improvements, including three single-family homes, a private roadway lot, stormwater management, utilities, and landscaping. Said property is located on Assessor Map 222 Lot 11 and lies within the Single Residence B (SRB) District.

**E.** The request of **Oak Street Invest GRD NET (Owner),** and **Oak Street Real Estate Capital (Owner**) and **Durgin Lane LLC (Applicant),** for property located at **100 Durgin Lane** requesting Subdivision approval for a Lot Line Adjustment of the three existing parcels, a Wetland conditional use permit in accordance with Section 10.1017.50, a conditional use permit from the Highway Noise Overlay District (HNOD) in accordance with Section 10.613.60, a conditional use permit for a Development Site in accordance with Section 10.5B41.10, and Site Plan Review Approval for the demolition of the existing buildings and the construction of 360 rental housing units in a mix of 3-story and 4-story

to have each parcel build its own parking. He said it might be better to have centralized parking and have people pay a fee that would go into a capital fund and be used to develop a new parking garage. He explained why it didn't seem sensible to him that the requirement called for 10 spaces and the Board said it was okay for three spaces. Mr. Almeida said the applicant's parking requirements were going down by the change in use. It was further discussed. Chair Chellman said there was a need for more public utility meeting more public parking and that was the reason there was a line item in the Capital Improvement Plan. Mr. Almeida said the lot had more parking than most buildings on the street and that he didn't want to penalize the applicant with any condition and would prefer to leave it to the property owner to manage. Mr. Giuliano said the applicant wanted to convert commercial to residential on the first floor and would not expand the footprint. He said it would add much needed residential to the area.

**DECISION OF THE BOARD**

1) *Mr. Giuliano moved that the Board find that the Conditional Use Permit Application meets the requirements set forth in Section 10.1112.14 of the Ordinance and adopt the findings of fact as presented. Vice-Chair Mahanna seconded. The motion* ***passed*** *8-0 with Mr. Samonas abstaining.*

2) *Mr. Giuliano moved that the Board grant the Conditional Use Permit as presented. Vice-Chair Mahanna seconded. The motion* ***passed*** *8-0 with Mr. Samonas abstaining.*

**D.** The request of **635 Sagamore Development LLC (Owner)**, for property located at **635 Sagamore Avenue** requesting Site Plan Review Approval for the demolition of the existing structures and construction of 4 single family dwellings with associated site improvements. Said property is located on Assessor Map 222 Lot 19 and lies within the Single Residence A (SRA) District. (LU-22-209)

**SPEAKING TO THE PETITION**

[Timestamp 53:13] Project engineer Ian MacKinnon was present on behalf of the applicant and said the property had a service garage with an apartment and also an apartment in the rear that they wanted to demolish and replace with four single-family homes. He said the homes would be four condominium units. He reviewed the stormwater, water and sewer and said a landscape buffer would be created around the development. He said the project received variances from the ZBA in May 2023 and that TAC recommended approval in November 2024.

[Timestamp 56:01] Mr. Hewitt said a 3-lot proposal was presented at the January 2022 Planning Board meeting, and the driveway at that time was located farther southeasterly at the end of the property. He asked why the driveway was moved. Mr. MacKinnon said they had a highway access plan and had done a heavy analysis of sight and stop distances and felt that the new location was the safest location. Mr. Samonas asked about the TAC meetings. Mr. MacKinnon said they discussed stormwater with Altus Engineering. He said the site had a lot of slope and that there were recommended conditions due to the stormwater system and to condominium requirements related to maintenance and inspection during construction. Mr. Samonas said the blasting and undermining of the trees and root systems would be alarming to the neighborhood,

and he wanted to ensure that the drainage and retention pond had been looked at in terms of insurability and would not create additional issues to the neighborhoods behind it. Mr. MacKinnon said there was a catch basin that was installed on Sagamore Avenue to help with the neighboring community. He said the locations for the viral retention system were chosen based on test pit locations, so there was some exposed ledge in the area and the percolation tests would have been at the correct horizon to insure that any infiltration practice would operate efficiently. He said the peer review engineer thought it was a suitable system. Mr. Samonas asked if there was an Operations and Maintenance (O&M) plan. Mr. MacKinnon agreed and said it would be submitted to the City yearly. Mr. Samonas said the building design had changed because there were walkout basements in Buildings 3 and 4 that were not on prior plans. Mr. MacKinnon said the walkout basement was a product of the stormwater component.

[Timestamp 1:02:13] Councilor Moreau said there was a big grade change from the street to the lot that would be increased by two feet, and there would be four 3500-sf homes built. She said she was concerned about residents trying to get out of a frozen driveway in winter and the fact that there was no place for guests to park. She asked why the lot had to be built up higher and why the driveway depth had to go up so high, creating drainage issues and not providing enough parking spaces. Mr. MacKinnon said there was an 8 percent grade coming in from the driveway, and they had a driveway plan profile in the package that mirrored the existing grade for the first 150 feet. He said when the high point in the site was crested, the design had a vertical curve for shared access. He said the parking consisted of two spaces in the garage and two cars on the outside. Councilor Moreau said it didn't go up to 72 square feet in the existing conditions and that the applicant was making a big hill in the neighborhood even bigger. It was further discussed. Councilor Moreau said it was not safe for people driving out of their driveway in the middle of winter. Mr. MacKinnon said 8 percent was the maximum and 8-10 percent depending on the terrain. He said a public roadway was limited to 8 percent. Chair Chellman said there was a road coming in at 8 percent and almost 5 feet higher than the existing grade at the end. He said he was more concerned about its intersection with the main public road. He said there was a slope that transitioned from a 6 to 8 percent grade with no landing, and in snow and icy conditions, people would slide into the road. He said the stopping sight distance was also inadequate and the exiting sight distance was not addressed. It was further discussed. Chair Chellman said it did not conform and was a public safety matter.

[Timestamp 1:08:36] Vice-Chair Mahanna said Plan C2 still called it a 5-unit residential site. He said the stormwater O&M plan had a notation about cleaning grease traps and disposing of rags property. He asked if that was a cut-and-paste area, and Mr. MacKinnon said it was likely because it would not be required on the site. Vice-Chair Mahanna said he lived in a similar development and thought the applicant's O&M plan was onerous. He noted that TAC told the applicant to change things to quarterly, yet everything in the plan still said monthly. He said there was also the issue of requiring a chemical analysis of the leaves pulled when removing the debris from the sand traps monthly. He said dredging and chemical analysis were expensive and asked if the applicant would warn the homeowners of the cost and level of detail and if it would be recorded on the deeds that the owners were subject to all of that. Mr. MacKinnon said the monthly term came from the NHDES Best Management Practices (BMP) manual for inspection. He said the yearly inspection by a professional might be a requirement by the City, but the

monthly inspection was a guide for the condo association. He said the sand trip was a unique feature and that recommendation came from the peer review engineer. Vice-Chair Mahanna said 99 percent of the applications the Board got for similar projects had a Green SnowPro program, an organic fertilizer maintenance plan, a State-certified organic plan, and an invasive species mitigation plan. He said the applicant's plan also showed no plan for snow storage, which was a requirement, and that the plan also indicated that the snow would be stored off the pavement. He asked if the applicant intended to put contaminated snow on a filter that would filter into the stormwater and if a lab would have to test for chemicals. Mr. MacKinnon said the report would not be recorded at the Rockingham Registry of Deeds but would be an attachment as part of the HOA documents. He said they had snow storage outlined in the plan and further explained it.

Chair Chellman said there was a disconnect from what was presented and things that the applicant wanted to change. Mr. MacKinnon said the monthly inspections were part of the recommended tables. Vice-Chair Mahanna said TAC had spent a lot of time on the topic of quarterly inspections, yet it was still listed as monthly in the plan. Mr. Coviello said there was a lack of clarity in the application. Mr. Samonas said there were two precedent cases that were both the same clustered development style and had ten units and were about the same size, so conceptually it was not unheard of. He said the massing was overwhelming. He asked where contractors, fire trucks, and so on would park. He said the barrier at the rear of the property might fail and Tidewatch would have to deal with it. He said adjustments had to be made.

[Timestamp 1:22:43] Mr. Bowen said the four condo families had to have specific information, and he suggested a detailed attachment to the condo documents related to the frequency of inspections. He said the developer could be contracted to do the maintenance at first and then it could be adapted by the owners. Councilor Moreau said very few people read their condo documents and suggested including conditions in the deed instead. She said she would like to see more room for parking, cars, and delivery vehicles and thought two duplexes would take up less space and allow more parking. She said the grade could be changed more. Chair Chellman said he could not support the proposal because it was not ready.

[Timestamp 1:25:45] Project manager Mike Garrepy suggested a site walk. He said traffic and drainage were vetted through the TAC process and that the applicant worked with City Staff in doing the sight distance analysis. He said the had one controlled point of access for the site that was reviewed by their traffic and civil engineers and City Staff and that it was in the safest location on the site. He said the proposed trips per day were less than the existing trips per day, with respect to traffic. He asked for more clarification on what the Board wanted. Mr. Bowen said the January 22 plan had the location of the driveway at the end of the property and he suggested a sight line analysis. Mr. Garrepy said they did one at that point and also did one farther up the slope. Mr. Bowen asked why the driveway was therefore in the proposed location. Mr. Garrepy said it was due to discussions with their engineers, the Department of Public Works (DPW), and City Staff. Mr. Bowen said the applicant could do a comparative analysis that showed why his proposed plan was the safest, but he felt that the safest location was the one on the January 22 plan. Mr. Almeida said the previous condition had multiple uncontrolled access in and out but thought the proposed conditions were very improved as far as safety and control of traffic and that a controlled access point was in place. Mr. Garrepy said the frequency of the

inspections was once a month, but the DPW, City Staff and TAC thought that was burdensome and agreed to change it. He said it just wasn't included in the document. Mr. Samonas agreed that the proposed conditions had improved but feared the hesitation between drivers going between Tidewatch and cyclists cresting the hill. He agreed that alternative access points could work to create more safety. Chair Chellman said stopping sight distance was in the study and that the study said it was close. He said intersection sight distance referred to vehicles coming out of a driveway onto Sagamore Avenue. He said based on the information the applicant submitted, they were more deficient there than on the stopping sight distance. He said an additional factor was adding the grade without having a landing on a north facing slope, which could pose problems and was a concern. He said a site walk and a continuance was a good idea.

Chair Chellman opened the public hearing.

**SPEAKING TO, FOR, OR AGAINST THE PETITION**

**First Round Speakers** [Timestamp 1:41:25]

Peter Wissel of 579 Sagamore Avenue (via Zoom) asked that the Board reject the application and limit the development to a single unit for reasons of public safety, an unworkable stormwater management system, the use of city and tax payer resources for the benefit of the applicant, inadequate onsite parking, and an inadequate buffer between the development and Tidewatch. He said the minimal sight distance requirements for traffic exiting the property were not met, and that four units would create more traffic and an increased risk of collision. He said the plan diverted more stormwater toward Tidewatch and additional stormwater and snowmelt would flow down the hill. He said TAC required monthly inspection reports of the stormwater management to be filed with DPW.

Project engineer Eric Weinberg clarified that he did not make design recommendations but only reviewed designs. He said the sand filter was the design engineer's idea.

Jeff Serto of Tidewatch Condominiums said the turn into Tidewatch up from Atlantic Road was a blind turn. He asked how the 635 Sagamore Avenue residents would pull out of the development. He asked what kind of damage the blasting would do to the community and whether there would be chemicals leaching into his property from the water runoff.

Ann Hartman of 579 Sagamore Avenue said the NH Department of Business and Economic Affairs Handbook for Planning Boards outlined the duties of planning boards and said the board could exercise independent knowledge and judgment of an area. She asked that the Board hear the concerns raised for several years and exercise their judgment on the issues of drainage mitigation, a challenging traffic configuration, and the safety and wisdom of the blasting.

Andrew Jaffe of 579 Sagamore Avenue said the access road for Tidewatch had a single point of access to Sagamore Ave. He said most of the residents of Tidewatch were seniors and needed to have continuous access for emergency vehicles and medical appointments.

Elise Gallo of 579 Sagamore Avenue said she attended the TAC meetings and heard their concerns about the drainage and retention pond and that any changes should go back to the ZBA.

Tim McNamara of 579 Sagamore Avenue said the Board reduce the number of units and send the petition back to the ZBA for reconsideration. He said the project posed too much risk on the abutters and the public due to traffic safety, inadequate distance for stopping, and parking issues.

**Second Round Speakers**

Tim McNamara said the proposed drainage system, stormwater management, water quality, and property flooding were concerns and that TAC had significant concerns about the system working as planned. He said the developer put an unsightly retention pond on the property lines of two abutters, and the buildings were now much closer to the abutters, which was against the ZBA's ruling. He asked that the number of units be reduced.

No one else spoke, and Chair Chellman closed the public hearing.

**DECISION OF THE BOARD**

[Timestamp 1:59:03] A site walk, continuing the application, and sending the application back to the ZBA were discussed. Mr. Stith said the variances were for more than one principal dwelling on the lot and the lot area per dwelling unit, which had not changed. He said there was a condition that it could change with site plan review. He said the changes to the house complied with zoning, and if it were changed to duplexes, then it should go back to the ZBA. Chair Chellman said the applicant offered to have the driveway and the four corners of the building staked with grades. He thought the additional analysis for the continuation of the meeting would be necessary. ***Note***: Councilor Moreau originally moved to continue the application to the February 20 meeting and schedule a site walk before then, but after further discussion, she amended her motion to state that the application would be continued to the January 16 meeting.

1) *Councilor Moreau moved that the Board **continue** the application to January 16, 2025 and schedule a site walk. Vice-Chair Samonas seconded. The motion **passed** with all in favor.*

~~**E.** The request of **Go-Lo Inc (Owner),** for property located at **2059 Lafayette Road** requesting~~ Site Plan Review Approval to demolish the existing mixed-use building and construct a new 8-unit residential building. Said property is located on Assessor Map 268 Lot 13 and lies within the Mixed Residential Business (MRB) District. (LU-23-191)

**SPEAKING TO THE PETITION**

[Timestamp 2:15:13] Project engineer Eric Weinberg was present on behalf of the applicant and said they wanted to replace the mixed-use building with an 8-unit residential building. He said there would be 16 underground parking spaces and five external visitor/handicap spaces. He said the access would be safer because people would drive in and out. He explained how the water, sewer, underground electric service, and gas would be serviced, and he described the screening ~~landscaping and lighting~~.

4. The applicant shall provide traffic signal equipment, traffic signs, travel lanes, pavement widening, markings, sidewalks, and other improvements to existing streets upon determination by the Planning Board that the specific improvements are necessary for safe handling of traffic generated by the proposed development.

5. Projects having access onto congested public streets may be required to eliminate certain turning movements as determined necessary and practical by the Planning Board.

## Section 3.3 General Accessway and Driveway Design

### 3.3.1 General Requirements

1. The internal network of accessways and driveways shall:

   (a) Provide for the safe, efficient and orderly movement of all modes of transportation, including vehicles, public transit, bikes and pedestrians;

   (b) Be designed to meet, but not exceed, the needs of the present and projected population served by the site, and;

   (c) Be designed to respect natural features and topography.

2. Accessways shall be designed based on the anticipated role within the project site of the accessway as defined by AASHTO road classifications and/or approved by the Planning Board.

3. A driveway permit from the Department of Public Works shall be required for all existing and new driveways accessing a street.

### 3.3.2 Accessway and Driveway Design and Location

1. Accessways and driveways shall, where practical, have an all-season safe sight distance (according to AASHTO standards) in both directions along the public street. Where only a lesser sight distance is obtainable, no more than one accessway per single parcel shall be allowed.

2. Accessways and driveways shall be located no closer than fifty (50) feet to the curb line of an intersecting street.

3. Driveways shall be limited to one per lot.

# Findings of Fact | Detached Accessory Dwelling Unit
## City of Portsmouth Planning Board

Date: February 20, 2025
Property Address: 435 Greenside Avenue
Application #: LU-25-14
Decision: □ Approve □ Deny □ Approve with Conditions

**Findings of Fact:**
Per RSA 676:3, I: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. **The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval.** If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of the all conditions necessary to obtain final approval.

Zoning Ordinance -10.814.60: Before granting a conditional use permit for a detached ADU, the Planning Board shall make the following findings:

| | Section 10.814.62 | Finding (Meets Requirement/ Criteria) | Supporting Information |
|---|---|---|---|
| **1** | 10.814.621 The ADU complies with all applicable standards of this Section 10.814 or as may be modified by the conditional use permit. | **Meets**<br>**Does Not Meet** | The AADU complies with all of the standards in Section 10.814 and no modifications are requested with this application. |
| **2** | 10.814.622 The exterior design of the ADU is architecturally consistent with or similar in appearance to the existing principal dwelling on a lot. | **Meets**<br>**Does Not Meet** | The addition will share similar roof pitch, window style/color and siding as the existing home. |
| **3** | 10.814.623 The site plan provides adequate and appropriate open space and landscaping for both the ADU and the principal dwelling unit and complies with the off-street parking requirements of 10.814.26. | **Meets**<br>**Does Not Meet** | The lot is large and has more than adequate open space with the addition. A parking space for the ADU is provided in addition to the parking for the existing dwelling. |
| **4** | 10.814.624 The ADU will maintain a compatible relationship with the character of adjacent and neighborhood properties in terms of location, design, and off-street parking layout, and will not significantly reduce the privacy of adjacent properties. | **Meets**<br>**Does Not Meet** | When looking around the neighborhood, one could envision this ADU as if it was always there. The height being lower than the main home helps make this look like a simple addition. Facing the home from the street, right side, is the wall closest to an abutting neighbor. This wall was designed as a "working wall" in order to maintain that |

| | Section 10.814.62 | Finding (Meets Requirement/ Criteria) | Supporting Information |
|---|---|---|---|
| | | | privacy. Most time in the ADU will be spent on the yard side where the bedroom, bathroom, and living room are located. |
| **5** | **<u>Other Board Findings</u>:** | | |

NOTE:
- THIS PLAN IS BASED ON A VISUAL INSPECTION ONLY
- DESIGNER DOES NOT CERTIFY THAT ANY HIDDEN OR EXISTING CONDITIONS THAT MAY BE PRESENT HAVE BEEN IDENTIFIED AND ADDRESSED IN PLANS

- IF SUCH CONDITIONS ARISE DURING CONSTRUCTION WITH NO FIELD REMEDY THEY SHALL BE SUBMITTED TO THE DESIGNER FOR REVIEW AND RESOLUTION

- CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS AND DIMENSIONS

- CONTRACTOR SHALL NOTIFY THE DESIGNER OF ANY CONCERNS OR CONDITIONS THAT MAY SUBSTANTIALLY AFFECT THE PROJECT PRIOR TO FABRICATING ANY WORK

- ALL WORK SHALL COMPLY WITH STATE AND MUNICIPAL BUILDING CODES

- ALL MECHANICAL WORK SHALL BE PERFORMED BY STATE LICENSED CONTRACTORS.

- DRAWINGS MAY BE SCALED FOR ESTIMATING PURPOSES AND FOR GENERAL REFERENCE ONLY. ALL DIMENSIONS TO BE VERIFIED IN FIELD.

THE FOLLOWING IS EXCLUDED FROM THE DESIGNERS SCOPE OF WORK;

- SOIL TESTING
- CIVIL ENGINEERING
- SURVEYING
- GRADING ELEVATIONS
- ZONING COMPLIANCE
- SITE CONFORMANCE
- PERMIT APPS
- SUBMISSIONS FOR VARIANCES OR SPECIAL PERMITS.

*ALL STRUCTURAL MEMBER SIZING TO BE VERIFIED BY THE GC*


1 PLOT PLAN
3/64" = 1'-0"

Section 10.520 Residential and Mixed Residential Districts

10.521 Table of Dimensional Standards – Residential and Mixed Residential Districts [1]

| | R | SRA | SRB | GRA | GRB | GRC | GA/MH | MRO | MRB |
|---|---|---|---|---|---|---|---|---|---|
| Minimum **Lot** Dimensions | | | | | | | | | |
| **Lot area** | 5 acres | 1 acre | 15,000 sf | 7,500 sf | 5,000 sf | 3,500 sf | 5 acres | 7,500 sf | 7,500 sf |
| **Lot area** per **dwelling unit** | 5 acres | 1 acre | 15,000 sf | 7,500 sf | 5,000 sf | 3,500 sf | 10,000 sf | 7,500 sf | 7,500 sf |
| Continuous **street frontage** | NA | 150' | 100' | 100' | 80' | 70' | N/A | 100' | 100' |
| Depth | NA | 200' | 100' | 70' | 60' | 50' | N/A | 80' | 80' |
| Minimum **Yard** Dimensions | | | | | | | | | |
| Front | 50' | 30' | 30' [2] | 15' | 5' | 5' | 30' [2,4] | 5' | 5' [2] |
| Side | 20' | 20' | 10' | 10' | 10' | 10' | 25' | 10' | 10' |
| Rear | 40' | 40' | 30' | 20' | 25' | 20' | 25' | 15' | 15' |
| Maximum **Structure** Dimensions | | | | | | | | | |
| **Structure height** | | | | | | | | | |
| **Sloped roof** | 35' | 35' | 35' | 35' | 35' | 35' [3] | 35' [3,4] | 40' | 40' |
| **Flat roof** | 35' | 30' | 30' | 30' | 30' | 30' | 35' [3,4] | 30' | 30' |
| **Roof appurtenance** height | 8' | 8' | 8' | 8' | 8' | 8' | 8' | 10' | 10' |
| **Building coverage** | 5% | 10% | 20% | 25% | 30% | 35% | 20% [4] | 40% | 40% |
| Minimum **open space** | 75% | 50% | 40% | 30% | 25% | 20% | 50% | 25% | 25% |

NA = Not Applicable NR = No Requirement

Notes:
1. See Article 5A and Article 5B for dimensional standards in Character and Gateway Neighborhood Mixed Use Districts.
2. See Section 10.533 for special front **yard** requirements on Lafayette Road.
3. Within the General Residence C and Garden Apartment/Mobile Home Park districts an additional 8' of height may be added to the maximum **structure** height in order to provide for **multifamily dwellings** that include vehicular parking spaces located within the residential **building** itself, if the additional height results in increased **open space** when compared to a site plan showing what **open spaces** would remain if required parking spaces were located in the open and in **accessory structures**.
4. See Section 10.816 for requirements within a **manufactured housing park**.


MJH DESIGN & VISUALIZATION

MICHAEL J. HEBERT
28 BIRCHWOOD DRIVE
WEARE, NH 03281

Consultant
Address
Address
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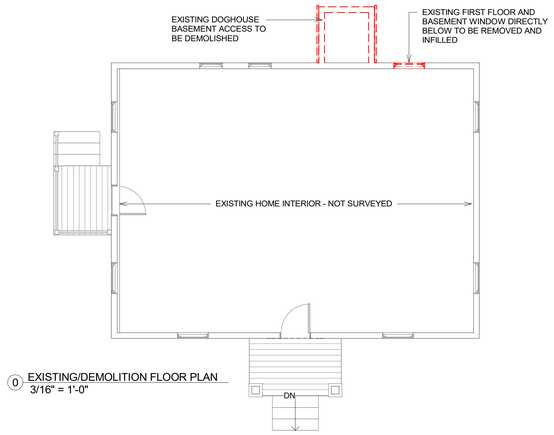
| No. | Description | Date |
|---|---|---|
| 1 | OWNER REVIEW 1 | 08.08.2024 |
| 2 | OWNER REVIEW 2 | 08.15.2024 |
| 3 | OWNER REVIEW 3 | Date 3 |
| 4 | PRICING/PERMIT | 09.09.2024 |

# 435 GREENSIDE AVE
## ATTACHED ADU
## PLOT PLAN

| | |
|---|---|
| Project number | Project Number |
| Date | 08.08.2024 |
| Drawn by | MJH |
| Checked by | MD |
| | A0 |
| Scale | 3/64" = 1'-0" |

2/3/2025 10:56:12 AM




0 EXISTING/DEMOLITION FLOOR PLAN
3/16" = 1'-0"

NOTE:
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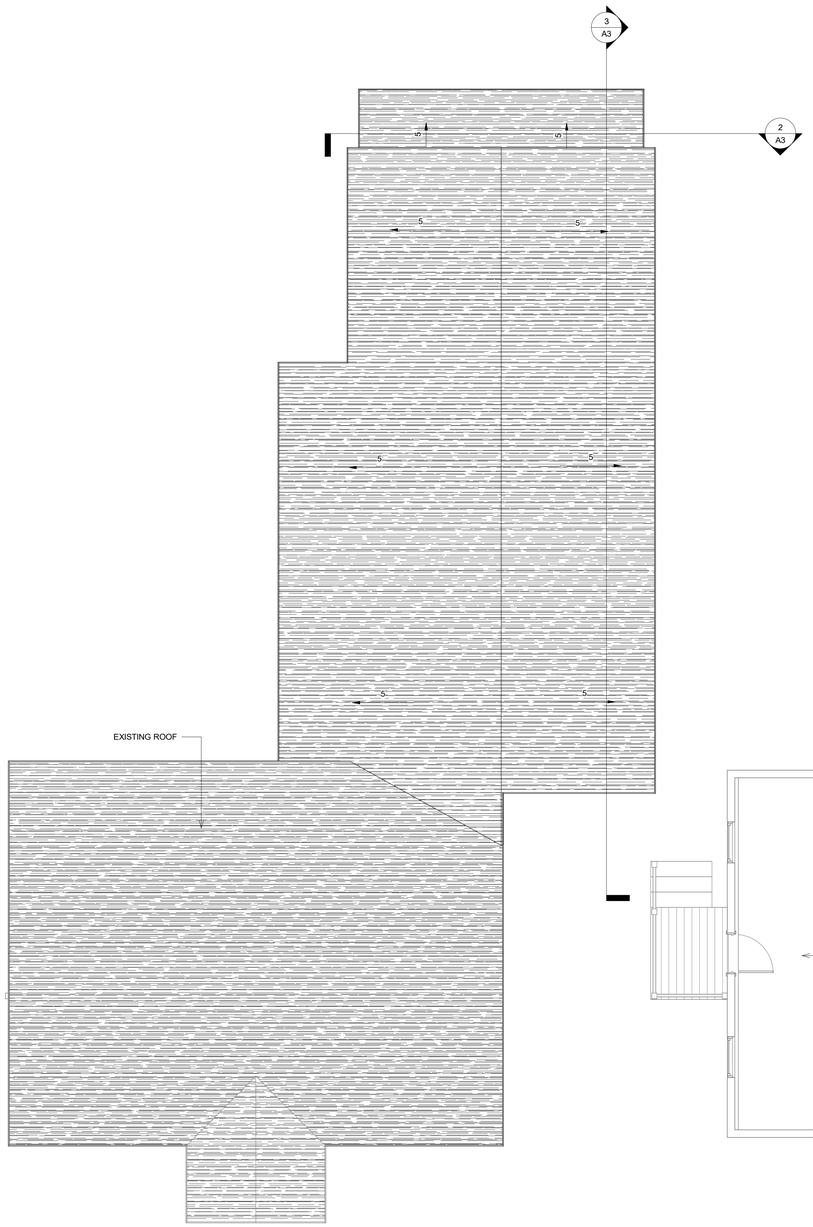
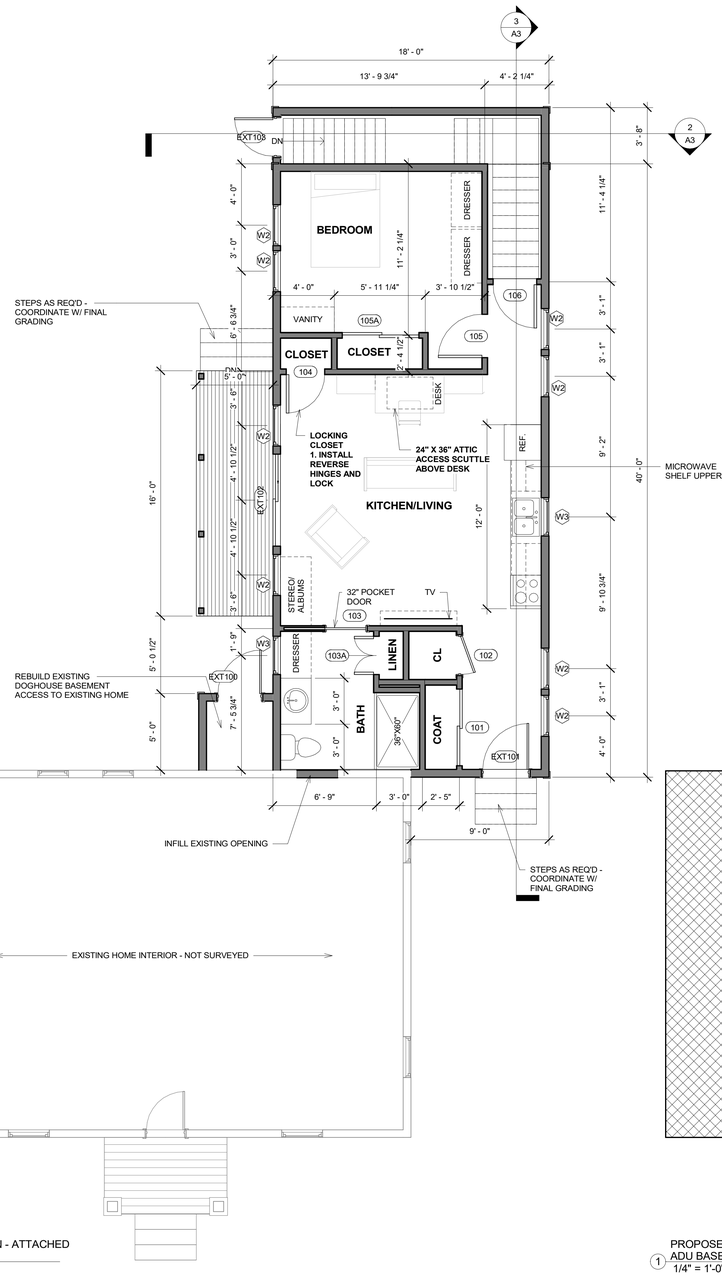
- SUBMISSIONS FOR VARIANCES OR SPECIAL PERMITS.

*ALL STRUCTURAL MEMBER SIZING TO BE VERIFIED BY THE GC*

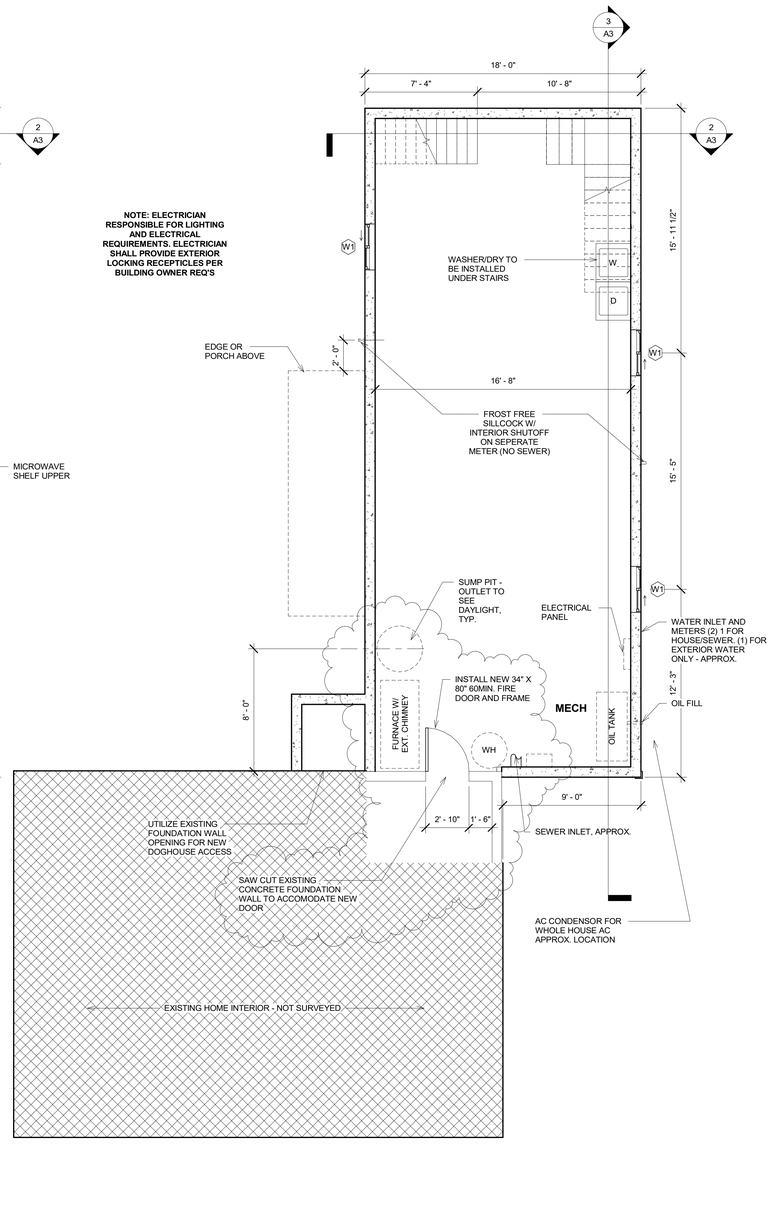



3 PROPOSED ROOF PLAN - ATTACHED ADU
1/4" = 1'-0"




2 PROPOSED FLOOR PLAN - ATTACHED ADU FIRST FLOOR
1/4" = 1'-0"

**NOTE: ELECTRICIAN RESPONSIBLE FOR LIGHTING AND ELECTRICAL REQUIREMENTS. ELECTRICIAN SHALL PROVIDE EXTERIOR LOCKING RECEPTICLES PER BUILDING OWNER REQ'S**




1 PROPOSED FLOOR PLAN - ATTACHED ADU BASEMENT
1/4" = 1'-0"

MJH DESIGN & VISUALIZATION
MICHAEL J. HEBERT
28 BIRCHWOOD DRIVE
WEARE, NH 03281

Consultant
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| No. | Description | Date |
|---|---|---|
| 1 | OWNER REVIEW 1 | 08.08.2024 |
| 2 | OWNER REVIEW 2 | 08.15.2024 |
| 3 | OWNER REVIEW 3 | Date 3 |
| 4 | PRICING/PERMIT | 09.09.2024 |
| 5 | BASEMENT DOOR UPDATE | 02.03.2025 |

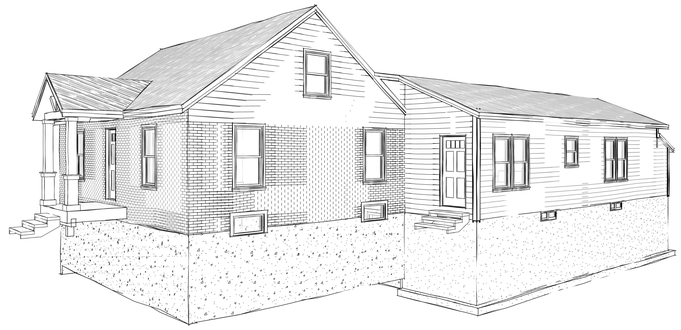
# 435 GREENSIDE AVE
## ATTACHED ADU FLOOR PLANS

| | |
|---|---|
| Project number | Project Number |
| Date | 08.08.2024 |
| Drawn by | MJH |
| Checked by | MD |
| Scale | As indicated |

A1

2/3/2025 10:56:12 AM

5 3D.2



6 3D.1

NOTE:
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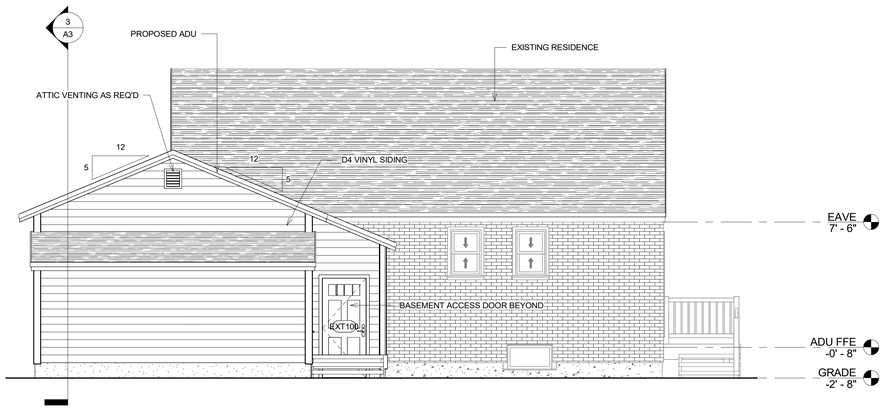
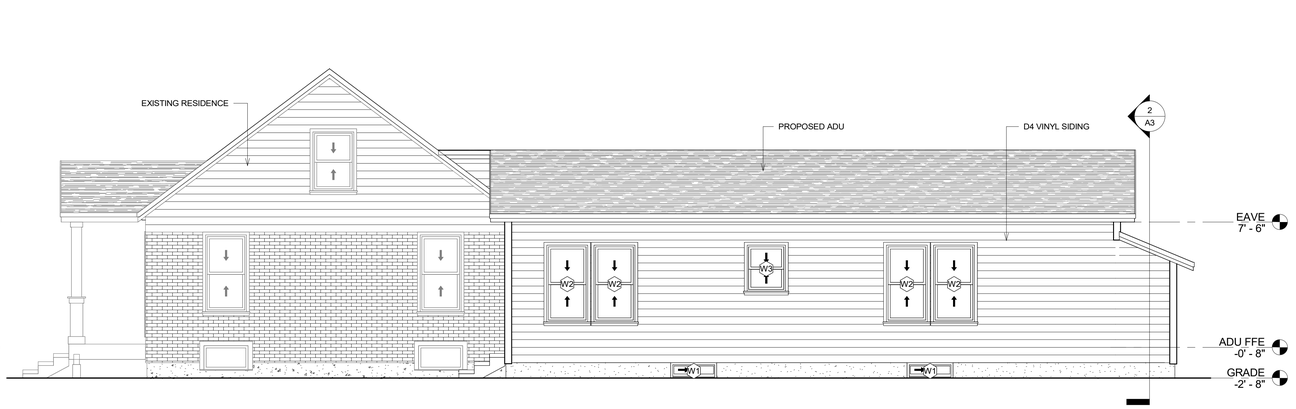
- SOIL TESTING
- CIVIL ENGINEERING
- SURVEYING
- GRADING ELEVATIONS
- ZONING COMPLIANCE
- SITE CONFORMANCE
- PERMIT APPS
- SUBMISSIONS FOR VARIANCES OR SPECIAL PERMITS.

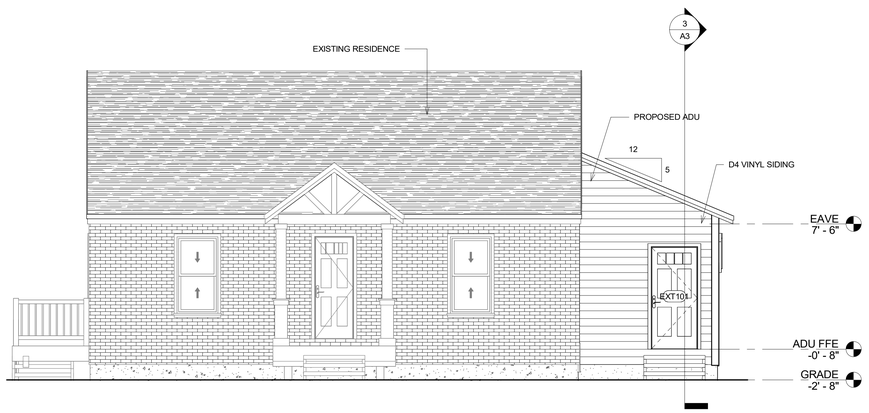
*ALL STRUCTURAL MEMBER SIZING TO BE VERIFIED BY THE GC*



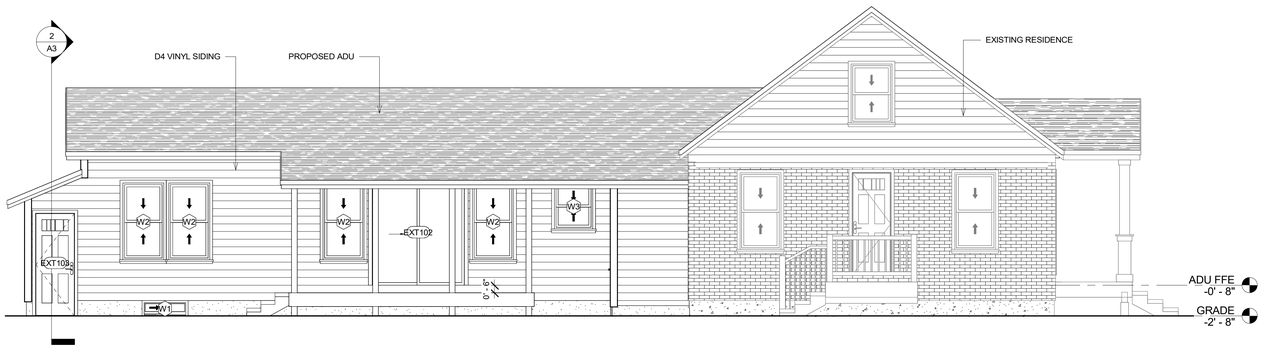

3 REAR ELEVATION
1/4" = 1'-0"




4 RIGHT ELEVATION
1/4" = 1'-0"




1 FRONT ELEVATION
1/4" = 1'-0"




2 LEFT ELEVATION
1/4" = 1'-0"

MJH DESIGN
& VISUALIZATION

MICHAEL J. HEBERT
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| 2 | OWNER REVIEW 2 | 08.15.2024 |
| 3 | OWNER REVIEW 3 | Date 3 |
| 4 | PRICING/PERMIT | 09.09.2024 |

# 435 GREENSIDE AVE
## ATTACHED ADU ELEVATIONS

| | |
|---|---|
| Project number | Project Number |
| Date | 08.08.2024 |
| Drawn by | Author |
| Checked by | Checker |

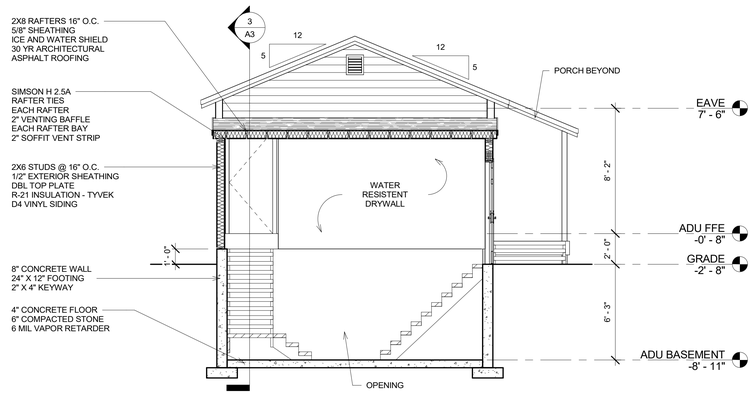
A2

Scale 1/4" = 1'-0"

2/3/2025 10:56:14 AM

| DOOR SCHEDULE | | | |
|---|---|---|---|
| DOOR NUMBER | HEIGHT | WIDTH | COMMENTS |
| 101 | 6' - 8" | 5' - 0" | SLIDING DOOR |
| 102 | 6' - 8" | 2' - 6" | SWING DOOR |
| 103 | 6' - 8" | 2' - 8" | POCKET DOOR |
| 103A | 6' - 8" | 2' - 6" | DOUBLE DOOR |
| 103B | 6' - 8" | 2' - 10" | 60 MIN. FIRE DOOR |
| 104 | 6' - 8" | 2' - 6" | SWING DOOR |
| 105 | 6' - 8" | 2' - 10" | SWING DOOR |
| 105A | 6' - 8" | 5' - 0" | SLIDING DOOR |
| 106 | 6' - 8" | 2' - 10" | INSULATED DOOR |
| EXT100 | 6' - 6" | 2' - 10" | INSULATED DOOR |
| EXT101 | 6' - 8" | 3' - 0" | INSULATED DOOR |
| EXT102 | 6' - 8" | 6' - 0" | INSULATED DOOR |
| EXT103 | 6' - 8" | 2' - 6" | INSULATED DOOR |

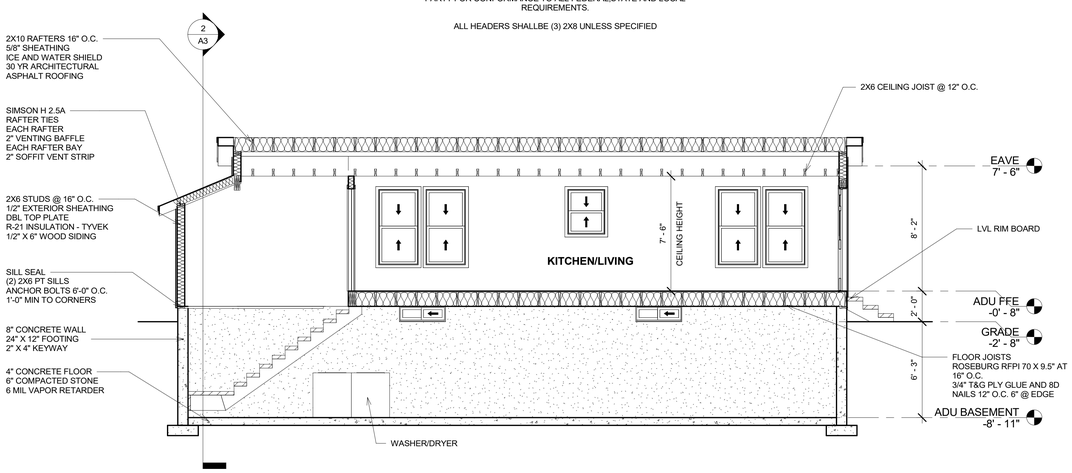
| WINDOW SCHEDULE | | | | |
|---|---|---|---|---|
| MARK | WIDTH | HEIGHT | HEAD HEIGHT | COMMENTS |
| W1 | 3' - 0" | 1' - 0" | 1' - 0" | BASEMENT WINDOW - PREP FOUNDATION AS REQ'D |
| W2 | 2' - 8" | 5' - 0" | 6' - 8" | EGRESS WINDOW |
| W3 | 2' - 6" | 3' - 0" | 6' - 8" | BATHROOM/KITCHEN WINDOW |




2 SECTION THRU BASEMENT ACCESS
1/4" = 1'-0"

ALL INSULATION VALUES SET FORTH ARE SUBJECT TO ALL JURISDICTIONAL REQUIREMENTS AND/OR MUNICIPAL ADOPTION OF THE STRETCH ENERGY CODE. THE VALUES SHALL BE REVIEWED, AMMENDED AS REQUIRED AND APPROVED BY A THIRD PARTY FOR CONFORMANCE TO ALL FEDERAL,STATE AND LOCAL REQUIREMENTS.

ALL HEADERS SHALLBE (3) 2X8 UNLESS SPECIFIED




3 SECTION - TYPICAL
1/4" = 1'-0"

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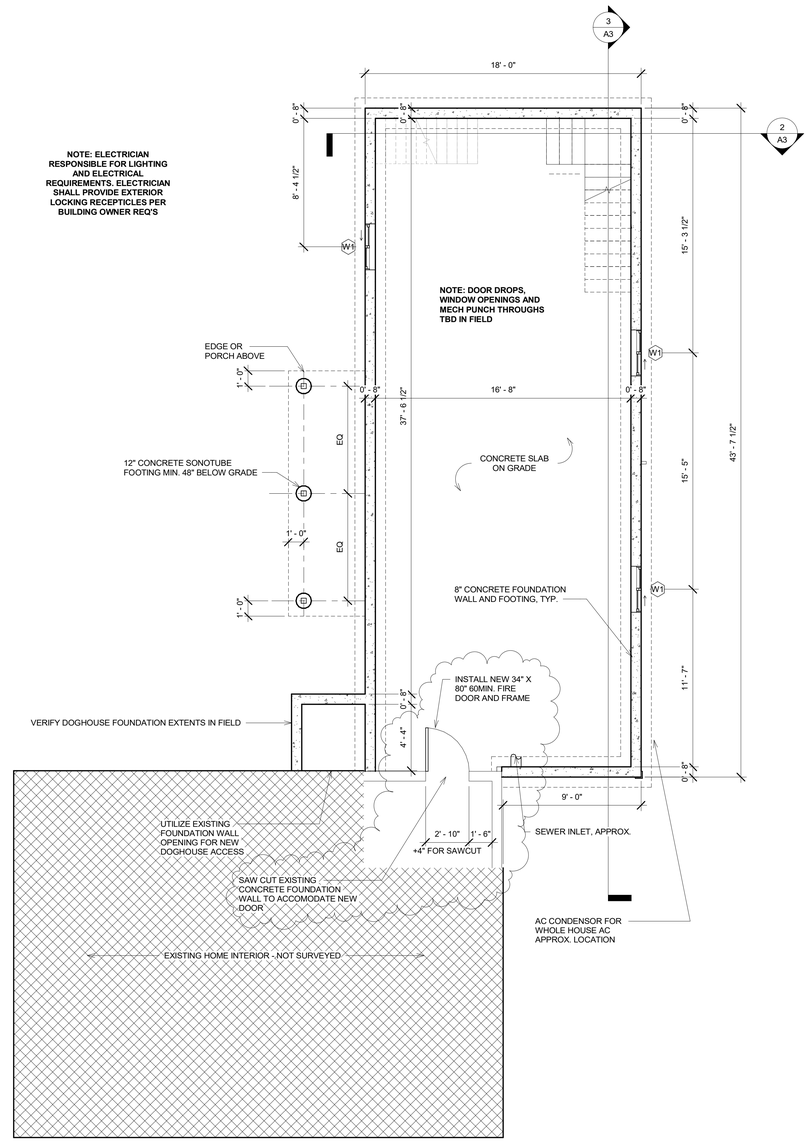
- GRADING ELEVATIONS
- ZONING COMPLIANCE
- SITE CONFORMANCE
- PERMIT APPS
- SUBMISSIONS FOR VARIANCES OR SPECIAL PERMITS.

*ALL STRUCTURAL MEMBER SIZING TO BE VERIFIED BY THE GC*

**NOTE: ELECTRICIAN RESPONSIBLE FOR LIGHTING AND ELECTRICAL REQUIREMENTS. ELECTRICIAN SHALL PROVIDE EXTERIOR LOCKING RECEPTICLES PER BUILDING OWNER REQ'S**




1 FOUNDATION PLAN
1/4" = 1'-0"

MJH DESIGN & VISUALIZATION
MICHAEL J. HEBERT
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| No. | Description | Date |
|---|---|---|
| 4 | PRICING/PERMIT | 09.09.2024 |
| 5 | BASEMENT DOOR UPDATE | 02.03.2025 |

# 435 GREENSIDE AVE
# ATTACHED ADU
# BUILDING DETAILS

| | |
|---|---|
| Project number | Project Number |
| Date | 08.08.2024 |
| Drawn by | MJH |
| Checked by | DS |

A3

Scale 1/4" = 1'-0"

2/3/2025 10:56:14 AM

BLUEPRINT BUILDERS
NORTH HAMPTON, NH

Property Owner's Narrative:

January 28, 2025

Donna J Sullivan,19 Cote Drive, Dover, NH 03820 (1993 - current)
Donna J Sullivan, 435 Greenside Ave., Portsmouth, NH 03801 (1983 - active owner)

Background:
Moved to Pease AFB in 1962 third of 6 children. Graduated Portsmouth Senior high 1966, NH College 1985 AS in EDP, NH College 1991 BS in EDP. Married for 11 years (1 child). Worked several jobs to support myself and child. Divorced for 13 years - (Put myself through College). Purchased the small cape on Greenside Ave in Portsmouth NH in 1983 - I still own it, my family lives there. Married for 32 years - widowed for 2 years, 4 months.

Why I Need my ADU:

I will be 77 this coming October. It is becoming difficult for me to continue upkeep at my primary residence. In early December of 2023, I thought I had a touch of Flu.
Around 3 am I went to the bathroom as usual, passed out and hit the floor hard, got up after a few minutes to go back to bed and passed out again. Came to, felt my head, it was all sweaty, I thought - actually I was bl  ding. I had cracked my forehead badly. I washed my face with cold water and called my daughter - She brought me to PRH ER, resulted in 11 stitches, 4 under, 7 over. Turns out that I had COVID. Recovered fully no issues or special medications.

SO - my daughter and I decided that living closer would be beneficial to both of us. I made plans to build an ADU on the property in Portsmouth, attached but separate. I then Move there and sell the place I am currently in.

The property in Portsmouth does not have any free space. The rooms are small, the ceilings low, the 2nd floor is not heated and head room is limited. My husband and I saved, planning for a cabin in the woods later - too late. Now I would like to spend that money on a 'SAFE PLACE FOR ME'.

BLUEPRINT
BUILDERS
NORTH HAMPTON, NH

Donna J. Sullivan
1-28-2025
Sincerely, Donna J Sullivan
date

I, Ted Lavoie, as owner of Blueprint Builders LLC and hired contractor for this project, believe we are presenting an ADU that meets all standards set in Section 10.814.

10.814.62 When Section 10.440 requires a conditional use permit for an attached or detached ADU, the Planning Board shall make the following findings before granting approval:

10.814.621 The ADU complies with all applicable standards of this Section 10.814 or as may be modified by the conditional use permit.

This was designed with the assistance of a former city employee who's job was to accommodate those in our position so I believe every detail listed in 10.814 was considered.

10.814.622 The exterior design of the ADU is architecturally consistent with or similar in appearance to the existing principal dwelling on the lot.

We have designed a simple and cohesive structure to attach to the existing home. Both structures will share similar roof pitches, window color/style, exterior door color/style, and we will be matching the color of the clapboard siding to the color of the clapboard siding on the existing home.

10.814.623 The site plan provides adequate and appropriate open space and landscaping for both the ADU and the principal dwelling unit and complies with the off-street parking requirements of Section 10.814.26.

The design shown in the plot plan shows a nice, almost courtyard-like common area in the backyard, accompanied with a covered porch on the

ADU. The ADU's main entrance is at the opposite end of the property's road frontage, as the Home's main entrance, allowing for privacy when coming or going.

10.814.624 The ADU will maintain a compatible relationship with the character of adjacent and neighborhood properties in terms of location, design, and off-street parking layout, and will not significantly reduce the privacy of adjacent properties.

When looking around the neighborhood, one could envision this ADU as if it was always there. The height being lower than the main home helps make this look like a simple addition. Facing the home from the street, right side, is the wall closest to an abutting neighbor. This wall was designed as a "working wall" in order to maintain that privacy. Most time in the ADU will be spent on the yard side where the bedroom, bathroom, and living room are located.

I do believe we have satisfied all requirements listed in section 10.814.62

Ted Lavoie – Owner – Blueprint Builders LLC

That Chapter 10, ZONING ORDINANCE, be amended by striking Article 5, Measurement Rules, Section 10.515.14; by amending Section 10.515.13; and by adding new Sections 10.811.60 and 10.811.61, relating to Accessory Uses to Permitted Residential Uses of the Ordinances of the City of Portsmouth, all in order to bring the Zoning Ordinance into better alignment with the Building Code, and to increase governmental efficiency, to be amended as follows (deletions from existing language ~~**stricken**~~; additions to existing language **bolded**; remaining language unchanged from existing):

# Article 5 Dimensional and Intensity Standards

## Section 10.510 General Requirements

### 10.515 Measurement Rules

10.515.13 Fences not over 4 feet in height shall be exempt from front yard requirements, and fences not over **8** ~~6~~ feet in height shall be exempt from side and rear yard requirements.

~~10.515.14 A mechanical system (i.e. HVAC, power generator, etc.) that is less than 36 inches above the ground level with a mounting pad not exceeding 10 square feet shall be exempt from yard requirements, but shall be set back at least 10 feet from a property line; and shall not be located closer to the street than the front of the principal structure.~~

# Article 8 Supplemental Use Standards

## Section 10.810 Residential and Institutional Residence of Care Uses

### 10.811 Accessory Uses to Permitted Residential Uses

10.811.60 Any **lot** containing one or two **dwelling units** is permitted to construct and maintain up to one, one-story detached accessory structure used as a tool or storage shed, playhouse, treehouse, or similar use per dwelling unit on the property, with a square footage not greater than 120 square feet. Accessory structures permitted by this section shall not require any permit, and shall be generally exempt from all provisions of this ordinance except Article 10, Environmental Protection Standards, Section 10.516.30, Corner Lot Vision Obstruction, and Section 10.630 **Historic District**.

10.811.61 Swings and other playground equipment as well as above-ground prefabricated pools and hot tubs are permitted as accessory to single and two family **dwellings** and are generally exempt from all provisions of this ordinance except Article 10, Environmental Protection Standards and Section 10.516.30, Corner Lot Vision Obstruction.

The City Clerk shall properly alphabetize and/or re-number the ordinances as necessary in accordance with this amendment.

All ordinances or parts of ordinances inconsistent herewith are hereby deleted.

This ordinance shall take effect upon its passage.

APPROVED:

_____
Deaglan McEachern, Mayor

ADOPTED BY COUNCIL:

_____
Kelli L. Barnaby, City Clerk

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Deaglan McEachern, Mayor

ADOPTED BY COUNCIL:

_____
Kelli L. Barnaby, City Clerk

HALEY WARD
200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

29 January 2025

Rick Chellman, Planning Board Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

**RE: Request for Conceptual (Subdivision) Consultation at Peverly Hill Road & Banfield Road, Tax Map 255, Lot 2**

Dear Mr. Chellman and Planning Board Members:

On behalf of Chinburg Development, we are pleased to submit the attached plan set for **Conceptual Consultation** for the above-mentioned project and request that we be placed on the agenda for your **February 20, 2025,** Meeting. The project is the subdivision of an existing parcel into five new residential lots with the associated and required site improvements.

The site is currently vacant, approximately 8.5-acre parcel that is located within the SRA Zoning District. The applicant has entered into a Purchase and Sale Agreement with the owner. The site is bifurcated by an existing wetland and wetland buffer. Two proposed lots would access Peverly Hill Road, and three would access Banfield Road. The applicant is proposing to connect each lot to the public sewer, water, and power and communications systems located within/along Peverly Hill Road and Banfield Road.

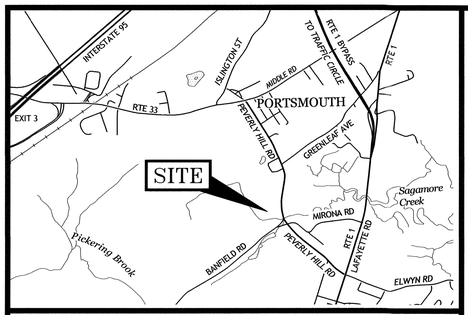
The following plans are included in our submission:

- Standard Boundary Survey & Existing Conditions Plan – This plan shows the results of a Standard Boundary Survey and the existing property conditions.
- Subdivision Plan – This plan shows the proposed lot lines.
- Subdivision Site Plan - This plan shows the site building envelopes.

