



**LEBANON PLANNING BOARD
DECEMBER 9, 2024 - 6:30 PM
COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
LEBANONNH.GOV/LIVE**

1. Call to Order

- A. To participate in this meeting, please [join live via Microsoft Teams](#) or call 929-229-5356 (access code: 340 962 759#). If you have trouble accessing this meeting, please [email tim.corwin@lebanonnh.gov](mailto:tim.corwin@lebanonnh.gov).

2. Notice of Regional Impact

3. Public Hearing Items

- A. **Brickyard One Nominee Trust, 174 Hanover Street (Tax Map 48, Lot 4), 0 Hanover Street (Tax Map 48, Lot 2), 0 Hanover Street (Tax Map 48, Lot 1), and 238 Hanover Street (Tax Map 63, Lot 1), zoned R-1, R-O-1, R-3 & RL-3:** Request for Site Plan Review and a Conditional Use Permit pursuant to Sections 308.2, 310.2, 311A.2, and 501.2 of the Zoning Ordinance for a proposed 474-unit multi-family Planned Unit Residential Development (PURD) totaling +/- 731,600 sq. ft. in size, consisting of 11 buildings together with parking, utilities, landscaping, access, and other related site improvements. Applicant also requests a Conditional Use Permit pursuant to Section 308.4 of the Zoning Ordinance to allow an increase in the maximum permitted building height from 45 ft. to 55 ft. **PB2024-22-CUPSPR - Continued from November 12, 2024**
- B. **Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2:** Request for Site Plan Review to construct a +/- 3,882 sq ft. two story accessory office building for the existing multi-family complex, together with associated site improvements, including relocating a basketball court and new parking spaces. **PB2024-41-SPR - Postponed from November 12, 2024**
- C. **Grafton County Senior Citizens Council, Inc. and City of Lebanon, 10-12 Campbell Street (Tax Map 92, Lot 23), 0 Flynn Street (Tax Map 92, Lot 17), and 0 Flynn Street (Tax Map 91, Lot 245), zoned L-D:** Request for approval of a Boundary Line Adjustment between Lot 92-23 and Lot 92-17 and a Voluntary Lot Merger of Lot 92-17 and Lot 91-245. **PB2024-46-BLAVLM**
- D. **Cicotte Holdings, LLC, 51 Evans Drive (Tax Map 78, Lot 40, Plot 200), zoned R-O-1:** Request for a Conditional Use Permit pursuant to Section 311A.2 of the Lebanon Zoning Ordinance and for Site Plan Review per Section 3.1.D of the Site Plan Review Regulations to expand the outdoor vehicular storage area for an existing vehicular sales use together with associated site improvements including landscaping and lighting. **PB2024-48-SPRCUP - To be postponed to January 13, 2025**

4. Conceptual Review

- A. **Choice Storage, LLC, 0 Etna Rd (Tax Map 26, Lot 17), CWM All Waste, LLC, 40 N Labombard Rd (Tax Map 51, Lot 10), Chaloux Properties, LLC, 32 Labombard Rd (Tax Map 51, Lot 11), Route 120 Hotel, LLC, 35 Labombard Rd (Tax Map 64, Lot 21), Chaloux Properties, LLC, 25 Labombard Rd (Tax Map 64, Lot 25), Klubio, LLC, 39 Labombard Rd (Tax Map 51, Lot 14), TLL Realty, LLC, 41 Labombard Rd (Tax Map 51, Lot 1) & Notch Climbing Real**

Estate, LLC, 33 Labombard Rd (Tax Map 51, Lot 15) zoned IND-L and RL-3: Conceptual Review of a proposed Planned Business Park and Major Subdivision. PB2024-47-CON

5. Study Items

- A. Review of Proposed Amendments to the Zoning Ordinance and Zoning Map - Discussion continued from the November 25, 2024 work session

6. Other Business

- A. Review of 2025 Planning Board Meeting calendar
- B. Adoption of Proposed Planning Board Rules of Procedure

7. Approval of Minutes

- A. October 14, 2024
- B. November 12, 2024
- C. November 25, 2024

8. Adjournment

The order of agenda items is subject to change.

Meetings are open for in-person and remote attendance. Members of the public that wish to attend remotely may do so by going to LebanonNH.gov/Live where you will find instructions on how to enter the meeting. Members of the public will be able to participate and ask questions through the City's virtual platform or by phone. Please note: Should technical difficulties occur during the meeting that disrupts virtual or phone connection(s), the meeting will continue without remote access capabilities.



CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

December 9, 2024 Meeting

Staff Memorandum – PB2024-22-SPRCUP – *con't from 11/12/24*

APPLICATION INFORMATION

Agenda Item: 3.A

Application ID: 2024-22-SPRCUP

Application Type:

Site Plan Review and CUP for a proposed 474-unit multi-family PURD, and a CUP to allow an increase in the maximum permitted building height from 45 ft. to 55 ft.

Property Location & Tax Map:

- 174 Hanover St (Tax Map 48, Lot 4)
- 0 Hanover St (Tax Map 48, Lot 2)
- 0 Hanover St (Tax Map 48, Lot 1)
- 238 Hanover St (Tax Map 63, Lot 1)

Applicant & Property Owner:

Brickyard One Nominee Trust

Property Size: +/-136.87 acres total

Zoning District(s): R-1, R-3, R-0-1, RL-3

Overlay District(s):

- Wetlands Conservation District
- Floodplain District
- Steep Slopes District

Future Land Use Map:

- Mixed Use
- Rural (*where zoned RL-3*)

Existing Use & Improvements:

- 174 Hanover Street: remains of Densmore Brickyard
- 238 Hanover Street: +/-5,146 (gross) sq. ft. one-family dwelling, constructed in 1800 (a conforming use in the R-3 District per §310.2) and accessory structures

Staff Attachments:

- Memo dated November 21, 2024 from Keach-Nordstrom Associates, Inc. (engineering review; 5 pages)
- 11/24/24 e-mail (staff comments)

LEGAL NOTICE

Brickyard One Nominee Trust, 174 Hanover Street (Tax Map 48, Lot 4), 0 Hanover Street (Tax Map 48, Lot 2), 0 Hanover Street (Tax Map 48, Lot 1), and 238 Hanover Street (Tax Map 63, Lot 1), zoned R-1, R-O-1, R-3 & RL-3: Request for Site Plan Review and a Conditional Use Permit pursuant to Sections 308.2, 310.2, 311A.2, and 501.2 of the Zoning Ordinance for a proposed 474-unit multi-family Planned Unit Residential Development (PURD) ~~totaling +/- 731,600 sq. ft. in size, consisting of 11 buildings*~~ together with parking, utilities, landscaping, access, and other related site improvements. Applicant also requests a Conditional Use Permit pursuant to Section 308.4 of the Zoning Ordinance to allow an increase in the maximum permitted building height from 45 ft. to 55 ft. PB2024-22-SPRCUP

**The applicant has revised the project to include 5 multi-family buildings containing 422 units and 8 townhouse clusters containing 51 units, and a maintenance building containing 1 unit.*

APPLICATION MATERIALS AND OTHER SUBMISSIONS

- ▶ Letter dated December 4, 2024 from Dave Fenstermacher, PE, of VHB (response to Conservation Commission comments; 5 pages)
- ▶ Letter dated December 4, 2024 from Dave Fenstermacher, PE, of VHB (response to 11/8/24 Fire Department memo; 2 pages)
- ▶ Letter dated December 4, 2024 from Dave Fenstermacher, PE, of VHB (response to Heritage Commission comments; 2 pages)
- ▶ Letter dated December 4, 2024 from Dave Fenstermacher, PE, of VHB (response to Pedestrian Bicyclist Advisory Committee comments; 3 pages)
- ▶ Letter dated December 4, 2024 from Dave Fenstermacher, PE, of VHB (response to Weston & Sampson traffic study peer review memo; 2 pages)
- ▶ Memo dated October 25, 2024 from Jason Plourde, PE, of VHB (trip generation letter for revised site layout; 6 pages) – *note: this letter was also included in the 11/12/24 agenda packet*
- ▶ Plan set titled “The Brickyard Residential Development,” dated May 10, 2024, latest issue December 4, 2024, prepared by VHB, EV Project: 52933.00 (53 sheets plus cover sheet)
- ▶ Drainage Report for Lebanon Brickyard Development, dated 05/10/2024, revised 12/3/2024, prepared by David Fenstermacher, PE, of VHB (331 pages) – *available on-line only*

****INCLUDED IN [11/12/24 AGENDA PACKET](#)****

Staff attachments:

- ▶ Memo dated November 8, 2024 from Duane Egner, Fire Inspector (Fire Department comments)
- ▶ Memo dated August 1, 2024, revised November 1, 2024 from Douglas Oster, PE, of Weston & Sampson (traffic study peer review)

Other public comment:

- ▶ 10/14/24 e-mail from Corrine Erskine
- ▶ Letter dated October 11, 2024 from the Lebanon Conservation Commission (3 pages)

Applicant submissions:

- ▶ Revised Application for Conditional Use Permit Support Statement (CUP for building height per Section 308.4 of the ZO; 3 pages)
- ▶ Revised Application for Conditional Use Permit Support Statement (PUD/PURD CUP per Sections 501.1 & 501.2 of the ZO; 3 pages)
- ▶ Memo dated October 25, 2024 from Jason Plourde, PE, of VHB (trip generation letter for revised site layout; 6 pages)
- ▶ Plan set titled "The Brickyard Residential Development," dated May 10, 2024, latest issue October 24, 2024, prepared by VHB, EV Project: 52933.00 (50 sheets plus cover sheet)
- ▶ Drainage Report for Lebanon Brickyard Development, dated 05/10/2024, revised 10/25/2024, prepared by David Fenstermacher, PE, of VHB (343 pages)

****INCLUDED IN [10/14/24 AGENDA PACKET](#)****

Other public comment:

- ▶ Letter dated October 6, 2024 from Nicole Ford Burley, Chair, Lebanon Heritage Commission (2 pages)

Applicant submissions:

- ▶ Letter dated October 9, 2024 from Dave Fenstermacher, PE, of VHB (description of revised site layout; 2 pages)
- ▶ Plan sheet titled, "Overall Site Plan," prepared by VHB, dated May 10, 2024, last revised 10/09/2024, Project Number 52933.00
- ▶ Site Rendering of the Brickyard Residential Development, prepared by VHB, dated October 9, 2024

****INCLUDED IN [8/12/24 AGENDA PACKET](#)****

Staff comments and other public comment:

- ▶ Letter dated June 26, 2024 from Steven Keach, PE, of Keach-Nordstrom Associates, Inc. (reviewing engineer comments; pgs 1-11 of 1113 of the attachment)
- ▶ Memo dated August 1, 2024 from Douglas Oster, PE, of Weston & Sampson (traffic study peer review; pgs of 12-13)
- ▶ Memo dated June 12, 2024 from Duane Egner, Lebanon Fire Department (review comments; pg 14)
- ▶ Memo dated June 5, 2024 from the Lebanon Pedestrian & Bicyclist Advisory Committee (PBAC) (review comments; pgs 15-16)

- ▶ Letter dated July 1, 2024 from Nicole Ford Burley, Lebanon Heritage Commission Chair (review comments; pgs 17-18)
- ▶ E-mail sent June 17, 2024 from Andrew Garthwaite, Lebanon Tree Advisory Board Chair (review comments; pg 19)
- ▶ E-mail sent July 1, 2024 from David Kroner, abutter at 194 Hanover Street (pg 20)
- ▶ E-mail sent July 7, 2024 from Brendan Nyhan (pgs 21-22)
- ▶ Letter dated June 11, 2024 from Brian Edwards, Town of Hanover Planning Board Chair (pgs 23-24)

Applicant submissions:

- ▶ Application form (pg 25)
- ▶ Letter dated May 13, 2024 from Dave Fenstermacher, PE, of VHB (transmittal letter; pg 26)
- ▶ Letter dated May 13, 2024, revised August 6, 2024, from Dave Fenstermacher, PE, of VHB (project description and impact statement; pgs 27-33)
- ▶ Letter dated July 2, 2024, from Dave Fenstermacher, PE, Managing Director of VHB (PUD/PURD Conditional Use Permit narrative; pgs 34-44)
- ▶ Application for Conditional Use Permit Support Statement (PUD/PURD CUP per Sections 501.1 & 501.2 of the Zoning Ordinance; pgs 45-47)
- ▶ Application for Conditional Use Permit Support Statement (CUP for building height per Section 308.4 of the Zoning Ordinance; pgs 48-50)
- ▶ Application for Waivers (pgs 51-52)
- ▶ Site Plan Review Regulations Technical Checklist dated May 10, 2024 (pgs 53-62)
- ▶ Certified Notification List (pgs 63-64)
- ▶ Fee Schedule (pgs 65-66)
- ▶ Fiscal Impact Analysis for The Brickyard – Hanover Street, dated May 8, 2024, prepared by Fougere Planning & Development (pgs 67-81)
- ▶ PURD Density Figure, dated May 2024, prepared by VHB (pg 82)
- ▶ PURD Open Space Figure, dated May 2024, prepared by VHB (pg 83)
- ▶ PURD Development Calculations, dated May 10, 2024, prepared by VHB (pg 84)
- ▶ Letter dated July 2, 2024 from Dave Fenstermacher, PE, of VHB (response to staff completeness comments; pgs 85-88)
- ▶ Letter dated August 7, 2024 from Dave Fenstermacher, PE, of VHB (response to staff review comments; pgs 89-125)
- ▶ Memo dated August 2, 2024 from Jason Plourde, PE, of VHB (response to Weston & Sampson peer review of traffic study; pgs 126-129)
- ▶ Plan set titled “The Brickyard Residential Development,” dated May 10, 2024, latest issue August 6, 2024, prepared by VHB, EV Project: 52933.00 (50 sheets plus cover sheet; pgs 130-180)
- ▶ Traffic Impact Study for Lebanon Brickyard Development, dated May 2024, revised August 2024, prepared by Jason Plourde, PE, of VHB (traffic study without appendices; pgs 181-248)

Available on-line only:

- ▶ Traffic Impact Study for Lebanon Brickyard Development, dated May 2024, revised August 2024, prepared by Jason Plourde, PE, of VHB (traffic study appendices; pgs 249-690)
- ▶ Drainage Report for Lebanon Brickyard Development, dated May 10, 2024, revised August 6, 2024, prepared by David Fenstermacher, PE, of VHB (pgs 690-1041)
- ▶ Lighting specifications by Gardco (pgs 1042-1113)

COMPLETENESS REVIEW

The Planning Board accepted the application as complete on July 8, 2024.

APPLICATION OVERVIEW

The applicant owns the following 4 properties which the applicant intends to merge into a single property following Planning Board approval of the subject application:

- 174 Hanover St (Tax Map 48, Lot 4)
- 0 Hanover St (Tax Map 48, Lot 2)
- 0 Hanover St (Tax Map 48, Lot 1)
- 238 Hanover St (Tax Map 63, Lot 1)

The properties are collectively referred to herein as the "Property". Per the applicant's application materials, the property is a total of +/-135.98 acres and is split-zoned R-O-1, R-3, R-1, and RL-3. A portion of the Property is the site of the former Densmore Brickyard. Other than vacant structures formerly occupied by the Densmore Brickyard, a vacant cottage at the north end of Densmore Pond, and a single family residence at what is currently 238 Hanover Street, the Property is vacant and undeveloped.

The applicant proposes to develop the +/-38.18 portion of the Property zoned R-O-1, R-3, R-1 as a 474-unit multi-building, multi-family Planned Unit Residential Development (PURD). All existing structures on the Property will be demolished except for some of the Densmore Brickyard kilns that are still standing. The remainder of the Property – zoned RL-3 and containing 97.8 acres – is not included as part of the PURD and is proposed to remain vacant (note that approval of the PURD does not preclude future development of the RL-3 portion of the Property).

When the subject application was originally submitted, the applicant had proposed to construct ten (10) multi-family dwellings with a total of 473 dwelling units (and a maintenance building with an additional dwelling unit). Following feedback from the Planning Board and the public at the August and September Planning Board meetings, the applicant substantially revised their plans and is now proposing 5 multi-family buildings with a total of 422 units at the southern end of the development site and 8 clusters of townhouses with 51 units at the northern end of the development site (and a maintenance building with an additional unit at the proposed northern entrance to development).

Two of the 5 multi-family dwellings – Buildings 4 and 5 as labeled in the plan set – are proposed to have a height of 55 ft. which requires the approval of a Conditional Use Permit (to exceed the 45 ft. maximum height). In addition to the Conditional Use Permit for building height, the proposed development also requires the granting of several waivers from the requirements of the Site Plan Review Regulations, the granting of a Conditional Use Permit for the PURD, the granting of a density bonus, and site plan approval. Each of these is discussed in more detail below.

The applicant submitted a revised plan set at the end of the day on December 4, 2024. It is staff's understanding that the revised plan set (which is included in the 12/9/24 Planning Board meeting agenda packet) was intended to address almost all of the comments received to date including the comments of the Board's Reviewing Engineer, Keach-Nordstrum Associates, Inc., set forth in the attached review letter dated November 21, 2024. As of the time of the writing of this memo, it is staff's understanding that the from the applicant's perspective, all comments have been addressed except those of the Planning staff sent via e-mail on November 24, 2024.