We look forward to an in-person presentation and the Planning Board's review of this submission.

Sincerely,

Jon Whitten, Jr., PE (Maine)
Senior Project Manager
P:\NH\5010220-Chinburg_Builders\001-Peverly Hill Rd. & Banfield Rd. - JHW\03-WIP_Files\Planning Board Submission Letter 1-29-25.doc




LOCATION MAP SCALE: 1"=2000'

## PLAN REFERENCES:

1) PLAN OF LAND FOR JOHN & MAUD HETT PORTSMOUTH, N.H. PREPARED BY: M.E. JENKINS, SCALE: 1"=100', DATED: DECEMBER 1988. RCRD C-19399.

2) SUBDIVISION PROPERTY OF JOHN & MAUD HETT, PORTSMOUTH NH, RCRD 2057/493. PREPARED BY: M.E. JENKINS, SCALE: 1"=50', DATED: OCTOBER 1988. RCRD C-18915.

3) PLAN SHOWING A PORTION OF PROPERTY OF JOHN HETT AND MAUD B HETT, PORTSMOUTH, ROCKINGHAM COUNTY, NH. PREPARED BY: MOULTON ENGINEERING CO., INC. SCALE: 1"=20', DATED: MAY 12, 1971. RCRD #2289.

4) SUBDIVISION PLAN FOR WALTER D HETT & THE TEMPLE OF ISRAEL, BANFIELD ROAD, COUNTY OF ROCKINGHAM, PORTSMOUTH, NH. PREPARED BY: MILLETTE, SPRAGUE, & COLWELL, INC., Scale: 1"=100', DATED: JUNE 25, 1999. RCRD D-27695.

5) PEVERLY HILL ROAD INTERSECTION IMPROVEMENTS. PREPARED BY: HOYLE TANNER & ASSOCIATES, INC., SCALE: 1"=20', DATED: AUGUST 2000. RCRD D-28807.

6) NEW HAMPSHIRE ELECTRIC COMPANY, PORTSMOUTH, NH "FOYES CORNER TAP" PORTSMOUTH AND RYE NH, POWER LINE RIGHT OF WAY 100 FT IN WIDTH ACCROSS PROPERTY OF JOHN, ELIZABETH, & HELEN M HETT. PREPARED BY: ALBERT MOULTON, SCALE: 1"=200', DATED: JANUARY 28, 1954. RCRD 1310/39, RCRD 1310/36, RCRD 1310/42, RCRD 1310/45.

7) BANFIELD ROAD RIGHT-OF-WAY WIDENING PLAN, CITY OF PORTSMOUTH NEW HAMPSHIRE. PREPARED BY: KIMBALL CHASE COMPANY, INC., SCALE: 1"=40', PROJECT NO. 83-311, NOT DATED OR RECORDED.

## LEGEND:

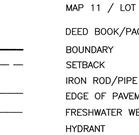
| | |
|---|---|
| N/F | NOW OR FORMERLY |
| RP | RECORD OF PROBATE |
| RCRD | ROCKINGHAM COUNTY REGISTRY OF DEEDS |
| 11/27 | MAP 11 / LOT 21 |
| 4553/432 | DEED BOOK/PAGE |
| | BOUNDARY |
| | SETBACK |
| O | IRON ROD/PIPE FOUND |
| | EDGE OF PAVEMENT |
| | FRESHWATER WETLAND LINE |
| +O+ | HYDRANT |
| | OVERHEAD ELECTRIC/WIRES |
| 100 | CONTOUR |
| | UTILITY POLE (w/ GUY) (UP) |
| FP | FAIR POINT |
| ES | EVERSOURCE |
| PSNH | PUBLIC SERVICE OF NEW HAMPSHIRE |
| (CALC) | CALCULATED |
| E | ELECTRIC METER |
| EL. | ELEVATION |
| FF | FINISHED FLOOR |
| INV. | INVERT |
| TBM | TEMPORARY BENCHMARK |
| TYP. | TYPICAL |
| | FRESH WATER WETLAND |
| TBS | TO BE SET |

## CURVE TABLE:

| CURVE | RADIUS | ARC LENGTH | CHORD LENGTH | CHORD BEARING | DELTA ANGLE |
|---|---|---|---|---|---|
| C1 | 175.00' | 143.27' | 139.30' | S18°31'45"W | 46°54'28" |
| E2 | 779.50' | 154.67' | 154.42' | N11°26'05"W | 11°22'08" |
| E3 | 969.50' | 7.92' | 7.92' | N05°30'59"W | 0°28'05" |
| E4 | 965.95' | 56.90' | 56.89' | N01°44'55"W | 3°22'30" |

## LINE TABLE:

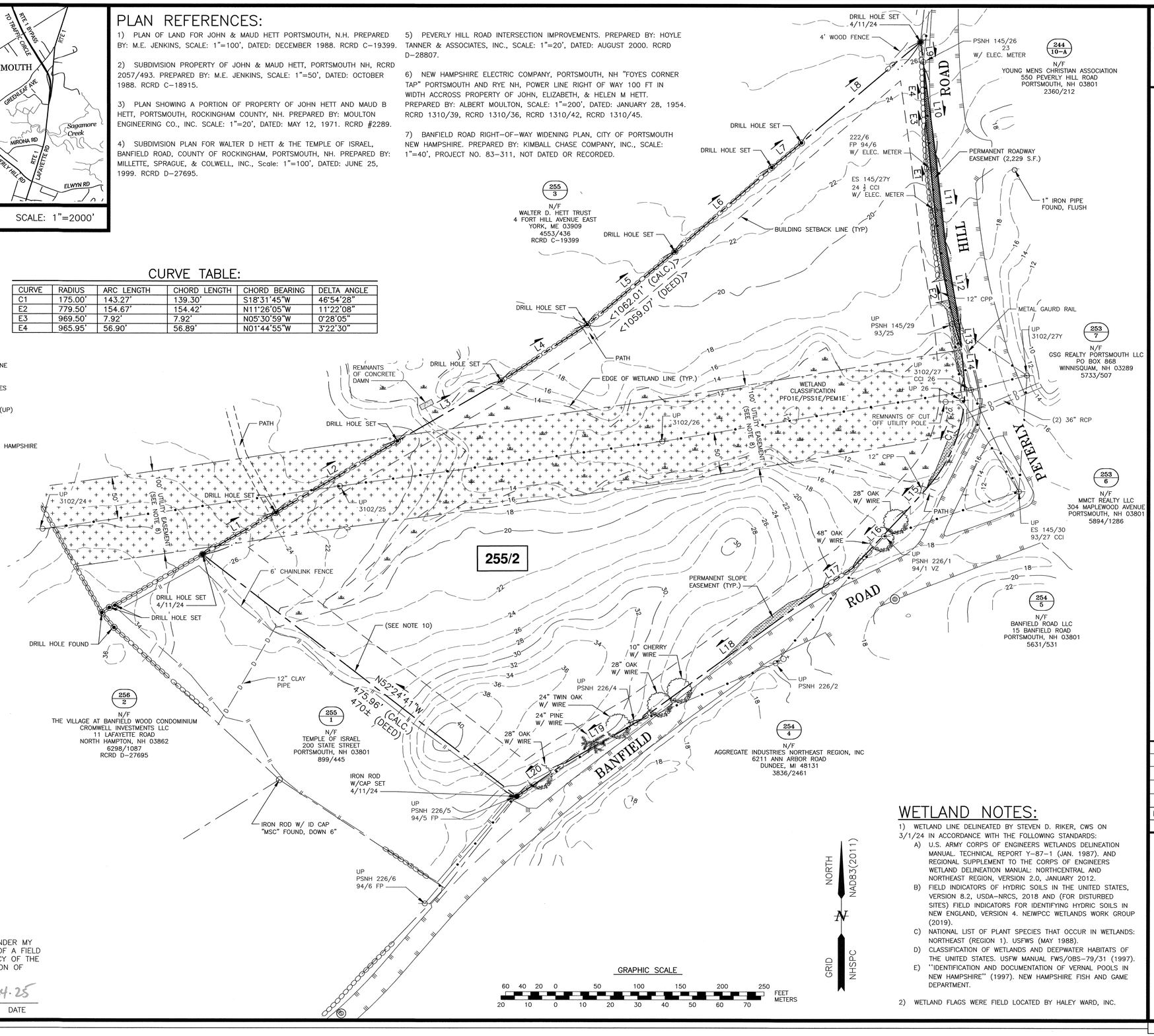
| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | N60°14'31"E | 100.91' |
| L2 | N59°28'46"E | 169.37' |
| L3 | N59°58'57"E | 143.89' |
| L4 | N56°42'48"E | 123.27' |
| L5 | N50°09'02"E | 136.90' |
| L6 | N48°55'47"E | 154.07' |
| L7 | N50°13'41"E | 46.30' |
| L8 | N49°42'27"E | 187.30' |
| L9 | S07°44'22"E | 30.73' |
| L10 | S07°44'20"E | 105.29' |
| L11 | S06°18'17"E | 105.22' |
| L12 | S09°33'00"E | 104.35' |
| L13 | S05°03'09"E | 24.11' |
| L14 | S04°55'29"E | 37.13' |
| L15 | S41°59'00"W | 34.17' |
| L16 | S43°13'04"W | 97.52' |
| L17 | S57°03'33"W | 42.99' |
| L18 | S53°54'24"W | 268.10' |
| L19 | S60°03'05"W | 105.30' |
| L20 | S55°32'09"W | 70.74' |
| E1 | N05°45'02"W | 120.34' |




"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

1.24.25

JOHN R. CHAGNON , LLS 738 DATE




## WETLAND NOTES:

1) WETLAND LINE DELINEATED BY STEVEN D. RIKER, CWS ON 3/1/24 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   - A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y-87-1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
   - B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2, USDA-NRCS, 2018 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEIWPCC WETLANDS WORK GROUP (2019).
   - C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).
   - D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS-79/31 (1997).
   - E) "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE" (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.
2) WETLAND FLAGS WERE FIELD LOCATED BY HALEY WARD, INC.

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Rd. Unit 14
Portsmouth, New Hampshire 03801
603.430.9282
WWW.HALEYWARD.COM

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 255 AS LOT 2.

2) OWNERS OF RECORD:
   WALTER D. HETT TRUST
   WALTER D. HETT TRUSTEE
   4 FORT HILL AVENUE
   YORK, ME 03909
   4553/432 (PARCEL 1)

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0270F. EFFECTIVE DATE JANUARY 29, 2021.

4) EXISTING LOT AREA:
   371,824 S.F.
   8.54 ACRES

5) PARCEL IS LOCATED IN SINGLE RESIDENCE A (SRA) DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

| | |
|---|---|
| MIN. LOT AREA: | 43,560 S.F. |
| FRONTAGE: | 150 FEET |
| DEPTH | 200 FEET |
| SETBACKS: | |
| FRONT | 30 FEET |
| SIDE | 20 FEET |
| REAR | 40 FEET |
| MAXIMUM STRUCTURE HEIGHT: | 35 FEET |
| MAXIMUM STRUCTURE COVERAGE: | 10% |
| MINIMUM OPEN SPACE: | 50% |

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF A STANDARD BOUNDARY SURVEY AND WETLANDS LOCATION ON ASSESSOR'S MAP 255 LOT 2 IN THE CITY OF PORTSMOUTH.

8) PARCEL IS SUBJECT TO A P.S.N.H. UTILITY EASEMENT, SEE RCRD 1310/37 AND 1310/39.

9) PARCEL IS SUBJECT TO A PERMANENT ROADWAY EASEMENT AND PERMANENT SLOPE EASEMENTS CONTAINED IN A DEED FROM WALTER D. HETT TO THE CITY OF PORTSMOUTH, SEE RCRD 3563/686 AND RCRD D-28807.

10) SEE NEW HAMPSHIRE STATUTE, TITLE XXVI CHAPTER: 289:3 LOCATION.III. NO NEW CONSTRUCTION, EXCAVATION, OR BUILDING SHALL BE CONDUCTED WITHIN 25' OF A KNOWN BURIAL SITE OR WITHIN 25' OF THE BOUNDARIES OF AN ESTABLISHED BURIAL GROUND OR CEMETERY.

11) ABUTTER INFORMATION TAKEN FROM THE CITY OF PORTSMOUTH GIS WEBSITE.

12) TOPOGRAPHY SHOWN HEREON DERIVED FROM LiDAR BARE EARTH DIGITAL ELEVATION MODEL 2022 OBTAINED FROM NH GRANIT.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| 2 | ISSUED TO CITY | 1/24/25 |
| 1 | MONUMENTS SET | 4/11/24 |
| 0 | ISSUED FOR COMMENT | 4/5/24 |

REVISIONS

# STANDARD BOUNDARY SURVEY & EXISTING CONDITIONS PLAN TAX MAP 255 – LOT 2

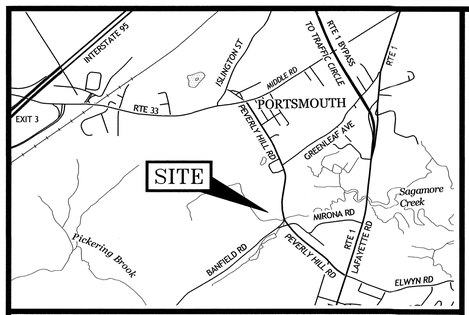
FOR

## WALTER D. HETT

BANFIELD ROAD
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=60' MARCH 2024

FB 499 & PG 1 5010419.001




LOCATION MAP SCALE: 1"=2000'

## LEGEND:

| | |
|---|---|
| N/F | NOW OR FORMERLY |
| RP | RECORD OF PROBATE |
| RCRD | ROCKINGHAM COUNTY REGISTRY OF DEEDS |
| 11/21 | MAP 11 / LOT 21 |
| 4553/432 | DEED BOOK/PAGE |
| | BOUNDARY |
| | SETBACK |
| O | IRON ROD/PIPE FOUND |
| | EDGE OF PAVEMENT |
| | FRESHWATER WETLAND LINE |
| +O+ | HYDRANT |
| | OVERHEAD ELECTRIC/WIRES |
| 100 | CONTOUR |
| | UTILITY POLE (w/ GUY) (UP) |
| FP | FAIR POINT |
| ES | EVERSOURCE |
| PSNH | PUBLIC SERVICE OF NEW HAMPSHIRE |
| (CALC) | CALCULATED |
| E | ELECTRIC METER |
| EL. | ELEVATION |
| FF | FINISHED FLOOR |
| INV. | INVERT |
| TBM | TEMPORARY BENCHMARK |
| TYP. | TYPICAL |
| | FRESH WATER WETLAND |
| TBS | TO BE SET |

## LINE TABLE

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | S 07°44'22" E | 30.73' |
| L2 | S 07°44'20" E | 105.29' |
| L3 | N 06°18'17" W | 105.22' |
| L4 | S 09°33'00" E | 104.35' |
| L5 | S 05°03'09" E | 24.11' |
| L6 | S 04°55'29" E | 37.13' |
| L7 | S 41°59'00" W | 34.17' |
| L8 | S 43°13'04" W | 97.52' |
| L9 | S 57°03'33" W | 42.99' |
| L10 | S 53°54'24" W | 131.92' |
| L11 | S 53°54'24" W | 136.18' |
| L12 | S 60°03'05" W | 17.89' |
| L13 | S 60°03'05" W | 87.41' |
| L14 | S 55°32'09" W | 70.74' |
| L15 | N 52°24'41" W | 475.96' |
| L16 | N 60°14'31" E | 100.91' |
| L17 | N 59°28'46" E | 59.53' |
| L18 | N 59°28'46" E | 109.84' |
| L19 | N 59°58'57" E | 49.00' |
| L20 | N 59°58'57" E | 94.90' |
| L21 | N 56°42'48" E | 123.27' |
| L22 | N 50°09'02" E | 136.90' |
| L23 | N 48°55'47" E | 127.34' |
| L24 | N 50°13'41" E | 46.30' |
| L25 | N 49°42'27" E | 187.30' |
| L26 | S 76°18'25" W | 87.96' |
| L27 | N 72°39'09" W | 90.59' |
| L28 | N 41°04'13" W | 86.05' |
| L29 | N 75°56'01" W | 526.77' |
| L30 | N 52°22'34" W | 455.57' |
| L31 | N 52°22'34" W | 470.09' |
| L32 | N 48°55'47" E | 26.73' |
| E1 | N 05°45'02" W | 120.34' |

## CURVE TABLE

| CURVE | RADIUS | ARC LENGTH | CHORD LENGTH | CHORD BEARING | DELTA ANGLE |
|---|---|---|---|---|---|
| C1 | 175.00' | 143.27' | 139.30' | S18°31'45"W | 46°54'28" |
| E2 | 779.50' | 154.67' | 154.42' | N11°26'05"W | 11°22'08" |
| E3 | 969.50' | 7.92' | 7.92' | N05°30'59"W | 0°28'05" |
| E4 | 965.95' | 56.90' | 56.89' | N01°44'55"W | 3°22'30" |

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

## PLAN REFERENCES:

1) PLAN OF LAND FOR JOHN & MAUD HETT PORTSMOUTH, N.H. PREPARED BY: M.E. JENKINS, SCALE: 1"=100', DATED: DECEMBER 1988. RCRD C–19399.

2) SUBDIVISION PROPERTY OF JOHN & MAUD HETT, PORTSMOUTH NH, RCRD 2057/493. PREPARED BY: M.E. JENKINS, SCALE: 1"=50', DATED: OCTOBER 1988. RCRD C–18915.

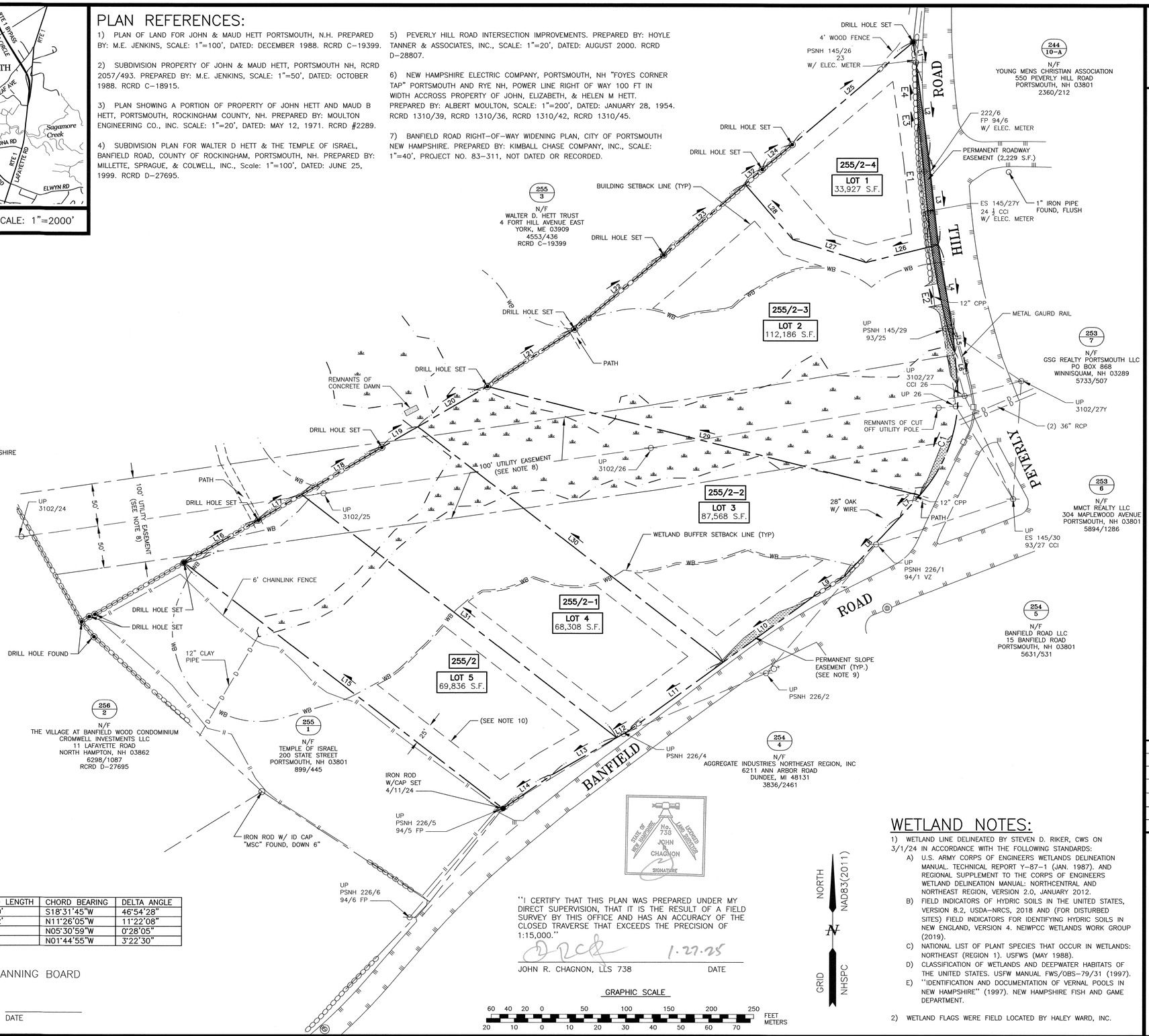
3) PLAN SHOWING A PORTION OF PROPERTY OF JOHN HETT AND MAUD B HETT, PORTSMOUTH, ROCKINGHAM COUNTY, NH. PREPARED BY: MOULTON ENGINEERING CO., INC. SCALE: 1"=20', DATED: MAY 12, 1971. RCRD #2289.

4) SUBDIVISION PLAN FOR WALTER D HETT & THE TEMPLE OF ISRAEL, BANFIELD ROAD, COUNTY OF ROCKINGHAM, PORTSMOUTH, NH. PREPARED BY: MILLETTE, SPRAGUE, & COLWELL, INC., Scale: 1"=100', DATED: JUNE 25, 1999. RCRD D–27695.

5) PEVERLY HILL ROAD INTERSECTION IMPROVEMENTS. PREPARED BY: HOYLE TANNER & ASSOCIATES, INC., SCALE: 1"=20', DATED: AUGUST 2000. RCRD D–28807.

6) NEW HAMPSHIRE ELECTRIC COMPANY, PORTSMOUTH, NH "FOYES CORNER TAP" PORTSMOUTH AND RYE NH, POWER LINE RIGHT OF WAY 100 FT IN WIDTH ACCROSS PROPERTY OF JOHN, ELIZABETH, & HELEN M HETT. PREPARED BY: ALBERT MOULTON, SCALE: 1"=200', DATED: JANUARY 28, 1954. RCRD 1310/39, RCRD 1310/36, RCRD 1310/42, RCRD 1310/45.

7) BANFIELD ROAD RIGHT–OF–WAY WIDENING PLAN, CITY OF PORTSMOUTH NEW HAMPSHIRE. PREPARED BY: KIMBALL CHASE COMPANY, INC., SCALE: 1"=40', PROJECT NO. 83–311, NOT DATED OR RECORDED.




"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

JOHN R. CHAGNON, LLS 738 — DATE 1.27.25

STATE OF NEW HAMPSHIRE — No. 738 — LICENSED LAND SURVEYOR — JOHN CHAGNON — SIGNATURE

GRAPHIC SCALE

60 40 20 0 50 100 150 200 250 FEET
20 10 0 10 20 30 40 50 60 70 METERS

NORTH NAD83(2011) — N — GRID NHSPC

## WETLAND NOTES:

1) WETLAND LINE DELINEATED BY STEVEN D. RIKER, CWS ON 3/1/24 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y–87–1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
   B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.2, USDA–NRCS, 2018 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEIWPCC WETLANDS WORK GROUP (2019).
   C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).
   D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS–79/31 (1997).
   E) "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE" (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.
2) WETLAND FLAGS WERE FIELD LOCATED BY HALEY WARD, INC.

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
200 Griffin Rd. Unit 14
Portsmouth, New Hampshire 03801
603.430.9282
WWW.HALEYWARD.COM

## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 255 AS LOT 2.

2) OWNERS OF RECORD:
WALTER D. HETT TRUST
WALTER D. HETT TRUSTEE
4 FORT HILL AVENUE
YORK, ME 03909
4553/432 (PARCEL 1)

APPLICANT:
CHINBURG DEVELOPMENT
3 PENSTOCK WAY
NEWMARKET, NH 03847

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0270F. EFFECTIVE DATE JANUARY 29, 2021.
4) EXISTING LOT AREA:
371,824 S.F.
8.54 ACRES
5) PARCEL IS LOCATED IN SINGLE RESIDENCE A (SRA) DISTRICT.
6) CURRENT ZONING: SINGLE RESIDENCE A (SRA)
DIMENSIONAL REQUIREMENTS:

| | |
|---|---|
| MIN. LOT AREA: | 43,560 S.F. |
| FRONTAGE: | 150 FEET |
| DEPTH | 200 FEET |
| SETBACKS: | |
| FRONT | 30 FEET |
| SIDE | 20 FEET |
| REAR | 40 FEET |
| MAXIMUM STRUCTURE HEIGHT: | 35 FEET |
| MAXIMUM STRUCTURE COVERAGE: | 10% |
| MINIMUM OPEN SPACE: | 50% |

7) THE PURPOSE OF THIS PLAN IS TO SHOW A 5 LOT SUBDIVISION ON ASSESSOR'S MAP 255 LOT 2 IN THE CITY OF PORTSMOUTH.
8) PARCEL IS SUBJECT TO A P.S.N.H. UTILITY EASEMENT, SEE RCRD 1310/37 AND 1310/39.
9) PARCEL IS SUBJECT TO A PERMANENT ROADWAY EASEMENT AND PERMANENT SLOPE EASEMENTS CONTAINED IN A DEED FROM WALTER D. HETT TO THE CITY OF PORTSMOUTH, SEE RCRD 3563/686 AND RCRD D–28807.
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| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 0 | ISSUED FOR COMMENT | 1/27/25 |

REVISIONS

# SUBDIVISION PLAN
# TAX MAP 255 – LOT 2

OWNER:

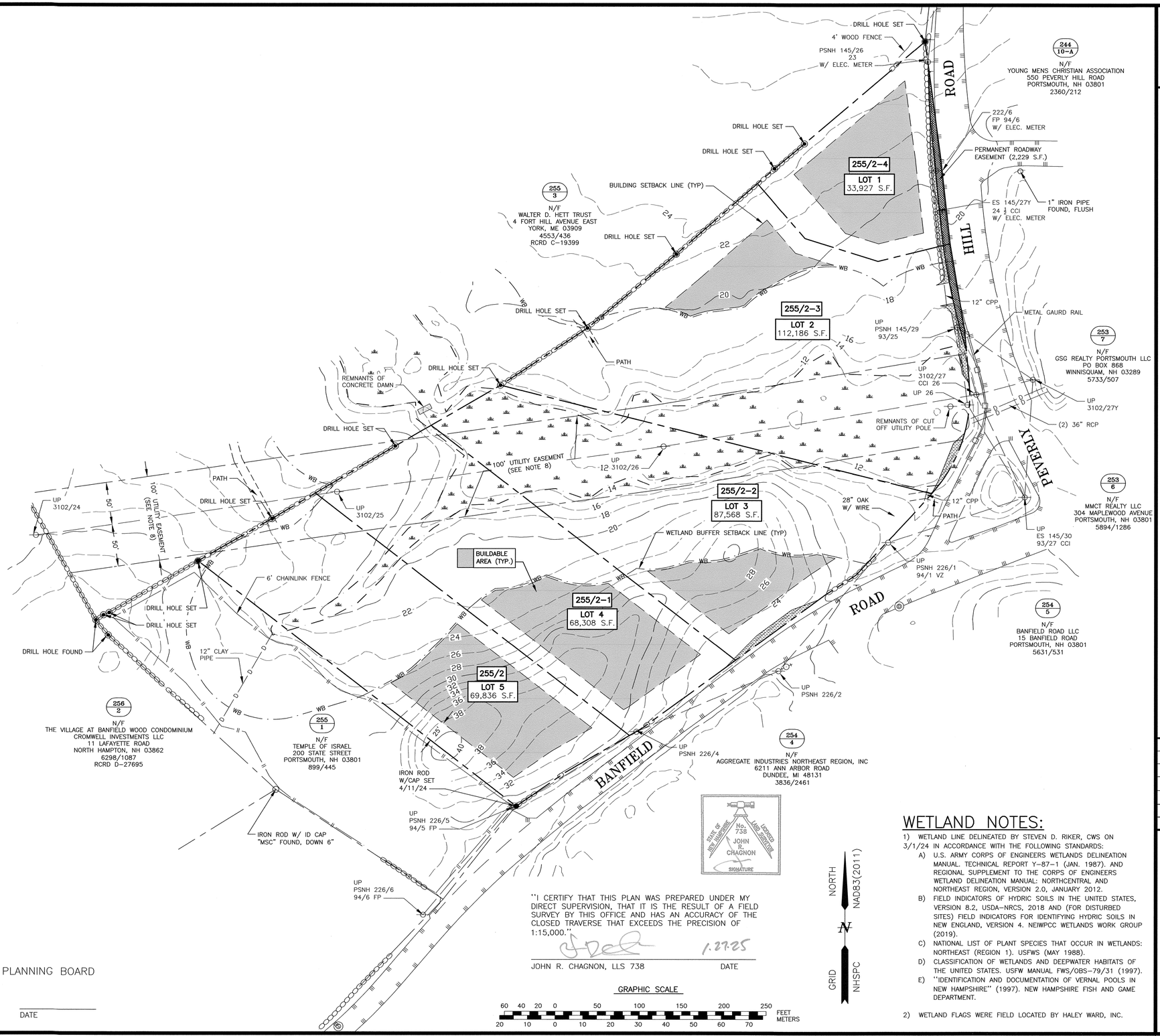
## WALTER D. HETT

BANFIELD ROAD &
PEVERLY HILL ROAD
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=60' JANUARY 2025

FB 499 & PG 1 5010220

P:\JOB\2019\19-83_Hett\001 Peverly Hill & Banfield Rd, Portsmouth-CSA\Wetland 2023 Survey\Plans & Specs\Sht\19-83 2021 Concept Subdivision.dwg, 1/26/2023 11:14:43 PM, Canon TX-8000 - Bottom




APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

1.27.25

JOHN R. CHAGNON, LLS 738 DATE

STATE OF NEW HAMPSHIRE No. 738 LAND SURVEYOR JOHN R. CHAGNON SIGNATURE

GRAPHIC SCALE

60 40 20 0 50 100 150 200 250 FEET

20 10 0 10 20 30 40 50 60 70 METERS

## WETLAND NOTES:

1) WETLAND LINE DELINEATED BY STEVEN D. RIKER, CWS ON 3/1/24 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
   - A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y-87-1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.
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## NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 255 AS LOT 2.

2) OWNERS OF RECORD:
   WALTER D. HETT TRUST
   WALTER D. HETT TRUSTEE
   4 FORT HILL AVENUE
   YORK, ME 03909
   4553/432 (PARCEL 1)

   APPLICANT:
   CHINBURG DEVELOPMENT
   3 PENSTOCK WAY
   NEWMARKET, NH 03847

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0270F. EFFECTIVE DATE JANUARY 29, 2021.

4) EXISTING LOT AREA:
   371,824 S.F.
   8.54 ACRES

5) PARCEL IS LOCATED IN SINGLE RESIDENCE A (SRA) DISTRICT.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| 0 | ISSUED FOR COMMENT | 1/27/25 |

REVISIONS

# SUBDIVISION SITE PLAN
# TAX MAP 255 – LOT 2

OWNER:

## WALTER D. HETT

BANFIELD ROAD &
PEVERLY HILL ROAD
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=60' JANUARY 2025

FB 499 & PG 1 5010220

P:\5010220 FD_Hett\001 Peverly Hill & Banfield Rd, Portsmouth GIS\Workfiles\ 2023 Survey\Plans & Specs\SiteX\20104291001 2023 Concept Subdivision-STT.dwg, 1/29/2025 1:23:55 PM, Daniel Hill (BG)

McNabb Properties Ltd.
Construction Development Management

January 15, 2025

Peter Britz
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: LU-24-21 99 Bow Street,
Portsmouth, NH
Planning Board One Year Extension Request

Dear Mr. Britz:

In reference to the project above, Martingale, LLC requests to be placed on the next Planning Board Meeting agenda, to request a one (1) year extension of its March 20, 2024 approval.

As previously submitted, there will be no construction on real property in the City of Portsmouth. All proposed work will be "free supported structure" from within the Piscataqua River. The project has final approval from NHDES and the State of New Hampshire, as referenced in the attached NHDES permit. Please note this permit restricts construction activity to occur during the months of November through March.

The contract to provide the marine engineering, Collins Engineering, and barge construction is in place with Riverside Pickering Marine Builders with work slated to commence on or about February 1, 2025. This work is subject to finalization of Easement and/or Licensing documents (in process) with the City of Portsmouth Legal Department for ultimate recording with the Rockingham Registry of Deeds and concurrent issuance of the Building Permit.

While it is our intent to proceed forward within the constraints of the NHDES permit for construction this Spring, we hereby request a one (1) year extension of our permit should there be any unintended delays. Please confirm your receipt and placement on this item on the February 20th agenda.

Sincerely,

Marie J. Bodi, CEO
McNabb Properties, Ltd.
As agent for Martingale, LLC

cc: Mark A. McNabb
Peter Britz
View Point Cloud Track 81056
Trevor McCourt

10 Pleasant Street | Suite 300
Portsmouth, NH 03801

603.427.0725
mcnabbgroup.com

HALEY WARD

200 Griffin Road, Unit 14, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

9 January 2025

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

**RE: Request for Site Plan Approval (Second Extension) at 1 Congress Street, Proposed Site Development**

Dear Mr. Stith and TAC Members:

On behalf of Mark McNabb and One Market Square, LLC, we hereby submit the attached previously approved plan set and supporting information for the above-mentioned project and request that we be placed on the agenda for your **February 4, 2025,** Technical Advisory Committee (TAC) Meeting. The project includes the re-use of the existing commercial buildings at 1 and 3 Congress Street, some existing building demolition, and proposed new construction of a 3 Story Structure with Attic Hip Top Mansard Roof to the rear of the existing buildings with the associated and required site improvements. The area behind the existing building is currently a surface parking lot. The surface parking will be lowered to below street level and be included with the new construction. The project was approved under **Site Plan** review at the January 3, 2023, TAC Meeting and received Planning Board approval on February 16, 2023. The applicant requested, and received, a 1-year extension to the Site Plan approval from the Planning Board on November 16, 2023.

The purpose of this submission is to request an additional 1-year extension of the February 2023 approval to February 16, 2025. Under the Site Plan Review regulations Section 2.14.3 the Applicant is required to supply the previously approved plan and supporting data if a second 1-year extension is requested. Please find that information attached herewith.

Since the 1 Congress Site Plan approval, the applicant has placed an adjacent property under agreement, and seeks to expand the project size and scope. Currently there is an application before the Planning Board which has TAC approval, which is proceeding forward but will not (potentially) be approved by the expiration of the 1-year extension. In order to keep the 1 Congress project vested while the current approvals are in process, this request is submitted. The Planning Board Conditions of Approval are repeated below, with information supplied to assist in your deliberations.

> 2.1) The site plan, and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department. **This is work that would need to be completed as a part of the approval, but the current application would alter the final task completion documents, so an extension is prudent.**
>
> 2.2) The applicant shall prepare a Construction Management and Mitigation Plan (CMMP)for review and approval by the City's Legal and Planning Departments. **This is work that would need to be completed as the project moves toward construction, and this would probably be a condition of the new approval.**

2.3) The applicant shall agree to pay for the services of an oversight engineer, to be selected by the City, to monitor the construction of improvements within the public rights-of-way and on site. **This is work that would need to be completed as the project moves toward construction, and this would probably be a condition of the new approval.**

2.4) Any site development (new or redevelopment) resulting in 15,000 square feet or greater ground disturbance will require the submittal of a Land Use Development Tracking Form through the Pollutant Tracking and Accounting Program (PTAP) online portal. For more information visit: https://www.cityofportsmouth.com/publicworks/stormwater/ptap. **This is work that would need to be completed with the final project approval.**

2.5) The proposed off-site improvements for High Street and Ladd Street and Haven Court will be reviewed and approved authorized by the City Council to ensure building, pedestrian, vehicular, and emergency vehicle safety. **This is work that would need to be completed as the project moves toward construction, and this would probably be a condition of the new approval.**

2.6) Any utility work that is necessary to construct a fully operational building will need to be reviewed and approved by the Public Works Department. **This is work that would need to be completed as the project moves toward construction, and this would probably be a condition of the new approval. Specific work in this regard is included in the current application before the Board.**

We look forward to the review of this submission and Staff / City Department review of this project. Given the current application before the city to expand on this approval we submit that a second 1-year extension is reasonable and hereby request that the TAC Committee recommend that the Planning Board grant an additional 1-year extension request.

Sincerely,

John R. Chagnon, PE

**NOTICE OF VOLUNTARY MERGER OF CONTIGUOUS LOTS**

NOW COMES One Market Square, LLC., owner of Map 117 Lot 14 and Map 117 Lot 15 being contiguous parcels of land located at 1 Congress Street and High Street, Portsmouth, County of Rockingham and State of New Hampshire, who wishes to merge said parcels for Municipal regulation and taxation purposes, and does hereby apply to the Planning Board of the City of Portsmouth, or its designee, for approval of said merger and further says that said lots are listed on Assessor's Map 117 as Lot 14 and as Lot 15, and being the same property conveyed to One Market Square, LLC., by deed of Peter H. Jarvis and Sons, LLC., dated December 09, 2022 and recorded at the Rockingham County Registry of Deeds at Book 6363 Page 31.

DATED this 31st day of January 2022.

Mark A. McNabb, Manager
One Market Square, LLC

State of New Hampshire
Rockingham, SS

Acknowledged before me by Mark A. McNabb, duly authorized Manager of One Market Square, LLC, this 31st day of January 2022, on behalf of said Limited Liability Company.

CHRISTINE A. LEBLANC
Notary Public - New Hampshire
My Commission Expires February 20, 2024

Notary Public

## APPROVAL OF MERGER

NOW COMES THE Portsmouth Planning Board or its designee and pursuant to RSA 674:39-a approved the merger.

Dated: 2-7-2022

Beverly Mesa-Zendt
Authorized Officer

## CONSENT OF LIEN HOLDER

Now comes Kennebunk Savings Bank and herby consents in accordance with NH RSA 674:39-a, II to the voluntary lot merger of lots set forth on the city of Portsmouth Tax Maps as Map 117 Lot 14 & Map 117 Lot 15, said parcels subject to the grant of a mortgage from One Market Square, LLC to Kennebunk Savings Bank, pursuant to a certain Commercial Mortgage, Security Agreement and Assignment of Leases and Rents dated December 9, 2021, and recorded at the Rockingham County Registry of Deeds at Book 6363, Page 31.

Kennebunk Savings Bank

Dated: 2/1/2022

By: _____

Chris Kehl, Executive Vice President

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

On this, the 31st of January 2022, before me, the undersigned Officer, personally appeared Chris Kehl, who acknowledged themself to be the Executive Vice President of Kennebunk Savings Bank, and that they, as such, being authorized to do so, executed the foregoing instrument for the purposes therein contained, by signing the name of the company by themself as Executive Vice President.

SIOBHAN K KENNEALLY NOTARY PUBLIC STATE OF NEW HAMPSHIRE

_____
Notary Public / ~~Justice of the Peace~~
My commission expires 8/18/2026

SIOBHAN K KENNEALLY
NOTARY PUBLIC
State of New Hampshire
My Commission Expires
August 18, 2026

McNabb Properties Ltd.
Construction | Development | Management

December 27, 2021

**AUTHORIZATION**
**One Market Square, LLC**
**One Congress Street, Portsmouth New Hampshire 03801**

I, Mark A. McNabb, manager and member of One Market Square, LLC, as owner of two parcels of land located in the City of Portsmouth on Tax Assessor Map U117 Lot 14 and Lot 15, hereby authorize Tracy Kozak from Arcove, LLC., as project architect, and John Chagnon from Ambit Engineering, to represent our interests before land use boards of the City of Portsmouth and any State of New Hampshire or federal agency necessary to obtain regulatory approvals and permits and to submit any applications and materials related to the above referenced property on our behalf.

_____ Date: December 27, 2021
Mark A. McNabb, Manager & Member

# 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: One Market Square, LLC Date Submitted: 10/18/2022

Application # (in City's online permitting): LU-22-12

Site Address: 1 Congress Street Map: 117 Lot: 14 & 15

| Application Requirements | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)** | Online | 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)** | Online | 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)** | See Letter | |
| ☐ | 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)** | Sheet C3 | N/A |
| ☐ | Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)** | Cover Sheet | 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)** | Cover Sheet | 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)** | Boundary Survey | N/A |
| ☐ | Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)** | Cover Sheet | N/A |
| ☐ | List of reference plans. **(2.5.3.1H)** | Boundary Survey | N/A |
| ☐ | List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)** | Cover Sheet | N/A |

| Site Plan Specifications | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | 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)** | Boundary Survey Plan | 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 | N/A |
| ☐ | Title (name of development project), north point, scale, legend. **(2.5.4.2A)** | Cover Sheet | N/A |
| ☐ | Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)** | Each Sheet | 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)** | Sheet C1 | N/A |

| Site Plan Specifications – Required Exhibits and Data | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | **1. Existing Conditions: (2.5.4.3A)**<br>• Surveyed plan of site showing existing natural and built features;<br>• Existing building footprints and gross floor area;<br>• Existing parking areas and number of parking spaces provided;<br>• Zoning district boundaries;<br>• Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre;<br>• Existing impervious and disturbed areas;<br>• Limits and type of existing vegetation;<br>• Wetland delineation, wetland function and value assessment (including vernal pools);<br>• SFHA, 100-year flood elevation line and BFE data, as required. | Sheet C1 | |
| ☐ | **2. Buildings and Structures: (2.5.4.3B)**<br>• Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;<br>• Elevations: Height, massing, placement, materials, lighting, façade treatments;<br>• Total Floor Area;<br>• Number of Usable Floors;<br>• Gross floor area by floor and use. | Sheet C3 & Architects Plans | |
| ☐ | **3. Access and Circulation: (2.5.4.3C)**<br>• Location/width of access ways within site;<br>• Location of curbing, right of ways, edge of pavement and sidewalks;<br>• Location, type, size and design of traffic signing (pavement markings);<br>• Names/layout of existing abutting streets;<br>• Driveway curb cuts for abutting prop. and public roads;<br>• If subdivision; Names of all roads, right of way lines and easements noted;<br>• AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC). | Sheet C3 | |
| ☐ | **4. Parking and Loading: (2.5.4.3D)**<br>• Location of off street parking/loading areas, landscaped areas/buffers;<br>• Parking Calculations (# required and the # provided). | Sheet C6 | |
| ☐ | **5. Water Infrastructure: (2.5.4.3E)**<br>• Size, type and location of water mains, shut-offs, hydrants & Engineering data;<br>• Location of wells and monitoring wells (include protective radii). | Sheet C4 | |
| ☐ | **6. Sewer Infrastructure: (2.5.4.3F)**<br>• Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period. | Sheet C4 | |

| | | | |
|---|---|---|---|
| ☐ | **7. Utilities: (2.5.4.3G)**<br>• The size, type and location of all above & below ground utilities;<br>• Size type and location of generator pads, transformers and other fixtures. | Sheet C4 | |
| ☐ | **8. Solid Waste Facilities: (2.5.4.3H)** | | |
| | • The size, type and location of solid waste facilities. | Sheet C6 | |
| ☐ | **9. Storm water Management: (2.5.4.3I)**<br>• The location, elevation and layout of all storm-water drainage.<br>• The location of onsite snow storage areas and/or proposed off-site snow removal provisions.<br>• Location and containment measures for any salt storage facilities<br>• Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures. | Sheet C5 | |
| ☐ | **10. Outdoor Lighting: (2.5.4.3J)**<br>• Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan. | Sheet C3 | |
| ☐ | **11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)** | N/A | |
| ☐ | **12. Landscaping: (2.5.4.3K)**<br>• Identify all undisturbed area, existing vegetation and that which is to be retained;<br>• Location of any irrigation system and water source. | Landscape Plans | |
| ☐ | **13. Contours and Elevation: (2.5.4.3L)**<br>• Existing/Proposed contours (2 foot minimum) and finished grade elevations. | Sheet C5 | |
| ☐ | **14. Open Space: (2.5.4.3M)**<br>• Type, extent and location of all existing/proposed open space. | Sheet C3 | |
| ☐ | **15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)** | Boundary Survey Plan | |
| ☐ | **16. Character/Civic District (All following information shall be included): (2.5.4.3P)**<br>• Applicable Building Height (10.5A21.20 & 10.5A43.30);<br>• Applicable Special Requirements (10.5A21.30);<br>• Proposed building form/type (10.5A43);<br>• Proposed community space (10.5A46). | Sheet C3 | |
| ☐ | **17. Special Flood Hazard Areas (2.5.4.3Q)**<br>• The proposed development is consistent with the need to minimize flood damage;<br>• All public utilities and facilities are located and construction to minimize or eliminate flood damage;<br>• 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)** | Report on file | |
| ☐ | Indicate where Low Impact Development Design practices have been incorporated. **(7.1)** | Drain Study | |
| ☐ | 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)** | Sheet D1 | |
| ☐ | Inspection and Maintenance Plan **(7.6.5)** | Drain Study | |

| 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:<br>• Waivers;<br>• Driveway permits;<br>• Special exceptions;<br>• Variances granted;<br>• Easements;<br>• Licenses.<br>**(2.5.3.2A)** | Cover Sheet | |
| ☐ | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to:<br>• Calculations relating to stormwater runoff;<br>• Information on composition and quantity of water demand and wastewater generated;<br>• Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;<br>• Estimates of traffic generation and counts pre- and post-construction;<br>• Estimates of noise generation;<br>• A Stormwater Management and Erosion Control Plan;<br>• Endangered species and archaeological / historical studies;<br>• Wetland and water body (coastal and inland) delineations;<br>• Environmental impact studies.<br>**(2.5.3.2B)** | Drainage Analysis<br><br>Other submitted studies | |
| ☐ | 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.<br>**(2.5.3.2D)** | To be provided | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---|
| ☑ | **Required Items for Submittal** | **Item Location (e.g. Page/line or Plan Sheet/Note #)** | **Waiver Requested** |
| ☐ | A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)** | Cover Sheet | |
| ☐ | A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)** | Cover Sheet & C3 | 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:<br>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."<br>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)** | Sheet C3 | N/A |

**Applicant's Signature:** John Chagnon **Date:** 10-18-2022

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801

(603) 610-7216

**TECHNICAL ADVISORY COMMITTEE**

January 4, 2023

Mark McNabb
One Market Square LLC
3 Pleasant Street, Ste 400
Portsmouth, New Hampshire 03801

RE: Site Plan Approval for property located at 1 Congress Street (LU-22-12)

Dear Mr. McNabb:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, January 3, 2023, considered your application for Site Plan Review approval for the partial demolition and expansion of the existing structure to construct a 3-story building with 58,780 square feet of gross floor area, 12,080 square foot building footprint, 13 parking spaces, and associated onsite and offsite improvements. Said property is shown on Assessor Map 117 Lot 14 and lies within the Character District 4 (CD-4), Character District 5 (CD-5) and the Historic District. As a result of said consideration, the Committee voted to recommend **approval** to the Planning Board with the following **conditions**:

**Prior to Planning Board consideration:**
*1. Applicant and project team will meet with the Planning staff to discuss the zoning compliance table.*
*2. Pole lights will be removed and the replacement fixtures will be reviewed and approved by Public Works Department.*
*3. Any utility work that is necessary to construct a fully operational building will need to be reviewed and approved by the Public Works Department.*

**Subsequent to Planning Board approval by prior to the issuance of a Building Permit:**
*4. Prior to issuance of building permit the proposed off site improvement for High Street and Ladd Street and Haven Court will be reviewed and approved authorized by the City entity to ensure building, pedestrian, vehicular, and emergency vehicle safety.*

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, February 16, 2023**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Wednesday, January 25, 2023**.

*Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:*

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*

- *Traffic Studies*
- *Etc.*

***All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.***

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Peter Britz,
Planning and Sustainability Director

cc:

Tracy Kozak, JSA Design
Francis Bruton, Bruton & Berube, PLLC
John Chagnon, Ambit Engineering

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

**HISTORIC DISTRICT COMMISSION**

August 23, 2022

Mark McNabb
One Market Square LLC
3 Pleasant Street, Ste 400
Portsmouth, New Hampshire 03801

RE: **Certificate of Approval for property located at 1 Congress Street (LU-22-12)**

Dear Mr. McNabb:

The Historic District Commission, at its regularly scheduled meeting of **Wednesday August 03, 2022**, considered your application for renovations to an existing structure (repair and upgrade building facades along Congress and High Streets) and new construction to an existing structure (replace rear shed additions with new 4 story addition) as per plans on file in the Planning Department. Said property is shown on Assessor Map 117 Lot 14 and lies within the Character District 4 (CD-4), Character District 5 (CD-5) and the Historic District. As a result of said consideration, the Commission voted to **grant** the Certificate of Approval with the following stipulation:

1. A sample board shall be presented.

**Findings of Fact**

A. Purpose and Intent

The proposed application meets the following objective(s) of the Historic District (as provided in Section 10.631.20 of the Zoning Ordinance):
- Conversation and enhancement of property values.

B. Review Criteria

The proposed application also meets the following review criteria of the Historic District (as provided in Section 10.635.70 of the Zoning Ordinance):
- Compatibility of innovative technologies with surrounding properties.

The Commission's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Commission's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Approvals may also be required from other City Committees or Boards. Once all required approvals have been received, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work.

This approval shall expire unless a building permit is issued within a period of one (1) year from the date granted by the Historic District Commission unless an extension is granted by the Commission in accordance with Section 10.636.70 of the Zoning Ordinance.

*Please note that any changes or modifications to this application require review and approval from the Commission prior to implementation and additional fees may apply.*

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Nicholas J. Cracknell, AICP, Principal Planner
for Jonathan Wyckoff, Chairman of the Historic District Commission

cc: Shanti Wolph, Chief Building Inspector
Rosann Maurice-Lentz, City Assessor

Tracy Kozak, JSA Design
Francis Bruton, Bruton & Berube, PLLC
John Chagnon, Ambit Engineering

# ZONING DEVELOPMENT STANDARD 02/14/2023

**CD4 (CD-4, DOD, HDC): CHARACTER DISTRICT 4**

| | REQUIRED | EXISTING | PROPOSED |
|---|---|---|---|
| Height | 3 stories with short 4th = 45' | **n/a** | **3 stories @ 40' - 7 3/4"** |
| Penthouses | may exceed bldg height by 2' | **n/a** | **n/a** |
| Roof appurtenance | may exceed bldg height by 10' | **n/a** | **7' - 5 3/4"** |
| Façade Types | shopfront | **n/a** | **yes** |
| Building Types | commercial, live-work, mixed use, flex space & community. | n/a | **mixed use (retail, office, apartments)** |
| Front (principle) max | 10 | n/a | 0'-0" |
| Front (secondary) max | 15 | n/a | 2'-4" |
| Side | NR | n/a | n/a |
| Rear, min | >of: 5' from rear line or 10' from cl alley | n/a | N/A |
| Front lotline buildout | 50% min | n/a | 100.00% |
| Lot area (sf) | NR | 8,840 | 8,840 |
| LOT area per dwelling | NR | 0 | n/a |
| Coverage, maximum | 90% | 0 | 65.6% |
| **Footprint, max* 10.5a43.40** | 15,000 | **0** | **5,686** |
| Ground floor area per use, max | 15,000 | N/A | **5,686** |
| Open space, minimum | 10% | 9.5% | 12.1% |
| Permitted uses (cd4 & cd5) | multifamily, live/work, office, retail, restaurant (<500occ) | surface parking lot | commercial retail, office & multifamily |
| Block length, max (ft) | 200 | n/a | **168' - 0 3/4"** |
| Façade modulation length, max (ft) | 80 | n/a | **77' - 3 7/8"** |
| Entrance spacing, max (ft) | 50 | n/a | **39' - 10 3/8"** |
| Floor height above sidewalk, max | 36" | n/a | **16"** |
| Ground floor height, min | 12' | n/a | **13' 5 5/8"** |
| Second floor height, min | 10' | n/a | **11'-3"** |
| Glazing, shopfront, min | 70% | n/a | **70%** |
| Glazing, other | 20%-50% | n/a | **25%** |
| Roof types(pitch) | flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12) | n/a | **hip-top mansard** |
| Parking, off-street; DOD* | when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed. | 19 | **12** |
| Residential (dwellings) | UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. ( + 1 visitor space/5 units) | N/A | **10** |
| Professional office | NA in DOD | N/A | N/A |
| | | | |

* see CD-5 zoning chart for remainder of parking spaces

# ZONING DEVELOPMENT STANDARD 02/14/2023

CD5 (CD-5, DOD, HDC): CHARACTER DISTRICT 5

| | REQUIRED | EXISTING | PROPOSED |
|---|---|---|---|
| Height | 2-3 stories with short 4th = 45' | **45' - 5 1/4"** | **40' - 7 3/4"** |
| Penthouses | may exceed bldg height by 2' | **n/a** | **n/a** |
| Roof appurtenance | may exceed bldg height by 10' | **8' 0 3/4"** | **7' - 5 3/4"** |
| Façade Types | shop front | **yes** | **yes** |
| Building Types | commercial, live-work, mixed use, flex space & community. | **mixed use (retail, restaurant, office, apartments)** | **mixed use (retail, office, apartments)** |
| Front (principle) max | 5 | 0'-0" | 0'-0" |
| Front (secondary) max | 5 | 0'-0" | 1'-6" |
| Side | NR | 0'-0" | N/R |
| Rear, min | >of: 5' from rear line or 10' from cl alley | N/A | N/A |
| Front lotline buildout | 80% min | 100% | 100% |
| Lot area (sf) | NR | 7,266 | 7,266 |
| LOT area per dwelling | NR | n/a | n/a |
| Coverage, maximum | 95% | 37.52% | 89.1% |
| **Footprint, max* 10.5a43.40** | 20,000 | **2,726** | **6,427** |
| Ground floor area per use, max | 15,000 | 2,726 | 6,427 |
| Open space, minimum | 5% | 0% | 8.2% |
| Permitted uses (cd4 & cd5) | commercial, live/work, mixed-use, flex space, community, office, retail, restaurant (<500occ) | commercial, mixed use, office, retail & restaurant | COMMERCIAL (retail, restaurant, hotel lobby) |
| Block length, max (ft) | 225 | **168' - 0 3/4"** | **168' - 0 3/4"** |
| Façade modulation length, max (ft) | 100 | **62' - 1 1/8"** | **62' - 1 1/8"** |
| Entrance spacing, max (ft) | 50 | **49' - 7 1/4"** | **49' - 7 1/4"** |
| Floor height above sidewalk, max | 36" | **4"** | **4"** |
| Ground floor height, min | 12' | **12' - 8 3/8"** | **13' 5 5/8"** |
| Second floor height, min | 10' | **11'-3"** | **11'-3"** |
| Glazing, shopfront, min | 70% | **31%** | **53%** |
| Glazing, other | 20%-50% | **20%** | **24%** |
| Roof types(pitch) | flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12) | **hip-top mansard and gable** | **hip-top mansard and gable** |
| Parking, off-street; DOD* | when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed. | 0 | **11** |
| Residential (dwellings) | UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. ( + 1 visitor space/5 units) | **5** | **8** |
| Professional office | NA in DOD | N/A | N/A |
| * see CD-4 zoning chart for remainder of parking spaces | | | |

## Schematic Area Summary

1/25/2023

| | gsf | use | use |
|---|---|---|---|
| **new construction** | **total new** | **existing** | **proposed** |
| 4th floor | 8,528 | n/a | residential |
| 3rd floor | 9,160 | n/a | residential |
| 2nd floor | 9,160 | n/a | office |
| **1st floor (footprint)** | **9,160** | **n/a** | **retail/restaurant** |
| basement | 9,596 | n/a | parking & support |
| **total new** | **45,604** | | |
| | | | |
| **existing to remain and be renovated** | | **existing** | **proposed** |
| 4th floor - 1&3 Congress St | 2,422 | residential | residential |
| 3rd floor - 1&3 Congress St | 2,726 | residential | residential |
| 2nd floor - 1&3 Congress St | 2,726 | office | office |
| **1st floor - 1&3 Congress St (footprint)** | **2,718** | office&retail | restaurant&retail |
| basement - 1&3 Congress | 2,726 | storage/mech | storage/support |
| **total renovation** | **13,318** | | |
| | | | |
| TOTAL FOOTPRINT new + reno | 11,878 | | |
| **TOTAL BUILDING new + reno** | **58,922** | | |
| **roof decks** | **388** | | |

| Residential Vehicular Parking | Qty | parking per unit | parking required | parking available |
|---|---|---|---|---|
| units > 750 sf | 16 | 1.30 | 20.80 | |
| units 500-750 sf | 1 | 1.00 | 1.00 | |
| Units <500 sf | 1 | 0.50 | 0.50 | |
| **resident units total** | **18** | | **22.30** | |
| DOD deduct | | | -4.00 | |
| 1 visitor space for every 5 units | | | 3.6 | |
| **TOTAL** | | | **21.90** | **23.00** |

| | Unit NO. | BR's | SF | parking/unit | parking available |
|---|---|---|---|---|---|
| | 301 | 2 | 1,067 | 1.3 | |
| | 302 | 1 | 885 | 1.3 | |
| | 303 | 1 | 925 | 1.3 | |
| | 304 | 1 | 574 | 1.0 | |
| | 305 | 1 | 1,011 | 1.3 | |
| | 306 | 1 | 996 | 1.3 | |
| | 307 | 1 | 1,032 | 1.3 | |
| | 308 | 1 | 946 | 1.3 | |
| | 309 | 2 | 1,037 | 1.3 | |
| | | | | | |
| | 401 | 2 | 917 | 1.3 | |
| | 402 | 1 | 845 | 1.3 | |
| | 403 | 1 | 876 | 1.3 | |
| | 404 | st | 343 | 0.5 | |
| | 405 | 1 | 1,028 | 1.3 | |
| | 406 | 1 | 848 | 1.3 | |
| | 407 | 1 | 844 | 1.3 | |
| | 408 | 1 | 894 | 1.3 | |
| | 409 | 2 | 965 | 1.3 | |
| resident units total | | | 16,033 | 22.3 | |
| DOD deduct | | | | -4.0 | |
| 1 visitor space for every 5 units | | | | 3.6 | |
| **TOTAL parking** | | | | **21.90** | **23** |

| **Bicycle Parking** | |
|---|---|
| One space for every 5 units | 3.6 |
| **TOTAL required, rounded up** | **4** |

# TECHNICAL MEMORANDUM

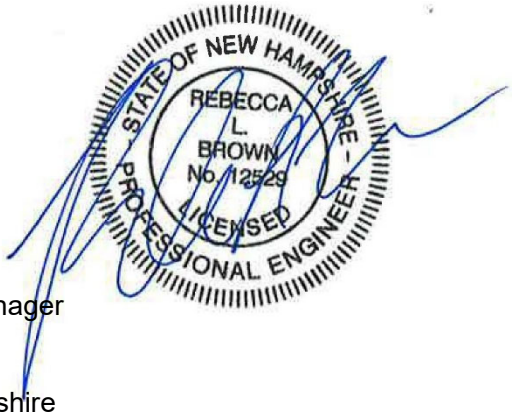
**REF:** NEX-2200015.00

**DATE:** October 25, 2022

**TO:** Mr. Mark A. McNabb
McNabb Properties
3 Pleasant Street, Suite 400
Portsmouth, New Hampshire 03801

**FROM:** Ms. Rebecca L. Brown, P.E., Senior Project Manager

**RE:** Traffic Impact Assessment
One Congress Street – Portsmouth, New Hampshire

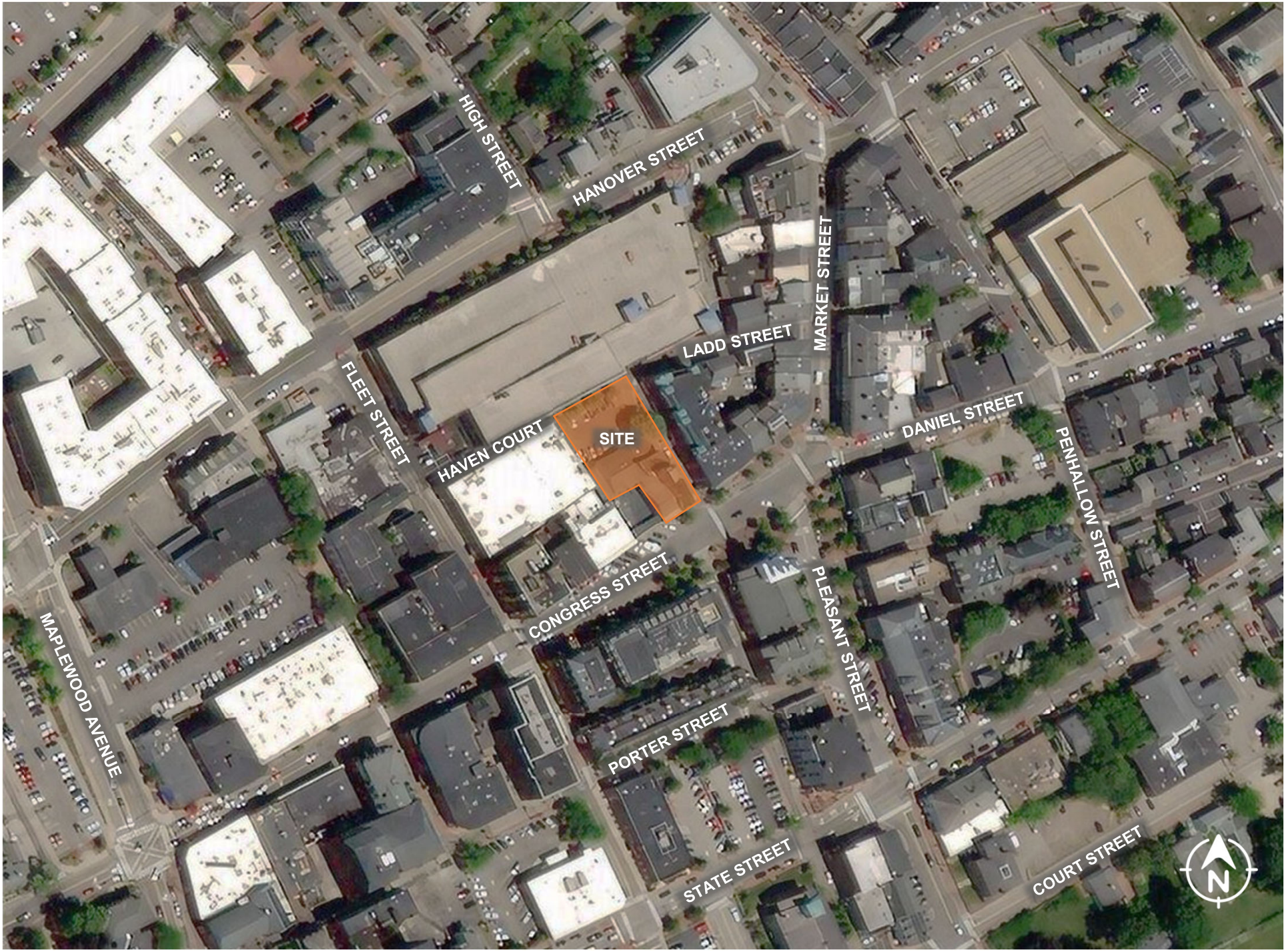



## INTRODUCTION

Greenman-Pedersen, Inc. (GPI) has prepared this *Traffic Impact Assessment* (TIA) for a proposed mixed-use redevelopment located One Congress Street in Portsmouth, New Hampshire. The site is comprised of two lots on Tax Map 117, Parcels 14 and 15. Parcel 14 currently contains a 4-story mixed-use building with retail and restaurant space on the first floor and office and apartment space on the upper floors. Parcel 15 contains a private parking locate. The project consists of renovating a portion of the existing building on Parcel 14 and constructing a 4-story addition to encompass the remainder of Parcels 14 and 15, and constructing basement-level parking. Access to the parking lot would be provided via a driveway on Haven Court to a vehicle elevator for access to the basement level. Upon completion, the Project would provide ±8,025 SF of retail space on the first floor, ±8,312 SF of office space on the second floor and a total of 18 residential units on the upper floors.

This TIA provides a preliminary assessment of the potential vehicular traffic and parking demand to be generated by the proposed redevelopment, and a review of the safety of the roadways providing access/egress for the redevelopment.

The site is bounded by Haven Court to the north, Congress Street to the south, High Street to the east, and mixed-use buildings to the west. The site location in relation to the surrounding roadways is shown on the map on Figure 1.




GPI
Greenman-Pedersen, Inc. || 181 Ballardvale Street, Suite 202, Wilmington, MA 01887
ONE MARKET SQUARE – PORTSMOUTH, NEW HAMPSHIRE

# FIGURE 1 – SITE LOCATION MAP

# COLLISIONS

Collision data for the section of Congress Street between Market Square and Fleet Street, as well as along High Street, Haven Court, and Ladd Street, were obtained from NHDOT for the latest complete three years available (2015-2017). A summary of the crashes at this intersection is provided in Table 1. The detailed crash history is provided in the Appendix.

Based on the collision data, the section of Congress Street between Market Square and Fleet Street experienced an average of 5.0 collisions per year over the three-year study period. Of the 15 crashes, three were single-vehicle crashes with a light pole and may have involved vehicles striking the light poles immediately adjacent to the angled parking spaces along the northerly side of Congress Street. Five of the collisions involved a collision with a pedestrian, three of which occurred late at night when visibility of pedestrians in the roadway may have been a factor. Only one of the pedestrian crashes occurred at the intersection with High Street and involved a pedestrian crossing outside of the crosswalk at night.

There were no collisions reported along Haven Court, High Street, or Ladd Street over the three-year study period.

**TABLE 1**
**Collision Summary**

| Location | Number of Collisions | | Severity [a] | | | | Collision Type [b] | | | | | Percent During | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Average per Year | PD | PI | F | NR | VEH | PED | FO | SV | U | Commuter Peak [c] | Wet/Icy Conditions [d] |
| Congress Street from Market Square to Fleet Street | 15 | 5.0 | 11 | 4 | -- | -- | 7 | 5 | 3 | -- | -- | 20% | 20% |
| Haven Court | 0 | 0.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% | 0% |
| High Street | 0 | 0.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% | 0% |
| Ladd Street | 0 | 0.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0% | 0% |

Source: NHDOT (2015-2017).

[a] PD = property damage only; PI = personal injury; F = fatality, NR = not reported.

[b] VEH = collision with another motor vehicle; PED = pedestrian / bicycle; FO = fixed object; SV = single vehicle; U = unknown.

[c] Percent of vehicle incidents that occurred during the weekday AM (7:00 AM-9:00 AM) and weekday PM (4:00 PM -6:00 PM) commuter peak periods.

[d] Represents the percentage of only “known” collisions occurring during inclement weather conditions.

# TRIP GENERATION

The site currently contains approximately 1,180 SF of retail space and 5,500 SF of restaurant space on the first floor, with an additional 2,720 SF of office space and 10 residential units on the upper floors. Upon completion, the Project will provide ±8,023 SF of retail space, ±8,312 SF of office space, and 18 residential apartment units. GPI utilized trip-generation rates published by the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*[1] for Land Use Code (LUC) 221 (Multi-family Housing (Mid-Rise)), LUC 710 (General Office Building), and LUC 822 (Strip Retail Plaza <40k)) to estimate the proposed trip generation.

The Project will be located in downtown Portsmouth, in close proximity to multiple retail, restaurant, office, residential, and entertainment uses for sharing of trips between uses. As a result, many of the trips generated by the site will be walking and biking trips. In addition, the site is located in close proximity to multiple bus routes, allowing for easy access to public transportation for access to/from the site. Therefore, the trip rates for the residential (LUC 221), office (LUC 710) and retail (LUC 822) uses were based on Dense Multi-Use Urban settings. The resulting trip generation estimate is summarized in Table 2, and the detailed calculations are provided in the Appendix.

**TABLE 2 – Proposed Trip Generation Summary**

| Time Period/Direction | Office Trips (LUC 710) [a] | Residential Trips (LUC 221) [b] | Retail Trips (LUC 822) [c] | Total Trips [d] |
|---|---|---|---|---|
| **Weekday Daily** | 62 | 46 | 272 | **380** |
| **Weekday AM Peak Hour:** | | | | |
| *Enter* | 6 | 0 | 7 | **13** |
| *Exit* | 1 | 4 | 5 | **10** |
| *Total* | 7 | 4 | 12 | **23** |
| **Weekday PM Peak Hour:** | | | | |
| *Enter* | 1 | 2 | 16 | **19** |
| *Exit* | 6 | 1 | 16 | **23** |
| *Total* | 7 | 3 | 32 | **42** |
| **Saturday Daily** | 14 | 42 | 544 | **600** |
| **Saturday Midday Peak Hour:** | | | | |
| *Enter* | 2 | 2 | 21 | **25** |
| *Exit* | 1 | 1 | 21 | **23** |
| *Total* | 3 | 3 | 42 | **48** |

[a] ITE LUC 710 (Hotel) in Dense Multi-Use Urban setting for 8,312 SF
[b] ITE LUC 221 (Multi-family Housing (Mid-Rise)) in Dense Multi-Use Urban setting for 18 units.
[c] ITE LUC 822 (Strip Retail Plaza (<40K)) in Dense Multi-Use Urban setting for 8,023 SF.
[d] Sum of Residential Trips, Office Trips, and Retail Trips.

As previously noted, the site currently contains a mix of residential, office, retail, and restaurant space that is currently generating traffic. Therefore, not all of the site-generated trips will be new to the area. GPI has

[1] *Trip Generation Manual*, 11th Edition; Institute of Transportation Engineers; Washington, DC; September 2021.

estimated the trips generated by the former uses on the site based on ITE trip rates for LUC 221 (Multifamily Housing (Mid-Rise)), LUC 710 (General Office), LUC 822 (Strip Retail Plaza <40k)), and LUC 931 (Fine-Dining Restaurant). The trip rates for the office (LUC 710), retail (LUC 822) and residential (LUC 221) uses were based on Dense Multi-Use Urban settings, while the trip rates for the restaurant (LUC 931) use were based on General Urban/Suburban settings due to the lack of available trip generation data within dense multi-use urban settings for this use. The resulting trip generation estimate is summarized in Table 3, and the detailed calculations are provided in the Appendix.

**TABLE 3 – Existing Trip Generation Summary**

| Time Period/Direction | Residential Trips (LUC 221) [a] | Office Trips (LUC 710) [b] | Retail Trips (LUC 822) [c] | Restaurant Trips (LUC 931) [d] | Total Trips [e] |
|---|---|---|---|---|---|
| **Weekday Daily** | 26 | 20 | 40 | 462 | **548** |
| **Weekday AM Peak Hour:** | | | | | |
| *Enter* | 0 | 2 | 1 | 2 | **5** |
| *Exit* | 2 | 0 | 1 | 2 | **5** |
| *Total* | 2 | 2 | 2 | 4 | **10** |
| **Weekday PM Peak Hour:** | | | | | |
| *Enter* | 1 | 0 | 2 | 29 | **32** |
| *Exit* | 1 | 2 | 2 | 14 | **19** |
| *Total* | 2 | 2 | 4 | 43 | **51** |
| **Saturday Daily** | 24 | 4 | 80 | 496 | **604** |
| **Saturday Midday Peak Hour:** | | | | | |
| *Enter* | 1 | 1 | 3 | 35 | **40** |
| *Exit* | 1 | 0 | 3 | 24 | **28** |
| *Total* | 2 | 1 | 6 | 59 | **68** |

[a] ITE LUC 221 (Multifamily Housing (Mid-Rise)) in Dense Multi-Use Urban setting for 10 dwelling units.
[b] ITE LUC 710 (General Office Building) in Dense Multi-Use Urban setting for 1,392 SF.
[c] ITE LUC 822 (Strip Retail Plaza (<40K)) in Dense Multi-Use Urban setting for 1,044 SF.
[d] ITE LUC 931 (Fine-Dining Restaurant) in General Urban/Suburban setting for 5,391 SF.
[e] Sum of Residential Trips, Office Trips, Retail Trips, and Restaurant Trips.

Table 4 provides a comparison of the trips generated by the proposed land uses to the trips generated by the former uses on the site.

**TABLE 4 – Trip Generation Comparison**

| Time Period/Direction | Existing Trips [a] | Proposed Trips [b] | Net Increase in Trips [c] |
|---|---|---|---|
| **Weekday Daily** | 548 | 380 | **-168** |
| **Weekday AM Peak Hour:** | | | |
| *Enter* | 5 | 13 | **8** |
| *Exit* | 5 | 10 | **5** |
| *Total* | 10 | 23 | **13** |
| **Weekday PM Peak Hour:** | | | |
| *Enter* | 32 | 19 | **-13** |
| *Exit* | 19 | 23 | **4** |
| *Total* | 51 | 42 | **-9** |
| **Saturday Daily** | 604 | 600 | **-4** |
| **Saturday Midday Peak Hour:** | | | |
| *Enter* | 40 | 25 | **-15** |
| *Exit* | 28 | 23 | **-5** |
| *Total* | 68 | 48 | **-20** |

[a] Total Existing Trips (From Table 3).
[b] Total Proposed Trips (From Table 4).
[c] Proposed Trips minus Existing Trips.

As shown in Table 4, the proposed redevelopment will result in a minimal increase in vehicle trips of 13 additional trips (8 entering and 5 exiting) during the weekday AM peak hour, and is anticipated to result in a net reduction in vehicle trips during all other analysis time periods as compared to the existing uses on the site. These increases in traffic volumes represent less than one additional vehicle every five minutes on downtown roadways and are anticipated to result in negligible impacts to traffic operations downtown.

## PARKING

As part of the project, a total of 23 parking spaces will be provided in the basement level parking structure for use by the residents. No on-site parking will be provided for the proposed office and retail uses.

The site is located within the Downtown Overlay District, in close proximity to numerous municipal parking garages and on-street public parking. Based on Section 10.1115.21 of the Zoning Ordinance, non-residential uses within the Downtown Overlay District are not required to provide any parking. Therefore, no on-site parking will be provided for the proposed office and retail uses. It is assumed that the office and retail employees will walk, bike, or use public transit to work or park in the adjacent Hanover Street parking garage. Similarly, it is assumed that retail patrons will either park in one of the municipal parking lots on utilize on-street parking spaces in the area.

### Residential Parking

Section 10.1112.311 of the City of Portsmouth Zoning Ordinance requires:

- 0.5 parking spaces per unit for residential dwellings of less than 500 SF;
- 1.0 parking spaces per unit for residential dwellings of between 500 SF and 770 SF; and

- 1.3 parking spaces per unit for residential dwellings of greater than 750 SF.

The Project proposes to include a total of 1 unit with less than 500 SF of space, 1 unit with less 500-750 SF, and 16 units greater than 750 SF. Therefore, a total of 22.3 parking spaces are required to serve the proposed residential units.

In addition, Section 10.1112.312 of the Zoning Ordinance states that:

*"In addition to the off-street parking spaces provided in accordance with Sec. 10.1112.311, any dwelling or group of dwellings on a lot containing more than 4 dwelling units shall provide one visitor parking space for every 5 dwelling units or portion thereof."*

Therefore, a total of 4.46 visitor parking spaces would be required to meet zoning regulations, which would result in a total of 26.76 parking spaces required for the residential use.

The Project is located within Downtown Overlay District. Section 10.1115.23 of the Zoning Ordinance allows for a 4 space reduction from the requirements of Section 10.1115.21 for any uses located within the Downtown Overlay District. Applying this reduction would result in a total parking requirement of 22.76 parking spaces.

As the proposed parking supply of 23 parking spaces will be consistent with the number of spaces required to meet the Zoning Ordinance, a Conditional Use Permit will not be required for this project for parking.

# CONCLUSIONS

- The site is comprised of two lots on Tax Map 117, Parcels 14 and 15. Parcel 14 currently contains a 4-story mixed-use building with retail and restaurant space on the first floor and office and apartment space on the upper floors. Parcel 15 contains a private parking locate. The project consists of renovating a portion of the existing building on Parcel 14 and constructing a 4-story addition to encompass the remainder of Parcels 14 and 15, and constructing basement-level parking. Access to the parking lot would be provided via a driveway on Haven Court to a vehicle elevator for access to the basement level. Upon completion, the Project would provide ±8,023 SF of retail space, ±8,312 SF of office space, and 18 residential apartment buildings.

- The section of Congress Street between Market Square and Fleet Street experienced an average of 5.0 collisions per year over the three-year study period. Of the 15 crashes, three were single-vehicle crashes with a light pole and may have involved vehicles striking the light poles immediately adjacent to the angled parking spaces along the northerly side of Congress Street. Five of the collisions involved a collision with a pedestrian, three of which occurred late at night when visibility of pedestrians in the roadway may have been a factor. Only one of the pedestrian crashes occurred at the intersection with High Street and involved a pedestrian crossing outside of the crosswalk at night. The occurrence of collisions with pedestrians at night may be an indication that the crosswalk is not adequately lit due either to poor lighting or overgrown street trees blocking existing light poles.

- There were no collisions reported along Haven Court, High Street, or Ladd Street over the three-year study period.

- The proposed redevelopment will result in a minimal increase in vehicle trips of 13 additional trips (8 entering and 5 exiting) during the weekday AM peak hour, and is anticipated to result in a net reduction in vehicle trips during all other analysis time periods as compared to the existing uses on

the site. These increases in traffic volumes represent less than one additional vehicle every five minutes on downtown roadways and are anticipated to result in negligible impacts to traffic operations downtown.

- The proposed parking supply of 23 residential parking spaces within the garage will meet the City's zoning regulations for residential developments within the Downtown Overlay District. No on-site parking is required for office and retail uses within the Downtown Overlay District.

# - APPENDIX

- ***NHDOT Crash Data***
- ***Trip Generation Calculations***

# NHDOT CRASH DATA

| FID | CRASH_DATE | ACDDAY | ACDTIME | ACDSTREET | INTERSTREE | MILESFTFR | NSEW_TO | TYPE_OF_AC | FIXED_OBJE | LOCATION_F | NUMVEHICLE | TOTALFATAL | TOTALINJUR | PEDFATALS | SEVERITY | ROAD_ALIGN | ROAD_CONDI | SURFACE_CO | LIGHTING_D | WEATHER_DE | TRAFFIC_CO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 417934 | 6/22/2015 | MON | 1558 | 151 HIGH ST | HIGH ST AND DEER ST | 150 | E | Other Motor Vehicle | | Along the Road | 2 | 0 | 0 | 0 | No Apparent Injury | Straight and Level | Normal | Dry | Daylight | Clear | Lane Control |
| 434430 | 8/13/2015 | THU | 933 | 75 CONGRESS ST | FLEET ST | 10 | S | Fixed Object | Light Pole | Along the Road | 1 | 0 | 0 | 0 | Unknown | Straight and Level | Normal | Dry | Daylight | Clear | Visible Road Markings |
| 455142 | 11/4/2015 | WED | 1443 | 1 DANIEL ST | 1 MARKET SQ | 0 | AT | Pedestrian | | At Intersection | 1 | 0 | 1 | 0 | No Apparent Injury | Other | Normal | Dry | Daylight | Clear | Stop Sign |
| 466467 | 5/17/2016 | TUE | 1242 | 5 MARKET SQ | CONGRESS ST | 10 | N | Other Motor Vehicle | | Along the Road | 2 | 0 | 0 | 0 | No Apparent Injury | Straight and Level | Normal | Dry | Daylight | Clear | Lane Control |
| 488867 | 6/16/2016 | TUE | 2302 | 5 MARKET SQ | PLEASANT ST | 0 | AT | Pedestrian | | Intersection Related | 3 | 0 | 2 | 0 | Non_Incapacitating | Straight and Level | Normal | Dry | Dark-Street Light On | Clear | Visible Road Markings |
| 481938 | 7/17/2016 | SUN | 1444 | 62 CONGRESS ST | FLEET ST | 20 | W | Other Motor Vehicle | | Unknown | 2 | 0 | 0 | 0 | No Apparent Injury | Unknown | Normal | Dry | Daylight | Clear | None |
| 482191 | 7/19/2016 | TUE | 1356 | 10 PLEASANT ST | 14 MARKET SQ | 0 | AT | Other Motor Vehicle | | Along the Road | 2 | 0 | 0 | 0 | No Apparent Injury | Straight and Level | Normal | Dry | Daylight | Clear | None |
| 482892 | 10/25/2016 | TUE | 1638 | 29 CONGRESS ST | | 0 | | Other Motor Vehicle | | Unknown | 2 | 0 | 0 | 0 | Non_Incapacitating | Unknown | Normal | Dry | Daylight | Clear | Yield Sign |
| 469157 | 11/8/2016 | TUE | 1934 | 14 MARKET SQ | | 0 | | Other Motor Vehicle | | Along the Road | 2 | 0 | 0 | 0 | No Apparent Injury | Straight and Level | Normal | Dry | Daylight | Clear | Lane Control |
| 499903 | 11/20/2016 | SUN | 1251 | 75 CONGRESS ST | FLEET ST | 40 | W | Pedestrian | | Intersection Related | 2 | 0 | 1 | 0 | Non_Incapacitating | Straight and Level | Normal | Dry | Daylight | Clear | Traffic Signals |
| 481331 | 12/8/2016 | THU | 2018 | 5 CONGRESS ST | HIGH ST | 0 | AT | Pedestrian | | At Intersection | 2 | 0 | 0 | 0 | No Apparent Injury | Straight and Level | Normal | Dry | Dark-Street Light On | Clear | Visible Road Markings |
| 469809 | 12/12/2016 | MON | 1612 | 40 PLEASANT ST | | 0 | | Other Motor Vehicle | | Unknown | 2 | 0 | 0 | 0 | No Apparent Injury | Unknown | Normal | Dry | Dusk | Clear | None |
| 479143 | 12/22/2016 | THU | 1426 | 8 CONGRESS ST | | 0 | | Fixed Object | Light Pole | At Intersection | 1 | 0 | 0 | 0 | No Apparent Injury | Unknown | Normal | Wet | Daylight | Snow | None |
| 484255 | 12/24/2016 | SAT | 1 | 5 MARKET SQ | 1 PLEASANT ST | 0 | AT | Pedestrian | | Intersection Related | 2 | 0 | 1 | 0 | Possible | Straight and Level | Normal | Wet | Dark-Street Light On | Cloudy | Stop Sign |
| 477050 | 3/28/2017 | TUE | 833 | 6 CONGRESS ST | 1 CHURCH ST | 0 | AT | Fixed Object | Light Pole | Along the Road | 1 | 0 | 0 | 0 | Unknown | Straight and Level | Normal | Wet | Unknown | Cloudy | None |

# TRIP-GENERATION CALCULATIONS

| Proposed Use | Size | Variable |
|---|---|---|
| Residential (LUC 221) | 18 | Units |
| Office (LUC 710) | 8312 | SF |
| Retail (LUC 822) | 8023 | SF |
| Restaurant (LUC 930) | 0 | SF |

| Existing Uses | Size | Variable |
|---|---|---|
| Residential (LUC 221) | 10 | Units |
| Office (LUC 710) | 2720 | SF |
| Retail (LUC 822) | 1180 | SF |
| Restaurant (LUC 931) | 5500 | SF |

| Time Period / Direction | Proposed Trips | | | | | First Floor Office | | | | | Net Change in Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Office LUC 710 | Residential LUC 221 | Retail LUC 822 | Restaurant LUC 930 | Total Trips | Office LUC 710 | Residential LUC 221 | Retail LUC 822 | Restaurant LUC 930 | Total Trips | |
| Weekday Daily | 62 | 46 | 272 | 0 | 380 | 20 | 26 | 40 | 462 | 548 | -168 |
| Weekday AM Peak Hour | | | | | | | | | | | |
| Enter | 6 | 0 | 7 | 0 | 13 | 2 | 0 | 1 | 2 | 5 | 8 |
| Exit | 1 | 4 | 5 | 0 | 10 | 0 | 2 | 1 | 2 | 5 | 5 |
| Total | 7 | 4 | 12 | 0 | 23 | 2 | 2 | 2 | 4 | 10 | 13 |
| Weekday PM Peak Hour | | | | | | | | | | | |
| Enter | 1 | 2 | 16 | 0 | 19 | 0 | 1 | 2 | 29 | 32 | -13 |
| Exit | 6 | 1 | 16 | 0 | 23 | 2 | 1 | 2 | 14 | 19 | 4 |
| Total | 7 | 3 | 32 | 0 | 42 | 2 | 2 | 4 | 43 | 51 | -9 |
| Saturday Daily | 14 | 42 | 544 | 0 | 600 | 4 | 24 | 80 | 496 | 604 | -4 |
| Saturday Midday Peak Hour | | | | | | | | | | | |
| Enter | 2 | 2 | 21 | 0 | 25 | 1 | 1 | 3 | 35 | 40 | -15 |
| Exit | 1 | 1 | 21 | 0 | 23 | 0 | 1 | 3 | 24 | 28 | -5 |
| Total | 3 | 3 | 42 | 0 | 48 | 1 | 2 | 6 | 59 | 68 | -20 |

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 710 - General Office Building**

**Dense Multi-Use Urban**

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 8.312

**AVERAGE WEEKDAY DAILY**

$$\frac{\text{ITE LUC 710 Weekday Trip Rate (U)}}{\text{ITE LUC 710 Weekday Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{9.74} = \frac{0.87}{1.15} \qquad Y = 7.37$$

T = Y * 8.312
T = 61.25
T = 62 vehicle trips
with 50% ( 31 vpd) entering and 50% ( 31 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.83 * (X)
T = 0.83 * 8.312
T = 6.90
T = 7 vehicle trips
with 86% ( 6 vph) entering and 14% ( 1 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.87 * (X)
T = 0.87 * 8.312
T = 7.23
T = 7 vehicle trips
with 17% ( 1 vph) entering and 83% ( 6 vph) exiting.

**SATURDAY DAILY**

$$\frac{\text{ITE LUC 710 Saturday Trip Rate (U)}}{\text{ITE LUC 710 Saturday Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{2.21} = \frac{0.87}{1.15} \qquad Y = 1.67$$

T = Y * 8.312
T = 1.67 * 8.312
T = 13.90
T = 14 vehicle trips
with 50% ( 7 vpd) entering and 32% ( 7 vpd) exiting.

**SATURDAY PEAK HOUR OF GENERATOR**

$$\frac{\text{ITE LUC 710 Saturday Peak Trip Rate (U)}}{\text{ITE LUC 710 Saturday Peak Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{0.53} = \frac{0.87}{1.15} \qquad Y = 0.40$$

T = Y * 8.312
T = 3.33
T = 3 vehicle trips
with 54% ( 2 vph) entering and 46% ( 1 vph) exiting.
*(same distribution split as ITE LUC 710 General Urban/Suburban during the Saturday Peak period)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)**

**Dense Multi-Use Urban**

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 18

**AVERAGE WEEKDAY DAILY**

T = 2.59 * (X)
T = 2.59 * 18
T = 46.62
T = 46 vehicle trips
with 50% ( 23 vpd) entering and 50% ( 23 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.20 * (X)
T = 0.20 * 18
T = 3.60
T = 4 vehicle trips
with 12% ( 0 vph) entering and 88% ( 4 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.18 * (X)
T = 0.18 * 18
T = 3.24
T = 3 vehicle trips
with 72% ( 2 vph) entering and 28% ( 1 vph) exiting.

**SATURDAY DAILY**

$$\frac{\text{ITE LUC 221 Saturday Daily Trip Rate (General Urban/Suburban)}}{\text{ITE LUC 221 Weekday Daily Trip Rate (General Urban/Suburban)}} = \frac{\text{ITE LUC 221 Saturday Daily Trip Rate (Dense Multi-Use Urban)}}{\text{ITE LUC 221 Weekday Daily Trip Rate (Dense Multi-Use Urban)}}$$

$$\frac{4.91}{5.44} = \frac{(Y)}{2.59} \qquad Y = 2.34$$

T = Y * 18.000
T = 42.078
T = 42 vehicle trips
with 50% ( 21 vpd) entering and 50% ( 21 vpd) exiting.
*(same distribution split as ITE LUC 221 General Urban/Suburban during the Saturday Daily period)*

**SATURDAY PEAK HOUR OF GENERATOR**

$$\frac{\text{ITE LUC 221 Saturday Peak Trip Rate (General Urban/Suburban)}}{\text{ITE LUC 221 Weekday Evening Peak Trip Rate (General Urban/Suburban)}} = \frac{\text{ITE LUC 221 Saturday Peak Trip Rate (Dense Multi-Use Urban)}}{\text{ITE LUC 221 Weekday Evening Peak Trip Rate (Dense Multi-Use Urban)}}$$

$$\frac{0.44}{0.44} = \frac{(Y)}{0.18} \qquad Y = 0.18$$

T = Y * 18.000
T = 3.24
T = 3 vehicle trips
with 49% ( 2 vpd) entering and 51% ( 1 vpd) exiting.
*(same distribution split as ITE LUC 221 General Urban/Suburban during the Saturday Peak period)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 822 - Strip Retail Plaza (<40k)**

**General Urban/Suburban**

Average Vehicle Trips Ends vs: 1000 Sq. Ft. Gross Floor Area
Independent Variable (X): 8.023

**AVERAGE WEEKDAY DAILY**

ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday Daily Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday Daily Trip Rate

4.10 / 6.59 = (Y) / 54.45 Y = 33.88

T = Y * 8.023
T = 271.82
T = 272 vehicle trips
with 500% ( 136 vpd) entering and 50% ( 136 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday Daily)*

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday AM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday AM Trip Rate

4.10 / 6.59 = (Y) / 2.36 Y = 1.47

T = Y * 8.023
T = 11.79
T = 12 vehicle trips
with 60% ( 7 vpd) entering and 40% ( 5 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday AM)*

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

ITE LUC 821 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 821 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate

3.23 / 5.19 = (Y) / 6.59 Y = 4.10

T = Y * 8.023
T = 32.89
T = 32 vehicle trips
with 50% ( 16 vpd) entering and 50% ( 16 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday PM)*

**SATURDAY DAILY**

ITE LUC 821 (General Urban/Suburban) Saturday Daily Trip Rate / ITE LUC 821 (General Urban/Suburban) Saturday Peak Hour Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Saturday Daily Trip Rate / ITE LUC 822 (Dense Multi-Use Urban) Saturday Peak Hour Trip Rate

81.07 / 6.22 = (Y) / 5.20 Y = 67.78

T = Y * 8.023
T = 543.80
T = 544 vehicle trips
with 50% ( 272 vpd) entering and 50% ( 272 vpd) exiting.
*(same distribution split as ITE LUC 821 during the Saturday Daily)*

**SATURDAY PEAK HOUR OF GENERATOR**

ITE LUC 821 (Dense Multi-Use Urban) Saturday Midday Trip Rate / ITE LUC 821 (General Urban/Suburban) Saturday Midday Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Saturday Midday Trip Rate / ITE LUC 822 (General Urban/Suburban) Saturday Midday Trip Rate

4.92 / 6.22 = (Y) / 6.57 Y = 5.20

T = Y * 8.023
T = 41.72
T = 42 vehicle trips
with 51% ( 21 vpd) entering and 49% ( 21 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Saturday Midday)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)**

**Dense Multi-Use Urban**

Average Vehicle Trips Ends vs: Dwelling Units
Independent Variable (X): 10

**AVERAGE WEEKDAY DAILY**

T = 2.59 * (X)
T = 2.59 * 10
T = 25.90
T = 26 vehicle trips
with 50% ( 13 vpd) entering and 50% ( 13 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.20 * (X)
T = 0.20 * 10
T = 2.00
T = 2 vehicle trips
with 12% ( 0 vph) entering and 88% ( 2 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.18 * (X)
T = 0.18 * 10
T = 1.80
T = 2 vehicle trips
with 72% ( 1 vph) entering and 28% ( 1 vph) exiting.

**SATURDAY DAILY**

$$\frac{\text{ITE LUC 221 Saturday Daily Trip Rate (General Urban/Suburban)}}{\text{ITE LUC 221 Weekday Daily Trip Rate (General Urban/Suburban)}} = \frac{\text{ITE LUC 221 Saturday Daily Trip Rate (Dense Multi-Use Urban)}}{\text{ITE LUC 221 Weekday Daily Trip Rate (Dense Multi-Use Urban)}}$$

$$\frac{4.91}{5.44} = \frac{(Y)}{2.59} \qquad Y = 2.34$$

T = Y * 10.000
T = 23.377
T = 24 vehicle trips
with 50% ( 12 vpd) entering and 50% ( 12 vpd) exiting.
*(same distribution split as ITE LUC 221 General Urban/Suburban during the Saturday Daily period)*

**SATURDAY PEAK HOUR OF GENERATOR**

$$\frac{\text{ITE LUC 221 Saturday Peak Trip Rate (General Urban/Suburban)}}{\text{ITE LUC 221 Weekday Evening Peak Trip Rate (General Urban/Suburban)}} = \frac{\text{ITE LUC 221 Saturday Peak Trip Rate (Dense Multi-Use Urban)}}{\text{ITE LUC 221 Weekday Evening Peak Trip Rate (Dense Multi-Use Urban)}}$$

$$\frac{0.44}{0.44} = \frac{(Y)}{0.18} \qquad Y = 0.18$$

T = Y * 10.000
T = 1.8
T = 2 vehicle trips
with 49% ( 1 vpd) entering and 51% ( 1 vpd) exiting.
*(same distribution split as ITE LUC 221 General Urban/Suburban during the Saturday Peak period)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 710 - General Office Building**

**Dense Multi-Use Urban**

Average Vehicle Trips Ends vs: 1000 Sq. Feet Gross Floor Area
Independent Variable (X): 2.720

**AVERAGE WEEKDAY DAILY**

$$\frac{\text{ITE LUC 710 Weekday Trip Rate (U)}}{\text{ITE LUC 710 Weekday Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{9.74} = \frac{0.87}{1.15} \qquad Y = 7.37$$

T = Y * 2.720
T = 20.04
T = 20 vehicle trips
with 50% ( 10 vpd) entering and 50% ( 10 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.83 * (X)
T = 0.83 * 2.720
T = 2.26
T = 2 vehicle trips
with 86% ( 2 vph) entering and 14% ( 0 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.87 * (X)
T = 0.87 * 2.720
T = 2.37
T = 2 vehicle trips
with 17% ( 0 vph) entering and 83% ( 2 vph) exiting.

**SATURDAY DAILY**

$$\frac{\text{ITE LUC 710 Saturday Trip Rate (U)}}{\text{ITE LUC 710 Saturday Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{2.21} = \frac{0.87}{1.15} \qquad Y = 1.67$$

T = Y * 2.720
T = 1.67 * 2.720
T = 4.55
T = 4 vehicle trips
with 50% ( 2 vpd) entering and 32% ( 2 vpd) exiting.

**SATURDAY PEAK HOUR OF GENERATOR**

$$\frac{\text{ITE LUC 710 Saturday Peak Trip Rate (U)}}{\text{ITE LUC 710 Saturday Peak Trip Rate (S)}} = \frac{\text{ITE LUC 710 Weekday Evening Trip Rate (U)}}{\text{ITE LUC 710 Weekday Evening Trip Rate (S)}}$$

$$\frac{(Y)}{0.53} = \frac{0.87}{1.15} \qquad Y = 0.40$$

T = Y * 2.720
T = 1.09
T = 1 vehicle trips
with 54% ( 1 vph) entering and 46% ( 0 vph) exiting.
*(same distribution split as ITE LUC 710 General Urban/Suburban during the Saturday Peak period)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 822 - Strip Retail Plaza (<40k)**

**General Urban/Suburban**

Average Vehicle Trips Ends vs: 1000 Sq. Ft. Gross Floor Area
Independent Variable (X): 1.180

**AVERAGE WEEKDAY DAILY**

ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday Daily Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday Daily Trip Rate

$\frac{4.10}{6.59} = \frac{(Y)}{54.45}$ Y = 33.88

T = Y * 1.180
T = 39.98
T = 40 vehicle trips
with 500% ( 20 vpd) entering and 50% ( 20 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday Daily)*

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday AM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday AM Trip Rate

$\frac{4.10}{6.59} = \frac{(Y)}{2.36}$ Y = 1.47

T = Y * 1.180
T = 1.73
T = 2 vehicle trips
with 60% ( 1 vpd) entering and 40% ( 1 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday AM)*

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

ITE LUC 821 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 821 (General Urban/Suburban) Weekday PM Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Weekday PM Trip Rate / ITE LUC 822 (General Urban/Suburban) Weekday PM Trip Rate

$\frac{3.23}{5.19} = \frac{(Y)}{6.59}$ Y = 4.10

T = Y * 1.180
T = 4.84
T = 4 vehicle trips
with 50% ( 2 vpd) entering and 50% ( 2 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Weekday PM)*

**SATURDAY DAILY**

ITE LUC 821 (General Urban/Suburban) Saturday Daily Trip Rate / ITE LUC 821 (General Urban/Suburban) Saturday Peak Hour Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Saturday Daily Trip Rate / ITE LUC 822 (Dense Multi-Use Urban) Saturday Peak Hour Trip Rate

$\frac{81.07}{6.22} = \frac{(Y)}{5.20}$ Y = 67.78

T = Y * 1.180
T = 79.98
T = 80 vehicle trips
with 50% ( 40 vpd) entering and 50% ( 40 vpd) exiting.
*(same distribution split as ITE LUC 821 during the Saturday Daily)*

**SATURDAY PEAK HOUR OF GENERATOR**

ITE LUC 821 (Dense Multi-Use Urban) Saturday Midday Trip Rate / ITE LUC 821 (General Urban/Suburban) Saturday Midday Trip Rate = ITE LUC 822 (Dense Multi-Use Urban) Saturday Midday Trip Rate / ITE LUC 822 (General Urban/Suburban) Saturday Midday Trip Rate

$\frac{4.92}{6.22} = \frac{(Y)}{6.57}$ Y = 5.20

T = Y * 1.180
T = 6.14
T = 6 vehicle trips
with 51% ( 3 vpd) entering and 49% ( 3 vpd) exiting.
*(same distribution split as ITE LUC 822 (General Urban/Suburban) during the Saturday Midday)*

*Institute of Transportation Engineers (ITE)*

**Land Use Code (LUC) 931 - Fine Dining Restaurant**

**General Urban/Suburban**

Average Vehicle Trips Ends vs: 1,000 Sq. Ft. Gross Floor Area
Independent Variable (X): 5.500

**AVERAGE WEEKDAY DAILY**

T = 83.84 * (X)
T = 83.84 * 5.500
T = 461.12
T = 462 vehicle trips
with 50% ( 231 vpd) entering and 50% ( 231 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 0.73 * (X)
T = 0.73 * 5.500
T = 4.02
T = 4 vehicle trips
with 55% ( 2 vph) entering and 45% ( 2 vph) exiting.
*(same distribution split as ITE LUC 932 during the Weekday AM)*

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

T = 7.80 * (X)
T = 7.8 * 5.500
T = 42.90
T = 43 vehicle trips
with 67% ( 29 vph) entering and 33% ( 14 vph) exiting.

**SATURDAY DAILY**

T = 90.04 * (X)
T = 90.04 * 5.500
T = 495.22
T = 496 vehicle trips
with 50% ( 248 vpd) entering and 50% ( 248 vpd) exiting.

**SATURDAY PEAK HOUR OF GENERATOR**

T = 10.68 * (X)
T = 10.68 * 5.500
T = 58.74
T = 59 vehicle trips
with 59% ( 35 vph) entering and 41% ( 24 vph) exiting.

1 Congress Street

Site Plan Review 10-18-2022

## Green Building Statement

WATER

- Protect water quality – Eliminate surface parking lot.
- Conserve Water -- Target 30% reduction in fixtures water use over building code, meeting EPACT 2005.

ENERGY

- Conserve Energy – Basis of Design to Target 50% Energy Use Index (EUI = 32) reduction over code compliance (IECC 2018) in combined attached existing and new buildings. Use early energy modeling to analyze effective scenarios. Provide high performance thermal envelope. Achieve Energy Star certification and associated rebates. Use Heat Recovery for ventilation.
  Commission energy using systems. LED lighting throughout. See attached engineering report and preliminary energy model summary for additional details.
- Renewable Energy – Rooftop Solar Photovoltaic system for portion of building's energy needs.
- Building Performance -- Use industry tools to annually monitor and benchmark buildings. Train staff on proper building operation with comprehensive Facilities Staff Training and Systems Manuals.
- Reduce Low level ozone (smog) -- Provide safe and secure bicycle storage. Use only low-VOC products for construction and operation.

MATERIALS & RESOURCES

- Minimize waste (during construction and operation)
- Use regional, renewable, low carbon footprint materials

INDOOR ENVIRONMENTAL QUALITY

- Thermal comfort -- Meet ASHRAE 55 Thermal Comfort Code. Address thermal envelope per above. Provide multiple zones of heating and cooling in each apartment.
- Indoor air quality (before and during occupancy) -- MEET ASHRAE 62 Ventilation Code in all occupied spaces. MEET LEED IEQ credit requirements.
- Views / connection to outdoors -- Provide views to outdoors for every regularly occupied space.
- Daylighting -- Achieve Daylight Factor of 2% minimum for every regularly occupied space.
- Individual controls (light, heat etc…) -- Provide individual controls for temperature and lighting.

wv engineering associates, pa. www.wvengineering.com
11 king court, keene, new hampshire 03431 t: 603.352.7007

October 14, 2022

**Ms. Lynn Kramer**
McNabb Properties, LTD.
3 Pleasant Street, Suite 400
Portsmouth, NH 03801

Re: **Market Square**
**One Congress Street**
**Portsmouth, New Hampshire**
**WVA Project No. 21208**

Dear Lynn:

We offer the following energy efficiency design standards as part of the 1 Congress Street Green Building Standard:

Plumbing

- Utilize low flow EPA Water Sense rated plumbing fixtures.
- Utilize 2018 International Energy Conservation Code (IECC) domestic hot water recirculation and piping insulation.
- Utilize condensing gas efficiency domestic hot water heaters at centralized domestic hot water plant for commercial and residential tenants.

Mechanical

- Utilize centralized commercial 3-phase VRF heat recovery air source heat pumps.
- Utilize minimum 65% efficiency energy recovery ventilators to provide 2018 International Mechanical Code required ventilation and exhaust to commercial and residential tenants.
- Utilized high supply/low return air distribution where possible to maximize ventilation efficiency.

Electrical

- Utilize Energy Star or Design Light Consortium rated LED light fixtures.
- Utilize 2018 IECC day light dimming, occupancy and vacancy sensors to minimize lighting energy use.

Sincerely,

WV Engineering Associates, PA

Richard A. Parks, III, PE

cc: Tracy Kozak ARCove Architects

# ANALYSIS SUMMARY

Location

Portsmouth, NH 03801, USA

Climate Zone

ASHRAE Climate Zone 5

98

Walk Score®

Walker's Paradise

63

Bike Score®

Bikeable

Building Type

## ENERGY UTILIZATION INTENSITY - EUI

Office

23.49

Apartments

36.87

Retail

30.96

32

Overall Energy

The current model is done using ASHRAE 2016 - IECC 2018 Equivalent energy code assumptions. The current design is better than the national average and can be significantly improved by higher performance of envelope, HVAC and more. The building load is driven by Equipment and Lighting.

# BENCHMARKS

## WHERE DO WE NEED TO BE?

Energy

**66**
National Average

**13**
2030 Target

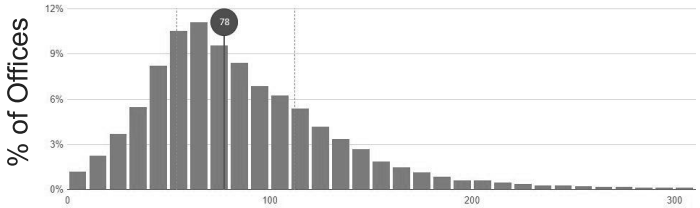
**55%**
Daylight

**10%**
Glare

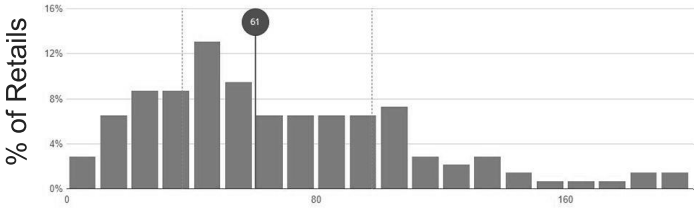
EUI is expressed as energy per square foot per year. It is calculated by dividing the total energy consumed by the building in one year (measured in kBtu) by the total floor area of the building. The most common unit for EUI is kBtu/ft²/year.

Spatial Daylight Autonomy (sDA) describes the percentage of floor area that receives at least 300 lux for at least 50% of the annual occupied hours.

Annual Solar Exposure (ASE) refers to the percentage of space that receives too much direct sunlight (1000 Lux or more for at least 250 occupied hours per year), which can cause glare or increased cooling loads.




Measured Energy Use of Offices



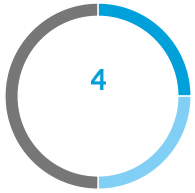

Measured Energy Use of Retails

# Water Use

**Total Water Use (gal/yr)**


| | |
|---|---|
| Retail | 129130 gal/yr |
| Apartments | 1226637 gal/yr |
| Office | 46118 gal/yr |
| Cooling Tower | 304318 gal/yr |
| Outdoor WU | 0 gal/yr |

**LEED Points - WEc1-c2 Credit**

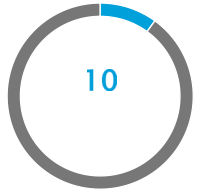



| | |
|---|---|
| Indoor Reduction | 31 % |
| Outdoor Reduction | 0 % |

**Indoor WUI (gal/ft²/yr)**

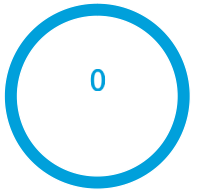

| | |
|---|---|
| Retail | 5.14 gal/ft²/yr |
| Apartments | 57.14 gal/ft²/yr |
| Office | 4.06 gal/ft²/yr |

**Stormwater Managed Onsite %**




| | |
|---|---|
| Total Runoff | 57381 gal/yr |

**Irrigation WUI (gal/ft²/yr)**




| | |
|---|---|
| Total Irrigation Water Use | 0 gal/yr |

| Average Grade Work Sheet | | | | | | |
|---|---|---|---|---|---|---|
| Project | One Congress Street | | | | Calculated | |
| Address: | 1 Congress Street, Portsmouth, NH | | | | 10/26/2022 | |
| 6' offset from Building; Prop Grades 10' OC | | | | | | |
| SECTION | Elev | Elev | Elev | Elev | Total | |
| SOUTH | 27.84 | 27.79 | 27.74 | 27.97 | 111.34 | |
| | 28.02 | | | | 28.02 | |
| | | | | | | AVG PER SECTION |
| | | | # | 5 | 139.36 | 27.87 |
| WEST | 35.00 | 34.83 | 34.61 | 34.44 | 138.88 | |
| | 34.25 | 34.04 | 33.86 | 33.68 | 135.83 | |
| | 33.50 | 33.32 | 33.14 | 33.03 | 132.99 | |
| | 32.50 | | | | 32.5 | AVG PER SECTION |
| | | | # | 13 | 440.20 | 33.86 |
| NORTH | 31.79 | 31.10 | 30.41 | 29.72 | 123.02 | |
| | 29.03 | 28.28 | 27.70 | 27.09 | 112.10 | |
| | 26.54 | | | | 26.54 | |
| | | | | | | AVG PER SECTION |
| | | | # | 9 | 261.66 | 29.07 |
| EAST | 27.83 | 27.71 | 27.59 | 27.47 | 110.60 | |
| | 27.62 | 27.56 | 27.43 | 27.26 | 109.87 | |
| | 27.39 | 27.64 | 27.44 | 27.24 | 109.71 | |
| | 27.04 | 26.84 | 26.64 | 26.44 | 106.96 | |
| | 26.24 | | | | 26.24 | AVG PER SECTION |
| | | | # | 17 | 463.38 | 27.26 |
| Total | 1,304.60 | > | AVERAGE GRADE | | | |
| # | 44 | | 29.65 | | | |

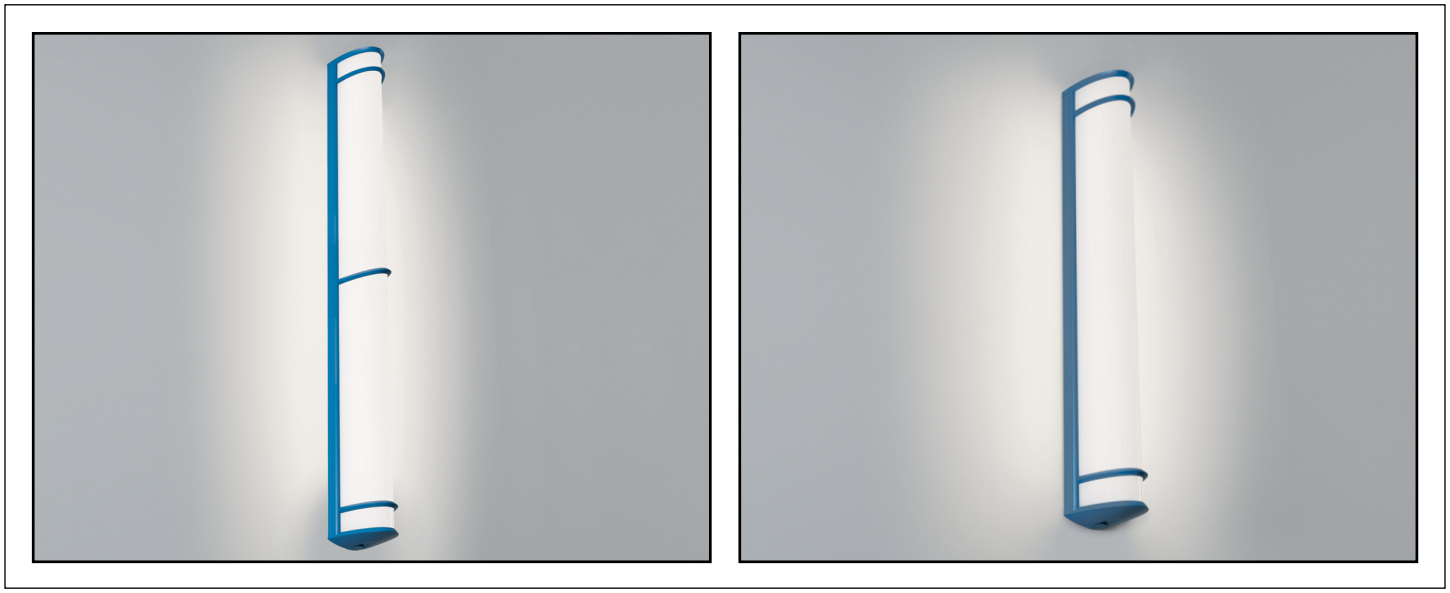
# RAVEN™

## 0W1340/0W1342/0W1344/0W1346/0W1348
## Outdoor models with Accent Bars

VISA LIGHTING

VisaLighting.com/products/Raven

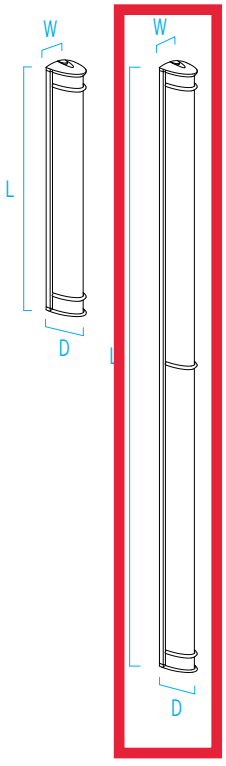
Type: Project: Location:



### DIMENSIONS[1]

L = Length D = Depth W = Width WT = Weight

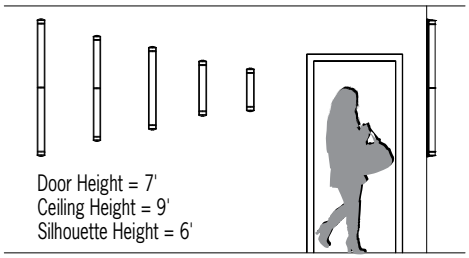
| | 0W1348 | 0W1340 | 0W1342 | 0W1344 | 0W1346 |
|---|---|---|---|---|---|
| L | 18-1/2" (470 mm) | 24-3/4" (629 mm) | 36-1/2" (927 mm) | 48-3/8" (1229 mm) | 60-1/8" (1527 mm) |
| D | 4" (102 mm) | | | | |
| W | 3 -3/8" (86 mm) | | | | |



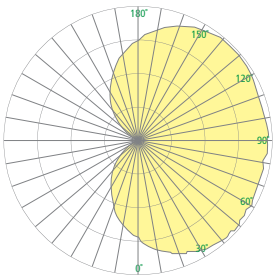

### FEATURES

- Integral driver
- Vertical or horizontal mounting
- Mounts to 2 X 4 electrical junction box (by others) with provided hardware. Requires auxiliary mounting fasteners (provided). Orient junction box to match fixture's linear dimension (horizontal or vertical)
- Tamper resistant fasteners
- High impact extruded aluminum backplate/side rails, die-cast end caps and trim bars; gasketed and sealed construction
- Extruded clear prismatic performance lens and extruded white acrylic diffuser
- High impact extruded white acrylic, F1 rated; UV stable; UL-94 HB Flame Class rated
- No VOC powder coat finish
- ETL listed for wet location mounting 4' above grade

### RELATIVE SCALE DRAWING




### PHOTOMETRICS




ADA XPS ETL Listed 5 Year Warranty

# RAVEN (cont.)

## 0W1340/0W1342/0W1344/0W1346/0W1348

## Outdoor models with Accent Bars

**Fill in shaded boxes using information listed below**

| | | – | | | |
|---|---|---|---|---|---|
| | | | MVOLT | | |
| **MODEL**[1]<br>0W1348<br>0W1340<br>0W1342<br>0W1344<br>0W1346<br><br>See page 1 | **SOURCE**[2]<br>• L30K(H)<br>• L30K(L)<br>L35K(H)<br>L35K(L)<br>• L40K(H)<br>• L40K(L) | | **VOLTAGE**<br>MVOLT | **FINISH**<br><br>See last page for finish order codes | **OPTION**[3]<br>XPS |

### SOURCE[2] (Select One)

Dimmable 0-10V to 1%, Minimum 80CRI, within 3-step MacAdam

| Source | CCT | 0W1348 | | 0W1340 | | 0W1342 | | 0W1344 | | 0W1346 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Delivered Lumens | Power/ Watts | Delivered Lumens | Power/ Watts | Delivered Lumens | Power/ Watts | Delivered Lumens | Power/ Watts | Delivered Lumens | Power/ Watts |
| **• L30K(H)** | 3000K | 1100 | 10 | 1400 | 13 | 2800 | 26 | 3300 | 29 | 3900 | 35 |
| **• L30K(L)** | 3000K | 750 | 7 | 800 | 7 | 1900 | 17 | 2200 | 19 | 2800 | 23 |
| **L35K(H)** | 3500K | 1100 | 10 | 1400 | 13 | 2800 | 26 | 3300 | 29 | 3900 | 35 |
| **L35K(L)** | 3500K | 750 | 7 | 800 | 7 | 1900 | 17 | 2200 | 19 | 2800 | 23 |
| **• L40K(H)** | 4000K | 1100 | 10 | 1400 | 13 | 2900 | 26 | 3400 | 29 | 4100 | 35 |
| **• L40K(L)** | 4000K | 750 | 7 | 800 | 7 | 2000 | 17 | 2300 | 19 | 2800 | 23 |

### OPTION[3]

⚠ Option availability may be interdependent with Other Options

| | |
|---|---|
| **XPS** | Express 10 day shipping. Items marked with a bullet (•) are not available with **XPS** |

### VOLTAGE

| | |
|---|---|
| **MVOLT** | 120-277V, 50/60 Hz |

### LUMEN MAINTENANCE RATING

| | |
|---|---|
| L80 (reported) | >50,000hrs |

### Tamper Resistant Fastener

# RAVEN (cont.)

## 0W1340/0W1342/0W1344/0W1346/0W1348
## Outdoor models with Accent Bars

### RAVEN PRODUCT FAMILY

| | | |
|---|---|---|
| **Accent Bars** | **Outdoor** | • 0W1348<br>• 0W1340<br>• 0W1342<br>• 0W1344<br>• 0W1346 |
| | **Indoor** | • CV1818<br>• CV1800<br>• CV1802<br>• CV1804<br>• CV1806 |
| **No Accent Bars** | **Outdoor** | • 0W1350<br>• 0W1352<br>• 0W1354<br>• 0W1356<br>• 0W1358 |
| | **Indoor** | • CV1820<br>• CV1822<br>• CV1824<br>• CV1826<br>• CV1828 |

See Visalighting.com/products/Raven for more information

### SUGGESTED VARIATIONS

- 2700k–5000k color temperatures
- Increase fixture length up to 8' (indoor only)

# RAVEN (cont.)

## 0W1340/0W1342/0W1344/0W1346/0W1348

## Outdoor models with Accent Bars

VISA LIGHTING

### FINISHES

Specify color code when ordering. For accurate color matching, individual paint and finish samples are available upon request.
For more information about our finishes visit visalighting.com/finishes

Powder Coat Paint Finishes (Standard)

| | | | | | | |
|---|---|---|---|---|---|---|
| **AGGY** Agate Grey | **ALGN** Alpine Green | **BJBG** Baja Beige | **BMAT** Bronze Matt | **BRNZ** Bronze | **BSIL** Blade Silver | **CVBL** Cove Blue |
| **DEOR** Deoro Gold | **GLWT** Glacier White | **GSIL** Graphite Siver | **HRGR** Harbor Grey | **JTBK** Jet Black | **OCBL** Ocean Blue | **SHGR** Shoreline Grey |
| **SBGN** Sagebrush Green | **SLGR** Slate Grey | **SSTP** Sierra Taupe | **TRCN** Terracotta Canyon | **TRWT** Traffic White | **VBLK** Velvet Black | **VNRD** Vineyard Red |

# A78BLED FRISCO SERIES

LED

**EPA** 2.03 (ft²)
**WEIGHT** 22 LBS

**7 YEAR WARRANTY**

**LUMEN RANGE** 2,200 to 5,400

**LIFE SPAN** L70 MINIMUM 100,000 HOURS

**UL LISTED**

**CLICK FOR FAQ's**

**JOB NAME**

**FIXTURE TYPE**

**MEMO**

## BUILD A PART NUMBER

**ORDERING EXAMPLE: 2A-A78BLED-5P-4L40T3-MDL05-A-PEC-FHD/480PM/4212FP4/FCC/BKT**

| Mounting Config. | Fixture | Fitter | LED | CCT | Type | Driver | Lens | Option Control Receptacle | Option Control | Option Fuse | Option Custom Logo | Option GFI | Option Terminal Block | Option House Side Shield | Arm See Arm Spec Sheets | Pole See Pole Spec Sheets | Finish |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |

### Mounting Configuration

(Click here to link to mounting configuration specification page)

- 1W
- 2A
- 3A90
- 1AM
- PT
- 2A90
- 3APT
- 2AM
- 1A
- 2APT
- 4A
- 450PB
- 1APT
- 3A
- 4APT

**W** = Wall Mount **PT** = Post Top **A** = Arm Mount **AM** = Arm Mid-Mount **PB** = Pier Base

### Fixture

- A78BLED

### Fitter

- 5P
- 990
- 991
- 992
- 993
- 994
- 995
- BD4
- BD5
- BD7
- OL3
- OL4
- C2097[1]

[1] Consult factory for use on concrete poles.