STAFF COMMENTS

PLANNING

I. INTRODUCTORY COMMENTS:

- Planning staff provided the applicant with comments via e-mail sent on 11/24/24 (a copy the 11/24/24 e-mail with Planning staff comments is attached for reference). It is staff's understanding that the most recent plan set (submitted on December 4, 2024 and included with the 12/9/24 Planning Board meeting agenda packet) is *not* responsive to Planning staff's comments, but that the applicant is working on a response which will be provided to staff.
- At this time, the Property will be kept in single ownership and the dwelling units will be available for rent. Following approval of the PURD, should the applicant at any point in the future desire to convert the development or any portion of the development to a condominium form of ownership, additional Planning Board review may be required pursuant to Section 6.3 of the Subdivision Regulations. Section 6.3 provides as follows:

6.3 Condominium Conversion.

When land and existing buildings under single ownership are proposed to be converted into a condominium form of ownership, and where no physical changes to the property are proposed, subdivision approval shall only be required if the Planning Director determines that the underlying existing use of the property will be materially altered by the conversion. If the Planning Director determines that, due to the specific facts of the case, the effect of the conversion will be to materially alter the nature or intensity of the use of the property, then full review under these Regulations shall be required. The landowner, any Board member, or any person aggrieved may, within 30 days of such determination, appeal the Planning Director's determination to the Planning Board. The Board shall act on the appeal within a reasonable time. Such a determination shall be considered administrative, and no noticed public hearing shall be required for the Board to act on the appeal.

The Conditional Use Permit for the PURD may also need to be amended.

- If the Board requires additional time beyond the December 9, 2024 Planning Board meeting to conclude the public hearing on the subject application and render a decision, the applicant will need to agree to another extension of the timeframe set forth in RSA 676:4, I(c)(1) (which requires the Board to render a decision within 65 days of the acceptance of an application as complete).

II. SITE PLAN REVIEW REGULATIONS:**Jurisdiction**

The proposed development constitutes a “major change” to the Property (as that term is defined in Article II of the Site Plan Review Regulations) and, therefore, requires Site Plan Review by the Planning Board and demonstration of compliance with the Article V submission requirements and Article VI design requirements.

Phasing

The applicant proposes to phase the development as depicted on pages 32-35 of the plan set. As identified in staff’s 11/24 e-mail to the applicant, the phasing plan is missing much of the information required to be included per Section 4.9.C of the Site Plan Review Regulations. However, it’s not clear at the time of the writing of this memo whether a phasing plan is appropriate for this development.

The purpose of phasing is to allow the buildings to be occupied as they are completed rather than waiting for completion of all site improvements, as is otherwise required by Section 8.1 of the Site Plan Review Regulations (“The Applicant shall construct and complete all design and construction requirements in accordance with Article VI and any other applicable section of these Regulations, as required in the Notice of Action, prior to the issuance of the Certificate of Occupancy.”) However, per the applicant’s phasing plan, it appears that all of the improvements are proposed to be constructed at one time prior to completion of any of the buildings.

Phasing can also extend the timelines required for obtaining a building permit for each phase (Section 4.10) and for the project to vest against any future changes to the Zoning Ordinance and Site Plan Review Regulations (Section 8.4 and NH RSA 6784:39). However, per Sections 4.10.A and 8.4.A.2 of the Site Plan Review Regulations, the Board is authorized to extend the building permit and active & substantial development deadlines at the time of plan approval.

Consequently, staff has recommended that, if the improvements are proposed to be constructed at the same time and prior to the issuance of a certificate of occupancy for any of the buildings, the applicant should submit a written request to the Board to approve alternative timeframes for obtaining building permits per Section 4.10.A and for achieving active and substantial completion per Section 8.4.A.2, *in lieu of a phasing plan*.

Waiver Requests

Pursuant to Section 7.1 (“Waiver of Regulations”), the applicant has requested waivers or partial waivers from certain provisions of Article V (“Submission Requirements”) and Article VI (“Design and Construction Requirements”) of the Site Plan Review Regulations, as set forth in the attached Application for Waivers and as listed below (in the order they appear on the Application for Waivers):

- **Section 5.1.E.7** – *requirement to provide information relative to buildings within 200 ft. of the site.*
- **Section 5.1.E.16** – *requirement to count existing trees if used to meet landscaping requirements.*
- **Section 5.1.E.21** – *construction detail requirements. The Reviewing Engineer is permitted to authorize alternative specifications. To Planning staff’s knowledge, the Reviewing Engineer has accepted the construction details as submitted without concern. Consequently, this waiver request may be moot.*

- **Section 6.6.C.1.2.K** – *requiring test pit data for stormwater management design. Additional discussion of this waiver request can be found below in the discussion of the Section 6.6 requirements.*
- **Section 5.1.E.7** – *requirement to provide an elevation for the “single family residence”, i.e. the maintenance building. The elevation has now been provided (see Sheet 50 of the plan set). Consequently, this waiver request is moot.*

NOTE: The applicant's Application for Waivers can be found on pages 51-52 of [the agenda packet](#) for the August 12, 2024 Planning Board meeting.

Pursuant to Section 7.1 of the Site Plan Review Regulations, the Board may grant a waiver of any part of the Regulations if it finds, by majority vote, that either:

- A. Strict conformity would pose an unnecessary hardship to the Applicant and waiver would not be contrary to the spirit and intent of the regulations; or
- B. Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations.

The applicant's basis for each waiver request is described in the attached Application for Waivers. Note that the granting of a waiver from a design requirement does not relieve an applicant from making the improvements that are depicted on the approved site plan, even if the depicted improvement would have been covered by the waiver had it not been included on the approved site plan.

Note that additional waiver requests may be needed depending on the applicant's response to staff's comments sent on 11/24/24 and depending on the Reviewing Engineer's review of the plan set and materials submitted on 12/4/24 (which staff understands were intended to address the Reviewing Engineer's comments set forth in the attached letter from Keach-Nordstrom Associates, Inc., dated 11/24/24).

SECTION 5 – SUBMISSION REQUIREMENTS

5.1 (Drawings and Other Submittals): The applicant has provided the attached materials pursuant to the submission requirements of Section 5.1 of the Site Plan Review Regulations. The applicant requests a waiver from some of the submission requirements, as discussed above and in the applicant's Application for Waivers (found on pages 51-52 of [the agenda packet](#) for the August 12, 2024 Planning Board meeting.)