### LED

- 4L

### CCT - Color Temperature (K)

- 27(00)
- 30(00)
- 35(00)
- 40(00)
- 50(00)

### Type

- T3
- T4
- T5

### Driver

- **MDL02** (120v-277v, 250mA)
- **MDL03** (120v-277v, 350mA)
- **MDL05** (120v-277v, 500mA)
- **MDL06** (120v-277v, 630mA)
- **MDH02** (347v-480v, 250mA)
- **MDH03** (347v-480v, 350mA)
- **MDH05** (347v-480v, 500mA)
- **MDH06** (347v-480v, 630mA)

### Lens

- **A** (Acrylic Lens)

### Options (Click here to view accessories sheet)

- **R**[2] 3-Pin control receptacle only
- **R5**[2] 5-Pin control receptacle only
- **R7**[2] 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)
- **FHD**[4] Double Fuse and Holder
- **CL**[5] Custom Logo in Medallion
- **GFI**[2] 15A Duplex GFI for Utility Fitter
- **TB**[2] Terminal Block
- **HSS** 120° House Side Shield

[2] For 900 series utility fitter only.
[3] Requires control receptacle.
[4] Ships loose for installation in base.
[5] Consult factory for specification details.

### Pole (Click here to link to pole specification page)

See Pole specification sheets.

### Finish

#### Standard Finishes[6]

- **BKT** Black Textured
- **WHT** White Textured
- **PGT** Park Green Textured
- **ABZT** Architectural Medium Bronze Textured
- **DBT** Dark Bronze Textured

[6] Smooth finishes are available upon request.

#### Custom Finishes[7]

- **OI** Old Iron
- **RT** Rust
- **WBR** Weathered Brown
- **CD** Cedar
- **WBK** Weathered Black
- **TT** Two Tone

[7] Custom colors require upcharge.

#### Sternberg Select Finishes

- **VG** Verde Green
- **SI** Swedish Iron
- **OWGT** Old World Gray Textured

## Specifications

### Fixture

The Frisco series is a stylized Victorian acorn fixture which consists of a decorative cast aluminum fitter, cage, hinged roof and high efficiency prismatic acrylic acorn. The cage includes four cast aluminum medallions finished in gold. Also available are custom medallions (CL). It shall be appointed with a cast aluminum decorative urn finial. The Luminaire shall be UL listed in US and Canada.

### Fitter - Standard

The fitter shall be heavy wall cast aluminum, 356 alloy for high tensile strength. It shall have an 8-1/2" inside diameter opening to attach to the 8" neck of the acorn globe. When ordered with a Sternberg aluminum pole, the fitter shall be welded to the pole top or tenon for safety and to ensure the fixture will be plumb, secure and level over the life of the installation. The fitter shall have a one-piece ring bug gasket to resist insect penetration into lamp assembly.

### 900 Series Utility Fitter Option

The fitter shall be heavy wall cast aluminum, 360 die cast alloy for high tensile strength. It shall have a 9-1/4" inside diameter opening to attach to the 8" neck of the acorn globe. It shall have a hinged, tool-less entry door that provides open access to all of the components. The 900 series shall have an optional terminal block for ease of wiring, an optional Twist-Lock Photocontrol receptacle, an optional single GFCI outlet for auxiliary power needs. The top mounted driver mounting plate shall be cast aluminum and provide tool-less removal from the housing using 2 finger latches. The fitter shall have a one-piece ring gasket to resist insect penetration into globe assembly. When supplied with GFCI receptacle a hole will be provided for cord and plug installation with the access door closed. When cord and plug is not in use a filler plug will be provided and shall be tethered to the fitter for easy recovery and installation.

### LED's

The luminaire shall use high output, high brightness LED's. The Chip on Board (COB) LED components are mounted to vertical heat sinks. The LED's and printed circuit boards shall be 100% recyclable; they shall also be protected from moisture and corrosion by a conformal coating of 1 to 3 mils. They shall not contain lead, mercury or any other hazardous substances and shall be RoHS compliant. The LED life rating data shall be determined in accordance with IESNA LM-80. The High Performance white LED's will have a life

*See next page*

SternbergLighting
ESTABLISHED 1923 / EMPLOYEE OWNED

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

# A78BLED FRISCO SERIES

LED

expectancy of approximately 100,000 hours with not less than 70% of original brightness (lumen maintenance), rated at 25°C. The High Brightness, High Output LED's shall be 4000K (2700K, 3000K, 3500K or 5000K 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 from external pristmatic acorn. Testing shall be done in accordance with IESNA LM-79.

## Electronic Drivers

The LED driver shall be U.L. Recognized. It shall be securely mounted inside the fixture, for optimized performance and longevity. It shall be supplied with a quick-disconnect electrical connector on the power supply, providing easy power connections and fixture installation. It shall have overload as well as 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 dimmable using a 0-10v signal.

**For sources over 50w:** The driver shall have a minimum efficiency of 90%. The driver shall be rated at full load with THD<20% and a power factor of greater than 0.90. The driver shall contain over-heat protection

**For sources under 50w:** The driver shall have a minimum efficiency of 88%.

## Photocontrols

**Button Style:** On a single assembly the photocontrol shall be mounted on the fixture and pre-wired to driver. On multiple head assembly's the photocontrol shall be mounted in the pole shaft on an access plate. 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.

**Twist-Lock Style:** The photocontrol shall be mounted in the utility fitter 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.

# Performance

| LIGHT SOURCE | T3 INITIAL LUMENS | EFFICACY (LPW) | T4 INITIAL LUMENS | EFFICACY (LPW) | T5 INITIAL LUMENS | EFFICACY (LPW) | WATTAGE |
|---|---|---|---|---|---|---|---|
| 4L27T_-MDL06 | 4680 | 47.8 | 4620 | 47.1 | 4735 | 48.3 | 98 |
| 4L30T_-MDL06 | 5170 | 52.8 | 5105 | 52.1 | 5230 | 53.4 | 98 |
| 4L40T_-MDL06 | 5340 | 54.5 | 5275 | 53.8 | 5400 | 55.1 | 98 |
| 4L27T_-MDL05 | 3855 | 51.4 | 3815 | 50.9 | 3860 | 51.5 | 75 |
| 4L30T_-MDL05 | 4255 | 56.7 | 4215 | 56.2 | 4265 | 56.9 | 75 |
| 4L40T_-MDL05 | 4395 | 58.6 | 4355 | 58.1 | 4405 | 58.7 | 75 |
| 4L27T_-MDL03 | 3025 | 55.0 | 2975 | 54.1 | 3020 | 54.9 | 55 |
| 4L30T_-MDL03 | 3340 | 60.7 | 3290 | 59.8 | 3335 | 60.6 | 55 |
| 4L40T_-MDL03 | 3450 | 62.7 | 3395 | 61.7 | 3445 | 62.6 | 55 |
| 4L27T_-MDL02 | 2225 | 55.6 | 2200 | 55.0 | 2215 | 55.4 | 40 |
| 4L30T_-MDL02 | 2460 | 61.5 | 2430 | 60.8 | 2445 | 61.1 | 40 |
| 4L40T_-MDL02 | 2540 | 63.5 | 2510 | 62.8 | 2530 | 63.3 | 40 |

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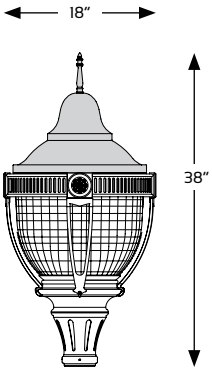
# A78BLED FRISCO SERIES

LED

## Fixtures




**A783BLED**

## Fitters

10-1/8" W
10-3/8" H

**5P or 5T***
Fits 3" OD
x 3" tall
tenon/pole

10-1/8" W
10-1/8" H

**BD4**
Fits 4" OD
x 5" tall
tenon/pole

10-1/8" W
10-1/4" H

**BD5**
Fits 5" OD
x 6" tall
tenon/pole

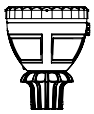
10-1/8" W
11-3/4" H

**BD7**
Fits 7" OD
x 1" tall
tenon/pole

10-1/2" W
15-3/4" H

**990 or 990T***
Fits 3" OD
x 3" tall
tenon/pole
**994 or 994T***
Fits 4" OD
x 3" tall
tenon/pole

10-1/2" W
13-1/8" H

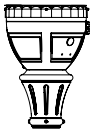


**991**
Fits 3" OD
x 3" tall
tenon/pole

10-1/2" W
13-1/8" H

**992**
Fits 3" OD
x 3" tall
tenon/pole

10-1/2" W
15-3/4" H



**993**
Fits 3" OD
x 3" tall
tenon/pole
**995**
Fits 4" OD
x 3" tall
tenon/pole

10-1/2" W
11-3/8" H

**OL3**
Fits 3" OD
x 3" tall
tenon/pole
**OL4**
Fits 4" OD
x 3" tall
tenon/pole

10" W
3-1/4" H

**C2097**
Fits 7" OD
x 1" tall
tenon/pole

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info@sternberglighting.com
www.sternberglighting.com

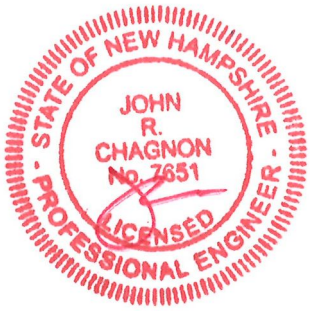
# ***DRAINAGE ANALYSIS***

# COMMERCIAL DEVELOPMENT

1 CONGRESS STREET
PORTSMOUTH, NH

PREPARED FOR
ONE MARKET SQUARE, LLC

18 OCTOBER 2022
AMENDED: 17 FEBRUARY 2023




**AMBIT ENGINEERING, INC.**
Civil Engineers & Land Surveyors

200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jrc@ambitengineering.com
(Ambit Job Number 3406)

# TABLE OF CONTENTS

# EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the Commercial Development at the property known as 1 Congress Street in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 117 as Lots 14 and 15. The total size of the associated drainage area is 15,377± square-feet (0.353 acres). The total size of the lot is 16,106± square-feet (0.353 acres). The total redevelopment area of the project is 24,218± square-feet (0.556 acres). The City of Portsmouth specifies a 15,000 square-foot disturbed area and 40% impervious existing area threshold that would qualify the proposed site as a Redevelopment project, creating additional treatment requirements for the proposed structure.

The development will provide for a new commercial building. The development has the potential to increase stormwater pollutants to City infrastructure, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in pollutants from the site as a result of this project.

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University), with a 15% increase to comply with local ordinance.

This report has been amended to include an area of permeable pavers, to reduce peak flows discharging from the site to below existing levels.

## INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 117 as Lots 14 and 15. Bounding the site to the north is Haven Court. Bounding the site to the east is High Street. Bounding the site to the South is Congress Street. Bounding the site to the west are multi-story commercial buildings. A vicinity map is included in the Appendix to this report.

The proposed development will include a commercial building with utilities. This report includes information about the existing site and the proposed expansion necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, subcatchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

## METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. These values have been used in this analysis, with a 15% addition to comply with local ordinances. The unadjusted table is appended to this report.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.20 program,

written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year, 25-year, and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Ambit Engineering and field observations to confirm.

## SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of one soil type:

| Soil Symbol | Soil Name and Slopes |
|---|---|
| **699** | Urban Land |

**Urban Land** does not have any recorded geological features, including depth to bedrock or depth to water table. The Hydraulic Soil Grade is assumed to be type D.

The physical characteristics of the site not containing buildings consist of gently sloped (0-8%) grades that generally slope from the west of the lot to the east. Elevations on the site range from 27 to 32 feet above sea level. The existing site is developed with multi-story commercial buildings and associated parking.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0259F (effective date January 29, 2021), the proposed development is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

## PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as two subcatchment basins (E1 and E1a) based on localized topography and discharge location. Subcatchment E1 contains the entirety of the lot as well as part of the runoff from adjacent roads, and flows to the north to discharge point DP1, represented as Catch Basin 1 (CB1) on the plan set. Subcatchment E1a contains the flow from an adjacent alleyway (Haven Court) and flows to a trench drain, before flowing to DP1.

***Table 1: Pre-Development Watershed Basin Summary***

| Watershed Basin ID | Basin Area (SF) | Tc (MIN) | CN | 10-Year Runoff (CFS) | 50-Year Runoff (CFS) | To Design Point |
|---|---|---|---|---|---|---|
| **E1** | 13,745 | 5.0 | 97 | 2.53 | 3.85 | DP1 |
| **E1a** | 1,632 | 5.0 | 98 | 0.30 | 0.46 | DP1 |

## POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as one subcatchment basin, (P1). The subcatchment matches the combined area of subcatchments E1 and E1a, and drain to Discharge Point DP1. Subcatchment P1 contains the new development and drains in part through a roof drain filter and then to DP1.

***Table 2: Post-Development Watershed Basin Summary***

| Watershed Basin ID | Basin Area (SF) | Tc (MIN) | CN | 10-Year Runoff (CFS) | 50-Year Runoff (CFS) | Design Point |
|---|---|---|---|---|---|---|
| **P1** | 15,377 | 5.0 | 94 | 2.76 | 4.26 | DP1 |

The overall impervious coverage of the subcatchment areas analyzed in this report **decreases** from 0.337 acres (95.50%) in the pre-development condition to 0.322 acres (91.17%) in the post-development condition. The City of Portsmouth specifies that 30% of existing impervious cover in addition to 100% of additional proposed impervious cover is treated in a Redevelopment project. These conditions are exceeded by treating the proposed 9,400 sf rooftop with the roof drain filter as well as the 1,358 sf permeable pavers.

(100%)(692 sf pervious) + (30%)(14,685 sf impervious) = 5,098 sf required treatment

Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for the design point. The comparison shows decreased flows between the existing and proposed conditions due to the decrease in impervious surfaces on the site as a result of the porous pavers.

***Table 3: Pre-Development to Post-Development Comparison***

| | **Q2 (CFS)** | | **Q10 (CFS)** | | **Q50 (CFS)** | | |
|---|---|---|---|---|---|---|---|
| **Design Point** | **Pre** | **Post** | **Pre** | **Post** | **Pre** | **Post** | **Description** |
| **DP1** | 1.84 | 1.75 | 2.83 | 2.76 | 4.31 | 4.26 | Catch Basin 1 |

Note that all post-development peak discharges are either equivalent or less than the existing peak discharges.

## OFFSITE INFRASTRUCTURE CAPACITY

Due to the change of impervious surfaces in the proposed plan, the impacts to the local infrastructure receptors were measured. The receiving catch basin was estimated to be designed for a 10-year storm event, neglecting the 15% increase in rainfall specified in current regulations. By the original design standard, there would be a depth decrease of 0.13 feet in the receiving catch basin and would not overflow. Using the updated standard, the catch basin in the existing condition overflows during the 10-year storm.

## EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is moderate due to the presence of existing impervious surfaces. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Catch basin filter baskets
- Stabilized construction entrance at access point to the site (FODS)
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by surfacing the access drives and walkways as shown on the plans.

## CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the roof drain filter and permeable pavers, the post-development runoff is treated sufficiently. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

## REFERENCES

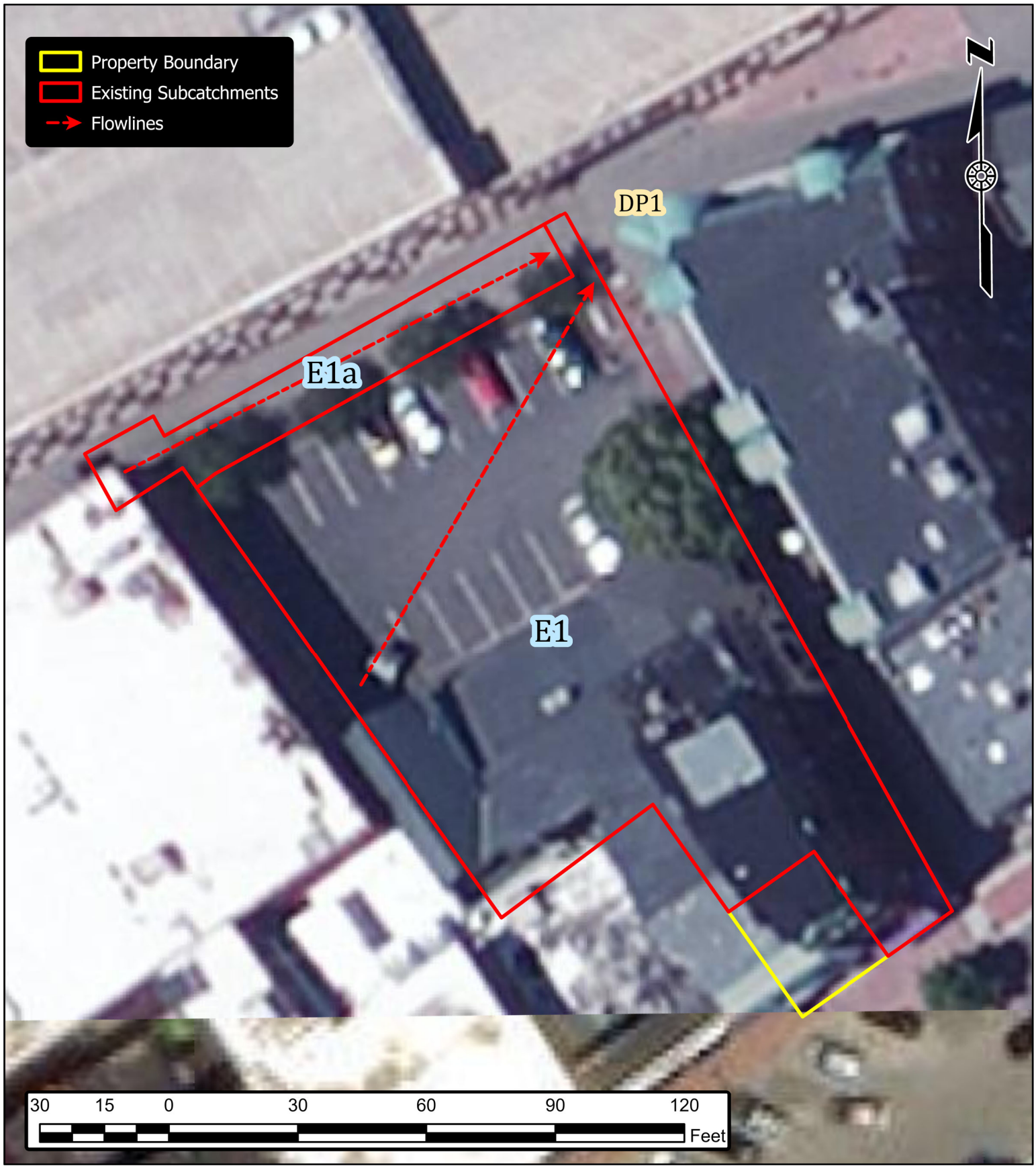
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.
3. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.20* copyright 2022.

**AMBIT ENGINEERING, INC.**
Civil Engineers & Land Surveyors

# Existing Subcatchments

COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, NEW HAMPSHIRE

JOB NUMBER: 3406
SCALE: 1" = 30'
SUBMITTED: 10-18-2022



**AMBIT ENGINEERING, INC.**
Civil Engineers & Land Surveyors

# Proposed Subcatchments

COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, NEW HAMPSHIRE

JOB NUMBER: 3406
SCALE: 1" = 50'
SUBMITTED: 02-17-2023

# APPENDIX A

# VICINITY (TAX) MAP

**AMBIT ENGINEERING, INC.**
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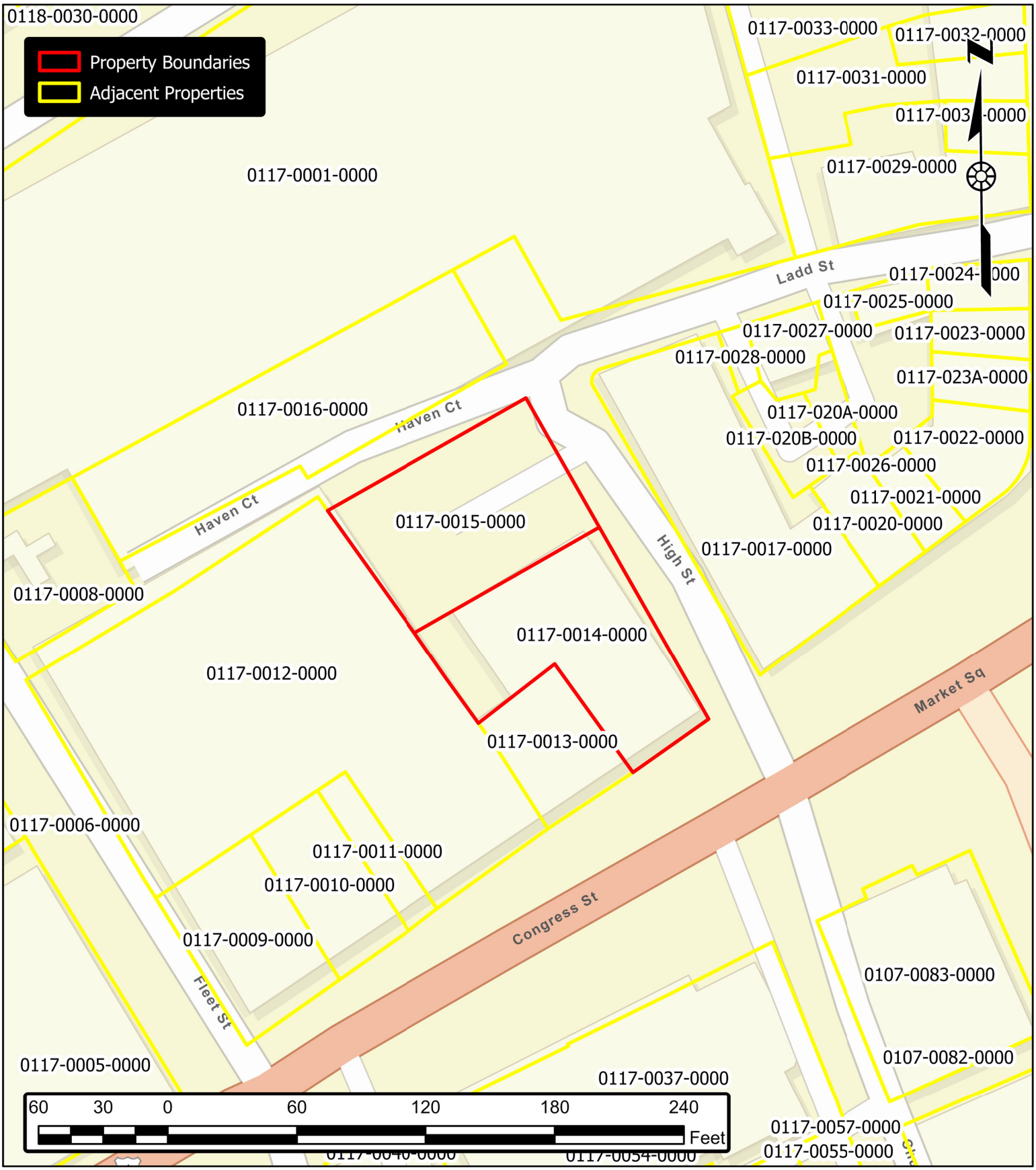
# Vicinity Map

COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, NEW HAMPSHIRE

JOB NUMBER: 3406
SCALE: 1" = 60'
SUBMITTED: 10-18-2022



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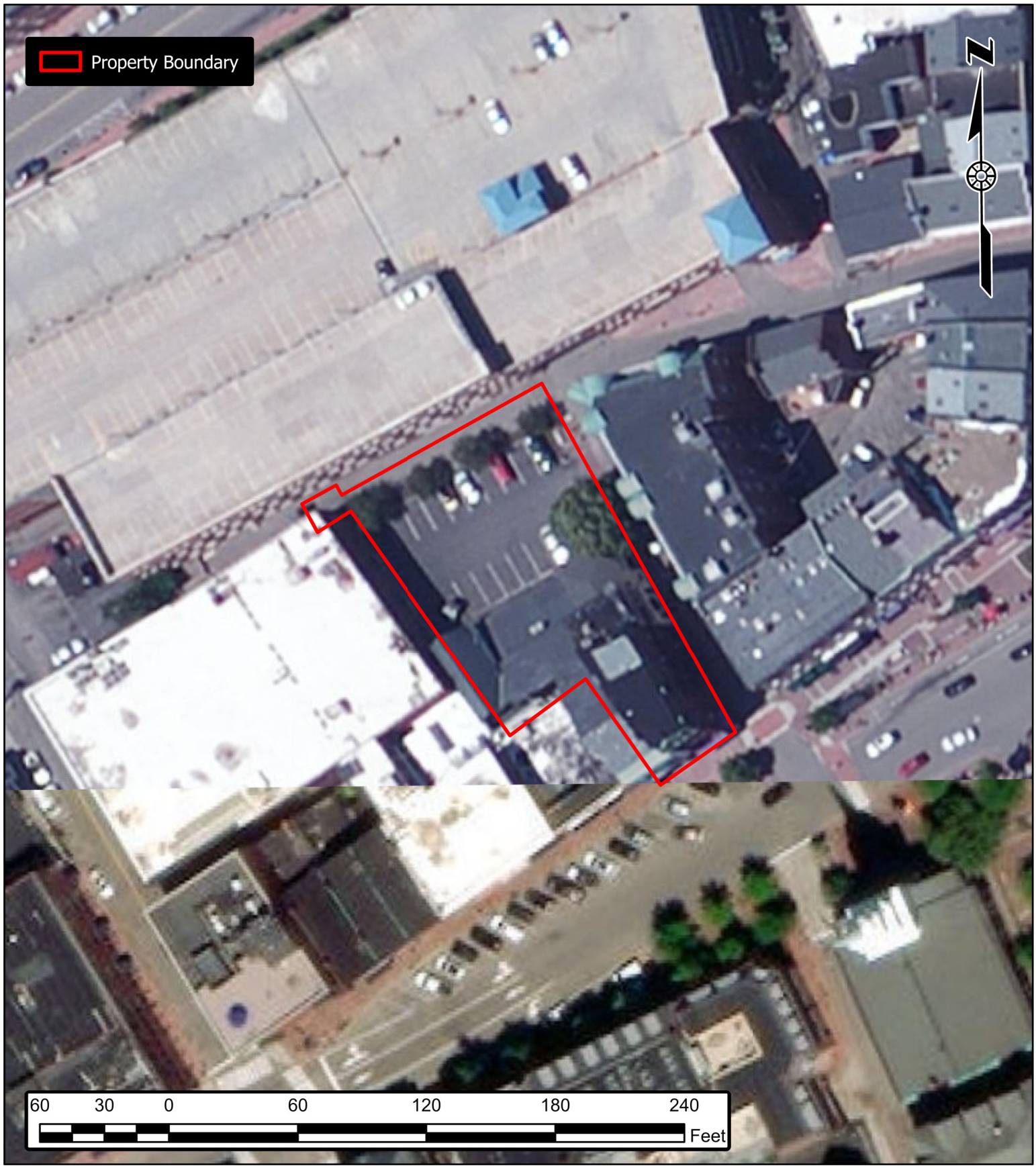
# Aerial Photography

COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, NEW HAMPSHIRE

JOB NUMBER: 3406
SCALE: 1" = 60'
SUBMITTED: 10-18-2022



# APPENDIX B

# TABLES, CHARTS, ETC.

# 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** | 70.758 degrees West |
| **Latitude** | 43.077 degrees North |
| **Elevation** | 0 feet |
| **Date/Time** | Tue, 01 Feb 2022 09:49:16 -0500 |

## 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 | 2.65 | 2.92 | **1yr** | 2.35 | 2.81 | 3.22 | 3.94 | 4.54 | **1yr** |
| **2yr** | 0.32 | 0.50 | 0.62 | 0.81 | 1.02 | 1.30 | **2yr** | 0.88 | 1.18 | 1.52 | 1.94 | 2.48 | 3.20 | 3.57 | **2yr** | 2.84 | 3.43 | 3.93 | 4.67 | 5.32 | **2yr** |
| **5yr** | 0.37 | 0.58 | 0.73 | 0.97 | 1.25 | 1.61 | **5yr** | 1.08 | 1.47 | 1.89 | 2.43 | 3.14 | 4.06 | 4.57 | **5yr** | 3.59 | 4.40 | 5.03 | 5.93 | 6.69 | **5yr** |
| **10yr** | 0.41 | 0.65 | 0.82 | 1.11 | 1.45 | 1.89 | **10yr** | 1.25 | 1.73 | 2.23 | 2.89 | 3.74 | 4.86 | 5.52 | **10yr** | 4.30 | 5.31 | 6.07 | 7.09 | 7.96 | **10yr** |
| **25yr** | 0.48 | 0.76 | 0.97 | 1.34 | 1.77 | 2.34 | **25yr** | 1.53 | 2.14 | 2.78 | 3.63 | 4.73 | 6.16 | 7.09 | **25yr** | 5.45 | 6.81 | 7.79 | 9.00 | 10.03 | **25yr** |
| **50yr** | 0.54 | 0.86 | 1.10 | 1.54 | 2.07 | 2.76 | **50yr** | 1.79 | 2.53 | 3.29 | 4.32 | 5.65 | 7.37 | 8.57 | **50yr** | 6.52 | 8.24 | 9.40 | 10.79 | 11.95 | **50yr** |
| **100yr** | 0.60 | 0.97 | 1.25 | 1.77 | 2.42 | 3.26 | **100yr** | 2.09 | 2.98 | 3.90 | 5.15 | 6.76 | 8.83 | 10.36 | **100yr** | 7.81 | 9.96 | 11.35 | 12.93 | 14.24 | **100yr** |
| **200yr** | 0.67 | 1.10 | 1.43 | 2.05 | 2.82 | 3.83 | **200yr** | 2.44 | 3.51 | 4.61 | 6.12 | 8.07 | 10.58 | 12.52 | **200yr** | 9.36 | 12.04 | 13.72 | 15.50 | 16.97 | **200yr** |
| **500yr** | 0.80 | 1.31 | 1.71 | 2.48 | 3.48 | 4.76 | **500yr** | 3.00 | 4.38 | 5.76 | 7.70 | 10.20 | 13.44 | 16.10 | **500yr** | 11.90 | 15.48 | 17.62 | 19.72 | 21.43 | **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 | 0.88 | **1yr** | 0.63 | 0.86 | 0.93 | 1.33 | 1.68 | 2.23 | 2.47 | **1yr** | 1.98 | 2.38 | 2.86 | 3.19 | 3.89 | **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 | 3.05 | 3.44 | **2yr** | 2.70 | 3.31 | 3.82 | 4.54 | 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 | 2.73 | 3.78 | 4.17 | **5yr** | 3.34 | 4.01 | 4.71 | 5.52 | 6.22 | **5yr** |
| **10yr** | 0.38 | 0.59 | 0.73 | 1.02 | 1.32 | 1.60 | **10yr** | 1.14 | 1.56 | 1.80 | 2.39 | 3.06 | 4.36 | 4.84 | **10yr** | 3.86 | 4.65 | 5.42 | 6.39 | 7.17 | **10yr** |
| **25yr** | 0.44 | 0.67 | 0.83 | 1.18 | 1.56 | 1.90 | **25yr** | 1.35 | 1.86 | 2.10 | 2.75 | 3.53 | 4.71 | 5.86 | **25yr** | 4.17 | 5.63 | 6.61 | 7.75 | 8.64 | **25yr** |
| **50yr** | 0.48 | 0.73 | 0.91 | 1.31 | 1.76 | 2.16 | **50yr** | 1.52 | 2.12 | 2.34 | 3.07 | 3.92 | 5.32 | 6.75 | **50yr** | 4.71 | 6.50 | 7.67 | 8.99 | 9.97 | **50yr** |
| **100yr** | 0.53 | 0.81 | 1.01 | 1.46 | 2.00 | 2.47 | **100yr** | 1.73 | 2.41 | 2.62 | 3.41 | 4.34 | 5.98 | 7.79 | **100yr** | 5.30 | 7.49 | 8.89 | 10.43 | 11.50 | **100yr** |
| **200yr** | 0.59 | 0.89 | 1.12 | 1.63 | 2.27 | 2.81 | **200yr** | 1.96 | 2.75 | 2.93 | 3.78 | 4.78 | 6.71 | 8.97 | **200yr** | 5.93 | 8.63 | 10.30 | 12.13 | 13.29 | **200yr** |
| **500yr** | 0.68 | 1.01 | 1.31 | 1.90 | 2.70 | 3.36 | **500yr** | 2.33 | 3.28 | 3.41 | 4.31 | 5.43 | 7.80 | 10.82 | **500yr** | 6.90 | 10.41 | 12.52 | 14.82 | 16.09 | **500yr** |

## Upper Confidence Limits

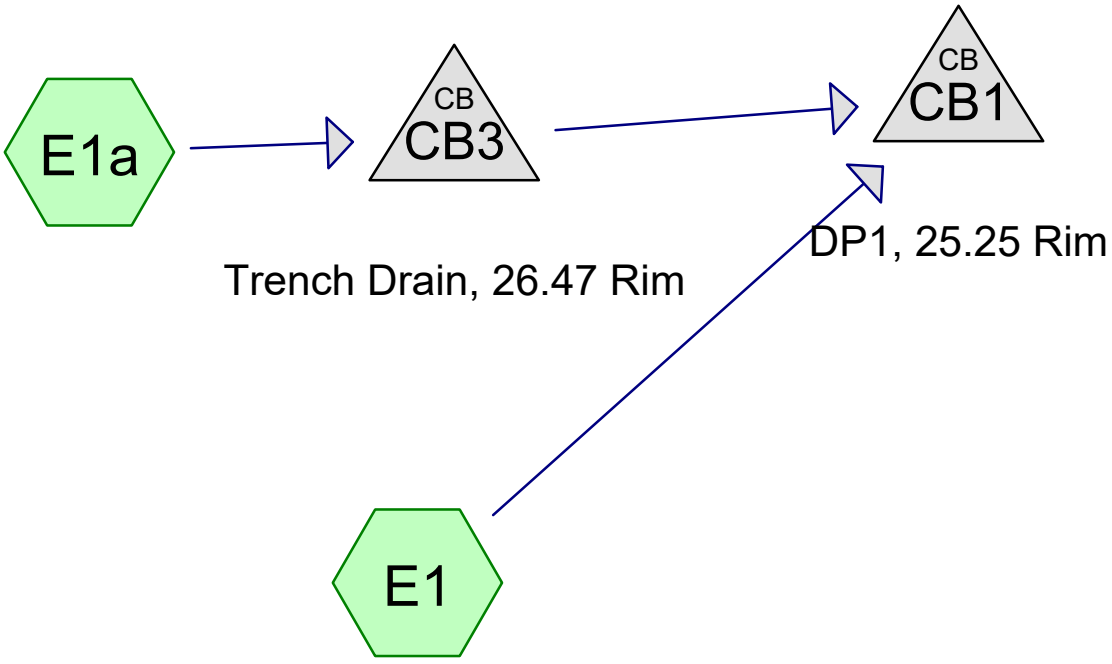
| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1yr** | 0.28 | 0.44 | 0.54 | 0.72 | 0.89 | 1.08 | **1yr** | 0.77 | 1.06 | 1.26 | 1.74 | 2.20 | 2.98 | 3.16 | **1yr** | 2.63 | 3.04 | 3.57 | 4.37 | 5.03 | **1yr** |
| **2yr** | 0.34 | 0.52 | 0.64 | 0.86 | 1.07 | 1.27 | **2yr** | 0.92 | 1.24 | 1.48 | 1.96 | 2.52 | 3.42 | 3.70 | **2yr** | 3.02 | 3.56 | 4.09 | 4.84 | 5.62 | **2yr** |
| **5yr** | 0.40 | 0.62 | 0.76 | 1.05 | 1.34 | 1.62 | **5yr** | 1.15 | 1.58 | 1.88 | 2.54 | 3.25 | 4.33 | 4.96 | **5yr** | 3.84 | 4.77 | 5.37 | 6.37 | 7.15 | **5yr** |
| **10yr** | 0.47 | 0.72 | 0.89 | 1.24 | 1.61 | 1.98 | **10yr** | 1.39 | 1.93 | 2.28 | 3.11 | 3.96 | 5.33 | 6.21 | **10yr** | 4.72 | 5.97 | 6.83 | 7.84 | 8.75 | **10yr** |
| **25yr** | 0.58 | 0.88 | 1.09 | 1.56 | 2.05 | 2.57 | **25yr** | 1.77 | 2.51 | 2.96 | 4.07 | 5.16 | 7.76 | 8.35 | **25yr** | 6.87 | 8.03 | 9.17 | 10.34 | 11.41 | **25yr** |
| **50yr** | 0.67 | 1.02 | 1.27 | 1.83 | 2.46 | 3.13 | **50yr** | 2.12 | 3.06 | 3.60 | 5.00 | 6.33 | 9.71 | 10.48 | **50yr** | 8.60 | 10.08 | 11.48 | 12.73 | 13.97 | **50yr** |
| **100yr** | 0.79 | 1.19 | 1.50 | 2.16 | 2.96 | 3.81 | **100yr** | 2.56 | 3.73 | 4.38 | 6.16 | 7.78 | 12.15 | 13.14 | **100yr** | 10.75 | 12.64 | 14.37 | 15.71 | 17.10 | **100yr** |
| **200yr** | 0.92 | 1.39 | 1.76 | 2.55 | 3.56 | 4.65 | **200yr** | 3.07 | 4.55 | 5.34 | 7.59 | 9.56 | 15.24 | 16.50 | **200yr** | 13.49 | 15.86 | 18.02 | 19.37 | 20.93 | **200yr** |
| **500yr** | 1.15 | 1.71 | 2.20 | 3.19 | 4.54 | 6.04 | **500yr** | 3.92 | 5.90 | 6.94 | 10.03 | 12.60 | 20.59 | 22.29 | **500yr** | 18.23 | 21.44 | 24.31 | 25.55 | 27.36 | **500yr** |

Powered by ACIS Northeast Regional Climate Center

# APPENDIX C

# HYDROCAD DRAINAGE

# ANALYSIS CALCULATIONS




Subcat Reach Pond Link

**Routing Diagram for 2022-02-01 Existing Conditions David T**
Prepared by Ambit Engineering, Printed 2022-10-14

## Project Notes

Defined 5 rainfall events from output (32) IDF

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-yr | Type II 24-hr | | Default | 24.00 | 1 | 3.68 | 2 |
| 2 | 10-yr | Type II 24-hr | | Default | 24.00 | 1 | 5.59 | 2 |
| 3 | 25-yr | Type II 24-hr | | Default | 24.00 | 1 | 7.08 | 2 |
| 4 | 50-yr | Type II 24-hr | | Default | 24.00 | 1 | 8.48 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.016 | 80 | >75% Grass cover, Good, HSG D (E1) |
| 0.196 | 98 | Paved parking, HSG D (E1, E1a) |
| 0.141 | 98 | Roofs, HSG D (E1) |
| **0.353** | **97** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.000 | HSG C | |
| 0.353 | HSG D | E1, E1a |
| 0.000 | Other | |
| **0.353** | | **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 | 0.000 | 0.016 | 0.000 | 0.016 | >75% Grass cover, Good | E1 |
| 0.000 | 0.000 | 0.000 | 0.196 | 0.000 | 0.196 | Paved parking | E1, E1a |
| 0.000 | 0.000 | 0.000 | 0.141 | 0.000 | 0.141 | Roofs | E1 |
| **0.000** | **0.000** | **0.000** | **0.353** | **0.000** | **0.353** | **TOTAL AREA** | |

## Pipe Listing (all nodes)

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n | Width (inches) | Diam/Height (inches) | Inside-Fill (inches) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | CB1 | 22.75 | 22.10 | 17.2 | 0.0378 | 0.013 | 0.0 | 8.0 | 0.0 |
| 2 | CB3 | 25.30 | 23.10 | 38.4 | 0.0573 | 0.013 | 0.0 | 6.0 | 0.0 |

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1:** Runoff Area=13,745 sf 94.97% Impervious Runoff Depth>3.10"
Tc=5.0 min CN=97 Runoff=1.65 cfs 0.081 af

**Subcatchment E1a:** Runoff Area=1,632 sf 100.00% Impervious Runoff Depth>3.18"
Tc=5.0 min CN=98 Runoff=0.20 cfs 0.010 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=24.29' Inflow=1.84 cfs 0.091 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=1.84 cfs 0.091 af

**Pond CB3: Trench Drain, 26.47 Rim** Peak Elev=25.57' Inflow=0.20 cfs 0.010 af
6.0" Round Culvert n=0.013 L=38.4' S=0.0573 '/' Outflow=0.20 cfs 0.010 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.091 af Average Runoff Depth = 3.11"**
**4.50% Pervious = 0.016 ac 95.50% Impervious = 0.337 ac**

## Summary for Subcatchment E1:

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

Runoff = 1.65 cfs @ 11.95 hrs, Volume= 0.081 af, Depth> 3.10"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

| Area (sf) | CN | Description |
|---|---|---|
| 6,899 | 98 | Paved parking, HSG D |
| 1,018 | 98 | Roofs, HSG D |
| 628 | 98 | Roofs, HSG D |
| 2,672 | 98 | Roofs, HSG D |
| 1,210 | 98 | Roofs, HSG D |
| 615 | 80 | >75% Grass cover, Good, HSG D |
| 77 | 80 | >75% Grass cover, Good, HSG D |
| 626 | 98 | Roofs, HSG D |
| 13,745 | 97 | Weighted Average |
| 692 | | 5.03% Pervious Area |
| 13,053 | | 94.97% Impervious Area |

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

## Summary for Subcatchment E1a:

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

Runoff = 0.20 cfs @ 11.95 hrs, Volume= 0.010 af, Depth> 3.18"
Routed to Pond CB3 : Trench Drain, 26.47 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

| Area (sf) | CN | Description |
|---|---|---|
| 1,632 | 98 | Paved parking, HSG D |
| 1,632 | | 100.00% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 24.29' (Flood elevation advised)
[79] Warning: Submerged Pond CB3 Primary device # 1 OUTLET by 1.19'

Inflow Area = 0.353 ac, 95.50% Impervious, Inflow Depth > 3.11" for 2-yr event
Inflow = 1.84 cfs @ 11.95 hrs, Volume= 0.091 af
Outflow = 1.84 cfs @ 11.95 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 11.95 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.29' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=1.84 cfs @ 11.95 hrs HW=24.28' (Free Discharge)
**1=Culvert** (Inlet Controls 1.84 cfs @ 5.28 fps)

## Summary for Pond CB3: Trench Drain, 26.47 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.57' (Flood elevation advised)

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth > 3.18" for 2-yr event
Inflow = 0.20 cfs @ 11.95 hrs, Volume= 0.010 af
Outflow = 0.20 cfs @ 11.95 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 11.95 hrs, Volume= 0.010 af
Routed to Pond CB1 : DP1, 25.25 Rim

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.57' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 25.30' | **6.0" Round Culvert**<br>L= 38.4' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 25.30' / 23.10' S= 0.0573 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf |

**Primary OutFlow** Max=0.20 cfs @ 11.95 hrs HW=25.57' (Free Discharge)
**1=Culvert** (Inlet Controls 0.20 cfs @ 1.79 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1:** Runoff Area=13,745 sf 94.97% Impervious Runoff Depth>4.83"
Tc=5.0 min CN=97 Runoff=2.53 cfs 0.127 af

**Subcatchment E1a:** Runoff Area=1,632 sf 100.00% Impervious Runoff Depth>4.90"
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.015 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=25.92' Inflow=2.83 cfs 0.142 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=2.83 cfs 0.142 af

**Pond CB3: Trench Drain, 26.47 Rim** Peak Elev=25.65' Inflow=0.30 cfs 0.015 af
6.0" Round Culvert n=0.013 L=38.4' S=0.0573 '/' Outflow=0.30 cfs 0.015 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.142 af Average Runoff Depth = 4.84"**
**4.50% Pervious = 0.016 ac 95.50% Impervious = 0.337 ac**

## Summary for Subcatchment E1:

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

Runoff = 2.53 cfs @ 11.95 hrs, Volume= 0.127 af, Depth> 4.83"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

| Area (sf) | CN | Description |
|---|---|---|
| 6,899 | 98 | Paved parking, HSG D |
| 1,018 | 98 | Roofs, HSG D |
| 628 | 98 | Roofs, HSG D |
| 2,672 | 98 | Roofs, HSG D |
| 1,210 | 98 | Roofs, HSG D |
| 615 | 80 | >75% Grass cover, Good, HSG D |
| 77 | 80 | >75% Grass cover, Good, HSG D |
| 626 | 98 | Roofs, HSG D |
| 13,745 | 97 | Weighted Average |
| 692 | | 5.03% Pervious Area |
| 13,053 | | 94.97% Impervious Area |

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

## Summary for Subcatchment E1a:

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

Runoff = 0.30 cfs @ 11.95 hrs, Volume= 0.015 af, Depth> 4.90"
Routed to Pond CB3 : Trench Drain, 26.47 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

| Area (sf) | CN | Description |
|---|---|---|
| 1,632 | 98 | Paved parking, HSG D |
| 1,632 | | 100.00% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.92' (Flood elevation advised)
[81] Warning: Exceeded Pond CB3 by 0.26' @ 11.95 hrs

Inflow Area = 0.353 ac, 95.50% Impervious, Inflow Depth > 4.84" for 10-yr event
Inflow = 2.83 cfs @ 11.95 hrs, Volume= 0.142 af
Outflow = 2.83 cfs @ 11.95 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
Primary = 2.83 cfs @ 11.95 hrs, Volume= 0.142 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.92' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=2.83 cfs @ 11.95 hrs HW=25.92' (Free Discharge)
**1=Culvert** (Inlet Controls 2.83 cfs @ 8.10 fps)

## Summary for Pond CB3: Trench Drain, 26.47 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.65' (Flood elevation advised)

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth > 4.90" for 10-yr event
Inflow = 0.30 cfs @ 11.95 hrs, Volume= 0.015 af
Outflow = 0.30 cfs @ 11.95 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 11.95 hrs, Volume= 0.015 af
Routed to Pond CB1 : DP1, 25.25 Rim

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.65' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 25.30' | **6.0" Round Culvert**<br>L= 38.4' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 25.30' / 23.10' S= 0.0573 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf |

**Primary OutFlow** Max=0.30 cfs @ 11.95 hrs HW=25.65' (Free Discharge)
**1=Culvert** (Inlet Controls 0.30 cfs @ 2.03 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1:** Runoff Area=13,745 sf 94.97% Impervious Runoff Depth>6.17"
Tc=5.0 min CN=97 Runoff=3.21 cfs 0.162 af

**Subcatchment E1a:** Runoff Area=1,632 sf 100.00% Impervious Runoff Depth>6.24"
Tc=5.0 min CN=98 Runoff=0.38 cfs 0.019 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=27.66' Inflow=3.59 cfs 0.182 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=3.59 cfs 0.182 af

**Pond CB3: Trench Drain, 26.47 Rim** Peak Elev=25.72' Inflow=0.38 cfs 0.019 af
6.0" Round Culvert n=0.013 L=38.4' S=0.0573 '/' Outflow=0.38 cfs 0.019 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.182 af Average Runoff Depth = 6.18"**
**4.50% Pervious = 0.016 ac 95.50% Impervious = 0.337 ac**

## Summary for Subcatchment E1:

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

Runoff = 3.21 cfs @ 11.95 hrs, Volume= 0.162 af, Depth> 6.17"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

| Area (sf) | CN | Description |
|---|---|---|
| 6,899 | 98 | Paved parking, HSG D |
| 1,018 | 98 | Roofs, HSG D |
| 628 | 98 | Roofs, HSG D |
| 2,672 | 98 | Roofs, HSG D |
| 1,210 | 98 | Roofs, HSG D |
| 615 | 80 | >75% Grass cover, Good, HSG D |
| 77 | 80 | >75% Grass cover, Good, HSG D |
| 626 | 98 | Roofs, HSG D |
| 13,745 | 97 | Weighted Average |
| 692 | | 5.03% Pervious Area |
| 13,053 | | 94.97% Impervious Area |

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

## Summary for Subcatchment E1a:

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

Runoff = 0.38 cfs @ 11.95 hrs, Volume= 0.019 af, Depth> 6.24"
Routed to Pond CB3 : Trench Drain, 26.47 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

| Area (sf) | CN | Description |
|---|---|---|
| 1,632 | 98 | Paved parking, HSG D |
| 1,632 | | 100.00% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 27.66' (Flood elevation advised)
[81] Warning: Exceeded Pond CB3 by 1.94' @ 11.95 hrs

Inflow Area = 0.353 ac, 95.50% Impervious, Inflow Depth > 6.18" for 25-yr event
Inflow = 3.59 cfs @ 11.95 hrs, Volume= 0.182 af
Outflow = 3.59 cfs @ 11.95 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min
Primary = 3.59 cfs @ 11.95 hrs, Volume= 0.182 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.66' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=3.59 cfs @ 11.95 hrs HW=27.66' (Free Discharge)
**1=Culvert** (Inlet Controls 3.59 cfs @ 10.30 fps)

## Summary for Pond CB3: Trench Drain, 26.47 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.72' (Flood elevation advised)

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth > 6.24" for 25-yr event
Inflow = 0.38 cfs @ 11.95 hrs, Volume= 0.019 af
Outflow = 0.38 cfs @ 11.95 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 11.95 hrs, Volume= 0.019 af
Routed to Pond CB1 : DP1, 25.25 Rim

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.72' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 25.30' | **6.0" Round Culvert**<br>L= 38.4' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 25.30' / 23.10' S= 0.0573 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf |

**Primary OutFlow** Max=0.38 cfs @ 11.95 hrs HW=25.72' (Free Discharge)
**1=Culvert** (Inlet Controls 0.38 cfs @ 2.19 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment E1:** Runoff Area=13,745 sf 94.97% Impervious Runoff Depth>7.43"
Tc=5.0 min CN=97 Runoff=3.85 cfs 0.195 af

**Subcatchment E1a:** Runoff Area=1,632 sf 100.00% Impervious Runoff Depth>7.49"
Tc=5.0 min CN=98 Runoff=0.46 cfs 0.023 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=29.67' Inflow=4.31 cfs 0.219 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=4.31 cfs 0.219 af

**Pond CB3: Trench Drain, 26.47 Rim** Peak Elev=25.78' Inflow=0.46 cfs 0.023 af
6.0" Round Culvert n=0.013 L=38.4' S=0.0573 '/' Outflow=0.46 cfs 0.023 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.219 af Average Runoff Depth = 7.44"**
**4.50% Pervious = 0.016 ac 95.50% Impervious = 0.337 ac**

## Summary for Subcatchment E1:

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

Runoff = 3.85 cfs @ 11.95 hrs, Volume= 0.195 af, Depth> 7.43"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

| Area (sf) | CN | Description |
|---|---|---|
| 6,899 | 98 | Paved parking, HSG D |
| 1,018 | 98 | Roofs, HSG D |
| 628 | 98 | Roofs, HSG D |
| 2,672 | 98 | Roofs, HSG D |
| 1,210 | 98 | Roofs, HSG D |
| 615 | 80 | >75% Grass cover, Good, HSG D |
| 77 | 80 | >75% Grass cover, Good, HSG D |
| 626 | 98 | Roofs, HSG D |
| 13,745 | 97 | Weighted Average |
| 692 | | 5.03% Pervious Area |
| 13,053 | | 94.97% Impervious Area |

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

## Summary for Subcatchment E1a:

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

Runoff = 0.46 cfs @ 11.95 hrs, Volume= 0.023 af, Depth> 7.49"
Routed to Pond CB3 : Trench Drain, 26.47 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

| Area (sf) | CN | Description |
|---|---|---|
| 1,632 | 98 | Paved parking, HSG D |
| 1,632 | | 100.00% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 29.67' (Flood elevation advised)
[81] Warning: Exceeded Pond CB3 by 3.88' @ 11.95 hrs

Inflow Area = 0.353 ac, 95.50% Impervious, Inflow Depth > 7.44" for 50-yr event
Inflow = 4.31 cfs @ 11.95 hrs, Volume= 0.219 af
Outflow = 4.31 cfs @ 11.95 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 4.31 cfs @ 11.95 hrs, Volume= 0.219 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 29.67' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=4.31 cfs @ 11.95 hrs HW=29.66' (Free Discharge)
**1=Culvert** (Inlet Controls 4.31 cfs @ 12.35 fps)

## Summary for Pond CB3: Trench Drain, 26.47 Rim

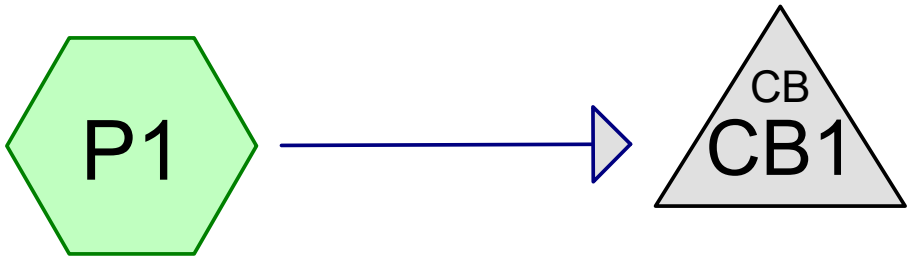
[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.78' (Flood elevation advised)

Inflow Area = 0.037 ac,100.00% Impervious, Inflow Depth > 7.49" for 50-yr event
Inflow = 0.46 cfs @ 11.95 hrs, Volume= 0.023 af
Outflow = 0.46 cfs @ 11.95 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 11.95 hrs, Volume= 0.023 af
Routed to Pond CB1 : DP1, 25.25 Rim

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.78' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 25.30' | **6.0" Round Culvert**<br>L= 38.4' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 25.30' / 23.10' S= 0.0573 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf |

**Primary OutFlow** Max=0.46 cfs @ 11.95 hrs HW=25.78' (Free Discharge)
**1=Culvert** (Inlet Controls 0.46 cfs @ 2.36 fps)




DP1, 25.25 Rim

Subcat Reach Pond Link

**Routing Diagram for 2022-10-14 Proposed Conditions David T**
Prepared by Ambit Engineering, Printed 2023-02-17

## Project Notes

Defined 5 rainfall events from output (32) IDF

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-yr | Type II 24-hr | | Default | 24.00 | 1 | 3.68 | 2 |
| 2 | 10-yr | Type II 24-hr | | Default | 24.00 | 1 | 5.59 | 2 |
| 3 | 25-yr | Type II 24-hr | | Default | 24.00 | 1 | 7.08 | 2 |
| 4 | 50-yr | Type II 24-hr | | Default | 24.00 | 1 | 8.48 | 2 |

## Area Listing (selected nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.165 | 98 | Paved parking, HSG D (P1) |
| 0.031 | 50 | Permeable Pavers (P1) |
| 0.157 | 98 | Roofs, HSG D (P1) |
| **0.353** | **94** | **TOTAL AREA** |

## Soil Listing (selected nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.000 | HSG C | |
| 0.322 | HSG D | P1 |
| 0.031 | Other | P1 |
| **0.353** | | **TOTAL AREA** |

## Ground Covers (selected nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.000 | 0.000 | 0.165 | 0.000 | 0.165 | Paved parking | P1 |
| 0.000 | 0.000 | 0.000 | 0.000 | 0.031 | 0.031 | Permeable Pavers | P1 |
| 0.000 | 0.000 | 0.000 | 0.157 | 0.000 | 0.157 | Roofs | P1 |
| **0.000** | **0.000** | **0.000** | **0.322** | **0.031** | **0.353** | **TOTAL AREA** | |

## Pipe Listing (selected nodes)

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n | Width (inches) | Diam/Height (inches) | Inside-Fill (inches) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | CB1 | 22.75 | 22.10 | 17.2 | 0.0378 | 0.013 | 0.0 | 8.0 | 0.0 |

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1:** Runoff Area=15,377 sf 91.17% Impervious Runoff Depth>2.82"
Tc=5.0 min CN=94 Runoff=1.75 cfs 0.083 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=24.17' Inflow=1.75 cfs 0.083 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=1.75 cfs 0.083 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.083 af Average Runoff Depth = 2.82"**
**8.83% Pervious = 0.031 ac 91.17% Impervious = 0.322 ac**

## Summary for Subcatchment P1:

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

Runoff = 1.75 cfs @ 11.95 hrs, Volume= 0.083 af, Depth> 2.82"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 5,541 | 98 | Paved parking, HSG D |
| | 1,018 | 98 | Roofs, HSG D |
| | 628 | 98 | Roofs, HSG D |
| | 2,672 | 98 | Roofs, HSG D |
| | 1,210 | 98 | Roofs, HSG D |
| | 615 | 98 | Roofs, HSG D |
| | 77 | 98 | Roofs, HSG D |
| | 626 | 98 | Roofs, HSG D |
| | 1,632 | 98 | Paved parking, HSG D |
| * | 1,358 | 50 | Permeable Pavers |
| | 15,377 | 94 | Weighted Average |
| | 1,358 | | 8.83% Pervious Area |
| | 14,019 | | 91.17% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 24.17' (Flood elevation advised)

Inflow Area = 0.353 ac, 91.17% Impervious, Inflow Depth > 2.82" for 2-yr event
Inflow = 1.75 cfs @ 11.95 hrs, Volume= 0.083 af
Outflow = 1.75 cfs @ 11.95 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min
Primary = 1.75 cfs @ 11.95 hrs, Volume= 0.083 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 24.17' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=1.74 cfs @ 11.95 hrs HW=24.16' (Free Discharge)
**1=Culvert** (Inlet Controls 1.74 cfs @ 5.00 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1:** Runoff Area=15,377 sf 91.17% Impervious Runoff Depth>4.57"
Tc=5.0 min CN=94 Runoff=2.76 cfs 0.134 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=25.77' Inflow=2.76 cfs 0.134 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=2.76 cfs 0.134 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.134 af Average Runoff Depth = 4.57"**
**8.83% Pervious = 0.031 ac 91.17% Impervious = 0.322 ac**

## Summary for Subcatchment P1:

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

Runoff = 2.76 cfs @ 11.95 hrs, Volume= 0.134 af, Depth> 4.57"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 5,541 | 98 | Paved parking, HSG D |
| | 1,018 | 98 | Roofs, HSG D |
| | 628 | 98 | Roofs, HSG D |
| | 2,672 | 98 | Roofs, HSG D |
| | 1,210 | 98 | Roofs, HSG D |
| | 615 | 98 | Roofs, HSG D |
| | 77 | 98 | Roofs, HSG D |
| | 626 | 98 | Roofs, HSG D |
| | 1,632 | 98 | Paved parking, HSG D |
| * | 1,358 | 50 | Permeable Pavers |
| | 15,377 | 94 | Weighted Average |
| | 1,358 | | 8.83% Pervious Area |
| | 14,019 | | 91.17% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 25.77' (Flood elevation advised)

Inflow Area = 0.353 ac, 91.17% Impervious, Inflow Depth > 4.57" for 10-yr event
Inflow = 2.76 cfs @ 11.95 hrs, Volume= 0.134 af
Outflow = 2.76 cfs @ 11.95 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Primary = 2.76 cfs @ 11.95 hrs, Volume= 0.134 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 25.77' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=2.75 cfs @ 11.95 hrs HW=25.76' (Free Discharge)
**1=Culvert** (Inlet Controls 2.75 cfs @ 7.88 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1:** Runoff Area=15,377 sf 91.17% Impervious Runoff Depth>5.93"
Tc=5.0 min CN=94 Runoff=3.53 cfs 0.174 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=27.50' Inflow=3.53 cfs 0.174 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=3.53 cfs 0.174 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.174 af Average Runoff Depth = 5.93"**
**8.83% Pervious = 0.031 ac 91.17% Impervious = 0.322 ac**

## Summary for Subcatchment P1:

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

Runoff = 3.53 cfs @ 11.95 hrs, Volume= 0.174 af, Depth> 5.93"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 5,541 | 98 | Paved parking, HSG D |
| | 1,018 | 98 | Roofs, HSG D |
| | 628 | 98 | Roofs, HSG D |
| | 2,672 | 98 | Roofs, HSG D |
| | 1,210 | 98 | Roofs, HSG D |
| | 615 | 98 | Roofs, HSG D |
| | 77 | 98 | Roofs, HSG D |
| | 626 | 98 | Roofs, HSG D |
| | 1,632 | 98 | Paved parking, HSG D |
| * | 1,358 | 50 | Permeable Pavers |
| | 15,377 | 94 | Weighted Average |
| | 1,358 | | 8.83% Pervious Area |
| | 14,019 | | 91.17% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 27.50' (Flood elevation advised)

Inflow Area = 0.353 ac, 91.17% Impervious, Inflow Depth > 5.93" for 25-yr event
Inflow = 3.53 cfs @ 11.95 hrs, Volume= 0.174 af
Outflow = 3.53 cfs @ 11.95 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 11.95 hrs, Volume= 0.174 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 27.50' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=3.53 cfs @ 11.95 hrs HW=27.49' (Free Discharge)
**1=Culvert** (Inlet Controls 3.53 cfs @ 10.11 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P1:** Runoff Area=15,377 sf 91.17% Impervious Runoff Depth>7.20"
Tc=5.0 min CN=94 Runoff=4.26 cfs 0.212 af

**Pond CB1: DP1, 25.25 Rim** Peak Elev=29.50' Inflow=4.26 cfs 0.212 af
8.0" Round Culvert n=0.013 L=17.2' S=0.0378 '/' Outflow=4.26 cfs 0.212 af

**Total Runoff Area = 0.353 ac Runoff Volume = 0.212 af Average Runoff Depth = 7.20"**
**8.83% Pervious = 0.031 ac 91.17% Impervious = 0.322 ac**

## Summary for Subcatchment P1:

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

Runoff = 4.26 cfs @ 11.95 hrs, Volume= 0.212 af, Depth> 7.20"
Routed to Pond CB1 : DP1, 25.25 Rim

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

| | Area (sf) | CN | Description |
|---|---|---|---|
| | 5,541 | 98 | Paved parking, HSG D |
| | 1,018 | 98 | Roofs, HSG D |
| | 628 | 98 | Roofs, HSG D |
| | 2,672 | 98 | Roofs, HSG D |
| | 1,210 | 98 | Roofs, HSG D |
| | 615 | 98 | Roofs, HSG D |
| | 77 | 98 | Roofs, HSG D |
| | 626 | 98 | Roofs, HSG D |
| | 1,632 | 98 | Paved parking, HSG D |
| * | 1,358 | 50 | Permeable Pavers |
| | 15,377 | 94 | Weighted Average |
| | 1,358 | | 8.83% Pervious Area |
| | 14,019 | | 91.17% Impervious Area |

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

## Summary for Pond CB1: DP1, 25.25 Rim

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 29.50' (Flood elevation advised)

Inflow Area = 0.353 ac, 91.17% Impervious, Inflow Depth > 7.20" for 50-yr event
Inflow = 4.26 cfs @ 11.95 hrs, Volume= 0.212 af
Outflow = 4.26 cfs @ 11.95 hrs, Volume= 0.212 af, Atten= 0%, Lag= 0.0 min
Primary = 4.26 cfs @ 11.95 hrs, Volume= 0.212 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 29.50' @ 11.95 hrs

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 22.75' | **8.0" Round Culvert**<br>L= 17.2' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 22.75' / 22.10' S= 0.0378 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf |

**Primary OutFlow** Max=4.26 cfs @ 11.95 hrs HW=29.49' (Free Discharge)
**1=Culvert** (Inlet Controls 4.26 cfs @ 12.19 fps)

# APPENDIX D

# SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Rockingham County, New Hampshire


February 1, 2022


Map Scale: 1:483 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 699 | Urban land | 0.4 | 100.0% |
| **Totals for Area of Interest** | | **0.4** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Rockingham County, New Hampshire

## 699—Urban land

### Map Unit Composition

*Urban land:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Minor Components

#### Not named

*Percent of map unit:* 15 percent
*Hydric soil rating:* No

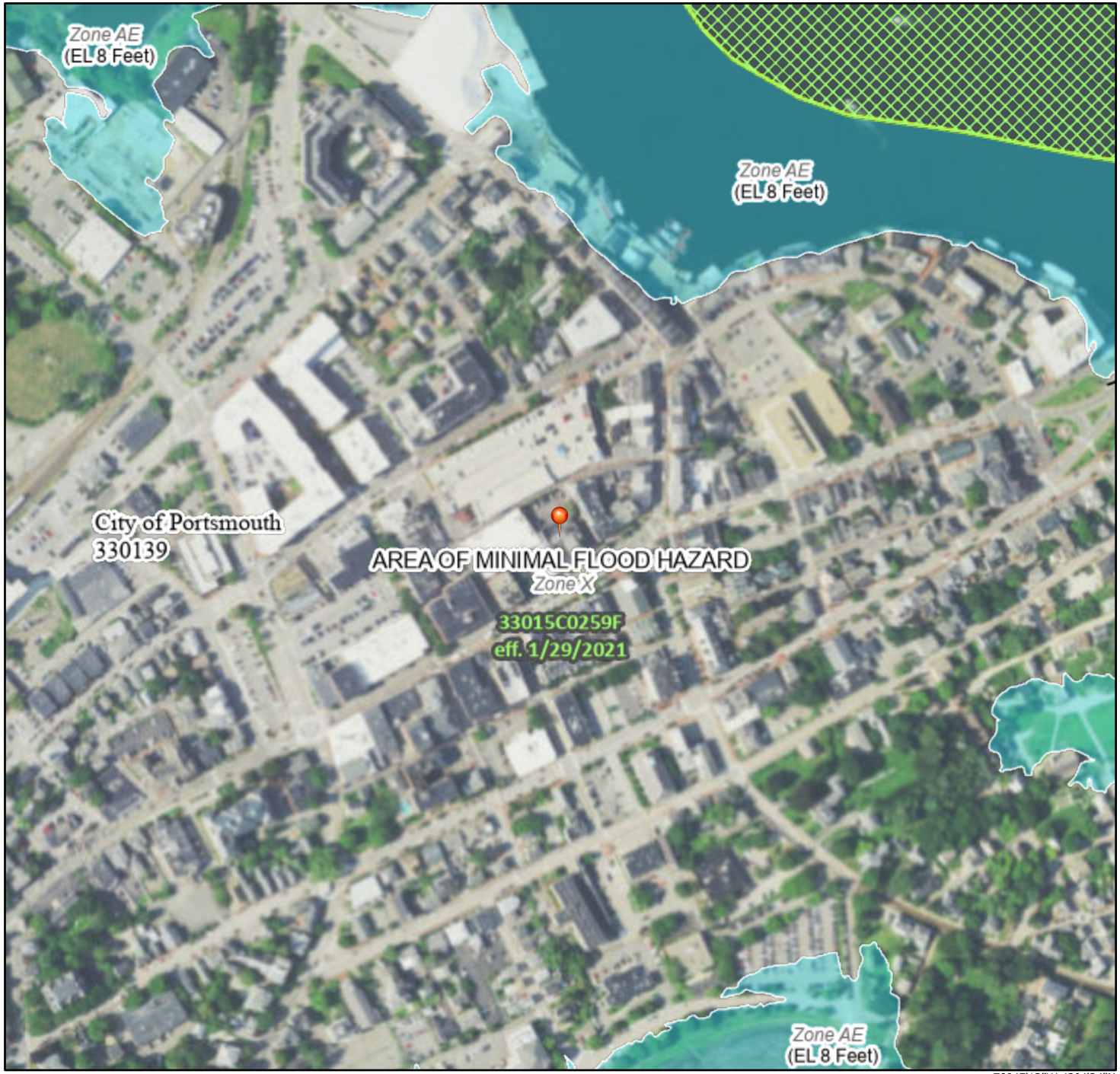
# APPENDIX E

# FEMA FIRM MAP

# National Flood Hazard Layer FIRMette

FEMA

70°45'49"W 43°4'51"N




70°45'12"W 43°4'24"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

*Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**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*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/25/2022 at 1:29 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# APPENDIX F

# INSPECTION & LONG TERM

# MAINTENANCE PLAN

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

# *INSPECTION & LONG-TERM MAINTENANCE PLAN*
# *FOR*
# COMMERCIAL DEVELOPMENT

# 1 CONGRESS STREET
# PORTSMOUTH, NH

## *Introduction*

The intent of this plan is to provide the One Market Square, LLC (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the proposed roof drain filter and permeable pavers (collectively referred to as the "Stormwater Management System"). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

## *Annual Report*

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the Portsmouth DPW, if required.

### *Inspection & Maintenance Checklist/Log*

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

## ***Stormwater Management System Components***

The Stormwater Management System is designed to mitigate the quality of site-generated stormwater runoff. As a result, the design includes the following elements:

### *Non-Structural BMPs*

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project may include but are not limited to:

- Dust control
- Sediment barriers
- Stabilized construction entrance
- Catch basin basket
- Dewatering control

### *Structural BMPs*

Structural BMPs are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to:

- Bio Clean Downspout Filter
- Closed Drainage System
- Permeable Pavers

## ***Inspection and Maintenance Requirements***

The following summarizes the inspection and maintenance requirements for the various BMP's that may be found on this project.

1. **Bio Clean Downspout Filter:** Refer to the manufacturer's Operation and Maintenance manual for guidance, included herewith.
2. **Storm Drains:** Monitor accumulation of debris in drainage structures monthly or after significant rain events. Remove sediments when they accumulate within the outlet pipe. During construction, maintain inlet protection until all areas have been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.
3. **Permeable Pavers:** Ensure that sediments do not enter and plug pavement. Remove sediments, trash, and debris, as necessary. Repair outlet structures and appurtenances, as necessary. Vacuum at least twice annually.

## ***Pollution Prevention***

The following pollution prevention activities shall be undertaken to minimize potential impacts on stormwater runoff quality. The Contractor is responsible for all activities during construction. The Owner is responsible thereafter.

### Spill Procedures

Any discharge of waste oil or other pollutant shall be reported immediately to the New Hampshire Department of Environmental Services (NHDES). The Contractor/Owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the stormwater system, and may be required by NHDES to remediate incidents that may impact groundwater quality. If the property ownership is transferred, the new owner will be informed of the legal responsibilities associated with operation of the stormwater system, as indicated above.

### Sanitary Facilities

Sanitary facilities shall be provided during all phases of construction.

### Material Storage

No on site trash facility is provided until homes are constructed. The contractors are required to remove trash from the site. Hazardous material storage is prohibited.

### Material Disposal

All waste material, trash, sediment, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Removed sediments shall be if necessary dewatered prior to disposal.

## STABILIZED CONSTRUCTION ENTRANCE CONSTRUCTION MAINTENANCE SHEET

| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| ENTRANCE SURFACE<br>*-Check for sediment accumulation/clogging of stone*<br>*-Check Vegetative filter strips* | After heavy rains, as necessary | *-Top dress pad with new stone.*<br>*-Replace stone completely if completely clogged.*<br>*-Maintain vigorous stand of vegetation.* |
| WASHING FACILITIES (if applicable)<br>*-Monitor Sediment Accumulation* | As often as necessary | *-Remove Sediments from traps.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

# PERMEABLE PAVER LONG-TERM MAINTENANCE SHEET

| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| *-Inspect pavement surface for the occurrence of sediment, trash, debris, or structural damage.*<br>*-Check pavement for surface ponding* | Frequently in first few months following construction, Bi-annually after | *-Ensure that sediments do not enter and plug pavement. Remove sediments, trash, and debris, as necessary.*<br>*-Repair outlet structures and appurtenances, as necessary.*<br>*-Vacuum pavement at least twice annually.*<br>*-Prevent vehicles with muddy wheels from accessing permeable pavement.* |
| *-No winter sanding permitted*<br>*-Minimize application of salt* | Continuous practice | |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

# CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| *-Outlet Control Structures*<br>*-Drain Manholes*<br>*-Catch Basins* | Every other Month | *Check for erosion or short-circuiting*<br>*Check for sediment accumulation*<br>*Check for floatable contaminants* |
| *-Drainage Pipes* | 1 time per 2 years | *Check for sediment accumulation/clogging, or soiled runoff.*<br>*Check for erosion at outlets.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

# CATCH BASIN BASKET CONSTRUCTION MAINTENANCE SHEET

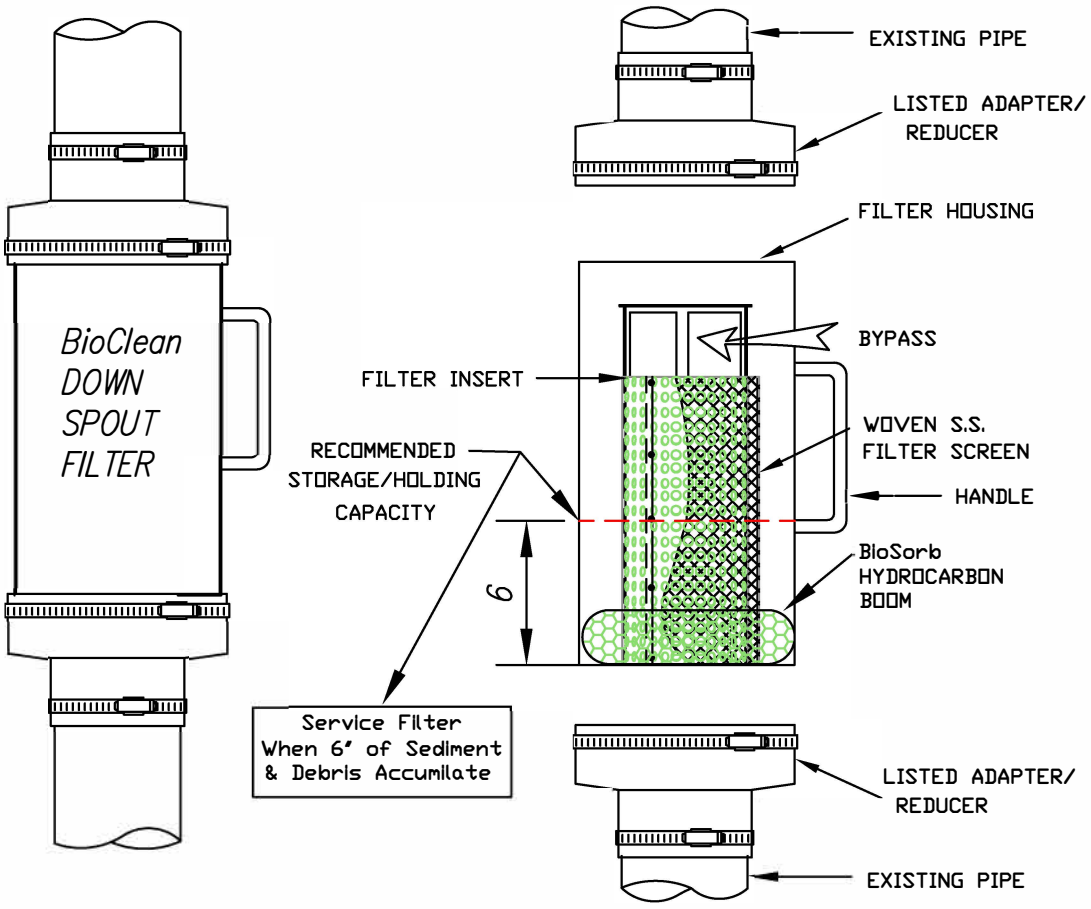
| INSPECTION REQUIREMENTS | | |
|---|---|---|
| **ACTION TAKEN** | **FREQUENCY** | **MAINTENANCE REQUIREMENTS** |
| -Check for damage to basket<br>-Remove sediment from basket | Within 24 hours of rainfall,<br>Daily during extended rainfall | *-Repair basket as necessary to prevent particles from reaching drainage system, or to prevent flooding.*<br>*-Empty basket after every storm, or if clogged.* |

| MAINTENANCE LOG | |
|---|---|
| **PROJECT NAME** | |
| **INSPECTOR NAME** | **INSPECTOR CONTACT INFO** |
| **DATE OF INSPECTION** | **REASON FOR INSPECTION**<br>☐LARGE STORM EVENT ☐PERIODIC CHECK-IN |
| **IS CORRECTIVE ACTION NEEDED?**<br>☐YES ☐NO | **DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE** |
| **DATE OF MAINTENANCE** | **PERFORMED BY** |
| **NOTES** | |

# SERVICE MANUAL

## (Cleaning Procedures)

## Bio Clean DOWNSPOUT FILTER
## Screen Type With Hydrocarbon Boom




DETAIL OF PARTS

### TOOLS AND EQUIPMENT NEEDED:

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia.
   (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.

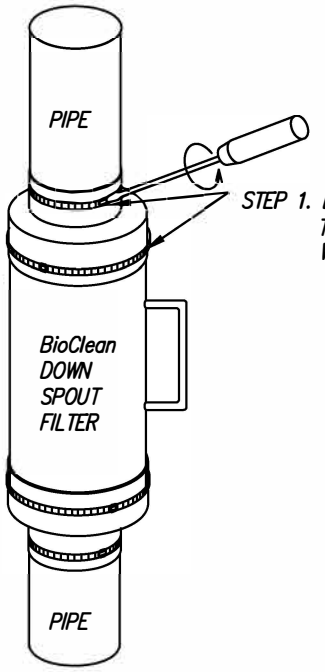
Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

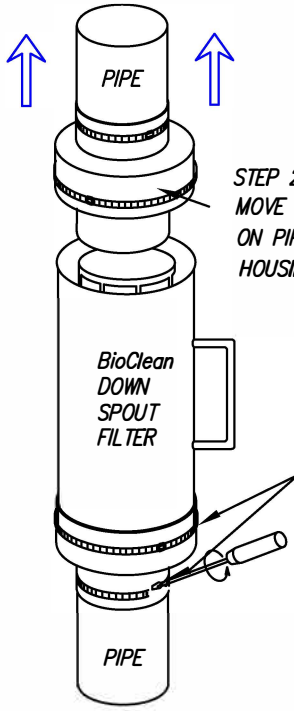
Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.bioclean environmental.net

# REMOVING FILTER




STEP 1. LOOSEN BOTH TOP CLAMPS WITH SCREW DRIVER.

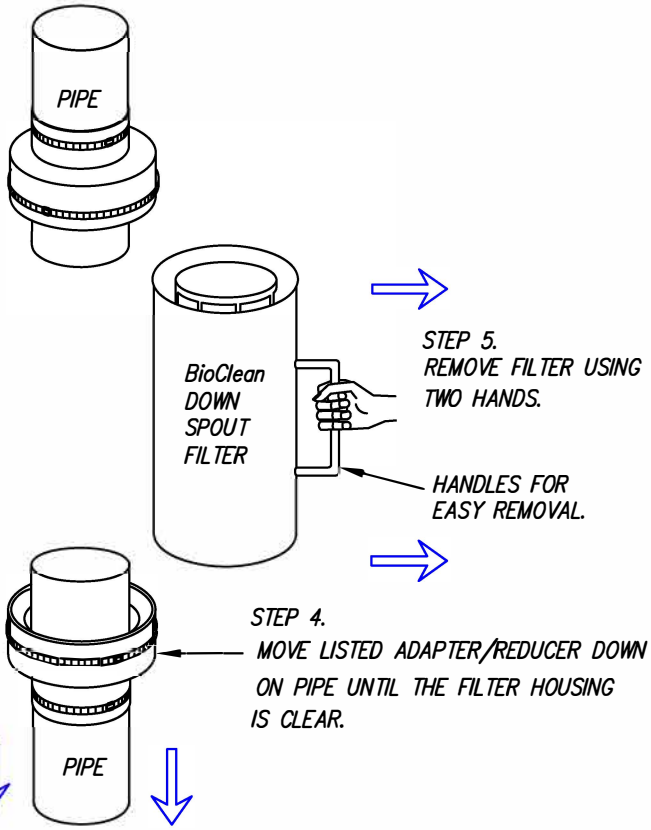



STEP 2.
MOVE LISTED ADAPTER/REDUCER UP ON PIPE UNTIL THE FILTER HOUSING IS CLEAR TO REMOVE.

STEP 3.
LOOSEN BOTH BOTTOM CLAMPS WITH SCREW DRIVER.

(STEP 4. AT BOTTOM LEFT OF PAGE)

# CLEANING FILTER

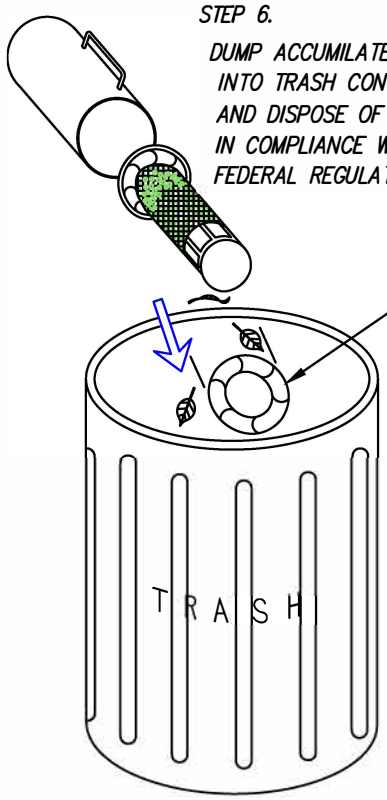



STEP 5.
REMOVE FILTER USING TWO HANDS.

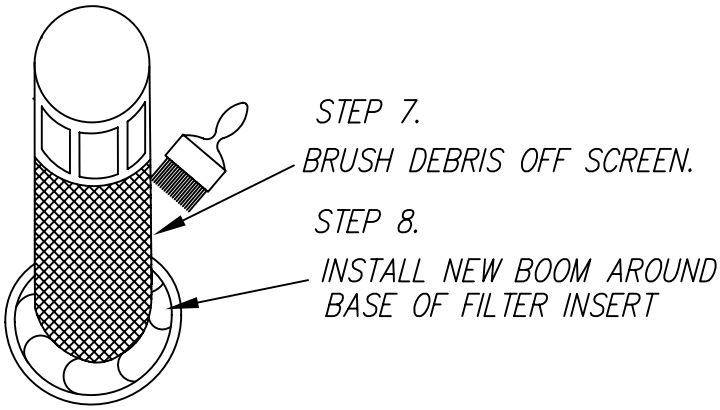
HANDLES FOR EASY REMOVAL.

STEP 4.
MOVE LISTED ADAPTER/REDUCER DOWN ON PIPE UNTIL THE FILTER HOUSING IS CLEAR.

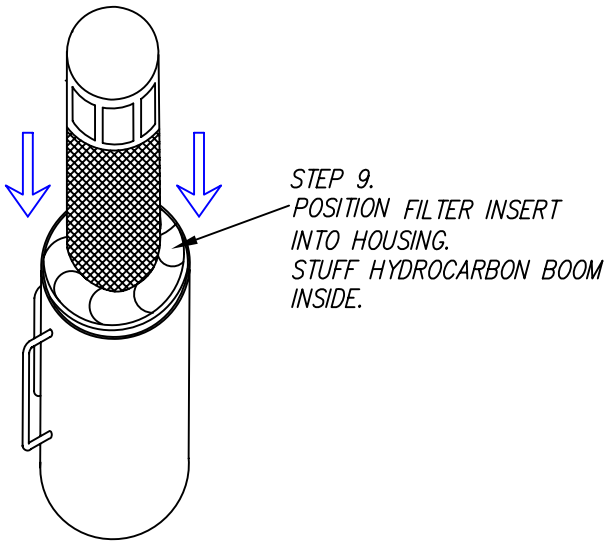
STEP 6.
DUMP ACCUMILATED DEBRIS OUT OF FILTER INTO TRASH CONTAINER. REMOVE FILTER INSERT AND DISPOSE OF HYDROCARBON BOOM IN COMPLIANCE WITH LOCAL STATE & FEDERAL REGULATIONS.

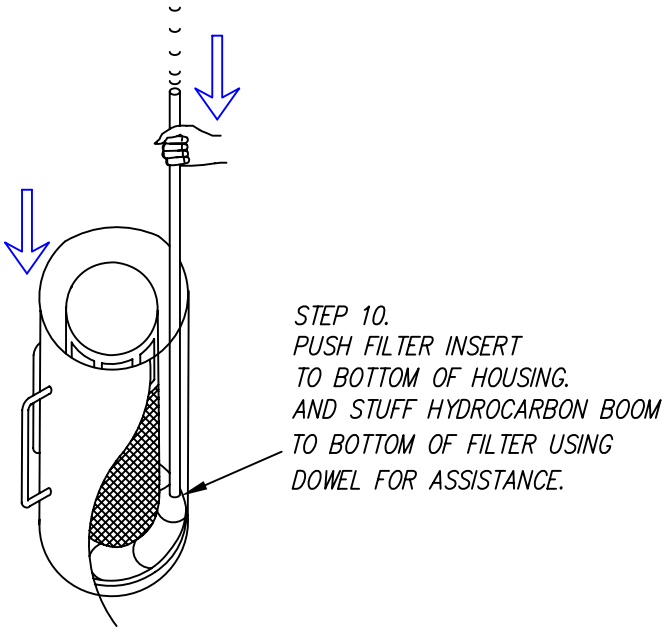


Bio Clean
A Forterra Company
P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net




## REPLACING FILTER INSERT



# REPLACING FILTER

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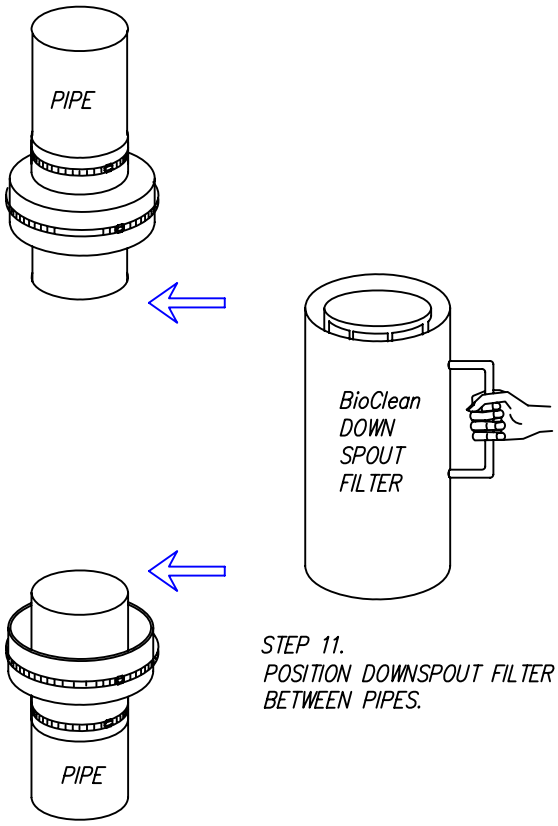
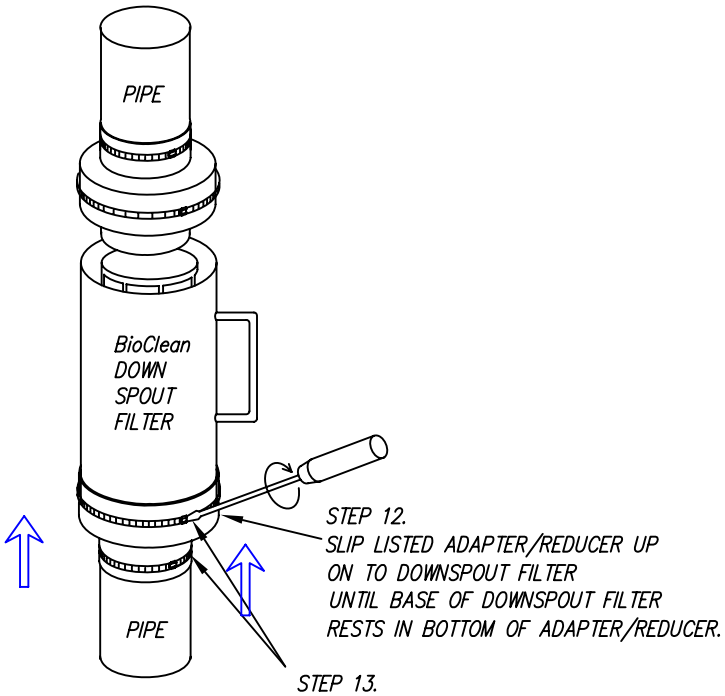
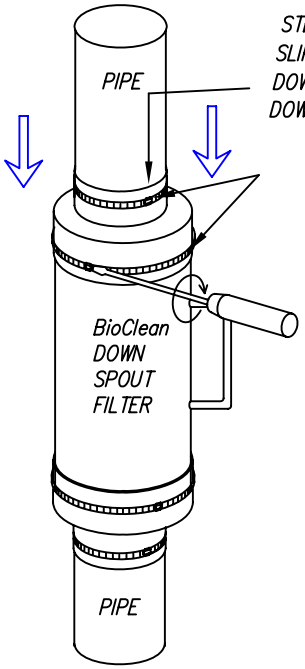



STEP 11.
POSITION DOWNSPOUT FILTER
BETWEEN PIPES.




STEP 12.
SLIP LISTED ADAPTER/REDUCER UP
ON TO DOWNSPOUT FILTER
UNTIL BASE OF DOWNSPOUT FILTER
RESTS IN BOTTOM OF ADAPTER/REDUCER.

STEP 13.
SECURE BY TIGHTENING
BOTH CLAMPS.



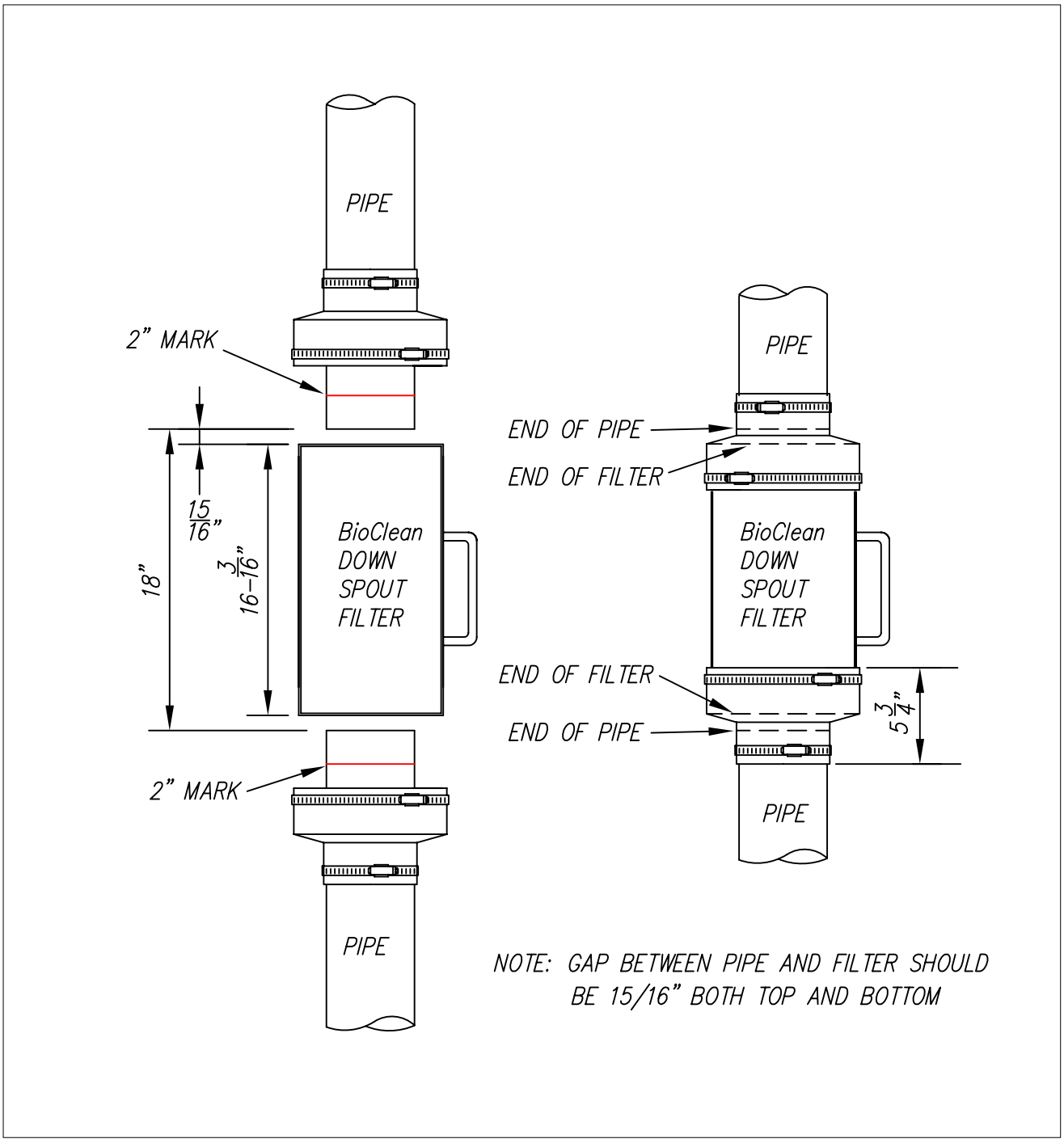

STEP 14.
SLIP LISTED ADAPTER/REDUCER
DOWNWARD ON TO
DOWNSPOUT FILTER.

STEP 15.
SECURE BY TIGHTENING
BOTH CLAMPS
WITH SCREWDRIVER.

ENSURE CLAMPS
ARE PROPERLY TIGHTENED.
SERVICE COMLPLETE.

# APPROPRIATE INSTALLATION

## FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM





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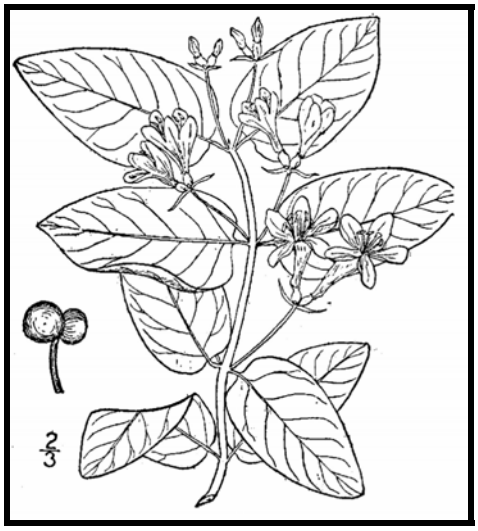
University of New Hampshire Cooperative Extension

# 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**

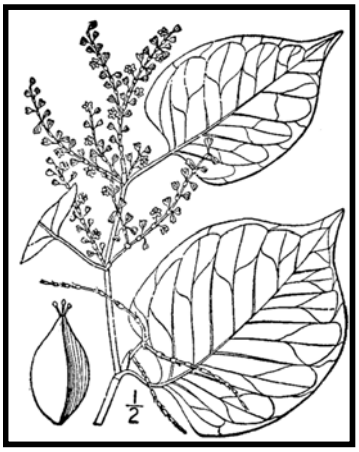
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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<br>(Acer platanoides)<br>European barberry<br>(Berberis vulgaris)<br>Japanese barberry<br>(Berberis thunbergii)<br>autumn olive<br>(Elaeagnus umbellata)<br>burning bush<br>(Euonymus alatus)<br>Morrow's honeysuckle<br>(Lonicera morrowii)<br>Tatarian honeysuckle<br>(Lonicera tatarica)<br>showy bush honeysuckle<br>(Lonicera x bella)<br>common buckthorn<br>(Rhamnus cathartica)<br>glossy buckthorn<br>(Frangula alnus)</td><td rowspan="2">Fruit and Seeds<br>  </td><td>Prior to fruit/seed ripening<br>Seedlings and small plants<br>▪ Pull or cut and leave on site with roots exposed. No special care needed.<br>Larger plants<br>▪ Use as firewood.<br>▪ Make a brush pile.<br>▪ Chip.<br>▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe<br>Don't remove from site.<br>▪ Burn.<br>▪ Make a covered brush pile.<br>▪ Chip once all fruit has dropped from branches.<br>▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet<br>(Celastrus orbiculatus)<br>multiflora rose<br>(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments<br>  </td><td>Prior to fruit/seed ripening<br>Seedlings and small plants<br>▪ Pull or cut and leave on site with roots exposed. No special care needed.<br>Larger plants<br>▪ Make a brush pile.<br>▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe<br>Don't remove from site.<br>▪ Burn.<br>▪ Make a covered brush pile.<br>▪ 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>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard<br>(Alliaria petiolata)<br>spotted knapweed<br>(Centaurea maculosa)<br>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.<br>black swallow-wort<br>(Cynanchum nigrum)<br>▪ May cause skin rash. Wear gloves and long sleeves when handling.<br>pale swallow-wort<br>(Cynanchum rossicum)<br>giant hogweed<br>(Heracleum mantegazzianum)<br>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.<br>dame’s rocket<br>(Hesperis matronalis)<br>perennial pepperweed<br>(Lepidium latifolium)<br>purple loosestrife<br>(Lythrum salicaria)<br>Japanese stilt grass<br>(Microstegium vimineum)<br>mile-a-minute weed<br>(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds<br>  </td><td>Prior to flowering<br>Depends on scale of infestation<br>Small infestation<br>▪ Pull or cut plant and leave on site with roots exposed.<br><br>Large infestation<br>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).<br>▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering<br>Do nothing until the following year or remove flowering heads and bag and let rot.<br><br>Small infestation<br>▪ Pull or cut plant and leave on site with roots exposed.<br><br>Large infestation<br>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).<br>▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed<br>(Phragmites australis)<br>Japanese knotweed<br>(Polygonum cuspidatum)<br>Bohemian knotweed<br>(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments<br>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.</td><td>Small infestation<br>▪ Bag all plant material and let rot.<br>▪ Never pile and use resulting material as compost.<br>▪ Burn.<br><br>Large infestation<br>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.<br>▪ Monitor and remove any sprouting material.<br>▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

Unitil
Northern Utilities, Inc.

*October 18th, 2022*

**John Chagnon, PE, LLS**
**Ambit Engineering**
**200 Griffin Road**
**Unit 3**
**Portsmouth, NH 03801**

***Natural Gas to 1 Congress Street Portsmouth, NH***

Hi John,

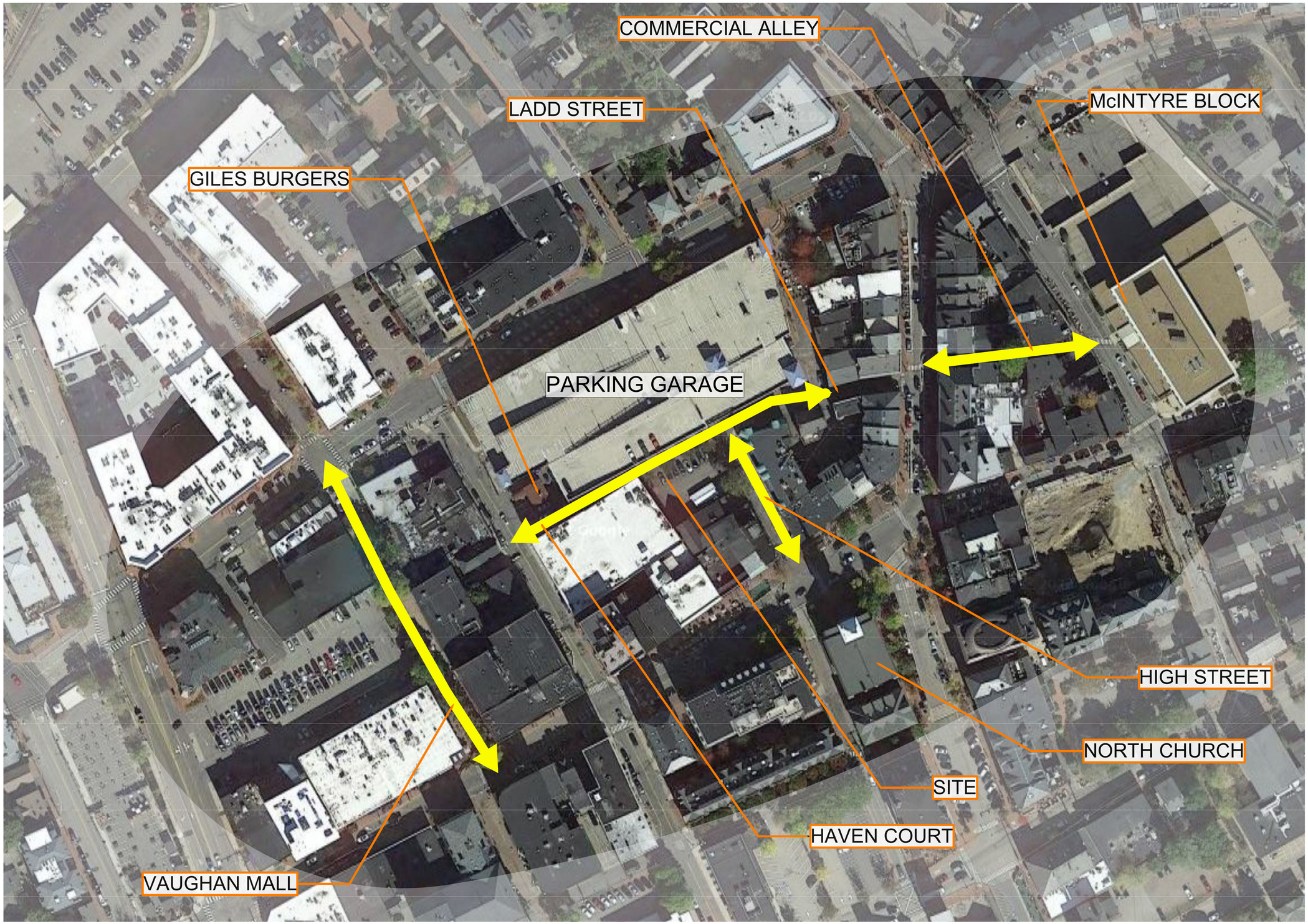
Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service:

Unitil hereby confirms that natural gas is available for the proposed building at 1 Congress Street, Portsmouth, NH

If you have any questions, please contact me at 603-534-2379.

Sincerely,

**Dave MacLean**
Senior Business Development Rep
Unitil
**T** 603.294.5261
**M** 603.534.2379
**F** 603.294.5264
Email macleand@unitil.com




ARCOVE ARCHITECTS
3 Congress St, Ste 1
Portsmouth, NH 03801
T 603.731.5187
arcove.com

**Ambit Engineering Inc**
Civil Engineering
200 Griffin Rd Unit 3
Portsmouth NH 03801
(603) 430-9282
ambitengineering.com

**Terra Firma Landscape**
Landscape Architecture
163a Court St
Portsmouth NH 03801
(603) 531-9109
terrafirmalandarch.com

1 CONGRESS STREET

1 CONGRESS STREET & HIGH STREET
PORTSMOUTH, NH 03801

ONE MARKET SQUARE LLC, OWNER

Scale:
Date: 02/16/2022
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

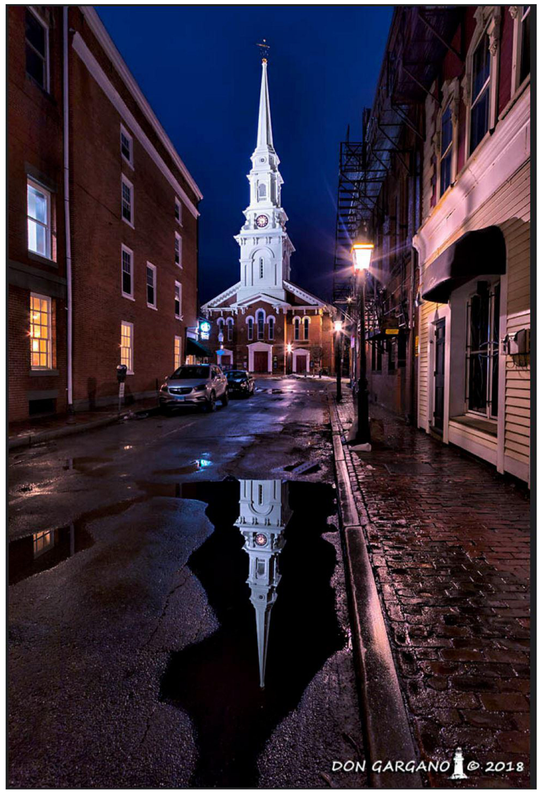
**CONCEPT DESIGN**

CONTEXT MAP

**PC.02**


1


2




3

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5


6

7

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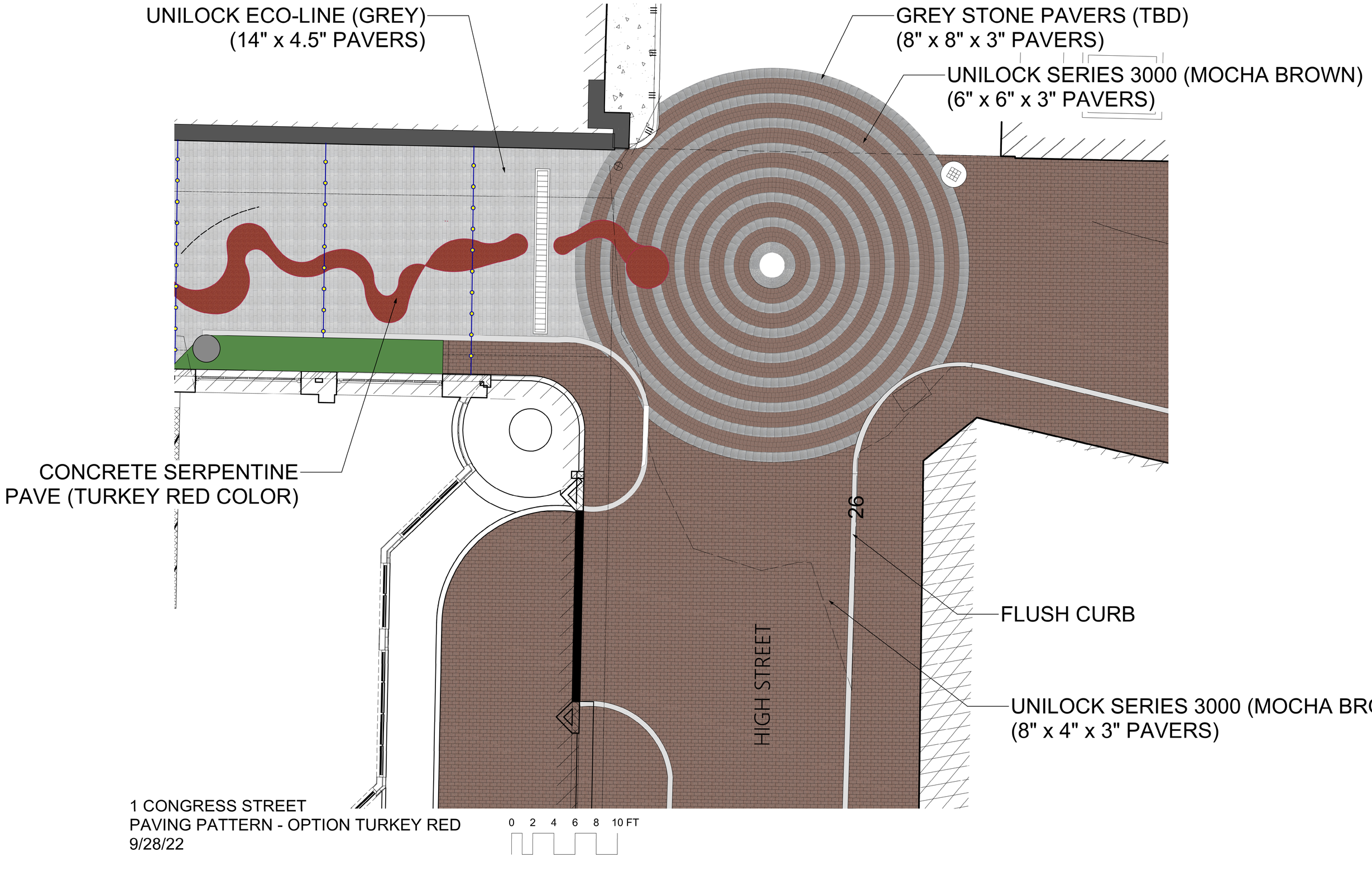
|---|---|---|
| NO. | DESCRIPTION | DATE |

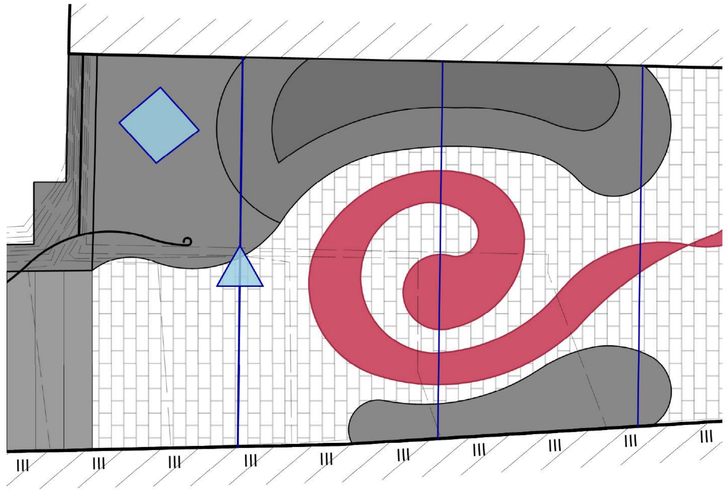
**CONCEPT DESIGN**

EXISTING CONDITIONS - CONTEXT

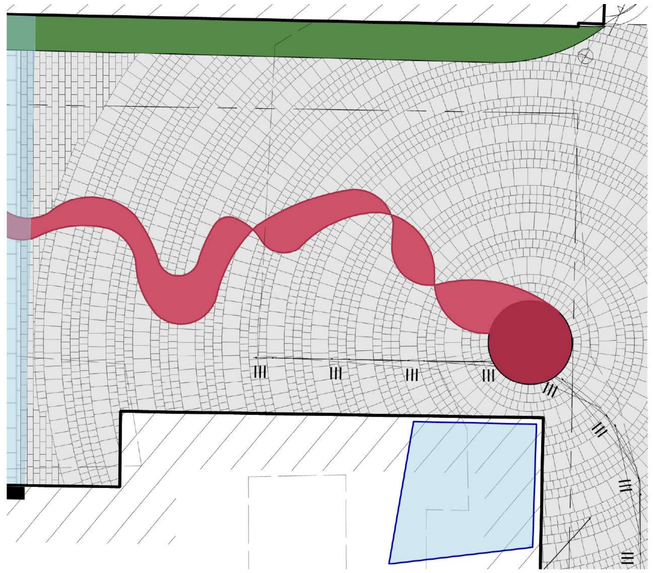
# PC.03




1 CONGRESS STREET
PAVING PATTERN - OPTION TURKEY RED
9/28/22



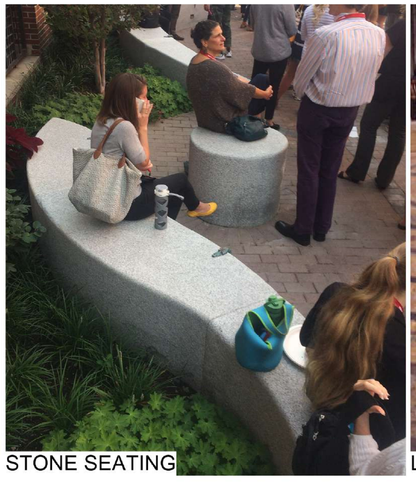
AMPHITHEATER DETAIL WITH SERPENTINE END



SERPENTINE BEGINNING DETAIL

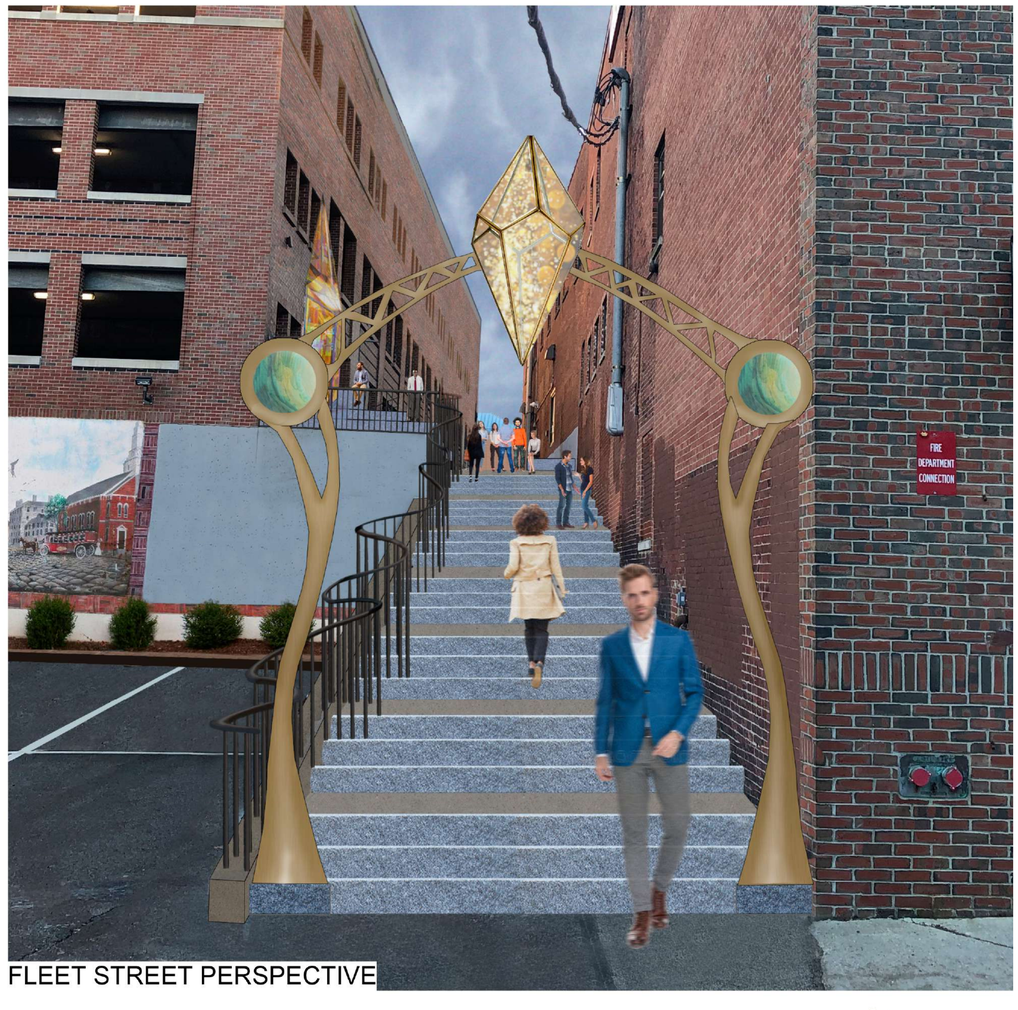
CATENARY LIGHTING

STONE SEATING

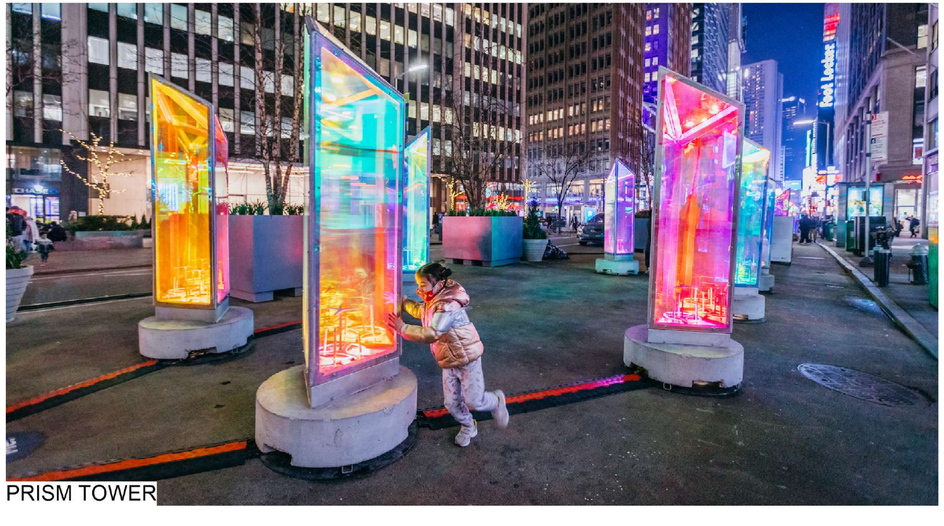


STONE SEATING

LABYRINTH INSPIRES + INFORMS THE SERPENTINE PAVING




FLEET STREET PERSPECTIVE



PRISM TOWER

LIGHT FIXTURE

# LANDSCAPE IDEAS

## 1 CONGRESS STREET

terra *firma*
landscape architecture
163.a court street · portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandarch.com