SECTION 6 – DESIGN AND CONSTRUCTION REQUIREMENTS

6.2 (Landscaping Standards): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.3 (Utilities & Fire Protection): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.4 (Fees and Assessments in Effect at time of Connection): The creation of new residential square footage will be subject to the City's Impact Fee Ordinance and fee schedule adopted by the Board on May 20, 2024. Section 213.7.A of the Zoning Ordinance requires that the amount of the impact fee is calculated at the time of the Planning Board's approval. Pursuant to Section 213.7.A, staff will determine the amount of the impact fee and include that amount within staff's proposed conditions of approval.

6.5 (Coordination of Roads, Parking, Loading, Recreation, and Safety): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.6 (Stormwater Management): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.7 (Lighting): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.8 (Off-Site Improvements): *Comments to be provided at the 12/9/24 Planning Board meeting.*

6.9 (Premature and Scattered Development): Section 6.9 provides that the Planning Board “may disapprove a site plan application that proposes development that is scattered or premature, so as to involve danger or injury to health, safety, or prosperity of the community. For purposes of this section, a development shall be considered scattered or premature if it will cause, or poses an undue risk of causing, a substantial or appreciable adverse impact upon any of the factors or parameters set forth in the General or Specific Purposes of Site Plan Review, as outlined in Sections 1.4 and 1.5 of these Regulations, *or as set forth in Section 6.9.B if such information is required to be submitted per Section 5.1.G.4 or Section 5.2.D.*” (emphasis added)

Section 5.1.G.4 of the Site Plan Review Regulations requires that, “[f]or multi-family dwelling developments and mixed-use developments resulting in a net increase of 50 dwelling units or more, the application shall include the information and impact statements identified in Section 6.9.B.” These include:

1. Statement of impact of the proposed development on natural resources and environmental quality including, but not limited to, water quality, air quality, wetlands, soil erosion and agricultural soils and a statement of pollution control and environmental impact mitigation measures.
2. Capacity of the school system; effect on school bus transportation and distance of the proposed subdivision from the nearest elementary school.
3. Adequacy of streets and/or sidewalks in the general area of the development including major intersections providing access, and such other areas as requested by the Board.
4. Sufficiency, availability and capacity of utility services to provide water, fire protection, and sewer, and further, the impact of the development on the municipal solid waste disposal facilities.
5. (If applicable) The impact of on-site subsurface sewage disposal systems as to adjacent wells, water supply systems, and any known aquifers so designated by the United States Geological Survey.
6. Any special fire, police and public safety problems due to location and/or special conditions related to the site’s proposed type of use.
7. Impact of storm drainage from the development on abutting properties and potential storm drainage problems both on the site of the development and downstream from the development.
8. Fiscal impact statement analyzing the impact of the development on municipal, school and county revenues and expenditures, including estimated potential tax revenue and estimated number of school children.

The applicant addressed the Section 6.9.B areas of study and information in a letter dated May 13, 2024, revised August 6, 2024, from Dave Fenstermacher, PE, of VHB, and in a document titled, "Fiscal Impact Analysis for The Brickyard – Hanover Street", dated May 8, 2024, prepared by Fougere Planning & Development. The 8/6/24 letter and Fiscal Impact Analysis can be found on pages 27-33 and pages 67-81, respectively, of [the agenda packet](#) for the August 12, 2024 Planning Board meeting. It is staff's understanding that the applicant is preparing an updated Fiscal Impact Analysis to reflect the revised development proposal (which now includes 5 multi-family buildings and 51 townhouses and a different unit mix in the multi-family buildings).

6.10 (Additional Regulations for the Lebanon Downtown District): *Not applicable.*

III. ZONING ORDINANCE:

Conditional Use Permit Per Section 307.8.A to Allow Additional Building Height:

45 ft. is the maximum building height in the R-1 District. Per Section 308.4, the Planning Board may allow building height of up to 55 ft. by Conditional Use Permit. Pursuant to Section 308.4, the applicant requests a Conditional Use Permit to allow the two multi-family buildings that are located wholly within the R-1 District (i.e. Buildings 4 and 5 as labeled in the plan set) to have a height of 55 ft. Section 308.4 provides as follows:

By **conditional use permit** per Section 302.4, the maximum **building height** for a proposed **building** may be increased up to 10 additional feet if the increase in **building height** is for the purpose of accommodating a **parking structure** underneath or within the proposed **building**, and provided that the **building** is set back from the **setback line** a minimum distance equal to two (2) feet for every one (1) foot of additional **building height** over 45 feet.

In order to grant the requested Conditional Use Permit, the Board must find the applicant's proposal satisfies the Enhanced Performance Standards set forth in Section 302.4.D as well as the specific requirements of Section 308.4. The applicant has addressed the Section 302.4.D and Section 308.4 criteria in an Application for Conditional Use Permit Support Statement (see pages 48-50 of [the agenda packet](#) for the August 12, 2024 Planning Board meeting).

Note that per Section 302.4.E of the Zoning Ordinance, the Planning Board "may impose conditions [of the Conditional Use permit] as it finds reasonably appropriate to safeguard the neighborhood and the general public or otherwise serve the purposes of this Ordinance, including such measures as set forth in Section 802.4 ("Special Conditions")."

Conditional Use Permit Per Section 501.2 for a PURD:

A Planned Unit Residential Development (PURD) is a type of Planned Unit Development (PUD) which is a type of planned development that is regulated by Section 501.1 of the Zoning Ordinance (PURD-specific regulations are found in Section 501.2). A PURD is an allowed use in the R-O-1, R-3, and R-1 Districts with a Conditional Use Permit from the Planning Board (per Section 501.1.B). Among other requirements, a minimum percentage of the PURD-land must be preserved as open space (Section 501.1.F.4.a of the Zoning Ordinance).