# COMMERCIAL DEVELOPMENT

## 1 CONGRESS STREET
## PORTSMOUTH, NEW HAMPSHIRE
# SITE PERMIT PLANS

**OWNER:**
ONE MARKET SQUARE LLC
3 PLEASANT STREET
SUITE #400
PORTSMOUTH, NH 03801
TEL. (603) 427–0725

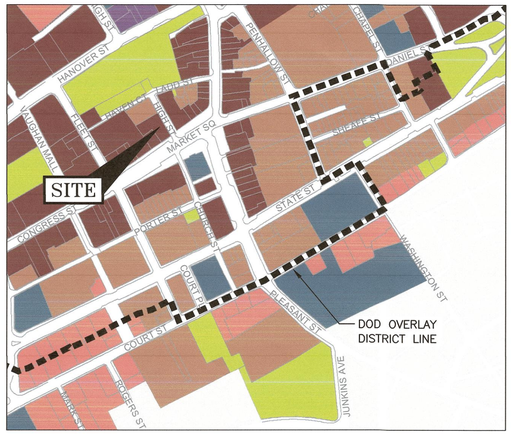
**LAND SURVEYOR & CIVIL ENGINEER:**
AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
Tel. (603) 430–9282
Fax (603) 436–2315

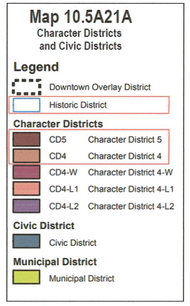
**ARCHITECT:**
ARCOVE LLC
3 CONGRESS STREET
SUITE 1
PORTSMOUTH, NH 03801
TEL. (603) 731–5187

**LANDSCAPE ARCHITECT:**
TERRA FIRMA LANDSCAPE ARCHITECTURE
163A COURT STREET
PORTSMOUTH, NH 03801
TEL. (603) 430–8388

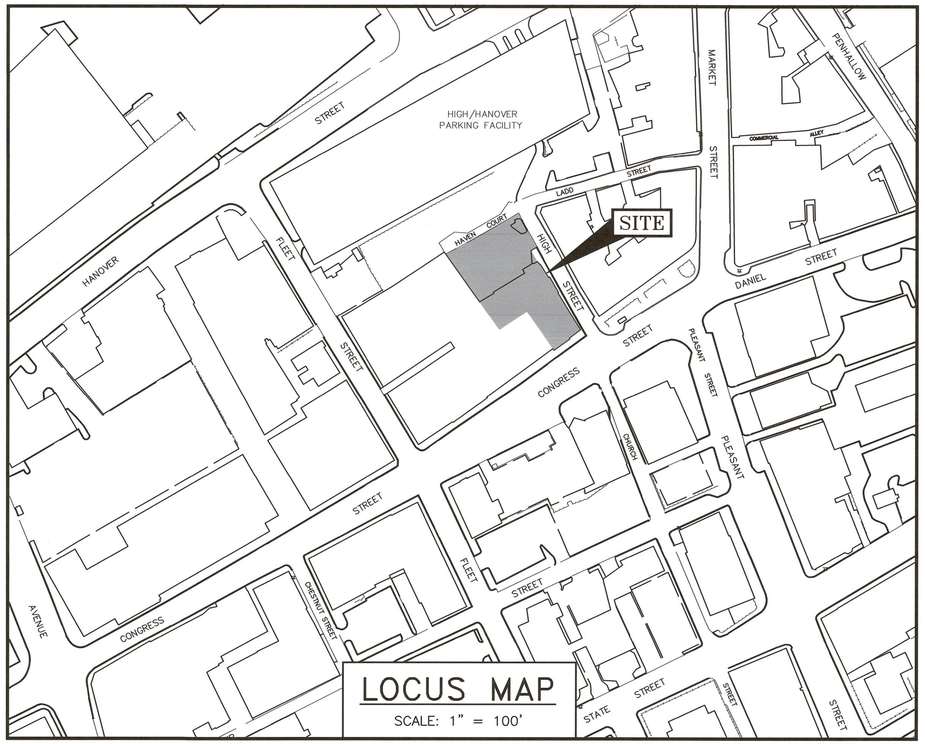
**GEOTECHNICAL:**
GEOTECHNICAL SERVICES INC.
18 COTE AVENUE, UNIT 11
GOFFSTOWN, N.H. 03045
Tel. (603) 624–2722

**LAND USE ATTORNEY:**
BRUTON & BERUBE, PLLC
601 CENTRAL AVENUE
DOVER, N.H. 03820
Tel. (603) 749–4529








LOCUS MAP
SCALE: 1" = 100'

**PORTSMOUTH APPROVAL CONDITIONS NOTE:**
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

## INDEX OF SHEETS



## UTILITY CONTACTS

**ELECTRIC:**
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436–7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

**NATURAL GAS:**
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294–5144
ATTN: DAVE BEAULIEU

**CABLE:**
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679–5695 (X1037)
ATTN: MIKE COLLINS

**SEWER & WATER:**
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427–1530
ATTN: JIM TOW

**COMMUNICATIONS:**
FAIRPOINT COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427–5525

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PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT: TO BE SUBMITTED
PORTSMOUTH HDC: PENDING
PORTSMOUTH SITE PLAN: PENDING

### LEGEND:

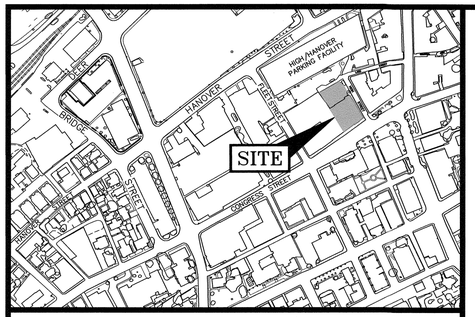
| EXISTING | PROPOSED | |
|---|---|---|
| | | PROPERTY LINE |
| | | SETBACK |
| S | S | SEWER PIPE |
| SL | SL | SEWER LATERAL |
| G | G | GAS LINE |
| D | D | STORM DRAIN |
| W | W | WATER LINE |
| WS | WS | WATER SERVICE |
| UGE | UGE | UNDERGROUND ELECTRIC |
| OHW | OHW | OVERHEAD ELECTRIC/WIRES |
| | UD | FOUNDATION DRAIN |
| | | EDGE OF PAVEMENT (EP) |
| 100 | 100 | CONTOUR |
| 97x3 | 98x0 | SPOT ELEVATION |
| | | UTILITY POLE |
| | | WALL MOUNTED EXTERIOR LIGHTS |
| | | TRANSFORMER ON CONCRETE PAD |
| | | ELECTRIC HANDHOLD |
| WS GS | WS GS | SHUT OFFS (WATER/GAS) |
| | GV | GATE VALVE |
| | HYD | HYDRANT |
| CB | CB | CATCH BASIN |
| | SMH | SEWER MANHOLE |
| | DMH | DRAIN MANHOLE |
| | TMH | TELEPHONE MANHOLE |
| 14 | 14 | PARKING SPACE COUNT |
| PM | | PARKING METER |
| LSA | | LANDSCAPED AREA |
| TBD | TBD | TO BE DETERMINED |
| CI | CI | CAST IRON PIPE |
| COP | COP | COPPER PIPE |
| DI | DI | DUCTILE IRON PIPE |
| PVC | PVC | POLYVINYL CHLORIDE PIPE |
| RCP | RCP | REINFORCED CONCRETE PIPE |
| AC | – | ASBESTOS CEMENT PIPE |
| VC | VC | VITRIFIED CLAY PIPE |
| EP | EP | EDGE OF PAVEMENT |
| EL. | EL. | ELEVATION |
| FF | FF | FINISHED FLOOR |
| INV | INV | INVERT |
| S = | S = | SLOPE FT/FT |
| TBM | TBM | TEMPORARY BENCH MARK |
| TYP | TYP | TYPICAL |

SITE PERMIT PLANS
COMMERCIAL DEVELOPMENT
1 CONGRESS STREET
PORTSMOUTH, N.H.


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315


PLAN SET SUBMITTAL DATE: 20 DECEMBER 2022

3406




LOCATION MAP SCALE: 1" = 300'

## PLAN REFERENCES:

1) PLAN OF A LOT OF LAND IN PORTSMOUTH N.H. BELONGING TO THE ESTATE OF CHAS. H. MENDUM, SCALE: 1 IN = 20 FT, DATED JULY 1, 1908, PREPARED BY WM. A. GROVER CIVIL ENGINEER, RCRD 00469.
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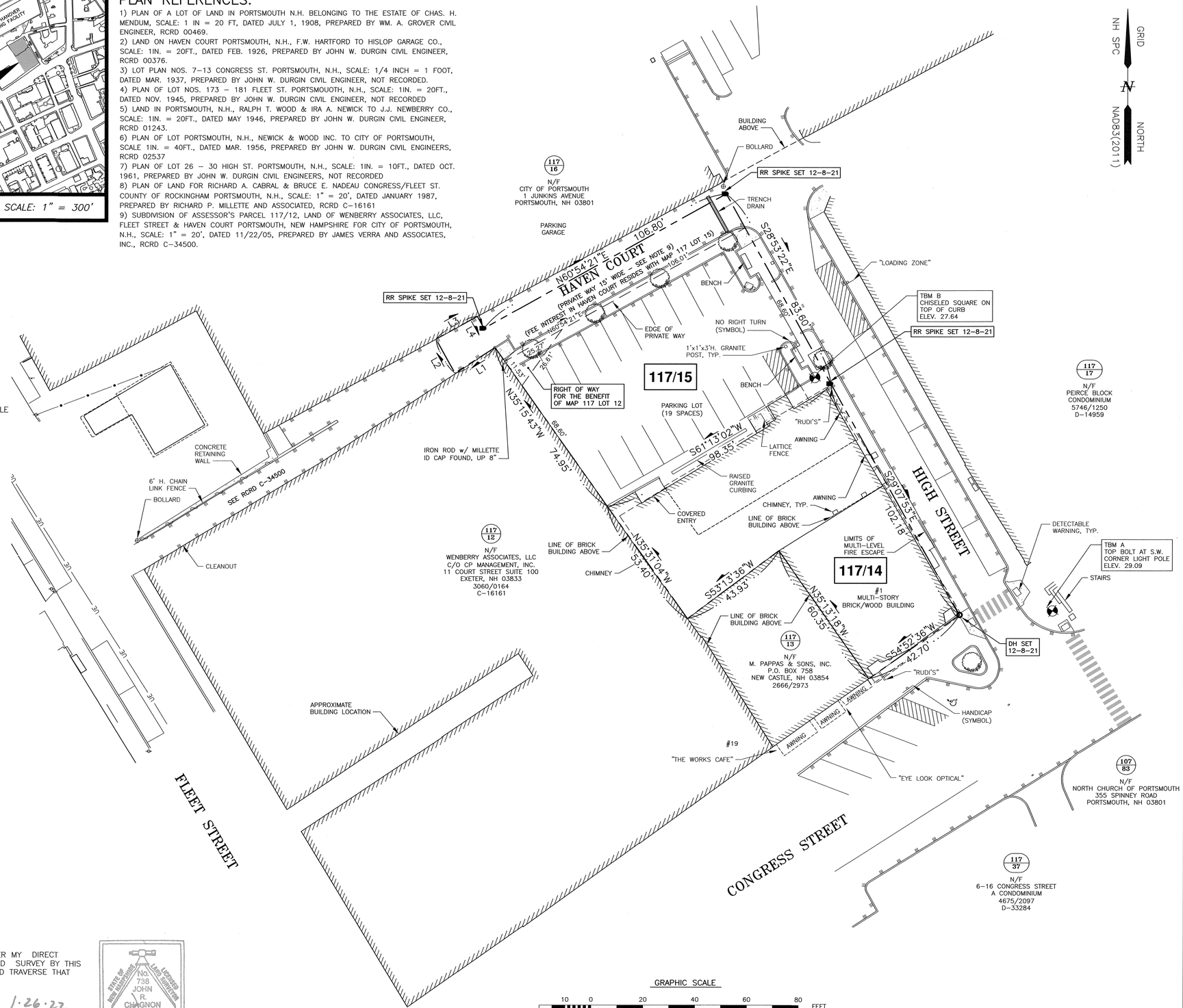
7) PLAN OF LOT 26 – 30 HIGH ST. PORTSMOUTH, N.H., SCALE: 1IN. = 10FT., DATED OCT. 1961, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, NOT RECORDED
8) PLAN OF LAND FOR RICHARD A. CABRAL & BRUCE E. NADEAU CONGRESS/FLEET ST. COUNTY OF ROCKINGHAM PORTSMOUTH, N.H., SCALE: 1" = 20', DATED JANUARY 1987, PREPARED BY RICHARD P. MILLETTE AND ASSOCIATED, RCRD C–16161
9) SUBDIVISION OF ASSESSOR'S PARCEL 117/12, LAND OF WENBERRY ASSOCIATES, LLC, FLEET STREET & HAVEN COURT PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH, N.H., SCALE: 1" = 20', DATED 11/22/05, PREPARED BY JAMES VERRA AND ASSOCIATES, INC., RCRD C–34500.

## LEGEND:

| | |
|---|---|
| N/F | NOW OR FORMERLY |
| RP | RECORD OF PROBATE |
| RCRD | ROCKINGHAM COUNTY REGISTRY OF DEEDS |
| RR SPK | RAILROAD SPIKE |
| 11/27 | MAP 11/LOT 21 |
| ○IR FND | IRON ROD FOUND |
| ○IP FND | IRON PIPE FOUND |
| ●IR SET | IRON ROD SET |
| ◉DH FND | DRILL HOLE FOUND |
| ⊙DH SET | DRILL HOLE SET |
| ▣NHHB | NHDOT BOUND FOUND |
| ▣TB | TOWN BOUND |
| ▣BND w/DH | BOUND WITH DRILL HOLE |
| ▣ST BND w/DH | STONE BOUND WITH DRILL HOLE |

## LENGTH TABLE

| LINE | BEARING | DISTANCE |
|---|---|---|
| L1 | S57°27'42"W | 18.36' |
| L2 | N28°53'22"W | 15.00' |
| L3 | N61°07'46"E | 18.19' |
| L4 | S29°05'39"E | 5.28' |




GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

JOHN R. CHAGNON, LLS 738 — DATE 1.26.22

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LAND SURVEYOR SIGNATURE


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315


## NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

| MAP 117 LOT 14 | MAP 117 LOT 15 |
|---|---|
| 7,266 S.F. | 8,840 S.F. |
| 0.1668 ACRES | 0.2029 ACRES |

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF A STANDARD BOUNDARY SURVEY ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

9) HAVEN COURT IS A PRIVATE WAY 15 FEET WIDE. ALL RIGHTS, TITLE AND INTEREST UNTO SAID HAVEN COURT WERE CONVEYED WITH ASSESSOR'S MAP 117 LOT 15, AS DESCRIBED IN RCRD 983/179, SUBJECT TO RIGHTS OF OTHERS (OTHERS NOT DEFINED ON THIS SURVEY).

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 1 | NEW OWNER | 1/26/22 |
| 0 | ISSUED FOR RECORDING | 12/8/21 |

REVISIONS

# STANDARD BOUNDARY SURVEY
# TAX MAP 117
# LOTS 14 & 15

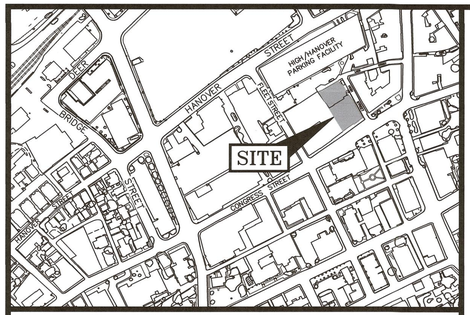
OWNER OF RECORD:
**ONE MARKET SQUARE, LLC**

PROPERTY LOCATED AT:
1 CONGRESS STREET & HIGH STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' NOVEMBER 2021

FB 309 PG 15 — 3406

J:\CIVIL\Jobs\3400's\3406\2021 Survey and Site Plan\Plans & Specs\Dwg\3406 Site 2022.dwg, 1/27/2022 4:28:07 PM, Canon TX-3000 Drafting




LOCATION MAP SCALE: 1" = 300'

## LEGEND:

| | |
|---|---|
| N/F | NOW OR FORMERLY |
| RP | RECORD OF PROBATE |
| RCRD | ROCKINGHAM COUNTY REGISTRY OF DEEDS |
| RR SPK | RAILROAD SPIKE |
| 11/21 | MAP 11/LOT 21 |
| ○ IR FND | IRON ROD FOUND |
| ○ IP FND | IRON PIPE FOUND |
| ● IR SET | IRON ROD SET |
| ◉ DH FND | DRILL HOLE FOUND |
| ◉ DH SET | DRILL HOLE SET |
| ▣ NHHB | NHDOT BOUND FOUND |
| ▣ TB | TOWN BOUND |
| ▣ BND w/DH | BOUND WITH DRILL HOLE |
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7) PLAN OF LOT 26 – 30 HIGH ST. PORTSMOUTH, N.H., SCALE: 1IN. = 10FT., DATED OCT. 1961, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, NOT RECORDED
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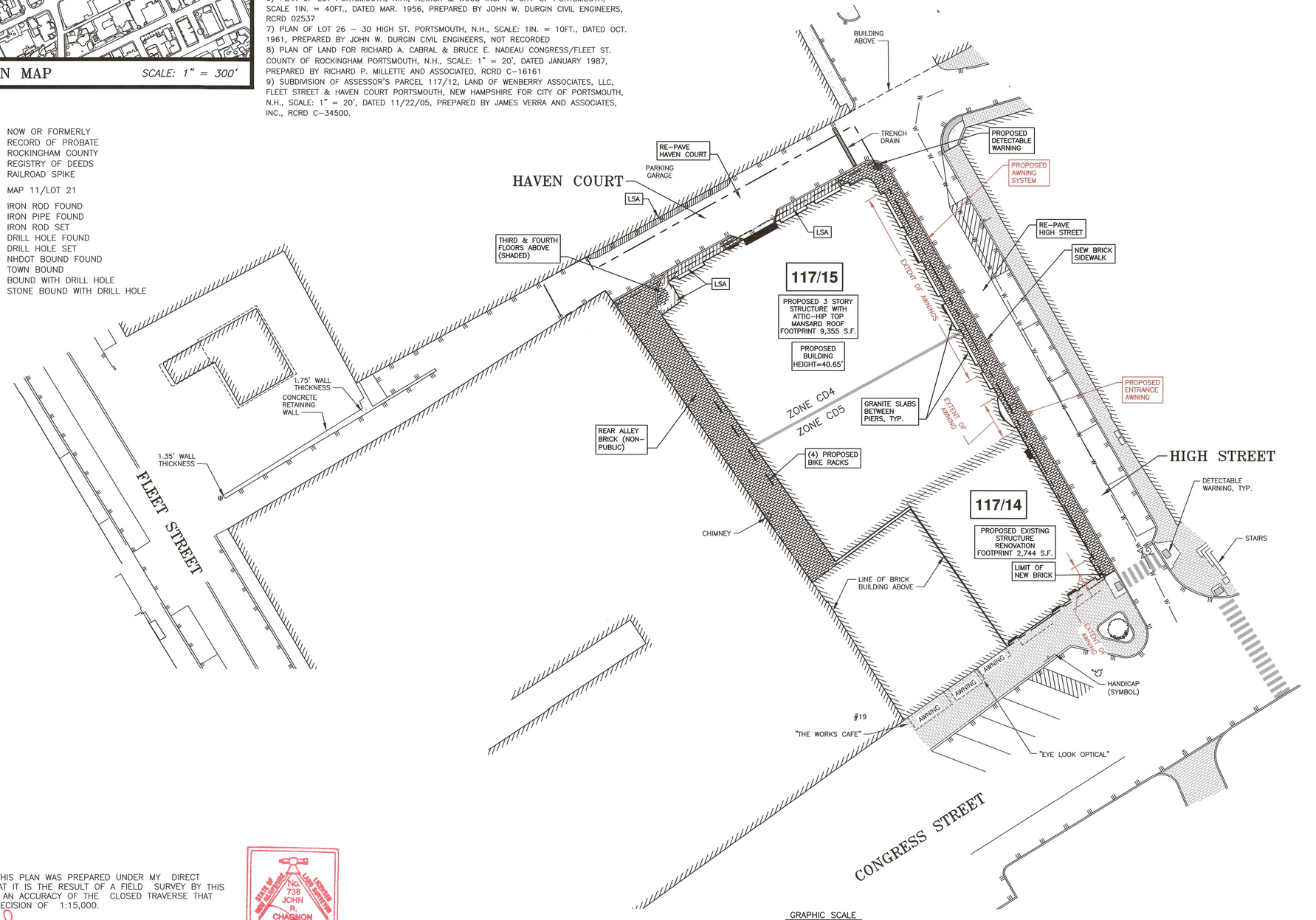


I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

JOHN R. CHAGNON, LLS 738

12.20.22
DATE

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

## NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

| MAP 117 LOT 14 | MAP 117 LOT 15 |
|---|---|
| 7,266 S.F. | 8,840 S.F. |
| 0.1668 ACRES | 0.2029 ACRES |

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED LICENSE AREAS ON HIGH STREET AND HAVEN COURT.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 1 | ON SITE ONLY | 12/20/22 |
| 0 | ISSUED FOR COMMENT | 11/29/22 |

REVISIONS

# LICENSE PLAN
## ONE MARKET SQUARE, LLC AND CITY OF PORTSMOUTH
HIGH STREET & HAVEN COURT
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' NOVEMBER 2022

FB 309 PG 15 3406

I:\CAD\SJN-3400's\3400's\3406\2021 Survey and Site Plan\Plans & Specs\Site\3406 Site 2022-lng, 2022-12-22 1:04:58 PM, Adobe PDF

## ADDITIONAL ABUTTERS:

107/83
N/F
NORTH CHURCH OF PORTSMOUTH
355 SPINNEY ROAD
PORTSMOUTH, NH 03801

117/37
N/F
6-16 CONGRESS STREET
A CONDOMINIUM
4675/2097
D-33284

117/17
N/F
PEIRCE BLOCK
CONDOMINIUM
5746/1250
D-14959

117/16
N/F
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801

117/13
N/F
M. PAPPAS & SONS, INC.
P.O. BOX 758
NEW CASTLE, NH 03854
2666/2973

117/12
N/F
WENBERRY ASSOCIATES, LLC
C/O CP MANAGEMENT, INC.
11 COURT STREET SUITE 100
EXETER, NH 03833
3060/0164
C-16161

117/14
#1
MULTI-STORY
BRICK/WOOD BUILDING

117/15

#19

HAVEN COURT
(PRIVATE WAY 15' WIDE - SEE NOTE 9)
(FEE INTEREST IN HAVEN COURT RESIDES WITH MAP 117 LOT 15)

CONGRESS STREET

GRID NORTH
NH SPC
NAD83(2011)

TBM A
TOP BOLT AT S.W.
CORNER LIGHT POLE
ELEV. 29.09

TBM B
CHISELED SQUARE ON
TOP OF CURB
ELEV. 27.64

RR SPIKE SET 12-8-21

DH SET
12-8-21

S28°53'22"E 83.60'

S29°07'53"E 102.18'

S54°52'36"W 142.70'

S61°13'02"W 98.35'

S53°13'36"W 43.93'

N60°54'21"E 106.80'

N35°13'18"W 60.35'

N35°31'04"W 53.40'

N35°15'43"W 74.95'

(SEE NOTE 10)

L1 N35°31'04"W 53.40'
L2 N60°54'21"E 106.80'
L3 S53°13'36"W 43.93'
L4 S29°07'53"E 102.18'

LOTS 14 & 15 WILL BE MERGED AND THIS DIVISION LINE ABANDONED

RIGHT OF WAY FOR THE BENEFIT OF MAP 117 LOT 12

IRON ROD w/ MILLETTE ID CAP FOUND, UP 8"

ABANDONED CONDUITS (NO OHW)

(2) PARKING METERS
"LOADING ZONE"
ELECTRIC HAND HOLE
HAND HOLE
STAIRS
BUILDING ABOVE
SMH 2323
8" PVC
10" VC
CB1
DMH 1
TO CB2 (OUT OF VIEW)
BOLLARD
CB3 (TD)
BENCH
NO RIGHT TURN (SYMBOL)
1'x1'x3'H. GRANITE POST, TYP.
PARKING KIOSK
B-1 (27x17)
B-2 (27x49)
B-3 (27x55)
B-4 (28x86)
B-5 (31x02)
B-6 (31x23)
LATTICE FENCE
27x87 THRESHOLD
CHIMNEY, TYP.
LINE OF BRICK BUILDING ABOVE
2" & 4" CONDUIT
27x79 THRESHOLD
28x10 THRESHOLD
28x13 THRESHOLD
27x59 THRESHOLD
27x61 THRESHOLD
LIMITS OF MULTI-LEVEL FIRE ESCAPE
AWNING
"RUDI'S"
"EYE LOOK OPTICAL"
"THE WORKS CAFE"
PARKING LOT (19 SPACES)
EDGE OF PRIVATE WAY
RAISED GRANITE CURBING
COVERED ENTRY
PARKING GARAGE
27x91 THRESHOLD
41x07 FF
40x80 FF
28x07 FF
28x10 FF
27x83 FF
WGV
VGC
VC

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

10-18-22
JOHN R. CHAGNON, LLS — DATE

STATE OF NEW HAMPSHIRE — No. 738 JOHN R. CHAGNON — LICENSED LAND SURVEYOR

GRAPHIC SCALE
10 5 0 10 20 30 40 FEET
3 0 5 10 METERS


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## NOTES:

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3 PLEASANT STREET, SUITE 400
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7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| 3 | ADD TELCOMM LOCATIONS | 10/18/22 |
| 2 | ADD TOPOGRAPHY | 2/9/22 |
| 1 | BORING LOCATIONS | 2/7/22 |
| 0 | PROPERTY LINES | 1/26/22 |

REVISIONS

SCALE 1" = 10' NOVEMBER 2021

EXISTING CONDITIONS PLAN

C1

FB 309 PG 15

3406

J:\JOBS3\JN 3400's\3400's\3406\2021 Survey and Site Plan\Plans & Specs\Site\3406 Site 2022.dwg, 12/22/2022 3:41:15 PM, Canon TX-3000 Drafting.pc3

## DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).

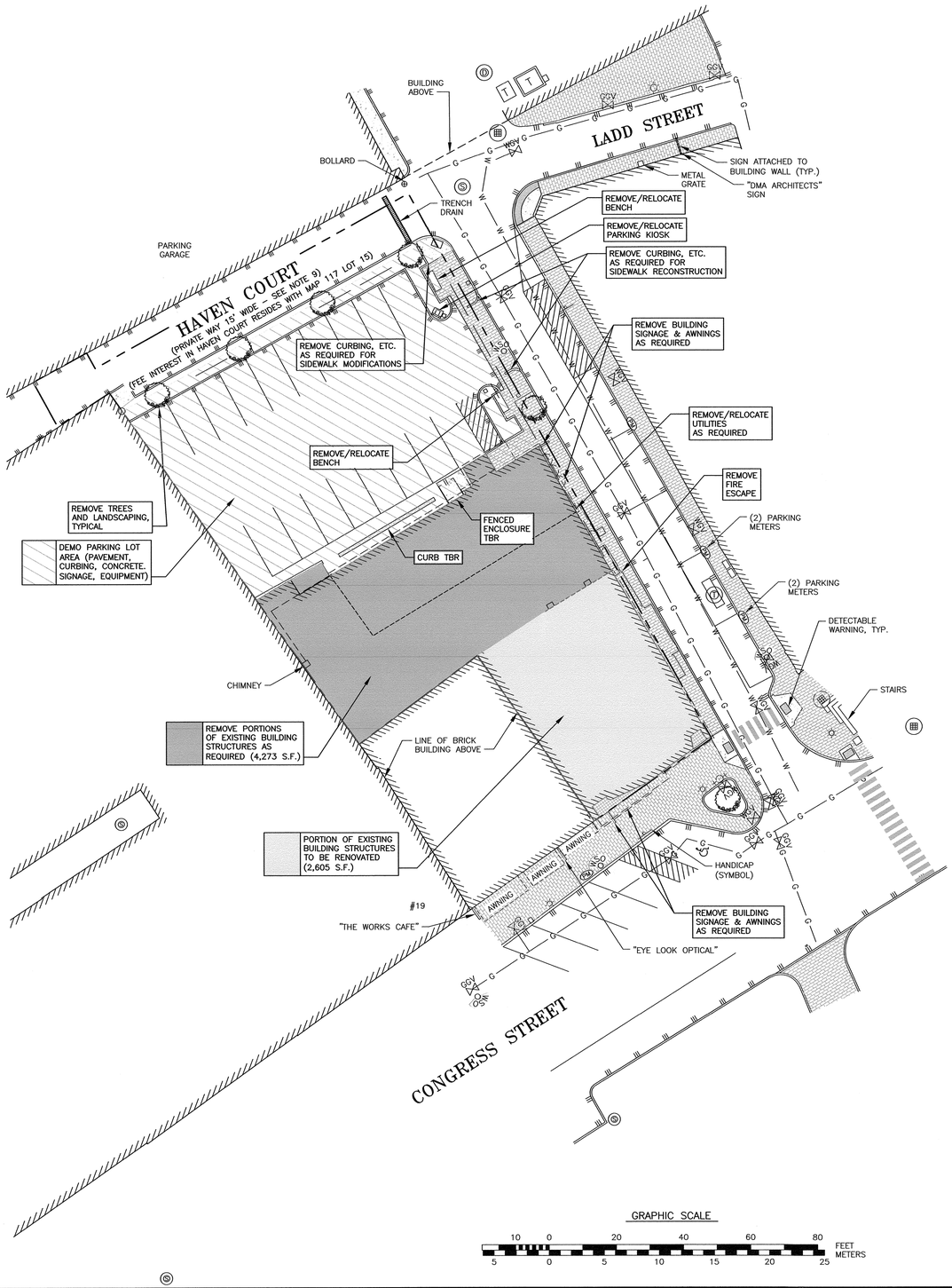
J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

K) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.

L) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN 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 WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

M) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

N) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS




GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

NH SPC GRID N NAD83(2011) NORTH


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 1 | SIDEWALK/CURB NOTES | 12/20/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

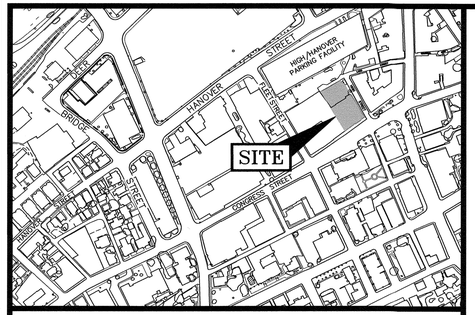
REVISIONS

STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON NO. 7851 LICENSED PROFESSIONAL ENGINEER

SCALE 1" = 20' SEPTEMBER 2022

**DEMOLITION PLAN** C2

FB 309 PG 15 3406



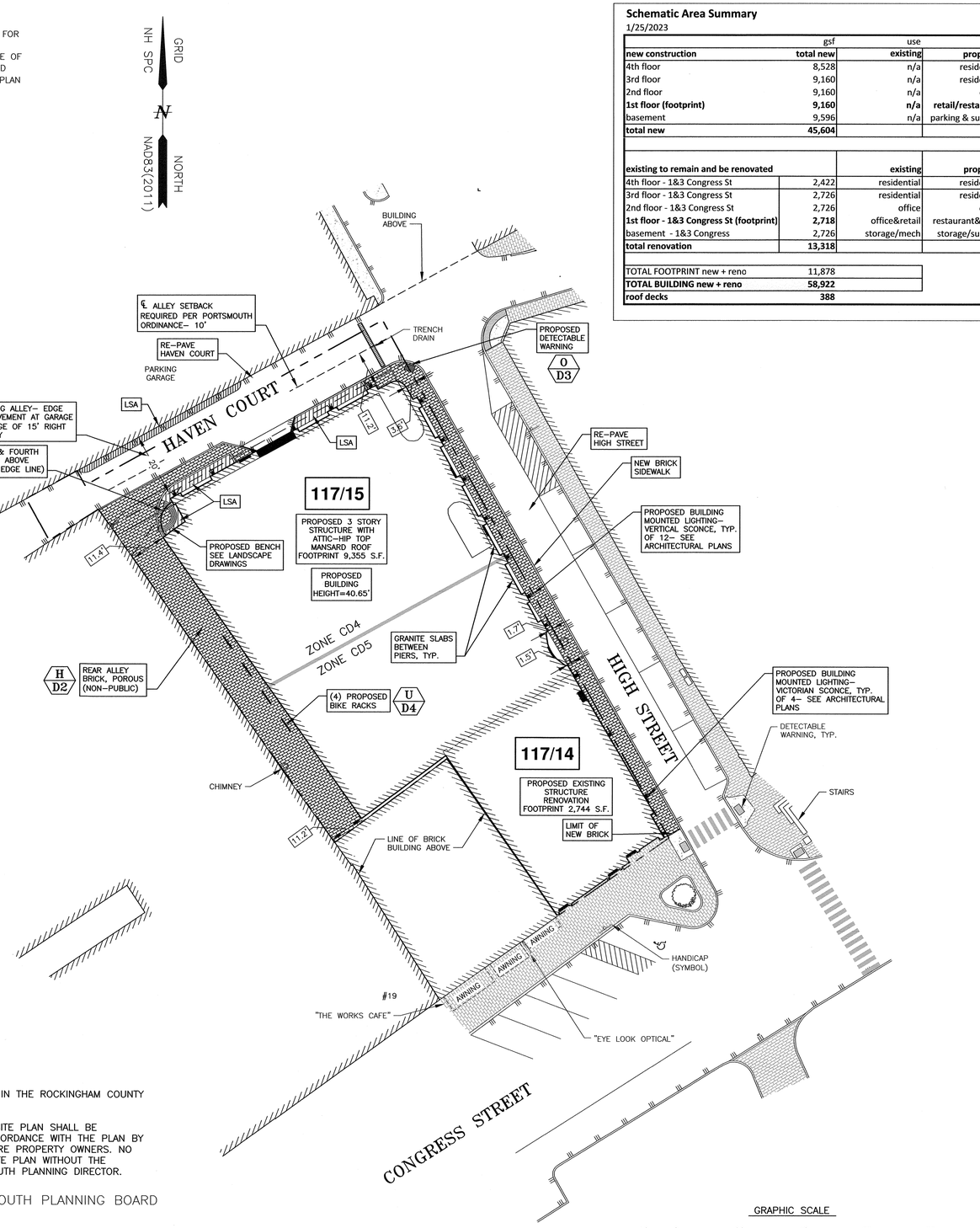

LOCATION MAP SCALE: 1" = 300'

## PLAN REFERENCE:

STANDARD BOUNDARY SURVEY, TAX MAP 117, LOTS 14 & 15, FOR PETER H. JARVIS & SONS, LLC. 1 CONGRESS STREET & HIGH STREET, CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM, STATE OF NEW HAMPSHIRE. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2021, ISSUED FOR RECORDING 12/8/21. R.C.R.D. PLAN D-43095.

## BUILDING DATA:

PROPOSED BUILDING:
12,099 S.F. FOOTPRINT




### ZONING DEVELOPMENT STANDARD 02/14/2023

| CD4 (CD-4, DOD, HDC): CHARACTER DISTRICT 4 | | | |
|---|---|---|---|
| | REQUIRED | EXISTING | PROPOSED |
| Height | 3 stories with short 4th = 45' | n/a | **3 stories @ 40' - 7 3/4"** |
| Penthouses | may exceed bldg height by 2' | n/a | n/a |
| Roof appurtenance | may exceed bldg height by 10' | n/a | **7' - 5 3/4"** |
| Façade Types | shopfront | n/a | **yes** |
| Building Types | commercial, live-work, mixed use, flex space & community. | n/a | **mixed use (retail, office, apartments)** |
| Front (principle) max | 10 | n/a | 0'-0" |
| Front (secondary) max | 15 | n/a | 2'-4" |
| Side | NR | n/a | n/a |
| Rear, min | >of: 5' from rear line or 10' from cl alley | n/a | N/A |
| Front lotline buildout | 50% min | n/a | 100.00% |
| Lot area (sf) | NR | 8,840 | 8,840 |
| LOT area per dwelling | NR | 0 | n/a |
| Coverage, maximum | 90% | 0 | 65.6% |
| **Footprint, max* 10.5a43.40** | 15,000 | **0** | **5,686** |
| Ground floor area per use, max | 15,000 | N/A | **5,686** |
| Open space, minimum | 10% | 9.5% | 12.1% |
| Permitted uses (cd4 & cd5) | multifamily, live/work, office, retail, restaurant (<500occ) | surface parking lot | commercial retail, office & multifamily |
| Block length, max (ft) | 200 | n/a | **168' - 0 3/4"** |
| Façade modulation length, max (ft) | 80 | n/a | **77' - 3 7/8"** |
| Entrance spacing, max (ft) | 50 | n/a | **39' - 10 3/8"** |
| Floor height above sidewalk, max | 36" | n/a | **16"** |
| Ground floor height, min | 12' | n/a | **13' 5 5/8"** |
| Second floor height, min | 10' | n/a | **11'-3"** |
| Glazing, shopfront, min | 70% | n/a | **70%** |
| Glazing, other | 20%-50% | n/a | **25%** |
| Roof types(pitch) | flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12) | n/a | **hip-top mansard** |
| Parking, off-street; DOD* | when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed. | 19 | **12** |
| Residential (dwellings) | UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. ( +1 visitor space/5 units) | N/A | **10** |
| Professional office | NA in DOD | N/A | N/A |
| | | | |
| * see CD-5 zoning chart for remainder of parking spaces | | | |

### ZONING DEVELOPMENT STANDARD 02/14/2023

| CD5 (CD-5, DOD, HDC): CHARACTER DISTRICT 5 | | | |
|---|---|---|---|
| | REQUIRED | EXISTING | PROPOSED |
| Height | 2-3 stories with short 4th = 45' | **45' - 5 1/4"** | **40' - 7 3/4"** |
| Penthouses | may exceed bldg height by 2' | **n/a** | **n/a** |
| Roof appurtenance | may exceed bldg height by 10' | **8' 0 3/4"** | **7' - 5 3/4"** |
| Façade Types | shop front | **yes** | **yes** |
| Building Types | commercial, live-work, mixed use, flex space & community. | **mixed use (retail, restaurant, office, apartments)** | **mixed use (retail, office, apartments)** |
| Front (principle) max | 5 | 0'-0" | 0'-0" |
| Front (secondary) max | 5 | 0'-0" | 1'-6" |
| Side | NR | 0'-0" | N/R |
| Rear, min | >of: 5' from rear line or 10' from cl alley | N/A | N/A |
| Front lotline buildout | 80% min | 100% | 100% |
| Lot area (sf) | NR | 7,266 | 7,266 |
| LOT area per dwelling | NR | n/a | n/a |
| Coverage, maximum | 95% | 37.52% | 89.1% |
| **Footprint, max* 10.5a43.40** | 20,000 | **2,726** | **6,427** |
| Ground floor area per use, max | 15,000 | 2,726 | 6,427 |
| Open space, minimum | 5% | 0% | 8.2% |
| Permitted uses (cd4 & cd5) | commercial, live/work, mixed-use, flex space, community, office, retail, restaurant (<500occ) | commercial, mixed use, office, retail & restaurant | COMMERCIAL (retail, restaurant, hotel lobby) |
| Block length, max (ft) | 225 | **168' - 0 3/4"** | **168' - 0 3/4"** |
| Façade modulation length, max (ft) | 100 | **62' - 1 1/8"** | **62' - 1 1/8"** |
| Entrance spacing, max (ft) | 50 | **49' - 7 1/4"** | **49' - 7 1/4"** |
| Floor height above sidewalk, max | 36" | **4"** | **4"** |
| Ground floor height, min | 12' | **12' - 8 3/8"** | **13' 5 5/8"** |
| Second floor height, min | 10' | **11'-3"** | **11'-3"** |
| Glazing, shopfront, min | 70% | **31%** | **53%** |
| Glazing, other | 20%-50% | **20%** | **24%** |
| Roof types(pitch) | flat, gable (6:12-12:12), hip(>3:12), gambrel/mansard(6:12-30:12) | **hip-top mansard and gable** | **hip-top mansard and gable** |
| Parking, off-street; DOD* | when >20 spaces, max spaces = 120% min required. 10.1112.60 mixed used - some shared spaces allowed. | 0 | **11** |
| Residential (dwellings) | UNIT<500SF=.5 space/unit; 500-750sf=1 space/unit; >750sf=1.3 space/unit. ( +1 visitor space/5 units) | **5** | **8** |
| Professional office | NA in DOD | N/A | N/A |
| * see CD-4 zoning chart for remainder of parking spaces | | | |

### Schematic Area Summary

1/25/2023

| | gsf | use | use |
|---|---|---|---|
| **new construction** | **total new** | **existing** | **proposed** |
| 4th floor | 8,528 | n/a | residential |
| 3rd floor | 9,160 | n/a | residential |
| 2nd floor | 9,160 | n/a | office |
| **1st floor (footprint)** | **9,160** | **n/a** | **retail/restaurant** |
| basement | 9,596 | n/a | parking & support |
| **total new** | **45,604** | | |
| | | | |
| **existing to remain and be renovated** | | **existing** | **proposed** |
| 4th floor - 1&3 Congress St | 2,422 | residential | residential |
| 3rd floor - 1&3 Congress St | 2,726 | residential | residential |
| 2nd floor - 1&3 Congress St | 2,726 | office | office |
| **1st floor - 1&3 Congress St (footprint)** | **2,718** | office&retail | restaurant&retail |
| basement - 1&3 Congress | 2,726 | storage/mech | storage/support |
| **total renovation** | **13,318** | | |
| | | | |
| TOTAL FOOTPRINT new + reno | 11,878 | | |
| **TOTAL BUILDING new + reno** | **58,922** | | |
| **roof decks** | **388** | | |

THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


## NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4 AND CHARACTER DISTRICT 5. SEE TABLES THIS SHEET.

4) DIMENSIONAL REQUIREMENTS: SEE PORTSMOUTH ORDINANCE FOR REQUIREMENTS.

5) LOT AREAS:

| MAP 117 LOT 14 | MAP 117 LOT 15 |
|---|---|
| 7,266 S.F. | 8,840 S.F. |
| 0.1668 ACRES | 0.2029 ACRES |

COMBINED LOT AREA:
16,106 S.F.
0.3697 ACRES

6) PARCELS ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED DEVELOPMENT ON TAX MAP 117, LOTS 14 AND 15 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

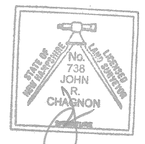
9) HAVEN COURT IS A PRIVATE WAY 15 FEET WIDE. ALL RIGHTS, TITLE AND INTEREST UNTO SAID HAVEN COURT WERE CONVEYED WITH ASSESSOR'S MAP 117 LOT 15, AS DESCRIBED IN RCRD 983/179, SUBJECT TO RIGHTS OF OTHERS (OTHERS NOT DEFINED ON THIS PLAN).

10) PROPOSED USE: RETAIL, OFFICE, RESIDENTIAL.
FIRST FLOOR: RETAIL.
2ND FLOOR: OFFICE.
3RD FLOOR & UP: 18 RESIDENTIAL UNITS.

# COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| 4 | TABLES, OPEN SPACE | 2/14/23 |
| 3 | REVISE TABLES, LIGHTS | 1/25/23 |
| 2 | STREET/SIDEWALK | 12/20/22 |
| 1 | BUILDING FOOTPRINT | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS


SCALE 1" = 20' SEPTEMBER 2022

**PROJECT SITE PLAN** C3

FB 309 PG 15

3406



ARCOVE ARCHITECTS

3 Congress St, Ste 1
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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

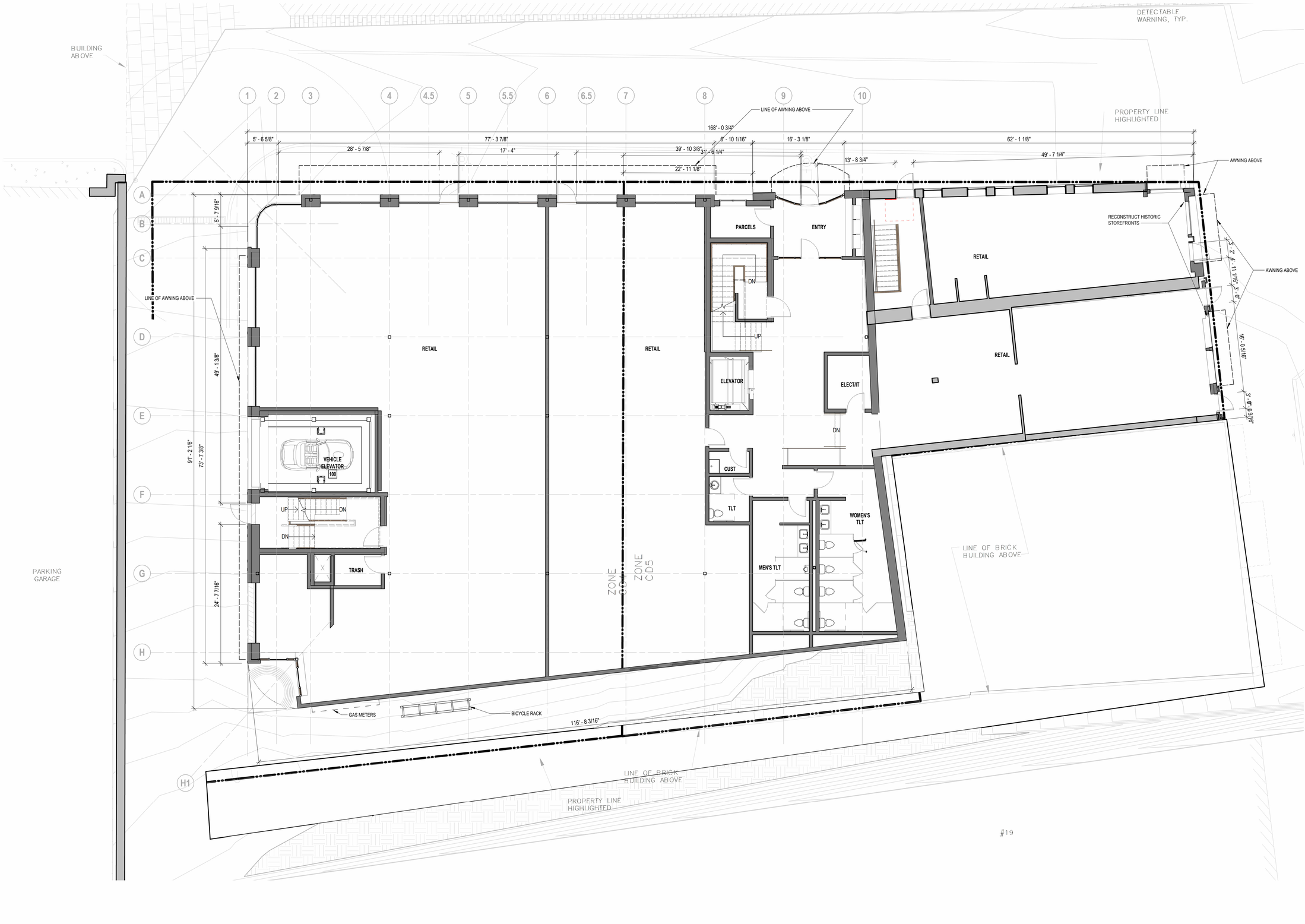
| | |
|---|---|
| Scale: | 1/8" = 1'-0" |
| Date: | 1/24/2023 |
| Project Number: | 1002 |

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

# BASEMENT FLOOR PLAN

# PB.A0





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# 1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

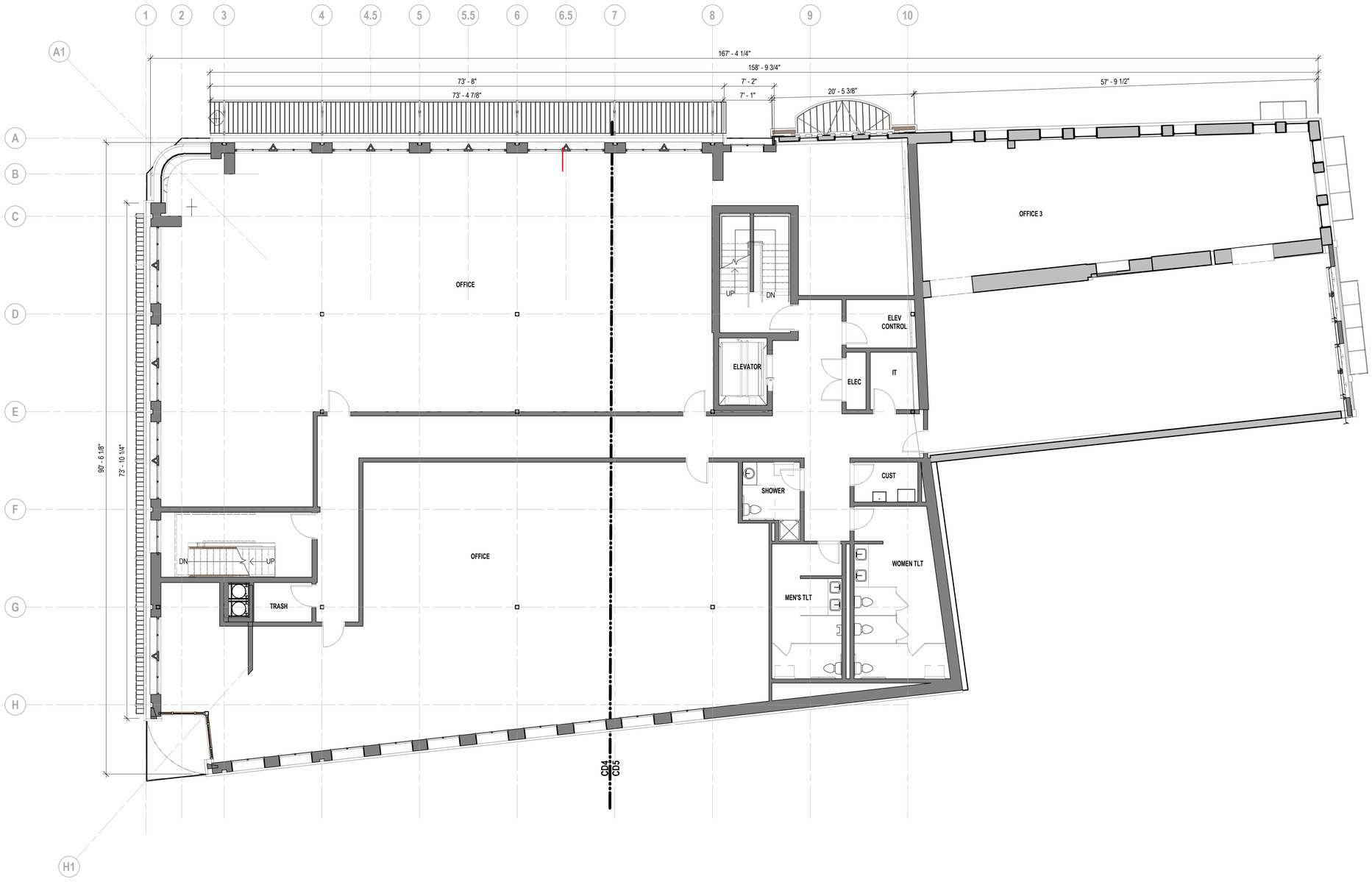
Scale: 1/8" = 1'-0"
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

## FIRST FLOOR PLAN

# PB.A1





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1 CONGRESS STREET

PORTSMOUTH, NH

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THE STATE OF NEW HAMPSHIRE

| | |
|---|---|
| Scale: | 1/8" = 1'-0" |
| Date: | 1/24/2023 |
| Project Number: | 1002 |

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

# SECOND FLOOR PLAN

# PB.A2



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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
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No. 2662
THE STATE OF NEW HAMPSHIRE

Scale: 1/8" = 1'-0"
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

# THIRD FLOOR PLAN

# PB.A3



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# 1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

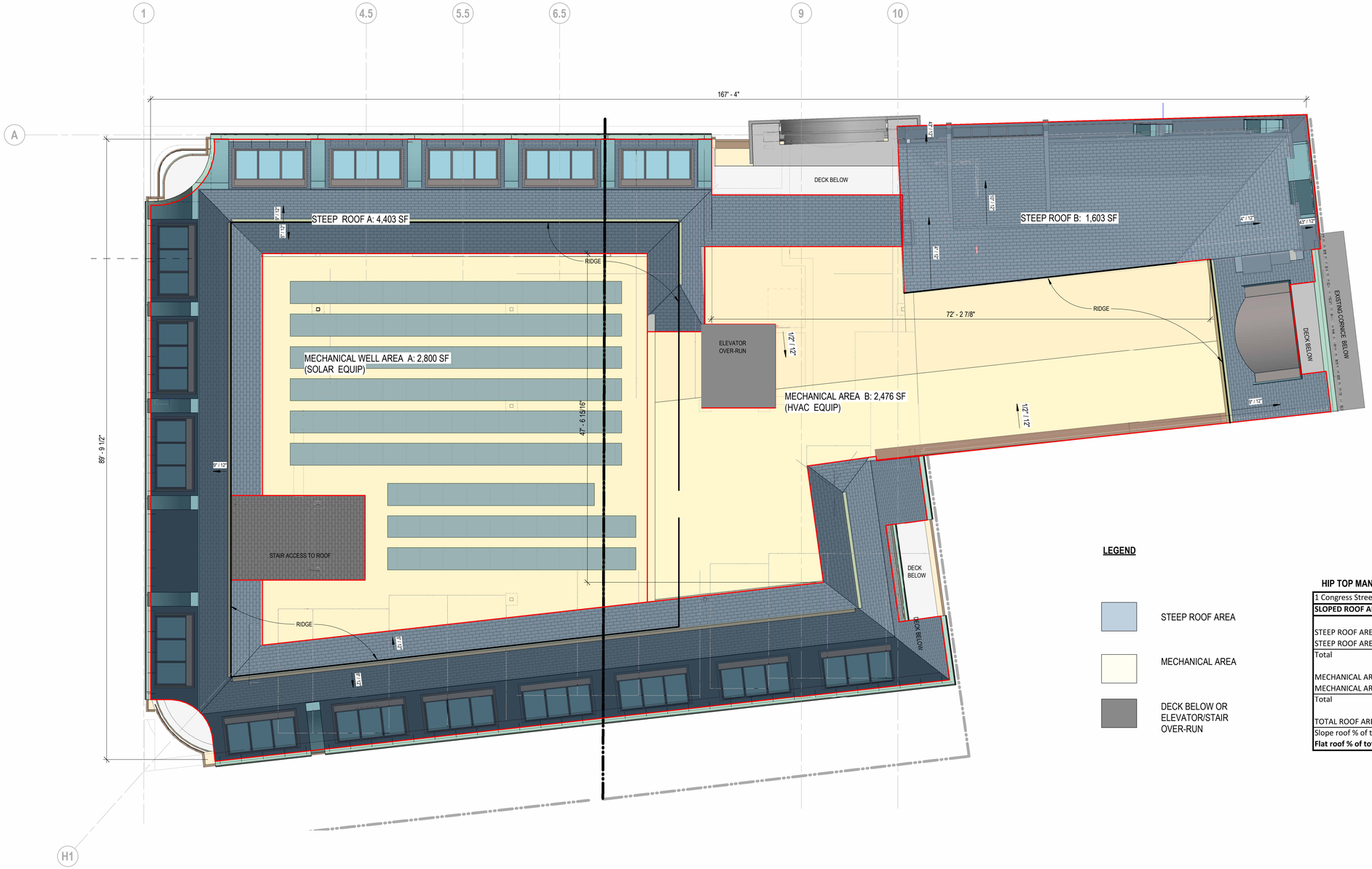
Scale: 1/8" = 1'-0"
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