The core purpose of the PUD regulations is set forth in Section 501.1.A of the Zoning Ordinance as follows: "PUDs should occur only after the characteristics of a property are studied and described, in order to best ensure that impacts on natural resources are minimized, through a process of building site

selection in areas of lowest natural resource value. Land planning is not an exercise in geometry, but a rational process of site assessment and intelligent design.” Moreover:

To effectuate this core purpose of the PUD regulations, the preparation of a PUD plan must first begin with identifying the “Site Resources” (described in Section 501.1.E.1.a). The required open space, building sites, and overall site layout must then be designed in a manner that maximizes protection/conservation of the Site Resources. At the same time, the open space must be designed in a manner that meets as many of the public benefit criteria set forth in Section 501.1.J.1.a.ii as possible. The goal is to ensure a thoughtful and well-planned development that is based on a site specific assessment. In return, the applicant may propose a development that does not meet the minimum yard, lot area, and frontage requirements of the underlying zoning district. The elimination of these requirements allows a “clustering” of the development which gives the developer flexibility in design and should result in overall cost savings by reducing the extent of infrastructure and site work that is needed for the development.

To approve a Conditional Use permit for a proposed PURD, the Board must make the following determinations (as required by Section 501.1.J.1 of the Zoning Ordinance:

- a. “The subdivision and/or site plan prepared pursuant to Section 501.1.E.1 above meets the purpose statement set forth in Section 501.1.A above and the following standards:
 - i. The Planning Board must find that, in consideration of the Site Resources, the portions of the property most suitable for Open Space preservation and those portions most appropriate for development have been designated on the plans for those purposes.
 - ii. Public Benefit of Open Space. The Planning Board must determine that the layout of the designated Open Space area provides the greatest feasible public benefit which is compatible with the applicant’s permissible development goals. The Board shall not approve such layout if it finds that there is a feasible alternative layout which would yield a significantly improved Open Space public benefit while still fulfilling the applicant’s otherwise permissible development objectives.

“Public benefit” means that the Open Space fulfills as many of the following criteria as are feasible:

- the Open Space is larger and contiguous, rather than smaller and fragmented. In achieving characteristics of larger and contiguous, the location of the Open Space will factor in off-site, adjacent open space natural areas;
- the Open Space conserves Site Resources located on the property;
- the Open Space is realistically capable of management for economically viable **agriculture** or forestry activities;
- the Open Space conserves natural habitat for animals or plants, especially those which are locally rare or unusual;
- the Open Space contributes to the ecological viability of natural systems, or natural areas, or of nearby recreation areas;
- the Open Space conserves historical and archeological resources;
- the Open Space provides opportunities for passive and/or active public indoor or outdoor recreation;
- the Open Space provides scenic enjoyment by the public from the vantage point of public lands, highways, or waters; and/or

- the Open Space provides some other open space public benefit explicitly identified by the Planning Board in its decision.
- iii. To the maximum extent practicable, the plan adheres to the design guidelines set forth in Section 501.1.G above.
- b. All applicable requirements of Section 501.1.E, Section 501.1.F, Section 501.1.H, [and] Section 501.2 [...] have been met.
- c. The types of housing units and/or other buildings proposed within the PUD shall not adversely impact the character of the area.
- d. The PUD will not have any substantial or undue impact on the environment or on transportation systems, community facilities, utilities and services and/or the applicant will contribute impact fees, in amounts acceptable to the Planning Board, in order to mitigate the impact of the PUD on transportation systems, public facilities, utilities and services.
- e. The PUD complies with all requirements of the Site Plan Review Regulations and Subdivision Regulations, as applicable.
- f. For developments proposing condominium ownership, the PUD is capable of complying with all applicable state statutes regulating the condominium form of ownership.”

The applicant provided a written narrative addressing some of the applicable PUD/PURD requirements in a letter dated July 2, 2024, from Dave Fenstermacher, PE, Managing Director of VHB, and in an Application for Conditional Use Permit Support Statement, found on pages 34-44 and 45-47, respectively, of [the agenda packet](#) for the August 12, 2024 Planning Board meeting. Staff recommends that the applicant provide responses to the remaining applicable requirements (as noted in staff's 11/24/24 comment e-mail to the applicant).

PURD Density Bonus Per Section 507:

Pursuant to Section 501.2.D of the Zoning Ordinance, the maximum permitted density of the proposed PURD is 423 dwelling units. However, Section 507 of the Zoning Ordinance allows the Board to grant up to a 12% density bonus for PURDs. The applicant requests a density bonus of 51 units which is the maximum number of additional units that the Board may allow pursuant to Section 507.

At present, the only guidelines for evaluating a density bonus request are set forth in Section 507.2 which provides that, “[t]he decision of the Planning Board in awarding such a bonus and the amount thereof is hereby declared to be a discretionary administrative decision of the Planning Board. In no case shall the Planning Board award a bonus if it determines that the limitations of a site cannot accommodate the increase.” In evaluating the requested bonus, the Board may want to consider the extent to which the proposed development effectuates the PURD objectives as set forth in Section 501.2.A.1 through 9 of the Zoning Ordinance.

If the Board denies the requested density bonus, the applicant will need to revise the plan set accordingly.

CITY ASSESSOR

No comment at this time.

BUILDING INSPECTOR

No comment at this time.

ENGINEERING/PUBLIC WORKS

As noted above, it is staff's understanding that the revised plan set submitted on 12/4/24 (and which is included with the 12/9/24 Planning Board meeting agenda packet) was intended to address the comments of the Board's Reviewing Engineer, Keach-Nordstrum Associates, Inc., set forth in the attached review letter dated November 21, 2024. The Reviewing Engineer will review the 12/4/24 revised plan set and revised drainage report and will provide additional comment, as needed.

FIRE DEPARTMENT

The applicant has provided a memo dated 12/4/24 in response to the comments of the Fire Department as set forth in a memo dated 11/8/24 from Duane Egner, Fire Inspector. The Fire Department is currently reviewing the 12/4/24 response memo and will provide additional comment, as needed.

POLICE DEPARTMENT

No comment at this time.

STAFF RECOMMENDATIONS

If the Planning Board moves to approve this request, then based on the information reviewed by City staff, the Planning and Development Department recommends that the Planning Board approve the application with the conditions noted below:

[TBD - draft proposed conditions of approval remain in progress at the time of the writing of this memo]

Attachments

cc: Brickyard One Nominee Trust (emailmarchese@gmail.com)
Dave Fenstermacher, PE, VHB (dfenstermacher@vhb.com)
Richard Whitehouse, VHB (rwhitehouse@vhb.com)

November 21, 2024

Mr. Brian A. Vincent, P.E.; City Engineer
City of Lebanon — Department of Public Works 1
93 Dartmouth College Highway
Lebanon, New Hampshire 03766

Subject: **Site Plan Review Application - The Brickyard Residential Development
174 Hanover Street (Map 48- Lots 01,02 & 04; and Map 63 Lot 01)
Lebanon, New Hampshire
KNA Project No. 24-0516-3**

Dear Mr. Vincent:

As you may recall, on June 26, 2024, this office issued a letter report in response to the subject application. Within that report we offered comments and recommendations generated upon consideration and review of the applicant's initial submission of project plans and supporting information. On October 29th we received a copy of a subsequent submission made to City officials by or on behalf of the applicant. Specifically, we acknowledge receipt of copies of the following documents, which were the subject of our current review:

- Site Plans (50 drawings) dated May 10 and last revised October 24, 2024
- A Drainage Report dated May 10 and last revised October 25, 2024

Based upon our careful consideration and review of the cited information we offer the following comments and recommendations at this time:

General Comments

1. This project necessitates receipt of the following State Agency Permits: (a) a NHDES Alteration of Terrain Permit; (b) a NHDES Wetlands Permit; and (c) a NHDES Sewer Connection Permit. We recommend receipt of each required permit prior to or as a condition of site plan approval.
2. We understand the planned residential development will rely on public water and sewer utilities available at Hanover Street. Accordingly, we recommend the applicant receive local Water Use and Sewer Use Permits necessary to support the extent of buildout contemplated prior to or as a condition of site plan approval.

Civil Engineering

Land Surveying

Landscape Architecture

10 Commerce Park North, Suite 3B

Bedford, NH 03110

Phone (603) 627-2881

Fax (603) 627-2915

3. Given the extent of land area to be disturbed by planned construction activities, coupled with immediate proximity of this work to Densmore Pond and other on-site wetlands, we recommend the Planning Board rely on authority of Section 8.3 of the Site Plan Review Regulations (SPRR's) to require, as a condition of application approval, the applicant provide a performance guarantee, in an amount and form acceptable to your Department, to serve as a financial surety for: site restoration in the event of abandonment; installation and maintenance of appropriate erosion and sedimentation controls throughout construction; and full and final completion of public improvements and/or work within the public right-of-way at Hanover Street.
4. We understand the owner/applicant intends to voluntarily merge four existing parcels to yield the single 136+ acre tract that is the subject of this application. If so, we recommend execution and recording of a Notice of Voluntary Lot Merger prior to or as a condition of application approval.

Planning/Design Matters

1. A Parking Summary Chart provided on the Cover Sheet indicates a total of 527 planned on-site parking spaces. We count 526. We recommend reconciliation of this difference.
2. We continue to recommend expanding the drawings to provide a detailed layout of interior (garage) parking space stall and aisle dimensions. We note the project narrative indicates the dimensions of standard parking spaces situated within garages are planned to be 8' x 18', rather than 9' x 18', as required under Section 6.5.E (3) of the SPRR's. We also note Section 6.5.E (5) of the SPRR's authorizes Planning Board approval of "alternate parking designs" under certain circumstances. As acknowledged by a note on the site plan cover sheet, we understand the applicant seeks alternate parking design approval.
3. Existing Conditions Plans of the subject site depict and define the locations of various buildings, structures, site improvements, and utility infrastructure. We anticipate most existing improvements will be demolished or removed to facilitate the proposed construction. In addition, we understand it is the applicant's intent to preserve three existing brick kilns for purposes of legacy preservation. We continue to recommend expansion of the site plan drawings to provide a site preparation/demolition plan which specifically defines the intended disposition of existing building and site improvements.
4. Section 6.5.D (5) of the SPRR's require sidewalk availability on the frontage of the development parcel at Hanover Street. Although a public sidewalk presently exists along the easterly line of that segment of Hanover Street situated to the south of Old Etna Road, none currently exists to the north of that intersection. Accordingly, we recommend expansion of the site plan to specify installation of public sidewalk along the westerly line of Hanover Street, between the northerly site driveway of Lebanon High School and the proposed development's northerly site driveway, together with a painted crosswalk at the southerly limits of new sidewalk installation to facilitate safe pedestrian movement between the easterly and westerly lines of Hanover Street.

5. Note No. 1 on Sheet C2.0 acknowledges an existing bus stop, located at the corner of Heater Road and Old Etna Road, approximately 0.2 miles from the subject premises. In correspondence dated May 13th, the applicant's consultant acknowledged that "with the additional ridership resulting from this project there is potential to coordinate future stops." In anticipation that prediction may prove accurate, we recommend the applicant consider expanding the final site plan to identify a suitable bus stop location in the vicinity of one or both proposed site driveways. While we are not suggesting constructing any permanent improvement(s) at this time, we believe it may be wise to at least pre-plan for this eventuality.
6. To satisfy requirements of the SPRR's we recommend:
 - a. Identification of resident recreational facilities sufficient to satisfy Section 6.5.H. At present, a dog park and several small areas of "park space" are the only accommodations specified.
 - b. Identification of suitable on-site seasonal snow storage areas [Section 5.1.E (19)].
7. Sheets C2.1 through C2.3 graphically depict a series of planned dumpster enclosure installations. Sheet C7.2 provides details of dumpster pad and enclosure construction, which refer the reader to the "plan" for dimensions. We recommend the expansion of Sheets C2.1 through C2.3 to specify the referenced dimensions.
8. We continue to recommend the expansion of the site plan to specify accommodations for resident mail delivery.
9. Based upon consideration and review of Sheets C3.0 through C3.3 (Grading and Drainage Plans) we offer the following remarks:
 - a. We recommend the expansion of the drawings to specify location, elevation and details of proposed forebay construction at each of three proposed bioretention ponds. The Drainage Report indicates intent to satisfy stormwater pretreatment requirements of Section 6.6.E (10) of the SPRR's via forebay installation. If so, we recommend the expansion of the drawings to include corresponding design information.
 - b. We continue to recommend labeling proposed sluice construction on Sheets C3.2, C3.3, C4.2 and C4.3 respectively, as applicable.
 - c. We recommend the drawings identify the intended disposition of two existing 60-inch diameter and one existing 54-inch diameter culverts located in the vicinity of Building 1 (See Sheet C4.1).
 - d. We continue to recommend the expansion of the drawings to provide a detailed storm drainage pipe schedule.
 - e. We recommend the expansion of Sheet C3.1 to provide design details and elevations for the proposed trench drain installation at the parking garage entrance at Building 2.