## FOURTH FLOOR PLAN

# PB.A4




**LEGEND**

- STEEP ROOF AREA
- MECHANICAL AREA
- DECK BELOW OR ELEVATOR/STAIR OVER-RUN

**HIP TOP MANSARD ROOF**

| 1 Congress Street | |
|---|---|
| **SLOPED ROOF AREAS** | 12/22/2022 |
| | |
| STEEP ROOF AREA A | 4,403 |
| STEEP ROOF AREA B | 1,603 |
| Total | 6,006 |
| | |
| MECHANICAL AREA A | 2,800 |
| MECHANICAL AREA B | 2,476 |
| Total | 5,276 |
| | |
| TOTAL ROOF AREA | 11,282 |
| Slope roof % of total | 53.24% |
| **Flat roof % of total** | **46.76%** |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# 1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

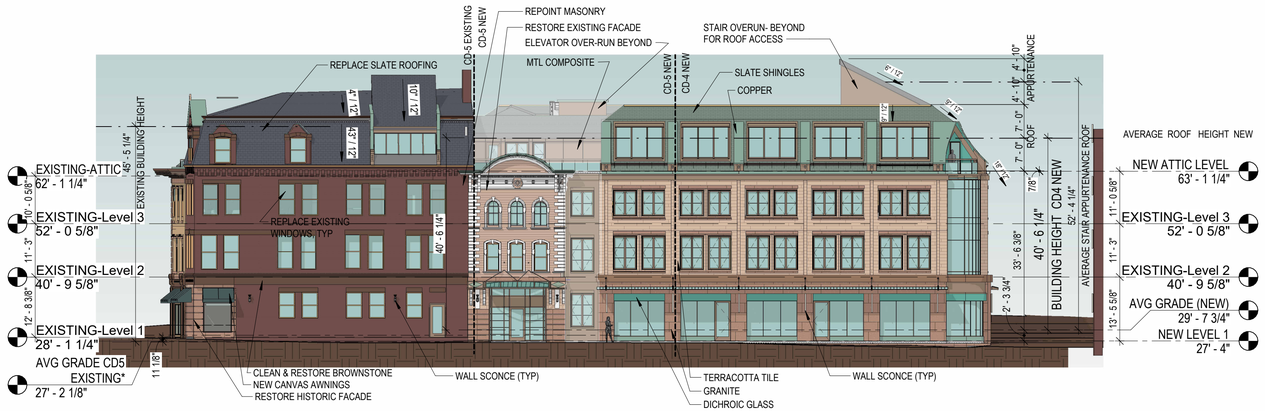
Scale: 1/8" = 1'-0"
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

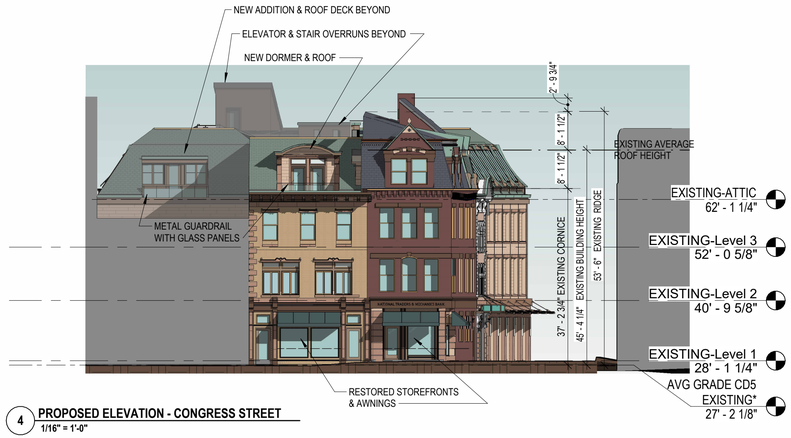
ROOF PLAN

**PB.A5**

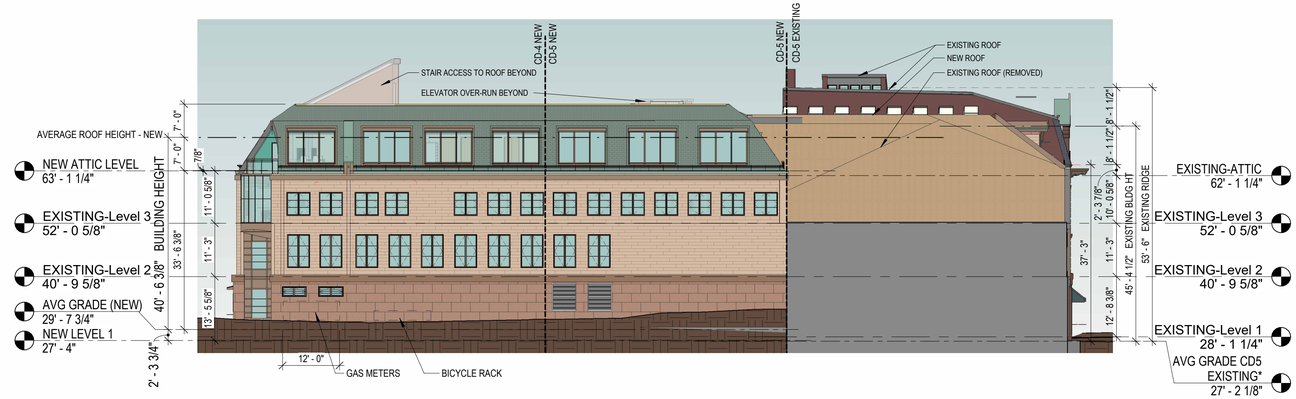



1 **PROPOSED ELEVATION - NE - HIGH STREET**
1/16" = 1'-0"


2 **PROPOSED ELEVATION - NW HAVEN COURT**
1/16" = 1'-0"




4 **PROPOSED ELEVATION - CONGRESS STREET**
1/16" = 1'-0"




3 **SW ELEVATION - REAR ALLEY PB2**
1/16" = 1'-0"

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S. KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

Scale: 1/16" = 1'-0"
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

ELEVATIONS

**PB.A6**


VIEW FROM MARKET SQUARE


VIEW FROM HIGH STREET AT LADD STREET


VIEW FROM LADD STREET

VIEW FROM HAVEN COURT AT NEWBERRY'S

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1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

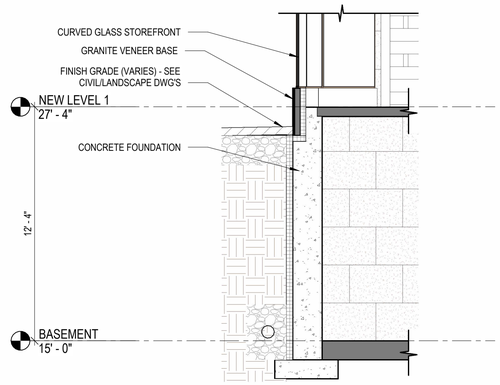
Scale:
Date: 1/24/2023
Project Number: 1002

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

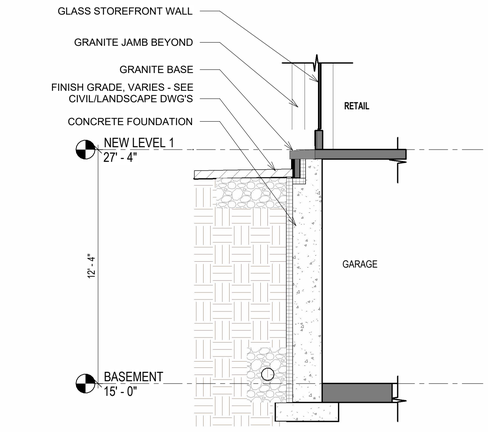
**SITE PLAN REVIEW**

3D VIEWS

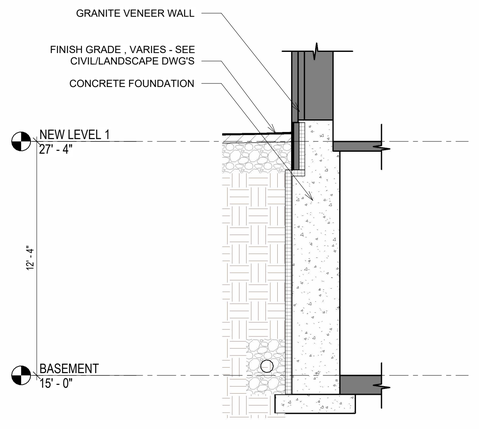
# PB.A7




3 **CORNER-HAVEN-HIGH**
1/4" = 1'-0"




2 **HIGH STREET**
1/4" = 1'-0"




1 **HAVEN-COURT ST**
1/4" = 1'-0"

ARCOVE ARCHITECTS
3 Congress St, Ste 1
PORTSMOUTH, NH 03801
T 603.731.5187
arcove.com

**Ambit Engineering Inc**
Civil Engineering
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(603) 430-9282
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**Terra Firma Landscape**
Landscape Architecture
163a Court St
Portsmouth NH 03801
(603) 531-9109
terrafirmalandarch.com

1 CONGRESS STREET

PORTSMOUTH, NH

ONE MARKET SQUARE LLC

LICENSED ARCHITECT
TRACY S KOZAK
No. 2662
THE STATE OF NEW HAMPSHIRE

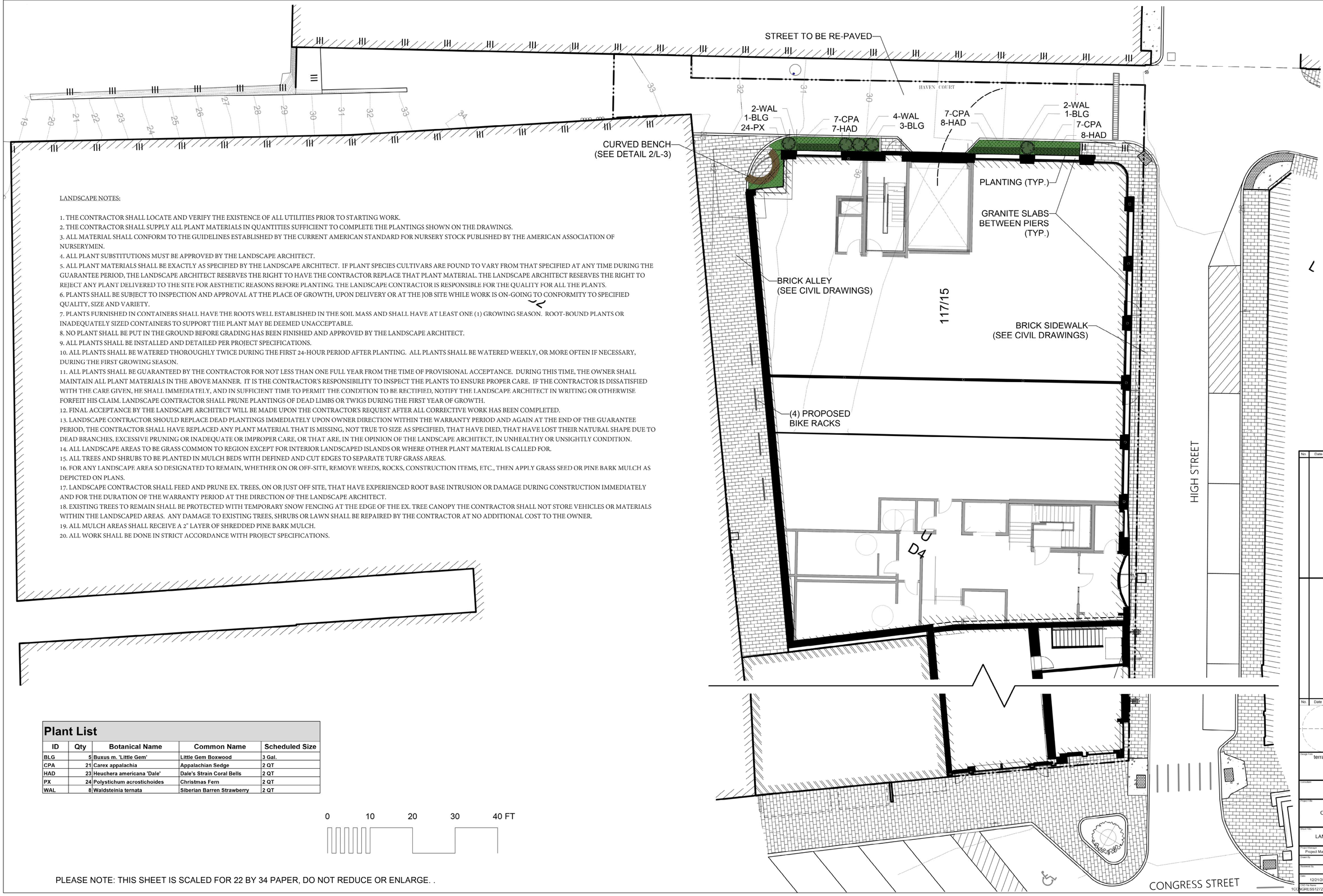
| | |
|---|---|
| Scale: | 1/4" = 1'-0" |
| Date: | 1/24/2023 |
| Project Number: | 1002 |

| REVISIONS | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |

**SITE PLAN REVIEW**

WALL SECTIONS

# PB.A8




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. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. 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 TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. 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.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. 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.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY 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.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.

## Plant List

| ID | Qty | Botanical Name | Common Name | Scheduled Size |
|---|---|---|---|---|
| BLG | 5 | Buxus m. 'Little Gem' | Little Gem Boxwood | 3 Gal. |
| CPA | 21 | Carex appalachia | Appalachian Sedge | 2 QT |
| HAD | 23 | Heuchera americana 'Dale' | Dale's Strain Coral Bells | 2 QT |
| PX | 24 | Polystichum acrostichoides | Christmas Fern | 2 QT |
| WAL | 8 | Waldsteinia ternata | Siberian Barren Strawberry | 2 QT |

0 10 20 30 40 FT

PLEASE NOTE: THIS SHEET IS SCALED FOR 22 BY 34 PAPER, DO NOT REDUCE OR ENLARGE. .

terra firma
landscape architecture
163.a court street portsmouth, nh 03801
office 603.430.8388 | terrance@terrafirmalandarch.com

| No. | Date | By | Revision Notes |
|---|---|---|---|
| | | | |

| No. | Date | Issue Notes |
|---|---|---|
| | | |

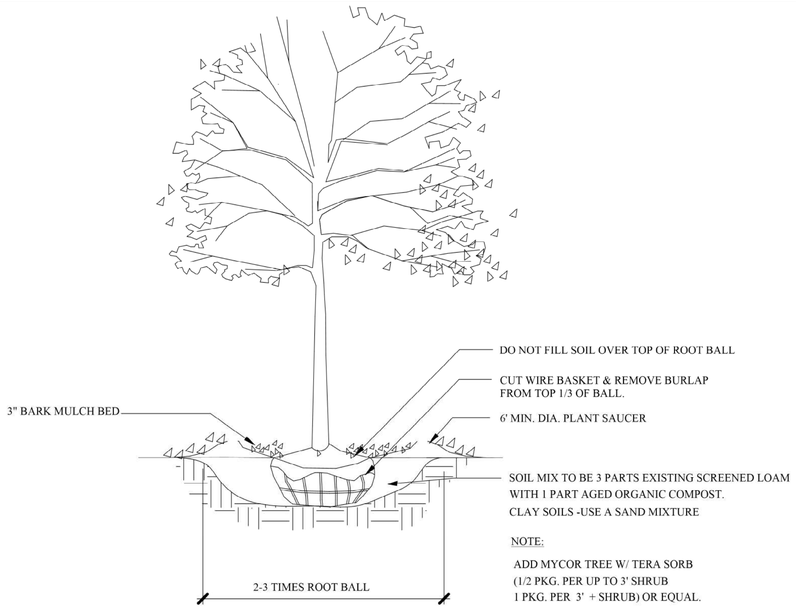
Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH 03801

Consultant:

Project Title: ONE CONGRESS STREET

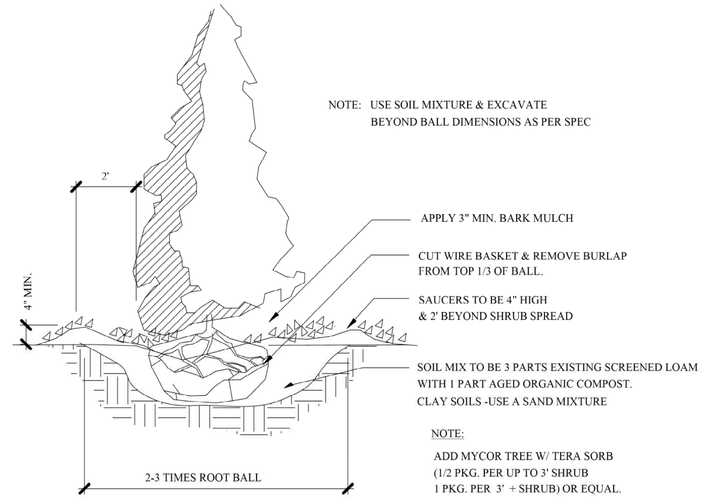
Sheet Title: LANDSCAPE PLAN - CONCEPT

| | |
|---|---|
| Project Manager: Project Manager | Project No: ONE CONGRESS STREET |
| Drawn By: | Scale: 1:120 |
| Approved By: | Sheet No: L-01 of 12 |
| Date: 12/21/2022 | |
| CAD File Name: | C:\CONGRESS12\22separate.vwx |



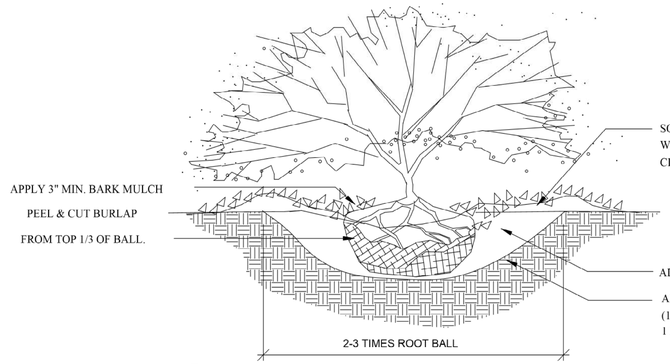

1 L-2

## TREE PLANTING - 2"+ CAL.
SCALE: NTS



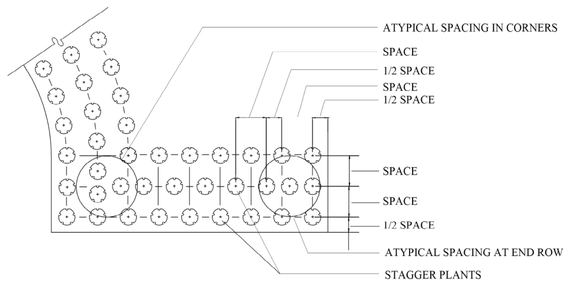

2 L-2

## PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS




3 L-2

## B&B SHRUB PLANTING
SCALE: NTS

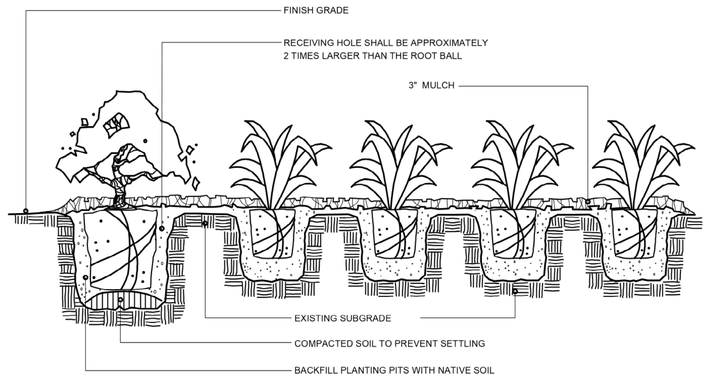



NOTES:

1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

4 L-2

## GROUND COVER SPACING DETAIL
SCALE: NTS




NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

5 L-2

## SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS

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office 603.430.2388 | terrence@terrafirmalandarch.com

| No. | Date | By | Revision Notes |
|---|---|---|---|
| | | | |

| No. | Date | Issue Notes |
|---|---|---|
| | | |

Design Firm: terra firma landscape architecture
163 a Court Street
Portsmouth, NH 03801

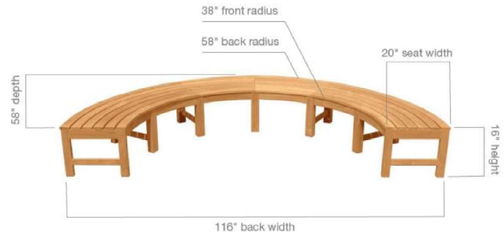
Consultant:

Project Title: ONE CONGRESS STREET

Sheet Title: LANDSCAPE DETAILS

| | |
|---|---|
| Project Manager: Project Manager | Project #: ONE CONGRESS STREET |
| Drawn By: | Scale: 1:120 |
| Reviewed By: | Sheet No. L-02 of 12 |
| Date: 12/21/2022 | |

Digital File Name: 1CONGRESS12722separate.vwx

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CIRCA 2PIECE 10' DIAMETER HALF-CIRCLE BACKLESS BENCH
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Gaithersburg, Maryland 20879
800-289-8325
301-926-9195
Fax: 301-926-9198
https://www.countrycasualteak.com/

2
L-3

CURVED BENCH DETAIL
SCALE: NTS

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| No. | Date | By | Revision Notes |
|---|---|---|---|
| | | | |

| No. | Date | Issue Notes |
|---|---|---|
| | | |

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH 03801

Consultant:

Project Title: ONE CONGRESS STREET

Sheet Title: LANDSCAPE DETAILS

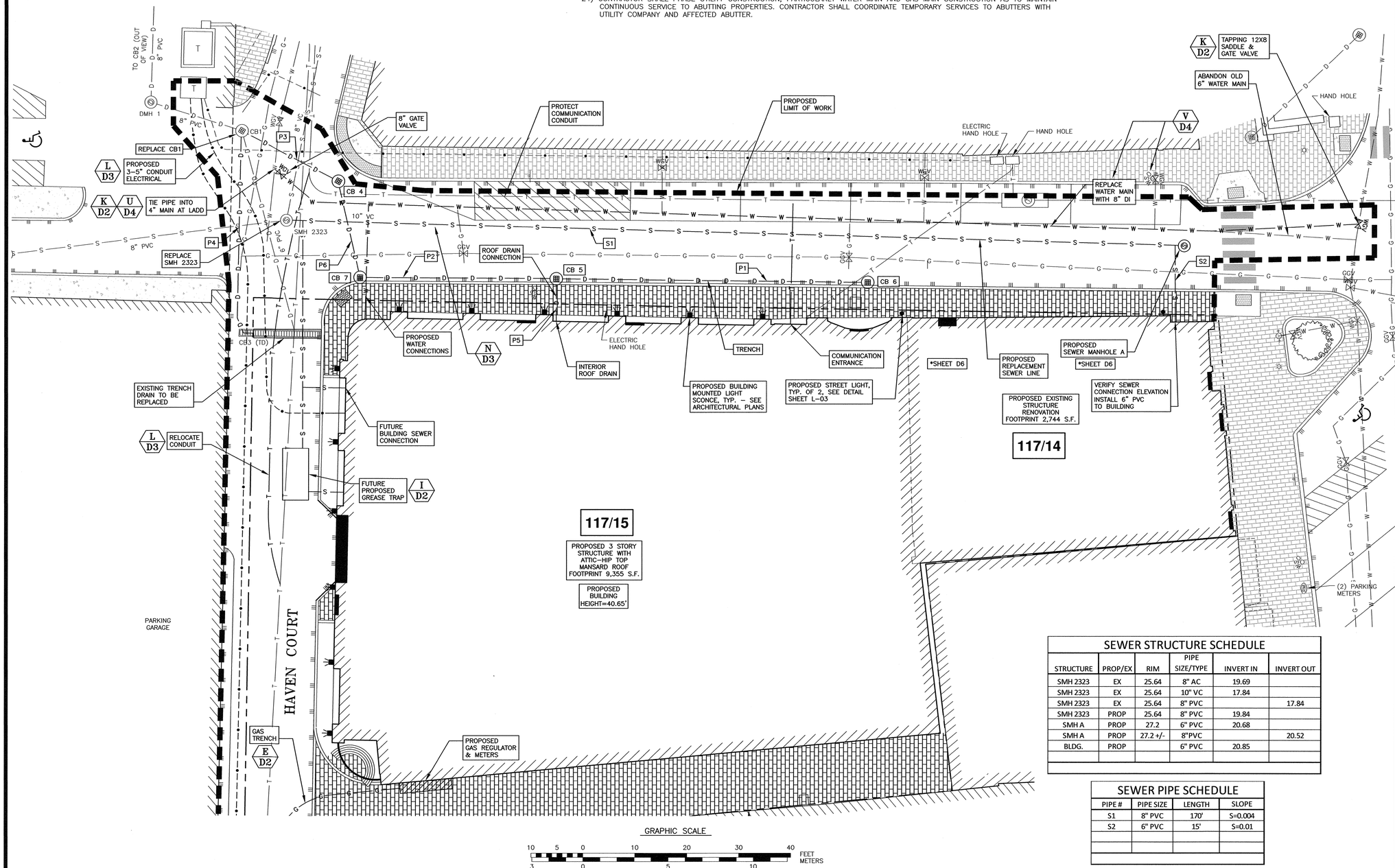
| | |
|---|---|
| Project Manager: Project Manager | Project ID: ONE CONGRESS STREET |
| Drawn By: | Scale: 1:120 |
| Reviewed By: | Sheet No.: L-03 of 12 |
| Date: 12/21/2022 | |
| CAD File Name: 1CONGRESS12722separate.vwx | |

## UTILITY NOTES:

1) SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
2) COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.
3) SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
4) ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, POLYWRAPPED, CEMENT LINED DUCTILE IRON PIPE.
5) ALL WATERMAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION AND BEFORE ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH.
6) ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
7) ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH
8) CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
9) ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
10) EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
11) ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
12) THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.
13) ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
14) ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.

## UTILITY NOTES CONTINUED:

15) THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.
16) THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
17) CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
18) A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS WATER ABOVE SEWER.
19) SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
20) GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
21) COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
22) ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.
23) CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
24) CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH UTILITY COMPANY AND AFFECTED ABUTTER.




### SEWER STRUCTURE SCHEDULE

| STRUCTURE | PROP/EX | RIM | PIPE SIZE/TYPE | INVERT IN | INVERT OUT |
|---|---|---|---|---|---|
| SMH 2323 | EX | 25.64 | 8" AC | 19.69 | |
| SMH 2323 | EX | 25.64 | 10" VC | 17.84 | |
| SMH 2323 | EX | 25.64 | 8" PVC | | 17.84 |
| SMH 2323 | PROP | 25.64 | 8" PVC | 19.84 | |
| SMH A | PROP | 27.2 | 6" PVC | 20.68 | |
| SMH A | PROP | 27.2 +/- | 8"PVC | | 20.52 |
| BLDG. | PROP | | 6" PVC | 20.85 | |
| | | | | | |
| | | | | | |

### SEWER PIPE SCHEDULE

| PIPE # | PIPE SIZE | LENGTH | SLOPE |
|---|---|---|---|
| S1 | 8" PVC | 170' | S=0.004 |
| S2 | 6" PVC | 15' | S=0.01 |
| | | | |
| | | | |
| | | | |


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) PROVIDE TEMPORARY WATER SERVICES TO ALL IMPACTED PROPERTIES DURING NEW WATER MAIN INSTALLATION.

5) PROPOSED SEWER FLOW:
1ST FLOOR: 9,355 SF RETAIL/RESTAURANT: 460-3,000 GPD
2ND FLOOR: OFFICE: 470 GPD
REMAINDER: 18 RESIDENTIAL UNITS: 3,000 GPD
TOTAL PROPOSED FLOW: 3,930-6,470 GPD

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | REVISIONS | |
| 4 | TAC COMMENTS | 1/3/23 |
| 3 | RE-DESIGN | 12/20/22 |
| 2 | PROPOSED ELECTRICAL & COMMS | 10/27/22 |
| 1 | BUILDING FOOTPRINT | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

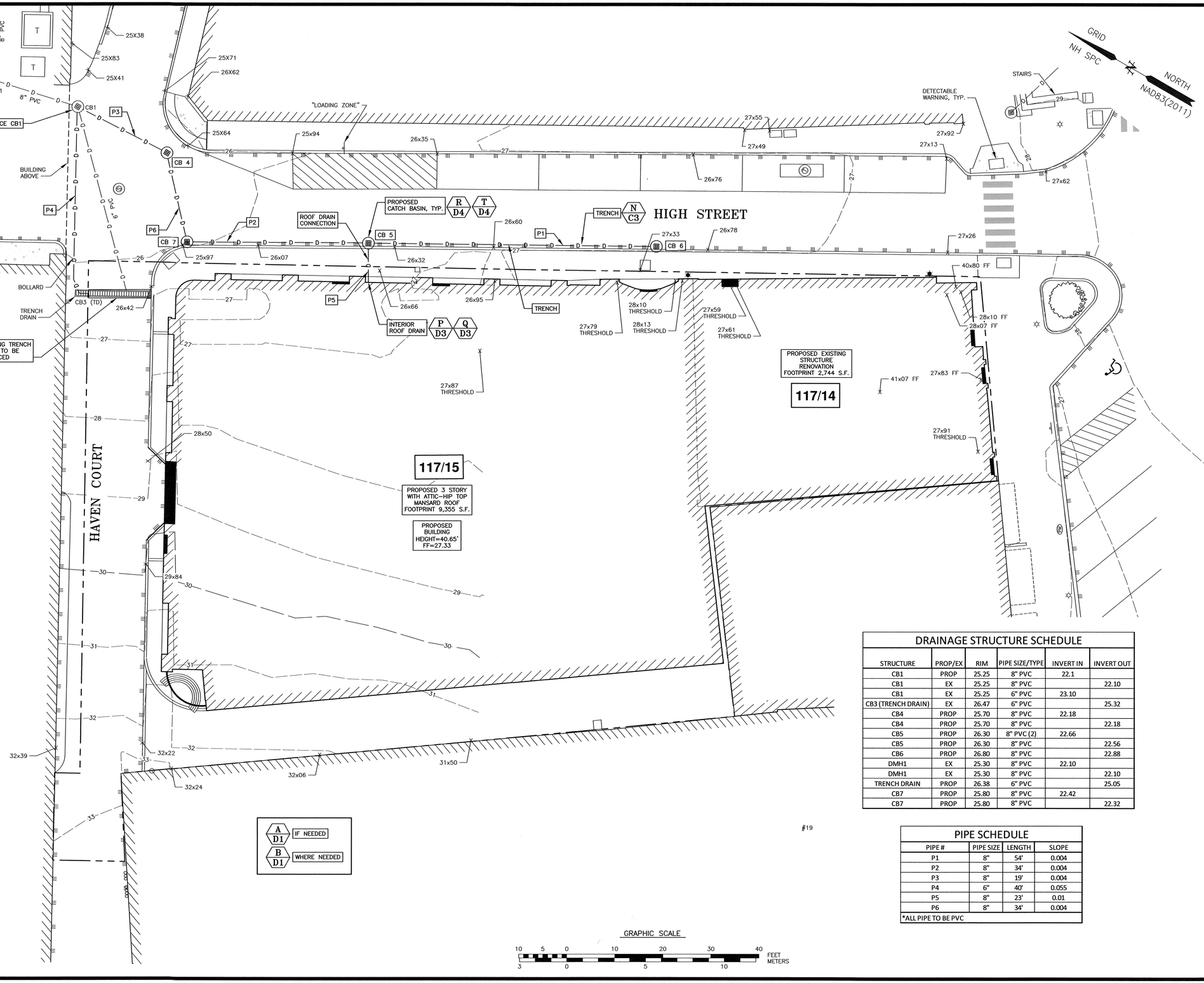
STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON No. 7851 - LICENSED PROFESSIONAL ENGINEER

SCALE 1" = 10' SEPTEMBER 2022

**UTILITY PLAN** C4

FB 309 PG 15

3406




## DRAINAGE STRUCTURE SCHEDULE

| STRUCTURE | PROP/EX | RIM | PIPE SIZE/TYPE | INVERT IN | INVERT OUT |
|---|---|---|---|---|---|
| CB1 | PROP | 25.25 | 8" PVC | 22.1 | |
| CB1 | EX | 25.25 | 8" PVC | | 22.10 |
| CB1 | EX | 25.25 | 6" PVC | 23.10 | |
| CB3 (TRENCH DRAIN) | EX | 26.47 | 6" PVC | | 25.32 |
| CB4 | PROP | 25.70 | 8" PVC | 22.18 | |
| CB4 | PROP | 25.70 | 8" PVC | | 22.18 |
| CB5 | PROP | 26.30 | 8" PVC (2) | 22.66 | |
| CB5 | PROP | 26.30 | 8" PVC | | 22.56 |
| CB6 | PROP | 26.80 | 8" PVC | | 22.88 |
| DMH1 | EX | 25.30 | 8" PVC | 22.10 | |
| DMH1 | EX | 25.30 | 8" PVC | | 22.10 |
| TRENCH DRAIN | PROP | 26.38 | 6" PVC | | 25.05 |
| CB7 | PROP | 25.80 | 8" PVC | 22.42 | |
| CB7 | PROP | 25.80 | 8" PVC | | 22.32 |

## PIPE SCHEDULE

| PIPE # | PIPE SIZE | LENGTH | SLOPE |
|---|---|---|---|
| P1 | 8" | 54' | 0.004 |
| P2 | 8" | 34' | 0.004 |
| P3 | 8" | 19' | 0.004 |
| P4 | 6" | 40' | 0.055 |
| P5 | 8" | 23' | 0.01 |
| P6 | 8" | 34' | 0.004 |

*ALL PIPE TO BE PVC


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | REVISED | 12/20/22 |
| 1 | BUILDING FOOTPRINT, GRADING | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS

JOHN R. CHAGNON No. 7051 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

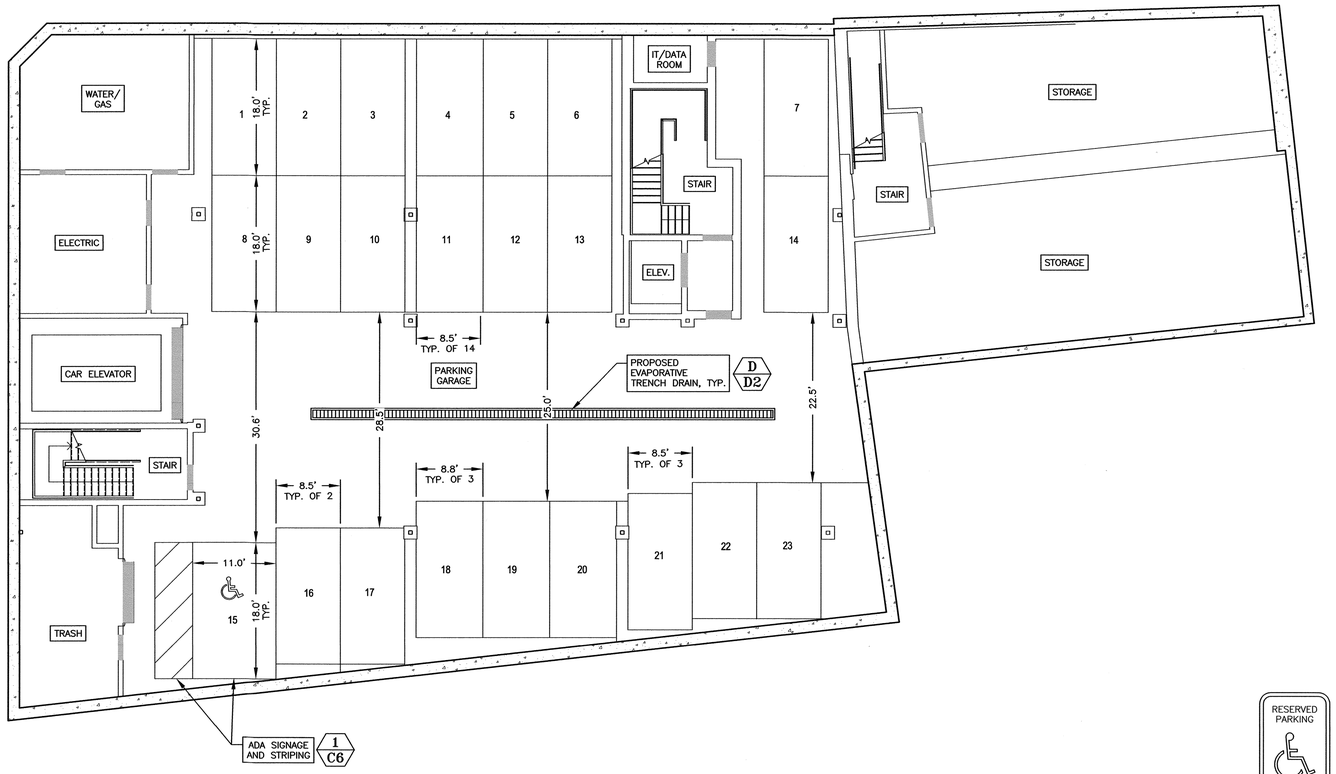
SCALE 1" = 10' SEPTEMBER 2022

GRADING PLAN

C5

FB 309 PG 15

3406




| Residential Vehicular Parking | Qty | parking per unit | parking required | parking available |
|---|---|---|---|---|
| units > 750 sf | 16 | 1.30 | 20.80 | |
| units 500-750 sf | 1 | 1.00 | 1.00 | |
| Units <500 sf | 1 | 0.50 | 0.50 | |
| **resident units total** | **18** | | **22.30** | |
| DOD deduct | | | -4.00 | |
| 1 visitor space for every 5 units | | | 3.6 | |
| **TOTAL** | | | **21.90** | **23.00** |

| | Unit NO. | BR's | SF | parking/unit | parking available |
|---|---|---|---|---|---|
| | 301 | 2 | 1,067 | 1.3 | |
| | 302 | 1 | 885 | 1.3 | |
| | 303 | 1 | 925 | 1.3 | |
| | 304 | 1 | 574 | 1.0 | |
| | 305 | 1 | 1,011 | 1.3 | |
| | 306 | 1 | 996 | 1.3 | |
| | 307 | 1 | 1,032 | 1.3 | |
| | 308 | 1 | 946 | 1.3 | |
| | 309 | 2 | 1,037 | 1.3 | |
| | 401 | 2 | 917 | 1.3 | |
| | 402 | 1 | 845 | 1.3 | |
| | 403 | 1 | 876 | 1.3 | |
| | 404 | st | 343 | 0.5 | |
| | 405 | 1 | 1,028 | 1.3 | |
| | 406 | 1 | 848 | 1.3 | |
| | 407 | 1 | 844 | 1.3 | |
| | 408 | 1 | 894 | 1.3 | |
| | 409 | 2 | 965 | 1.3 | |
| resident units total | | | 16,033 | 22.3 | |
| DOD deduct | | | | -4.0 | |
| 1 visitor space for every 5 units | | | | 3.6 | |
| **TOTAL parking** | | | | **21.90** | **23** |

| Bicycle Parking | |
|---|---|
| One space for every 5 units | 3.6 |
| **TOTAL required, rounded up** | **4** |

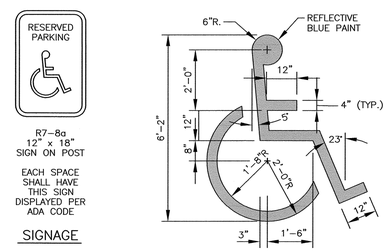
APPROVED BY THE PORTSMOUTH PLANNING BOARD

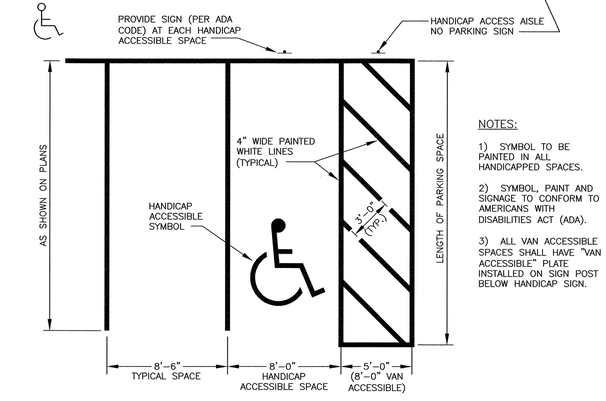
CHAIRMAN

DATE

GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS



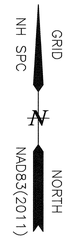

NOTES:

1) SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES.

2) SYMBOL, PAINT AND SIGNAGE TO CONFORM TO AMERICANS WITH DISABILITIES ACT (ADA).

3) ALL VAN ACCESSIBLE SPACES SHALL HAVE "VAN ACCESSIBLE" PLATE INSTALLED ON SIGN POST BELOW HANDICAP SIGN.

1 C6 HANDICAP PARKING DETAIL
NTS





AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 117 AS LOTS 14 AND 15.

2) OWNER OF RECORD:
ONE MARKET SQUARE, LLC
3 PLEASANT STREET, SUITE 400
PORTSMOUTH, NH 03801
6363/31 PARCEL 1 & PARCEL 2

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE PARKING FOR THE PROPOSED SITE DEVELOPMENT ON ASSESSORS MAP 117 AS LOTS 14 AND 15. IN THE CITY OF PORTSMOUTH.

4) REQUIRED PARKING:
PROPOSED USE: RETAIL, OFFICE, RESIDENTIAL.

FIRST FLOOR: EXEMPT FROM REQUIREMENT.
2ND FLOOR: OFFICE- NOT REQUIRED.
UPPER FLOORS: 18 RESIDENTIAL UNITS

REQUIRED PARKING: 27 (SEE TABLE).
DOD CREDIT: <4>
TOTAL REQUIRED: 23
PROVIDED: 23

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | PARKING TABLE | 1/25/23 |
| 1 | BUILDING FOOTPRINT | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS


SCALE 1" = 10' SEPTEMBER 2022

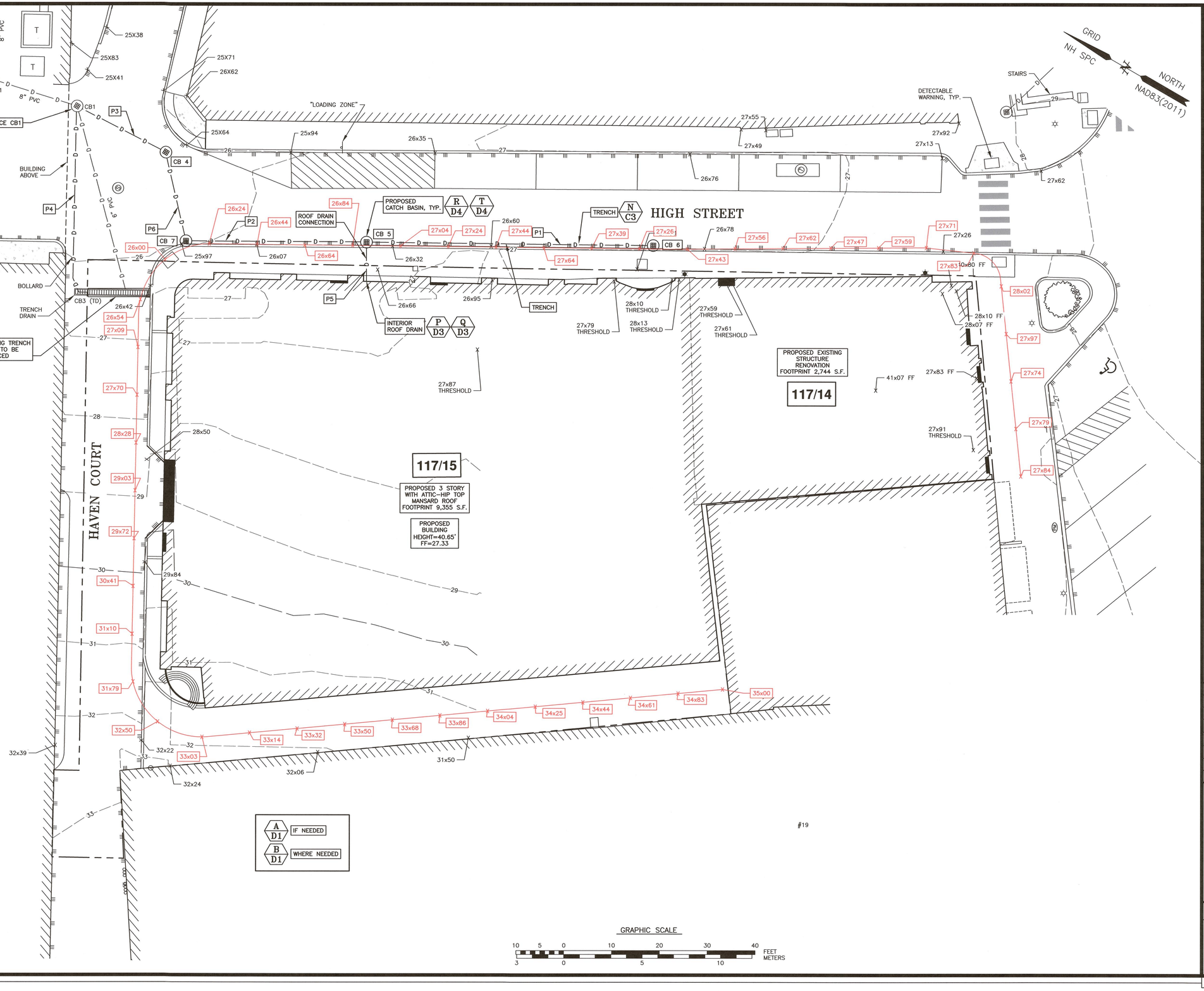
**PARKING LEVEL PLAN**

C6

FB 309 PG 15

3406

J:\OB3\Jobs\3400's\3405\3405201 Survey and Site Plan\Plans & Specs\Dwg\3405 Site 2022.dwg C6 FARKING LEVEL, 1/25/2023 1:53:48 PM





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## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | REVISED | 12/20/22 |
| 1 | BUILDING FOOTPRINT, GRADING | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS

JOHN R. CHAGNON No. 9651 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -

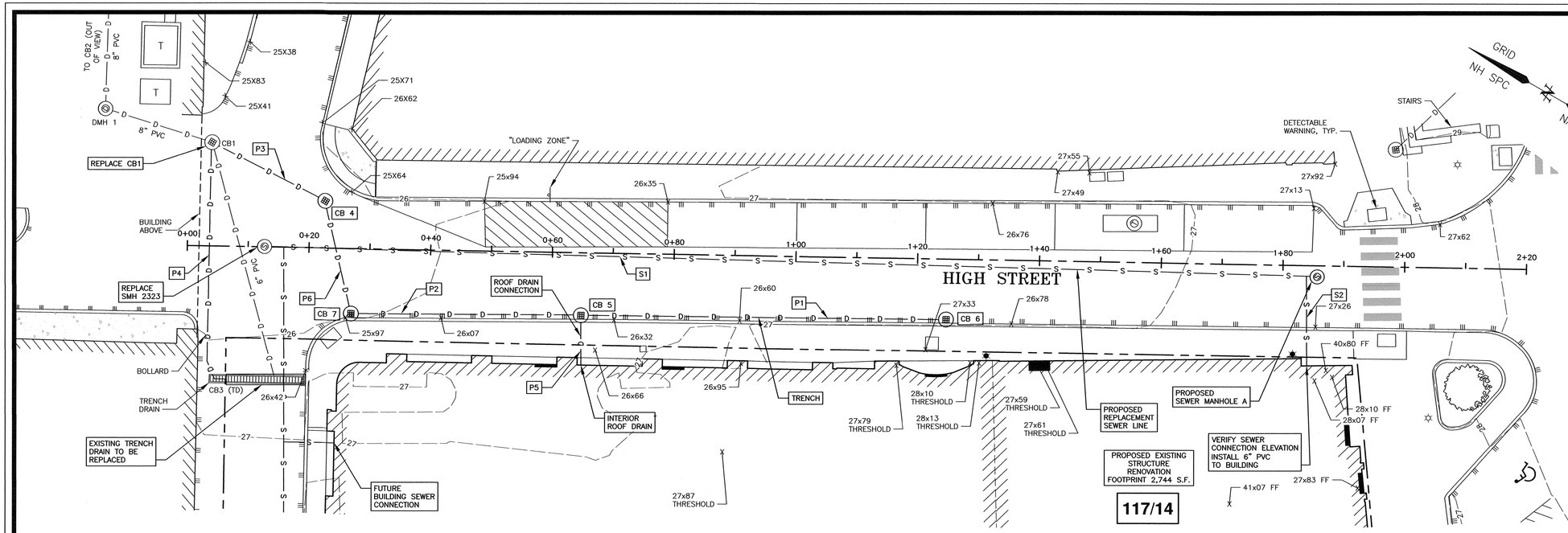
SCALE 1" = 10' SEPTEMBER 2022

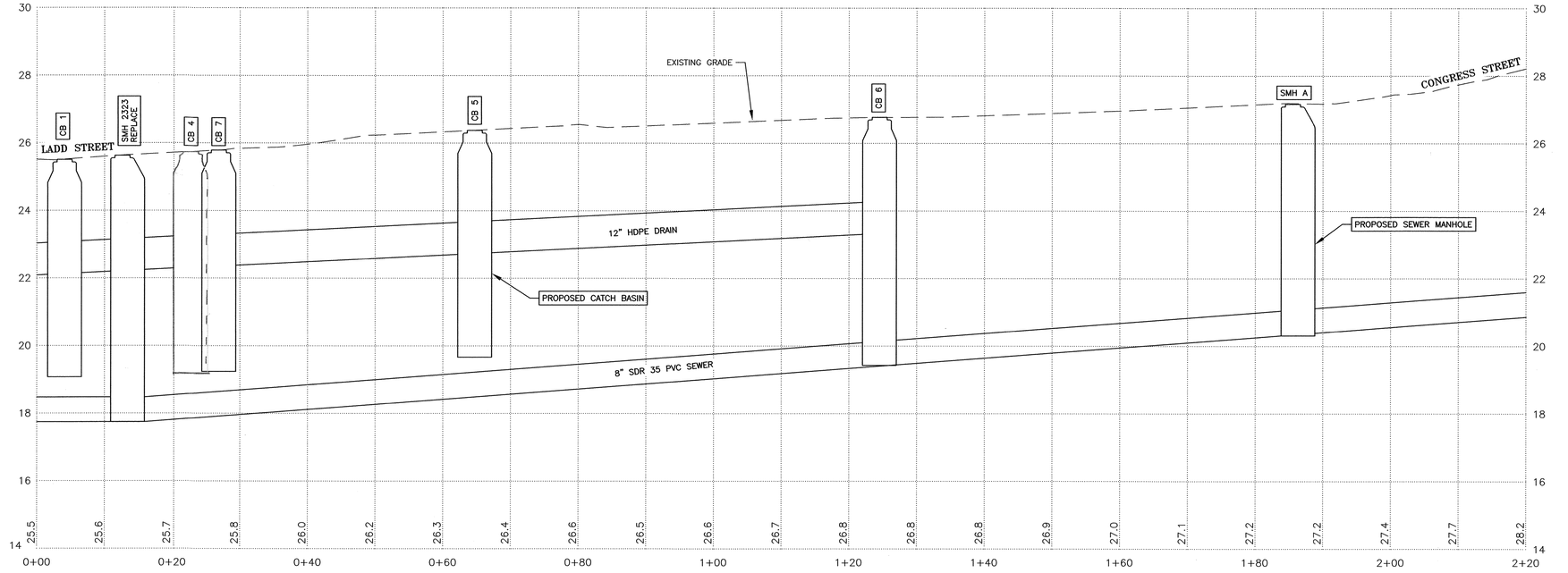
**AVERAGE GRADE PLANE**

**C7**

FB 309 PG 15

3406




GRAPHIC SCALE

10 5 0 10 20 30 40 FEET

3 0 5 10 METERS

SCALE: 1" = 10' (HOR.)
1" = 2' (VERT.)


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
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## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 1 | REVISED | 12/20/22 |
| 0 | ISSUED FOR COMMENT | 12/14/22 |

REVISIONS

JOHN R. CHAGNON No. 7051 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE H:1"=10' V:1"=2' NOVEMBER 2021

**PLAN & PROFILE**

**P1**

FB 309 PG 15

3406

# EROSION CONTROL NOTES

## CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

IF REQUIRED THE CONTRACTOR SHALL OBTAIN AN **NPDES** PHASE II STORMWATER PERMIT AND SUBMIT A NOTICE OF INTENT (N.O.I) BEFORE BEGINNING CONSTRUCTION AND SHALL HAVE ON SITE A STORMWATER POLLUTION PREVENTION PLAN (**S.W.P.P.P.**) AVAILABLE FOR INSPECTION BY THE PERMITTING AUTHORITY DURING THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THE **S.W.P.P.P.** AND INSPECTING AND MAINTAINING ALL BMP'S CALLED FOR BY THE PLAN. THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (**N.O.T.**) FORM TO THE REGIONAL EPA OFFICE WITHIN 30 DAYS OF FINAL STABILIZATION OF THE ENTIRE SITE OR TURNING OVER CONTROL OF THE SITE TO ANOTHER OPERATOR.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
3. A REPRESENTATIVE OF THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
4. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

INSTALL PERIMETER CONTROLS, i.e., SILTSOXX AND CATCH BASIN PROTECTION AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS. THE USE OF HAYBALES IS NOT ALLOWED.

THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES. PLACE FODS AS NEEDED.

CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED. DEMOLISH BUILDINGS AND FENCES AS NEEDED. REMOVE WALL AND STORE.

ROUGH GRADE SITE.

LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES UP TO 10' OF THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.

CONSTRUCT BUILDING.

CONNECT UTILITIES.

PLACE BINDER LAYER OF PAVEMENT FOR SIDEWALKS.

PLANT LANDSCAPING IN AREAS OUT OF WAY OF BUILDING CONSTRUCTION. PREPARE AND STABILIZE FINAL SITE GRADING BY ADDING TOPSOIL, SEED, MULCH AND FERTILIZER.

AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.

CONSTRUCT SIDEWALKS.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

## PROJECT DESCRIPTION

THE PROJECT CONSISTS OF A BUILDING REDEVELOPMENT WITH ASSOCIATED UTILITIES AND PARKING.

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.370 ACRES.

BASED ON THE USCS WEB SOIL SURVEY THE SOILS ON SITE CONSIST OF URBAN LAND WHICH HAS AN UNSPECIFIED HYDROLOGIC SOIL GROUP RATING, ASSUMED D.

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM TO THE CITY OF PORTSMOUTH CLOSED DRAINAGE SYSTEM WHICH ULTIMATELY FLOWS TO THE PISCATAQUA RIVER.

## GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". 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.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

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.

DUST CONTROL: DUST CONTROL MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.
IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED.
- 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.

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:
- TEMPORARY SEEDING;
- MULCHING.

1. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
2. 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, SILTSOXX, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
3. 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 SILTSOXX, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

## MAINTENANCE AND PROTECTION

THE SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

SILTSOXX SHALL BE REMOVED ONCE SITE IS STABILIZED, AND DISTURBED AREAS RESULTING FROM SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

THE CATCH BASIN INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.
SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

## WINTER NOTES

ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED 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.

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;

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;

## 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.

## CONCRETE WASHOUT AREA

THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
1. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FAILITY;
2. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
3. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
4. 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.

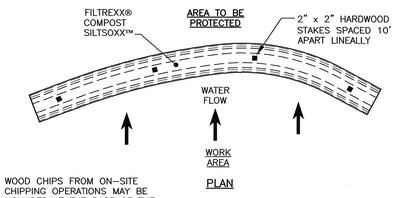
## WASTE DISPOSAL

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

## BLASTING NOTES

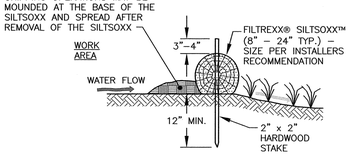
1. CONTRACTOR SHALL CONTACT THE NHDES AND/OR LOCAL JURISDICTION PRIOR TO COMMENCING ANY BLASTING ACTIVITIES.
2. FOR ANY PROJECT FOR WHICH BLASTING OF BEDROCK IS ANTICIPATED, THE APPLICANT SHALL SUBMIT A BLASTING PLAN THAT IDENTIFIES:
   - WHERE THE BLASTING ACTIVITIES ARE ANTICIPATED TO OCCUR;
   - THE ESTIMATED QUANTITY OF BLAST ROCK IN CUBIC YARDS; AND
   - SITE-SPECIFIC BLASTING BEST MANAGEMENT PRACTICES.

**NOTE: THAT HIGH STREET SHALL BE SWEEPED DAILY DURING THE EXCAVATION PHASE OF THE BUILDING CONSTRUCTION.**




PLAN

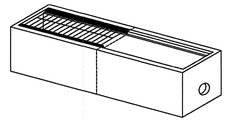
WOOD CHIPS FROM ON-SITE CHIPPING OPERATIONS MAY BE MOUNDED AT THE BASE OF THE SILTSOXX AND SPREAD AFTER REMOVAL OF THE SILTSOXX

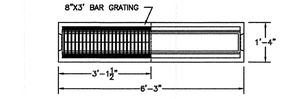



ELEVATION

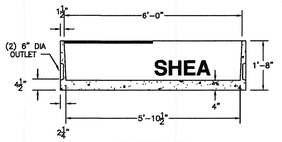
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

A / C5 FILTREXX® SILTSOXX™ FILTRATION SYSTEM (IF NEEDED) NTS

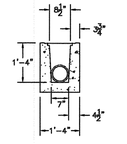





PLAN VIEW



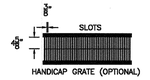

SIDE SECTION VIEW




END SECTION VIEW

| ITEM NO. | | WEIGHT |
|---|---|---|
| TD6 | 6' SECTION | 1,315# |
| TD3 | 3' SECTION | 711# |

NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. AVAILABLE IN 3' AND 6' SECTIONS.
3. AVAILABLE IN END, MIDDLE, OR CLOSED SECTIONS.
4. DESIGNED FOR AASHTO HS-20 LOADING.




HANDICAP GRATE (OPTIONAL)

SHEA PRODUCT ID: TD3/TD6
TRENCH DRAIN 8"X16"
WEIGHT (LBS): 711#/1,315#

C / C5 TRENCH DRAIN NTS

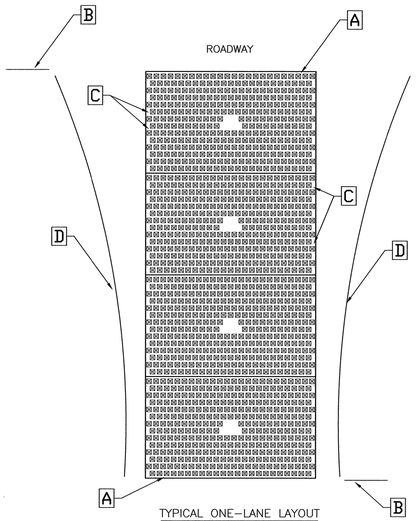
# FODS TRACKOUT CONTROL SYSTEM

## INSTALLATION:

THE PURPOSE AND DESIGN OF THE FODS TRACKOUT CONTROL SYSTEM IS TO EFFECTIVELY REMOVE MOST SEDIMENT FROM VEHICLE TIRES AS THEY EXIT A DISTURBED LAND AREA ONTO A PAVED STREET. THIS MANUAL IS A PLATFORM FROM WHICH TO INSTALL A FODS TRACKOUT CONTROL SYSTEM. (NOTE: THIS IS NOT A ONE SIZE FITS ALL GUIDE.) THE INSTALLATION MAY NEED TO BE MODIFIED TO MEET THE EXISTING CONDITIONS, EXPECTATIONS, OR DEMANDS OF A PARTICULAR SITE. THIS IS A GUIDELINE. ULTIMATELY THE FODS TRACKOUT CONTROL SYSTEM SHOULD BE INSTALLED SAFELY WITH PROPER ANCHORING AND SIGNS PLACED AT THE ENTRANCE AND EXIT TO CAUTION USERS AND OTHERS.

KEY NOTES:

A. FODS TRACKOUT CONTROL SYSTEM MAT.
B. FODS SAFETY SIGN.
C. ANCHOR POINT.
D. SILT OR ORANGE CONSTRUCTION FENCE.




TYPICAL ONE-LANE LAYOUT

INSTALLATION:
1. THE SITE WHERE THE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED SHOULD CORRESPOND TO BEST MANAGEMENT PRACTICES AS MUCH AS POSSIBLE. THE SITE WHERE FODS TRACKOUT CONTROL SYSTEM IS PLACED SHOULD ALSO MEET OR EXCEED THE LOCAL JURISDICTION OR STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.
2. CALL FOR UTILITY LOCATES 3 BUSINESS DAYS IN ADVANCE OF THE OF FODS TRACKOUT CONTROL SYSTEM INSTALLATION FOR THE MARKING OF UNDERGROUND UTILITIES. CALL THE UTILITY NOTIFICATION CENTER AT 811.
3. ONCE THE SITE IS ESTABLISHED WHERE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED, ANY EXCESSIVE UNEVEN TERRAIN SHOULD BE LEVELED OUT OR REMOVED SUCH AS LARGE ROCKS, LANDSCAPING MATERIALS, OR SUDDEN ABRUPT CHANGES IN ELEVATION.
4. THE INDIVIDUAL MATS CAN START TO BE PLACED INTO POSITION. THE FIRST MAT SHOULD BE PLACED NEXT TO THE CLOSEST POINT OF EGRESS. THIS WILL ENSURE THAT THE VEHICLE WILL EXIT STRAIGHT FROM THE SITE ONTO THE PAVED SURFACE.
8. AFTER THE FIRST MAT IS PLACED DOWN IN THE PROPER LOCATION, MATS SHOULD BE ANCHORED TO PREVENT THE POTENTIAL MOVEMENT WHILE THE ADJOINING MATS ARE INSTALLED. ANCHORS SHOULD BE PLACED AT EVERY ANCHOR POINT (IF FEASIBLE) TO HELP MAINTAIN THE MAT IN ITS CURRENT POSITION.
9. AFTER THE FIRST MAT IS ANCHORED IN ITS PROPER PLACE, AN H BRACKET SHOULD BE PLACED AT THE END OF THE FIRST MAT BEFORE ANOTHER MAT IS PLACED ADJACENT TO THE FIRST MAT.
10. ONCE THE SECOND MAT IS PLACED ADJACENT TO THE FIRST MAT, MAKE SURE THE H BRACKET IS CORRECTLY SITUATED BETWEEN THE TWO MATS, AND SLIDE MATS TOGETHER.
11. NEXT THE CONNECTOR STRAPS SHOULD BE INSTALLED TO CONNECT THE TWO MATS TOGETHER.
12. UPON PLACEMENT OF EACH NEW MAT IN THE SYSTEM, THAT MAT SHOULD BE ANCHORED AT EVERY ANCHOR POINT TO HELP STABILIZE THE MAT AND ENSURE THE SYSTEM IS CONTINUOUS WITH NO GAPS IN BETWEEN THE MATS.
13. SUCCESSIVE MATS CAN THEN BE PLACED TO CREATE THE FODS TRACKOUT CONTROL SYSTEM REPEATING THE ABOVE STEPS.

USE AND MAINTENANCE
1. VEHICLES SHOULD TRAVEL DOWN THE LENGTH OF THE TRACKOUT CONTROL SYSTEM AND NOT CUT ACROSS THE MATS.
2. DRIVERS SHOULD TURN THE WHEEL OF THEIR VEHICLES SUCH THAT THE VEHICLE WILL MAKE A SHALLOW S-TURN ROUTE DOWN THE LENGTH OF THE FODS TRACKOUT CONTROL SYSTEM.
3. MATS SHOULD BE CLEANED ONCE THE VOIDS BETWEEN THE PYRAMIDS BECOME FULL OF SEDIMENT. TYPICALLY THIS WILL NEED TO BE PERFORMED WITHIN TWO WEEKS AFTER A STORM EVENT. BRUSHING IS THE PREFERRED METHOD OF CLEANING, EITHER MANUALLY OR MECHANICALLY.
4. THE USE OF ICE MELT, ROCK SALT, SNOW MELT, DE-ICER, ETC. SHOULD BE UTILIZED AS NECESSARY DURING THE WINTER MONTHS AND AFTER A SNOW EVENT TO PREVENT ICE BUILDUP.

REMOVAL
1. REMOVAL OF FODS TRACKOUT CONTROL SYSTEM IS REVERSE ORDER OF INSTALLATION.
2. STARTING WITH THE LAST MAT, THE MAT THAT IS PLACED AT THE INNERMOST POINT OF THE SITE OR THE MAT FURTHEST FROM THE EXIT OR PAVED SURFACE SHOULD BE REMOVED FIRST.
3. THE ANCHORS SHOULD BE REMOVED.
4. THE CONNECTOR STRAPS SHOULD BE UNBOLTED AT ALL LOCATIONS IN THE FODS TRACKOUT CONTROL SYSTEM.
5. STARTING WITH THE LAST MAT IN THE SYSTEM, EACH SUCCESSIVE MAT SHOULD THEN BE MOVED AND STACKED FOR LOADING BY FORKLIFT OR EXCAVATOR ONTO A TRUCK FOR REMOVAL FROM THE SITE.

B / C5 FODS (USE AS REQUIRED) NTS


*AMBIT ENGINEERING, INC.*
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315


## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) HIGH AND LADD STREETS SHALL BE SWEEPED DAILY DURING EXCAVATION PHASE OF THE BUILDING CONSTRUCTION.

# COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | UPDATED FOR URBAN AREAS | 12/19/22 |
| 1 | DETAIL C | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

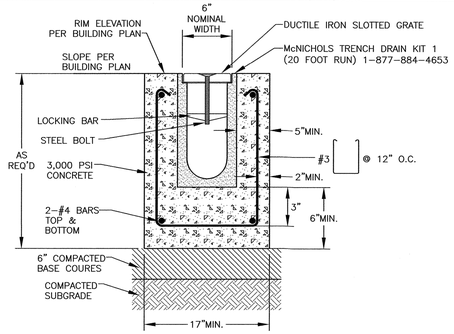
REVISIONS

JOHN R CHAGNON No. 7951 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN SEPTEMBER 2022

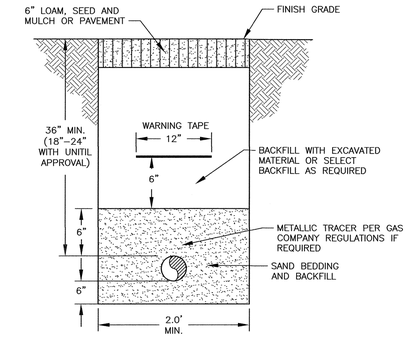
**EROSION PROTECTION NOTES AND DETAILS** **D1**

FB 309 PG 15 3406




D / C6 TRENCH DRAIN DETAIL

EVAPORATIVE NTS

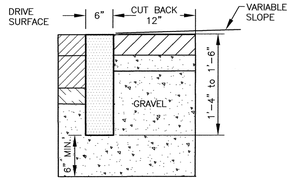



E / C4 GAS SERVICE TRENCH

NTS

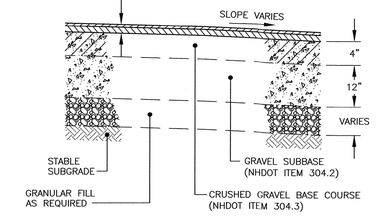
MIN. LENGTH OF CURB STONES 3FT.
MAX. LENGTH OF CURB STONES 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATE LENGTH.




F / C3 FLUSHED GRANITE CURB

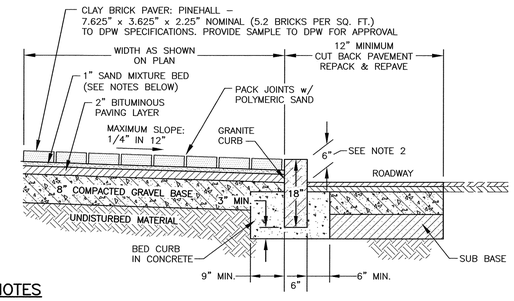
NTS




G / – TYPICAL PAVEMENT CROSS-SECTION

AS NEEDED NTS

CONSTRUCTION NOTE:
EXISTING GRANITE CURB DISTURBED BY CONSTRUCTION SHALL BE REUSED AND ANY MISSING CURB SHALL BE REPLACED WITH NEW CURB MATCHING EXISTING CURB SIZE. NO CURB LESS THAN 3' IN LENGTH WILL BE ALLOWED.




## BRICK PAVEMENT NOTES

SCOPE OF WORK:

1) THE WORK SHALL CONSIST OF CONSTRUCTING/RECONSTRUCTING THE SUB-BASE AND CONSTRUCTING A NEW BRICK SIDEWALK AS DIRECTED IN THE FIELD BY THE ENGINEER.
2) REVEAL SHALL BE AS SHOWN ON PROPOSED GRADING PLAN. (COORDINATE WITH PORTSMOUTH DPW).

METHODS OF CONSTRUCTION:

A) ALL LABOR AND MATERIALS SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 608, AND CITY OF PORTSMOUTH SPECIFICATIONS FOR NEW BRICK SIDEWALK, SECTION 6.

B) ALL BRICKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD SPECIFICATIONS FOR BUILDING BRICKS: CLASS SX, TYPE 1, APPLICATION PX. THE BRICKS SHALL BE NO. 1, WIRE CUT TYPE FOR PAVING, WITH A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 POUNDS PER SQUARE INCH. THE BRICKS SHALL NOT BE CORED OR HAVE FROGS AND SHALL BE OF A STANDARD SIZE (2.25" X 3.625" X 7.625").

C) EXCAVATION FOR SIDEWALKS SHALL BE AT A DEPTH OF 10 INCHES BELOW FINISH GRADE. IN AREAS NOT BUTTING CURBING OR BUILDINGS, THE EXCAVATION SHALL BE 6 INCHES WIDER THAN THE FINISHED SIDEWALK WIDTH. AT ALL DRIVE CROSSINGS, THE DEPTH OF EXCAVATION SHALL BE INCREASED ACCORDINGLY. THE CONTRACTOR SHALL PROVIDE NEAT AND SQUARE CUTTING OF EXISTING ASPHALT ROAD SURFACE AS NEEDED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT THE CONTRACTOR'S OWN EXPENSE.

D) THE BASE MATERIAL SHALL CONSIST OF A MIXTURE OF STONES OR ROCK FRAGMENTS AND PARTICLES WITH 100% PASSING THE 3 INCH SIEVE, 95% TO 100% PASSING THE 2 INCH SIEVE, 55% TO 85% PASSING THE 1 INCH SIEVE, AND 27% TO 52% PASSING THE NO. 4 SIEVE. AT LEAST 50% OF THE MATERIALS RETAINED ON THE 1 INCH SIEVE SHALL HAVE A FRACTURED FACE. THE BASE MATERIAL SHALL BE THOROUGHLY COMPACTED TO THE DEPTH SPECIFIED OR DIRECTED. IN THE WAY OF ALL DRIVE CROSSINGS THE BASE WILL BE INCREASED TO A COMPACTED DEPTH OF 12 INCHES. GRAVEL REQUIREMENTS FOR RECONSTRUCTION WILL BE AS DIRECTED, BASED ON SITE CONDITIONS. THE WORK INCLUDES BACKING UP ANY AND ALL CURB BEING INSTALLED BY OTHERS ON BOTH SIDES.

E) THE CLAY BRICK PAVERS SHALL BE LAID IN A 1 INCH BED OF A SAND MIXTURE COMPRISED OF: 3 PARTS SAND MIXED WITH 1 PART PORTLAND CEMENT.

F) THE CONTRACTOR SHALL LAY THE BRICKS SO THAT APPROXIMATELY 5.2 BRICKS SHALL COVER ONE SQUARE FOOT.

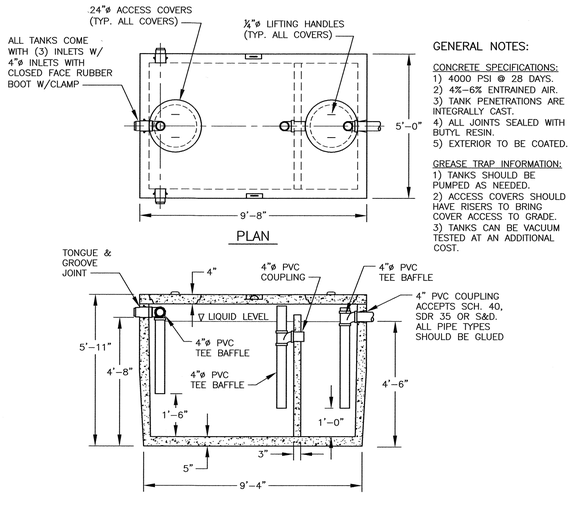
G) THE SIDEWALK SHALL PITCH TOWARDS THE STREET AS SHOWN ON THE GRADING PLAN.

H) IN AREAS WHERE THE FRONT OF THE BRICK SIDEWALK IS NOT ADJACENT TO GRANITE CURBING, THE CONTRACTOR SHALL INSTALL EDGING TO HOLD THE BRICKS IN PLACE. SUCH EDGING SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

I) THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE BRICKS FOR APPROVAL BY THE CITY BEFORE BRICKS ARE INSTALLED.

H / C3 BRICK SIDEWALK w/ VERTICAL GRANITE CURB

(STONE DUST BEDDING OVER BITUMINOUS PAVING) NTS




GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1) 4000 PSI @ 28 DAYS.
2) 4%-6% ENTRAINED AIR.
3) TANK PENETRATIONS ARE INTEGRALLY CAST.
4) ALL JOINTS SEALED WITH BUTYL RESIN.
5) EXTERIOR TO BE COATED.

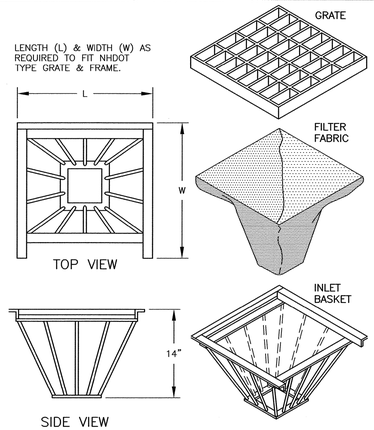
GREASE TRAP INFORMATION:
1) TANKS SHOULD BE PUMPED AS NEEDED.
2) ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE.
3) TANKS CAN BE VACUUM TESTED AT AN ADDITIONAL COST.

I / C4 SHEA CONCRETE

1000 GALLON 2 COMP. GREASE TRAP NTS

14,825 Lbs ITEM # M1000H

H20 LOAD RATED




1) INLET BASKETS SHALL BE INSTALLED IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION IS COMPLETE AND SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.

3) THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
- -RAB STRENGTH: 45 LB. MIN. IN ANY PRINCIPAL DIRECTION (ASTM D1682)
- -MULLEN BURST STRENGTH: MIN. 60 psi (ASTM D774)

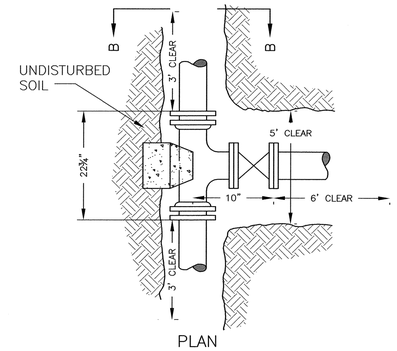
4) THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 gpm/s.f. (MULTIPLY THE PERMITTIVITY IN SEC.-1 FROM ASTM 54491-85 CONSTANT HEAD TEST USING THE CONVERSION FACTOR OF 74.)

5) THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

6) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

J / C5 CATCH BASIN INLET BASKET

NTS




NOTES:
1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.
2) ALL JOINTS SHALL BE MECHANICAL.
3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

K / C4 TAPPING SLEEVE AND GATE

INSTALL PER PORTSMOUTH REQUIREMENTS NTS


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315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# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS


SCALE: AS SHOWN SEPTEMBER 2022

**DETAILS** D2

FB 309 PG 15

3406

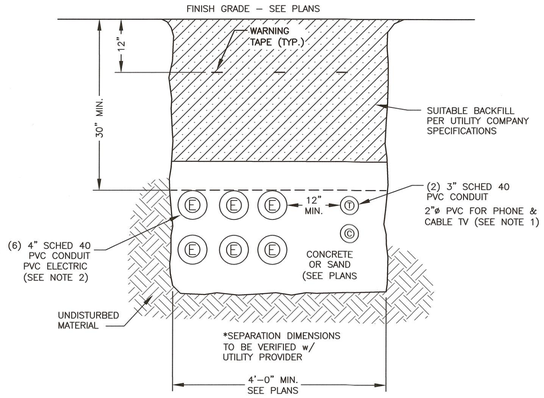
NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCHED. 40 FOR THE REMAINDER.

2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.

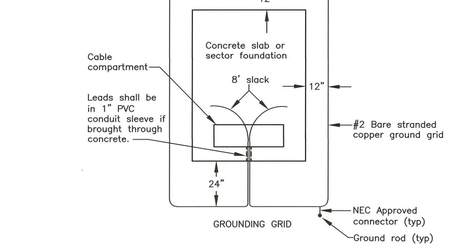
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)

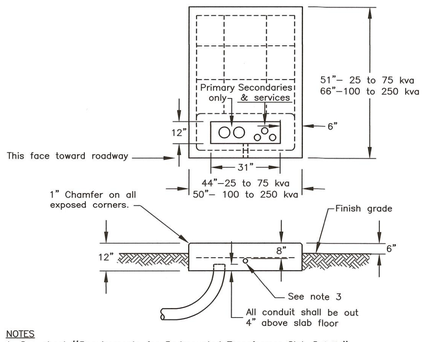
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT

5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANY'S PRIOR TO ANY CONSTRUCTION.



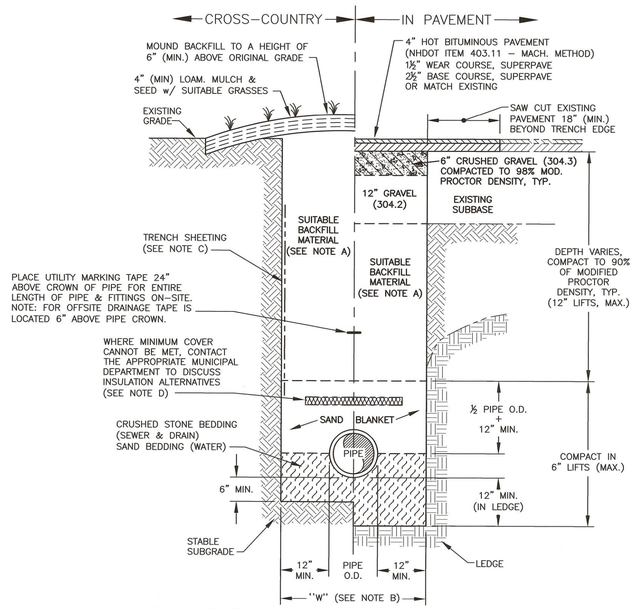

L C4 BURIED ELEC/COMM CABLE
NTS




NOTES
1. See sheet "Requirements for Padmounted Transformer Slab Details".
2. All reinforcing to be #6 bars.
3. 1" PVC conduit sleeve for ground grid leads.
4. The ground grid shall be supplied and installed by the customer and is to be buried at least 12" below grade. Eight feet of extra wire for each ground grid leg shall be left exposed in the cable compartment to allow for the connection to the transfomer. the two 8' ground rods may be either galvanized steel or copperweld and they shall be connected to the grid with NEC approved connectors.

M – TRANSFORMER PAD IF NEEDED
NTS




TRENCH NOTES:
A) TRENCH BACKFILL:
– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

– IN CROSS–COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

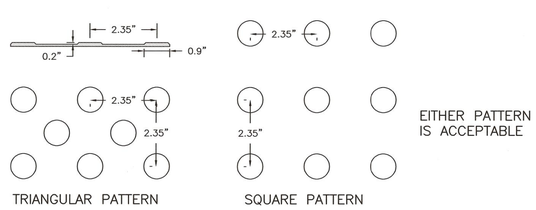
B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

C) TRENCH SHEETING:
THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFE EXCAVATION PRACTICES.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 5' MINIMUM FOR SEWER (IN PAVEMENT)
- 4' MINIMUM FOR SEWER (CROSS COUNTRY)
- 3' MINIMUM FOR STORMWATER DRAINS
- 5' MINIMUM FOR WATER MAINS

E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.

N C4 / N C5 TYPICAL PIPE TRENCH
NTS




EITHER PATTERN IS ACCEPTABLE

NOTE:
1. CURB RAMPS MUST HAVE A DETECTABLE WARNING FEATURE EXTENDING THE FULL WIDTH OF THE RAMP, A HEIGHT OF NOMINAL 0.2", THE DETECTABLE SURFACE MUST CONSIST OF RAISED TRUNCATED SPACING OF NOMINAL 2.35". THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (LIGHT–ON–DARK OR DARK–ON–LIGHT).
2. DETECTABLE WARNING SURFACE SHALL BE IRON PANEL TO FILL THE SPACE SHOWN ON THE SITE PLAN.

O C3 DETECTABLE WARNING SURFACE
NTS

## OVERVIEW

The Bio Clean Downspout Filter is the industry's leading solution for treatment of roof runoff. This technology is used to treat commercial and industrial rooftops along with highrise buildings, parking structures, and residential buildings.

Available in 3 sizes, this filter can easily adapt to downspouts 2" to 12" in diameter. The filter comes standard with rubber boots that allow for easy installation to the downspout.

Proven since 2003, the Downspout Filter has been used on hundreds of installations throughout the United States. All internal components are constructed of stainless steel.

The sleek in-line design allows the filter to be used in tight spaces. Approved by the IAPMO, this filter can meet all your needs.

### PERFORMANCE

**93%** REMOVAL OF TSS

**87%** REMOVAL OF HYDROCARBONS

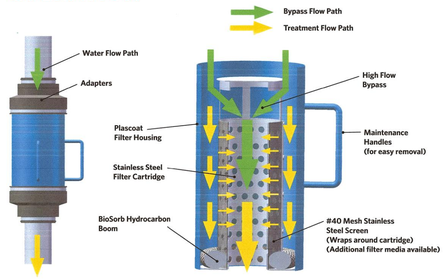
- EFFECTIVE AT REMOVING METALS, NUTRIENTS, AND BACTERIA (MEDIA TYPE)

### ADVANTAGES

- 1-YEAR WARRANTY
- NO NETS OR GEOFABRICS
- SLEEK IN-LINE DESIGN
- HIGH TREATMENT FLOW RATE
- HIGH BYPASS FLOW RATE
- LOW COST

P C5 ROOF DRAIN FILTER OVERVIEW
NTS

## OPERATION




## APPROVALS

IAPMO Testing & Approval Listing

## SPECIFICATIONS

| MODEL # | INLET ID (dia., in.) | FILTER OD (dia., in.) | STORAGE CAP. (cu. ft.) | FILTERED FLOW (gpm) | BYPASS FLOW (gpm) |
|---|---|---|---|---|---|
| BC-DF4 | 4 | 6.625 | 0.09 | 249 | 566 |
| BC-DF6 | 6 | 8.625 | 0.21 | 509 | 1006 |
| BC-DF8 | 8 | 8.625 | 0.21 | 509 | 1006 |
| BC-DF10 | 10 | 12.75 | 0.77 | 1145 | 2264 |
| BC-DF12 | 12 | 12.75 | 0.77 | 1145 | 2264 |

Q C5 ROOF DRAIN FILTER OPERATION
NTS


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315


## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 1 | DETAIL M | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |
| | REVISIONS | |

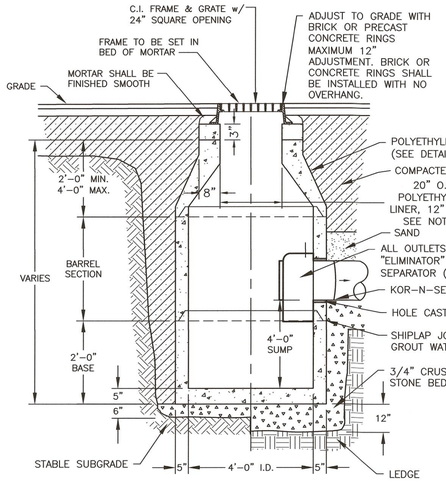
JOHN R. CHAGNON NO. 7851 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN AUGUST 2022

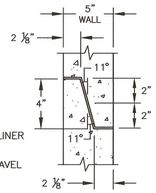
DETAILS D3

FB 309 PG 15

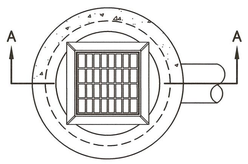
3406




SECTION A – A




DETAIL OF SHIPLAP JOINT

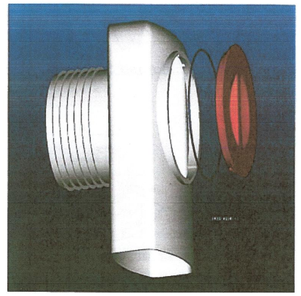



PLAN

NOTES:
1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
6. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
8. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
9. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
10. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.

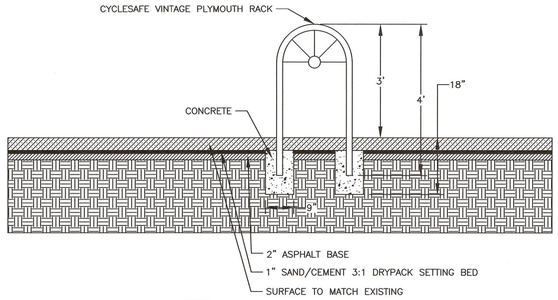
OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
11. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
12. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
13. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

R C5 CATCH BASIN DETAIL
NTS



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.

T C5 CATCH BASIN OIL TRAP
THE "ELIMINATOR" NTS




U C3 BIKE RACK
NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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4) CATCH BASIN POLYETHYLENE LINER NOTES:

POLYETHYLENE LINER (ITEM 604.0007) SHALL BE FABRICATED AT THE SHOP. DOWNSPOUT SHALL BE EXTRUSION FILLET WELDED TO THE POLYETHYLENE SHEET.

PLACE A CONTINUOUS BEAD OF AN APPROVED SILICONE SEALANT (SUBSIDIARY TO ITEM 604.0007) BETWEEN FRAME AND POLYETHYLENE SHEET.

PLACE CLASS AA CONCRETE TO 2" BELOW THE TOP OF THE GRATE ELEVATION (SUBSIDIARY TO DRAINAGE STRUCTURE).

USE ON DRAINAGE STRUCTURES 4' MIN. DIAMETER ONLY.

TRIM POLYETHYLENE SHEET A MAXIMUM OF 4" OUTSIDE THE FLANGE ON THE FRAME FOR THE CATCH BASIN BEFORE PLACING CONCRETE (EXCEPT AS SHOWN WHEN USED WITH 3-FLANGE FRAME AND CURB).

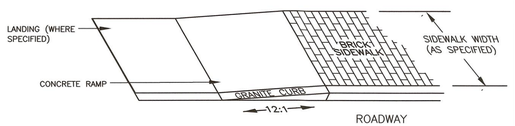
THE CENTER OF THE GRATE & FRAME MAY BE SHIFTED A MAXIMUM OF 6" FROM THE CENTER OF THE DOWNSPOUT IN ANY DIRECTION.

PLACED ONLY IN DRAINAGE STRUCTURES IN PAVEMENT.

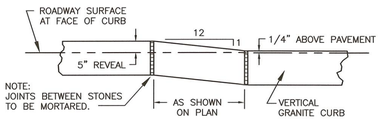
SEE NHDOT DR-04, "DI-DB, UNDERDRAIN FLUSHING BASIN AND POLYETHYLENE LINER DETAILS," FOR ADDITIONAL INFORMATION.

CATCHBASINS WITHIN CITY RIGHT OF WAY SHALL HAVE A POLYETHYLENE LINER.

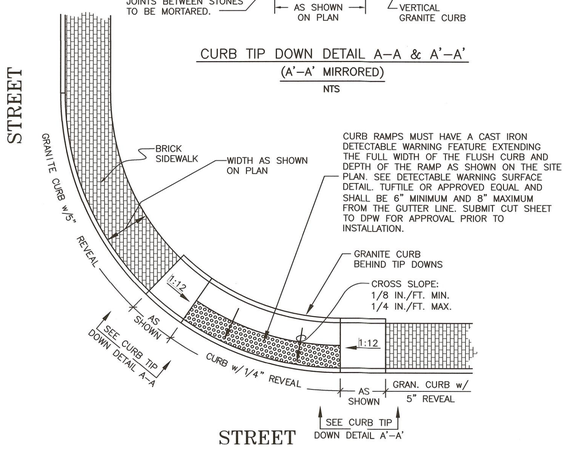
5) ALL WATER MAIN & CONNECTIONS SHALL BE INSTALLED PER CITY OF PORTSMOUTH CONSTRUCTION STANDARDS.




SIDEWALK TIP DOWN
(NON INTERSECTION) NTS

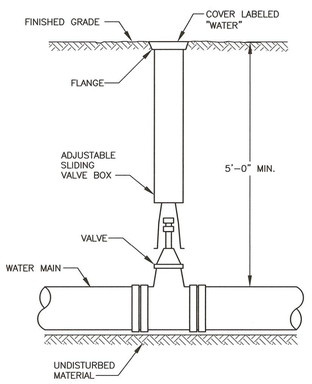



CURB TIP DOWN DETAIL A–A & A'–A'
(A'–A' MIRRORED)
NTS




SIDEWALK TIP DOWN AT INTERSECTION
NTS

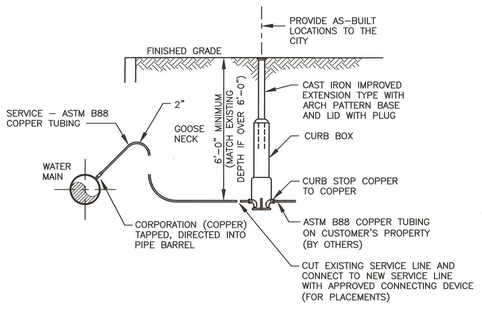
S C3 TYPICAL SIDEWALK TIP DOWNS
WITH FLUSH CURB RAMP IS ELIMINATED




VALVE AND BOX DETAIL
NTS

NOTES:
1. GATE VALVE TO BE LOCATED WITHIN ROADWAY PAVEMENT WHERE POSSIBLE.

2. PROPER SIZE VALVE BOX SHALL BE INSTALLED WHERE GATE VALVES ARE SHOWN ON PLANS.




TYPICAL WATER SERVICE CONNECTION

## HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK

UP TO 150 P.S.I. WORKING PRESSURE

| PIPE SIZE | TEE OR TAP SLEEVE | | 90° BEND | | 45° BEND | | 22 1/2° BEND | | 11 1/4° BEND | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | L | H | L | H | L | H | L | H | L |
| * 4" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" |
| 6" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" |
| 8" | 1'-2" | 1'-2" | 1'-2" | 1'-2" | 1'-0" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" |
| 10" | 1'-4" | 1'-4" | 1'-4" | 1'-4" | 1'-0" | 1'-0" | 0'-9" | 1'-0" | 0'-9" | 1'-0" |
| 12" | 1'-8" | 1'-8" | 1'-8" | 1'-8" | 1'-3" | 1'-3" | 1'-0" | 1'-0" | 0'-9" | 1'-0" |

* – FOR 3" AND SMALLER PIPES

## HORIZONTAL ANCHOR DIMENSIONS FOR AVERAGE SOIL CONDITIONS

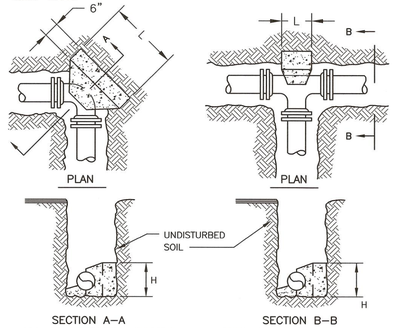
UP TO 150 P.S.I. WORKING PRESSURE

| PIPE SIZE | TEE OR TAP SLEEVE | | 90° BEND | | 45° BEND | | 22 1/2° BEND | | 11 1/4° BEND | |
|---|---|---|---|---|---|---|---|---|---|---|
| | H | L | H | L | H | L | H | L | H | L |
| * 4" | 1'-0" | 2'-0" | 1'-0" | 2'-0" | 1'-0" | 1'-4" | 0'-9" | 1'-0" | 0'-6" | 1'-0" |
| 6" | 1'-0" | 2'-0" | 1'-0" | 2'-0" | 1'-0" | 1'-4" | 0'-9" | 1'-0" | 0'-6" | 1'-0" |
| 8" | 1'-4" | 2'-8" | 1'-4" | 2'-8" | 1'-4" | 1'-6" | 1'-0" | 1'-0" | 0'-9" | 1'-0" |
| 10" | 1'-8" | 3'-4" | 1'-8" | 3'-4" | 1'-8" | 2'-0" | 1'-3" | 1'-3" | 1'-0" | 1'-0" |
| 12" | 2'-0" | 4'-0" | 2'-0" | 4'-0" | 2'-0" | 2'-2" | 1'-6" | 1'-6" | 1'-3" | 1'-3" |

* – FOR 3" AND SMALLER PIPES

NOTES:
1) TABLES ARE BASED ON AN ALLOWABLE SOIL PRESSURE OF 3000 PSF ON UNDISTURBED EARTH BEHIND THE ANCHOR BLOCK. WHERE SOIL HAS BEEN DISTURBED BY ADJACENT EXCAVATIONS OR WHERE SOIL CANNOT WITHSTAND SUCH A PRESSURE, THE TABLE DOES NOT APPLY.

2) WHERE ENTIRE DEPTH OF PIPE IS BELOW THE TOP SURFACE OF SOUND ROCK, USE "HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK" TABLE.

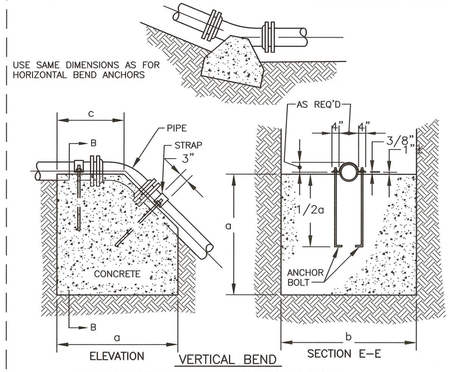



HORIZONTAL ANCHORING

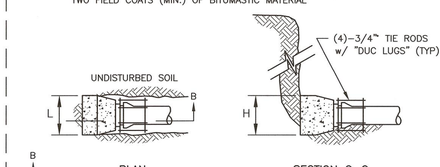
## VERTICAL ANCHOR DIMENSIONS

UP TO 150 P.S.I. WORKING PRESSURE

| PIPE SIZE | 45° BEND | | | | 22 1/2° BEND | | | | 11 1/4° BEND | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIMENSION | | | ROD DIA. | DIMENSION | | | ROD DIA. | DIMENSION | | | ROD DIA. |
| | a | b | c | | a | b | c | | a | b | c | |
| 4" | 3'-0" | 3'-0" | 2'-0" | 3/4" | 2'-6" | 2'-3" | 1'-6" | 3/4" | 2'-0" | 2'-0" | 1'-6" | 3/4" |
| 6" | 3'-0" | 3'-0" | 2'-0" | 3/4" | 2'-6" | 2'-3" | 1'-6" | 3/4" | 2'-0" | 2'-0" | 1'-6" | 3/4" |
| 8" | 3'-6" | 3'-6" | 2'-6" | 3/4" | 3'-0" | 3'-0" | 1'-9" | 3/4" | 2'-6" | 2'-6" | 1'-3" | 3/4" |
| 10" | 4'-3" | 4'-0" | 3'-0" | 3/4" | 3'-6" | 3'-3" | 2'-0" | 3/4" | 2'-9" | 2'-9" | 1'-6" | 3/4" |
| 12" | 4'-9" | 4'-6" | 3'-3" | 3/4" | 4'-0" | 3'-9" | 2'-6" | 3/4" | 3'-3" | 3'-3" | 1'-9" | 3/4" |




ALL EXPOSED PORTIONS OF ANCHOR STRAPS TO RECEIVE TWO FIELD COATS (MIN.) OF BITUMASTIC MATERIAL




RESTRAINED PLUG OR CAP

NOTE: SEE CHART "HORIZONTAL ANCHOR DIMENSIONS" TIE RODS TO BE PROVIDED IN LIEU OF THRUST BLOCK

VERTICAL ANCHORING

PRESSURE PIPE ANCHORING DETAILS
INSTALL PER PORTSMOUTH REQUIREMENTS NTS

V C4 WATER MAIN & SERVICE CONNECTION

# COMMERCIAL DEVELOPMENT ONE CONGRESS STREET PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | DETAIL V | 12/20/22 |
| 1 | DETAIL S | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS

STATE OF NEW HAMPSHIRE – JOHN R. CHAGNON No. 9581 LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN SEPTEMBER 2022

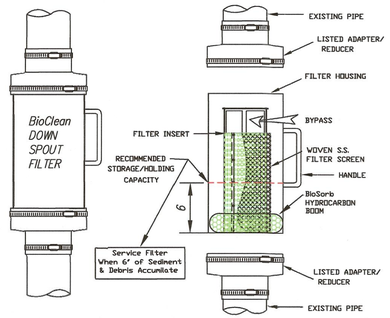
DETAILS D4

FB 309 PG 15

3406

# SERVICE MANUAL
## (Cleaning Procedures)

## Bio Clean DOWNSPOUT FILTER
## Screen Type With Hydrocarbon Boom




DETAIL OF PARTS

TOOLS AND EQUIPMENT NEEDED:

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia. (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.


Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net




REMOVING FILTER


Bio Clean
A Forterra Company

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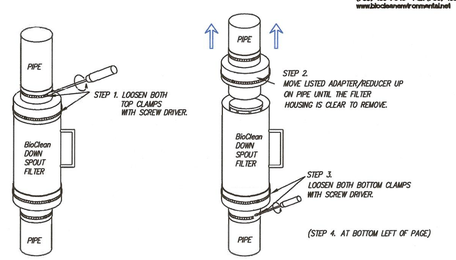
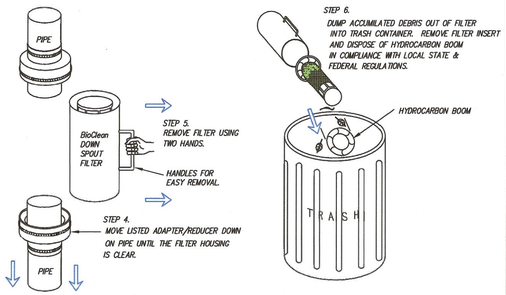



(STEP 4. AT BOTTOM LEFT OF PAGE)

CLEANING FILTER







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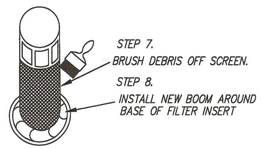
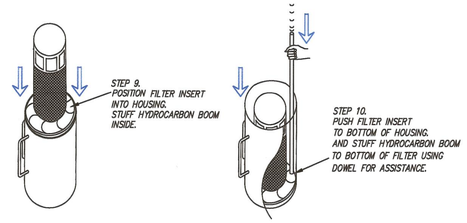



REPLACING FILTER INSERT






REPLACING FILTER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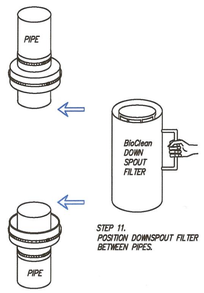
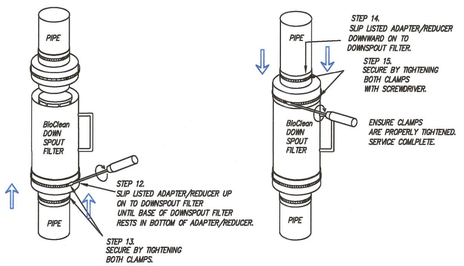
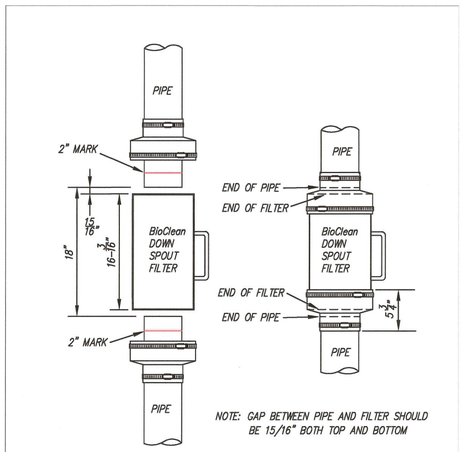





APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM





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# DOWNSPOUT FILTER

## MAINTENANCE:

THE FILTER IS DESIGNED TO ALLOW FOR THE USE OF MANUAL OR VACUUM REMOVAL OF CAPTURED MATERIALS IN THE FILTER STRUCTURE. FILTERS CAN BE CLEANED EASILY BY SIMPLY LOOSENING THE METAL CLAMPS AND REMOVING THE FILTER. THE HYDROCARBON ADSORBENT MEDIA THEN IS REMOVED AND THE TRASH AND DEBRIS CAN BE REMOVED FROM THE STRUCTURE. AT EACH CLEANING, NEW HYDROCARBON ADSORBENT MEDIA SHOULD BE REINSTALLED.

## MAINTENANCE NOTES:

1. BIO CLEAN ENVIRONMENTAL SERVICES, INC. RECOMMENDS CLEANING AND DEBRIS REMOVAL MAINTENANCE A MINIMUM OF TWO TO FOUR TIMES PER YEAR, AND REPLACEMENT OF MEDIA BOOMS A MINIMUM OF TWICE A YEAR.
2. THE DOWNSPOUT FILTER CAN BE CLEANED BY LOOSING THE METAL CLAMPS AT BOTTOM AND TOP OF RUBBER BOOTS. REMOVE THE FILTER BY GRASPING THE HANDLES, SLIDE DOWN THE BOTTOM BOOT OVER THE OUTFLOW PIPE AND SLIDE UP THE TOP BOOT OVER INFLOW PIPE. PLACE THE FILTER ON THE GROUND. DISPOSE OF ANY TRASH AND SEDIMENTS COLLECTED IN FILTER.
3. ONCE THE FILTER IS FREE, REMOVE THE INTERIOR INSERT. REMOVE THE HYDROCARBON ADSORBENT MEDIA BY UNWRAPPING IT FROM THE INTERIOR INSERT AND REPLACING WITH A NEW MEDIA, WRAPPING IT THE SAME WAY.
4. PLACE THE INTERIOR INSERT BACK INTO THE FILTER.
5. PLACE THE FILTER BACK IN LINE WITH THE PIPE AND SLIDE BACK THE TOP AND BOTTOM BOOTS IN PLACE AND TIGHTEN THE METAL CLAMPS SECURELY.
6. EVALUATION OF THE HYDROCARBON MEDIA SHALL BE PERFORMED AT EACH CLEANING. IF THE MEDIA IS FILLED WITH HYDROCARBONS AND OILS IT SHOULD BE REPLACED.
7. TRANSPORT ALL DEBRIS, TRASH, ORGANICS AND SEDIMENTS TO APPROVED FACILITY FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REQUIREMENTS.
8. THE HYDROCARBON MEDIA WITH ABSORBED HYDROCARBONS IS CONSIDERED HAZARDOUS WASTE AND NEEDS TO BE HANDLED AND DISPOSED OF AS HAZARDOUS MATERIAL. PLEASE REFER TO STATE AND LOCAL REGULATIONS FOR THE PROPER DISPOSAL OF USED MOTOR OIL/FILTERS.
9. FOLLOWING MAINTENANCE AND/OR INSPECTION, THE MAINTENANCE OPERATOR SHALL PREPARE A MAINTENANCE/INSPECTION RECORD. THE RECORD SHALL INCLUDE ANY MAINTENANCE ACTIVITIES PERFORMED, AMOUNT AND DESCRIPTION OF DEBRIS COLLECTED, AND CONDITION OF FILTER.
10. THE OWNER SHALL RETAIN THE MAINTENANCE/INSPECTION RECORD FOR A MINIMUM OF FIVE YEARS FROM THE DATE OF MAINTENANCE. THESE RECORDS SHALL BE MADE AVAILABLE TO THE GOVERNING MUNICIPALITY FOR INSPECTION UPON REQUEST AT ANY TIME.
11. ANY TOXIC SUBSTANCE OR ITEM FOUND IN THE FILTER IS CONSIDERED AS HAZARDOUS MATERIAL AND CAN ONLY BE HANDLED BY A CERTIFIED HAZARDOUS WASTE TRAINED PERSON (MINIMUM 24-HOUR HAZWOPER).


*AMBIT ENGINEERING, INC.*
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## NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

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# COMMERCIAL DEVELOPMENT
# ONE CONGRESS STREET
# PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| 2 | ADDED MAINTENANCE | 12/20/22 |
| 1 | ISSUED FOR APPROVAL | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

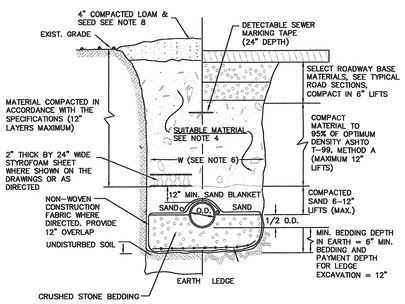
SCALE: AS SHOWN AUGUST 2022

DETAILS

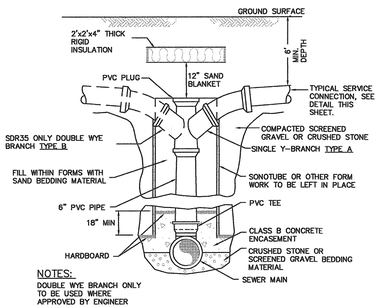
D5

FB 309 PG 15

3406




## TRENCH – GRAVITY SEWER

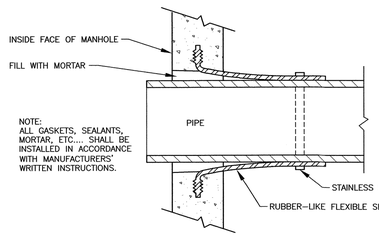



NOTES:
DOUBLE WYE BRANCH ONLY TO BE USED WHERE APPROVED BY ENGINEER

## PVC SEWER SERVICE CHIMNEY WITH WYE




KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

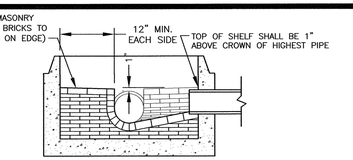



LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

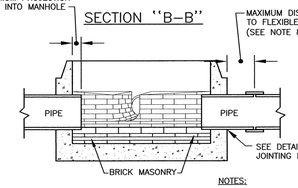
## DETAIL "A" – PIPE TO MANHOLE JOINTS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

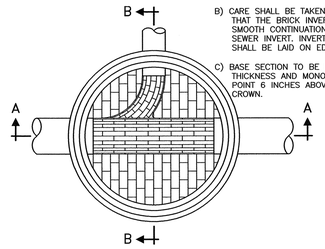
CHAIRMAN _____ DATE _____




SECTION "B–B"

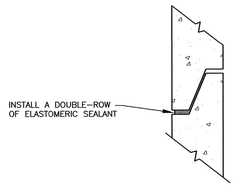



SECTION "A–A"




TYPICAL MANHOLE – PLAN VIEW

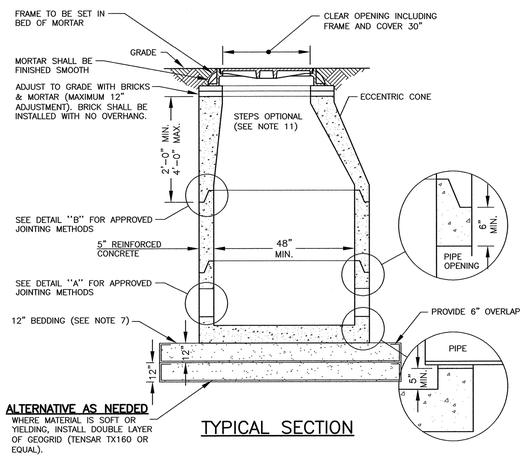
NOTES:
A) INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
B) CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
C) BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6 INCHES ABOVE THE PIPE CROWN.




ELASTOMERIC SEALANT

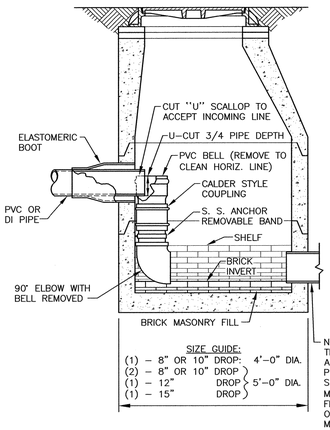
NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

## DETAIL "B" – HORIZONTAL JOINTS




TYPICAL SECTION

BB P2 SEWER MANHOLE DETAILS
INSTALL PER PORTSMOUTH REQUIREMENTS NTS




INSIDE DROP MANHOLE

## GENERAL NOTES

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAK PROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H–20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE, OR POURED IN PLACE REINFORCED CONCRETE IF POURED AS A COMPLETE MANHOLE.

3) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

4) LEAKAGE TEST MAY NOT BE FEASIBLE, BUT SHALL CONFORM TO ENV–WQ 704.17.

5) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE AND TANGENT TO THE CENTERLINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6) FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30–INCH CLEAR OPENING. A THREE INCH (MINIMUM HEIGHT) WORD "SEWER" FOR SEWERS AND "DRAIN" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. CASTINGS SHALL CONFORM TO CLASS 30, ASTM A48.

7) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

| | |
|---|---|
| 100% PASSING | 1 INCH SCREEN |
| 90%–100% PASSING | 3/4 INCH SCREEN |
| 20%– 55% PASSING | 3/8 INCH SCREEN |
| 0%– 10% PASSING | #4 SIEVE |
| 0%– 5% PASSING | #8 SIEVE |

WHEN ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1–1/2 INCH SHALL BE USED.

8) FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP & CI PIPE – ALL SIZES – 48"
AC AND VC PIPE – UP THOUGH 12" DIA. – 18"
AC AND VC PIPE – LARGER THAN 12" DIA. – 36"
DI PIPE – NONE REQUIRED
PVC – UP THROUGH 15" DIA. – NONE REQUIRED
PVC – LARGER THAN 15" DIA. – 48"/60"
ABS (ASTM D2680) – ALL SIZES – SAME AS VC ABOVE

9) 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 H–20 LOADS.

10) MANHOLE STEPS MAY BE PERMITTED UPON REQUEST BY THE OWNER AS SECONDARY ADDITIONAL SAFETY FEATURE SUPPLEMENTARY TO THE PRIMARY PORTABLE LADDER ENTRY AND WHEN INSTALLED UNDER THE FOLLOWING CONDITIONS:

1. THE STEPS SHALL BE MANUFACTURED OF 5/8ths INCH ROUND STAINLESS STEEL, PLASTIC COVERED STEEL OR PLASTIC. THEY SHALL BE SHAPED SO THAT THEY CANNOT BE PULLED OUT OF THE CONCRETE WALL IN WHICH THEY ARE EMBEDDED.
2. THE STEPS SHALL BE EMBEDDED IN THE CONCRETE BY THE MANUFACTURER DURING MANUFACTURE OR IMMEDIATELY FOLLOWING REMOVAL OF FORMS. SECURING THE STEPS WITH MORTAR IN DRILLED OR CAST HOLES, WILL NOT BE ACCEPTABLE.
3. THE STEPS SHALL BE OF THE DROP TYPE WITH A DEPRESSED SECTION FOR HANDHOLD. APPROXIMATELY 14" x 10" IN DIMENSION.

11) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC–LIKE GASKET, IN 2 ROWS.

12) PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON–SHRINKING MORTAR OR ELASTOMERIC SEALANT.

13) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

14) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV–WQ 704 DESIGN OF SEWERAGE.

15) BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE LARGEST INCOMING PIPE.

## GENERAL NOTES

1) MINIMUM PIPE SIZE FOR HOUSE SERVICE SHALL BE FOUR INCHES.

2) PIPE AND JOINT MATERIALS:

A. PLASTIC SEWER PIPE

1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

| ASTM STANDARDS | GENERIC PIPE MATERIAL | SIZES APPROVED |
|---|---|---|
| D3034 | *PVC (SOLID WALL) | 8" THROUGH 15" (SDR 35) |
| F679 | PVC (SOLID WALL) | 18" THROUGH 27" (T–1 & T–2) |
| F794 | PVC (RIBBED WALL) | 8" THROUGH 36" |
| AWWA C900 | PVC (SOLID WALL) | 8" THROUGH 18" |

*PVC: POLYVINYL CHLORIDE

2. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D–3212 AND SHALL BE PUSH–ON BELL AND SPIGOT TYPE.

3) DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4) JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5) HOUSE SEWER INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND REFILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

6) THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4 INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7) TESTING: WHEN REQUIRED BY THE GOVERNING AUTHORITY, TESTING SHALL CONFORM TO ENV–WQ 704.09.

8) ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM HOUSE TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9) HOUSE WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, UNLESS IT IS ON A SHELF 12" HIGHER, AND 18" APART.

10) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

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WHERE ORDERED BY THE ENGINEER, OVEREXCAVATE UNSTABLE TRENCH BOTTOM AND BACKFILL WITH CRUSHED STONE.

11) LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.

12) CAST–IN–PLACE CONCRETE: SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG OF CEMENT
MAXIMUM AGGREGATE SIZE: 3/4 INCH

13) BACKFILL UP TO SUBBASE GRAVEL SHALL BE WITH EXCAVATED SOIL FROM TRENCHING OPERATIONS. COMPACT IN 8" LIFTS WITH VIBRATORY PLATE COMPACTORS TO 90% OF MODIFIED PROCTOR DENSITY. IF FINE–GRAINED, COMPACT WITH POGO STICKS OR SHEEPSFOOT ROLLERS. PLACE NO LARGE ROCKS WITHIN 24" OF PIPE. TRENCHES THAT ARE NOT ADEQUATELY COMPACTED SHALL BE RE–EXCAVATED AND BACKFILLED UNDER THE SUPERVISION OF THE DESIGN ENGINEER OR GOVERNING BODY. UNSUITABLE BACKFILL MATERIAL INCLUDES CHUNKS OF PAVEMENT, TOPSOIL, ROCKS OVER 6" IN SIZE, MUCK, PEAT OR PIECES OF PAVEMENT.

14) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB–SITE SAFETY AND COMPLIANCE WITH GOVERNING REGULATIONS.

15) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. FOR TRENCH WIDTH SEE TRENCH DETAIL.

16) SAND BLANKET: CLEAN SAND, FREE FROM ORGANIC MATTER, SO GRADED THAT 90% – 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.

17) BASE COURSE GRAVEL, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE:

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION.

18) IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.

19) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION.

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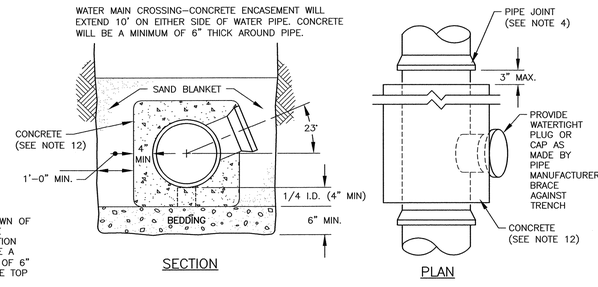


SECTION PLAN

CONCRETE FULL ENCASEMENT
NOT TO SCALE

AMBIT ENGINEERING, INC.
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200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
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# ONE CONGRESS STREET
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| | | |
| 2 | NOTE 8, TRENCH, CHIMNEY DETAIL, BB | 1/25/23 |
| 1 | TITLE | 10/18/22 |
| 0 | ISSUED FOR COMMENT | 9/6/22 |

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7951 LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN AUGUST 2022

SEWER DETAILS

D6

FB 309 PG 15

3406

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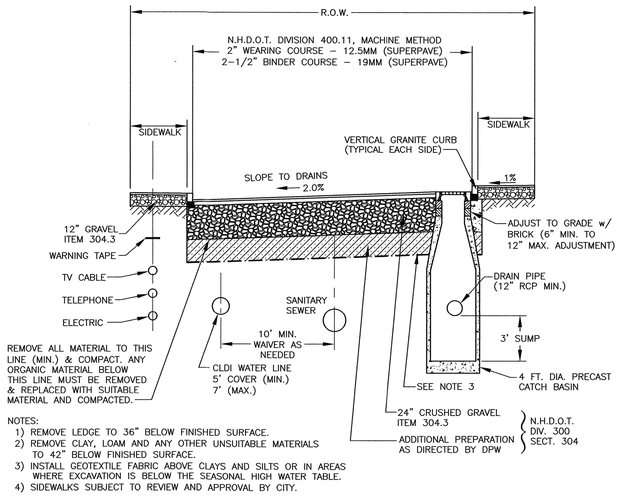


W C4 W P1 HIGH STREET ROADWAY CROSS SECTION

NTS

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| 0 | ISSUED FOR COMMENT | 12/20/22 |

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
NO. 7651
LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN AUGUST 2022

DETAILS D7

FB 309 PG 15

3406