- f. We recommend the design engineer specify headwall installation at the discharge from DMH 500 shown on Sheet C3.1.
 - g. We recommend the expansion of the Flared End-Section (FES) with Stone Protection detail provided on Sheet C7.3 to include data applicable to FES 301 shown on Sheet C3.1.
 - h. We recommend the expansion of the plans to include site specific details for each proposed outlet control structure.
10. Based upon review and consideration of the applicant's Drainage Report we offer the following remarks:
- a. We recommend the design engineer confirm availability of storm drain grate capacity sufficient to accommodate the 25-year return frequency design storm event.
 - b. As previously acknowledged, a swale is planned along the westerly limits of construction. This swale conveys intercepted surface and groundwater volumes to a wetland situated near the southerly site boundary. We continue to recommend the expansion of analysis to quantify and consider the impact of the volume of stormwater runoff from land situated beyond the development area intercepted and conveyed/redirected by proposed perimeter swale construction.
 - c. The existing watershed area map included in the drainage report appears to have a printing error with text and numbers. We recommend this be corrected.
 - d. The Drainage Report mentions sand filters, but no sand filters are specified on the site plan drawings.
 - e. No Infiltration Feasibility Report nor test pit logs were included in this submittal. As such, adequate separation between stormwater systems and the seasonal high-water table has not been evaluated.
 - f. HydroCAD calculations included in the report include a discrepancy in soil type area values between pre and post conditions. We recommend reconciliation of this discrepancy.
 - g. HydroCAD calculations call for a 5-foot weir length dimension at UIP-1 while Utility Note No. 11 on Sheet C1.0 species a uniform weir length of 4-feet.
11. Based upon consideration and review of design plans for wastewater collection and connection to existing public sanitary sewer at Hanover Street we offer the following remarks:
- a. Part Env-Wq 704.04 (b) of the New Hampshire Code of Administrative Rules (Rules) requires a minimum of 6-vertical feet of soil cover over sanitary sewer situated beneath paved surfaces. As shown on Sheets C4.1 through C4.3 there are several segments of proposed sewer which do not comply with this requirement.
 - b. We recommend a vertical drop in invert elevation of not less than 0.1-foot over the width of any sewer manhole. While a vertical drop of 0.1-feet is specified at most locations, there are others (Example: SMH 108 — Sheet C4.1) where invert-in and invert-out elevations match or are less than 0.1-feet. We recommend revision.

Mr. Brian A. Vincent, P.E.
November 21, 2024

- c. We recommend the expansion of Sheet C4.2 and C4.3 to specify pipe diameter, slope, and length values for segments of proposed sewer connecting the planned townhomes.
- d. We continue to recommend the addition of a label on the profile on sheet C6.1 at about station 5+25 to ensure an 18" separation between the water and the sewer line.
- e. We continue to recommend the addition of a typical sanitary sewer trench detail to the drawings.
- f. The drawings note proposed sewer will be constructed with PVC pipe. We continue to recommend expansion of the drawings to indicate PVC pipe and fittings incorporated with sewer construction shall be SDR 35 PVC.

We trust your department will find those remarks provided in this report useful in its continued consideration and review of the subject application. As always, please contact this writer in the event you should have specific questions or further instructions related to this matter.

Sincerely,

Steven B. Keach, P.E.
President
Keach-Nordstrom Associates, Inc.

From: [Tim Corwin](#)
To: [Fenstermacher, Dave](#)
Cc: [Richard Whitehouse](#); [Brian Vincent](#)
Subject: PLN Staff Comments_Revised Brickyard Plans
Date: Sunday, November 24, 2024 11:00:07 PM

Dave –

Below are Planning staff's initial comments on the revised Brickyard plan set last revised 10/24/24. Please note that I have not yet reviewed the landscaping and lighting plans, but other than landscaping and lighting and a few other odds and ends, below are the bulk of my comments on the revised plan set. I hope to have the rest to you by Wednesday.

I apologize for any typographical errors – I have run out of time to proofread closely before hitting send.

If you have any questions about any of the comments below, please don't hesitate to let me know. -
Tim

Note that items in bold were provided previously in either my 6/14 and/or 6/18 e-mails and appear to remain outstanding.

GENERAL

1. PUD/PURD narrative date 7/2/24 does not address the following:
 - a. **501.1.F.5 – ownership of open space**
 - b. **501.1.F.6 – protection of open space**
 - c. **501.1.F.7.a – open space documentation**
 - d. **501.1.F.7.b – open space physical delineation**
 - e. **Minimum required open space must be made available for public use**
 - f. 501.1.G – design guidelines
 - g. 501.1.J.1 – CUP approval requirements (except for 501.1.J.1.a.ii which the applicant has already addressed)
 - h. Typo: the 501.1.E.2.a numbering on page 5 begins with “e” instead of “a”.
2. **PURD density figure: wetlands area striping in legend is backwards**
3. **PURD calculations exhibit: under maximum quantity calculations, for density (SF required for first two units) change 20,000 for R1 to 10,000 and change 0 for RO1 to 10,000. Please readjust calculations accordingly.**
4. Waivers
 - a. Test pit waiver – Staff was agreeable to a waiver for the purposes of application acceptance only, but are not supportive of this waiver for the purpose of final design or final site plan approval. Note the final bullet at Comment #20 in KNA's memo of 6/26 recommended expansion of the applicant's drainage report to include all information required by the AoT.

- Note that any waiver request from a requirements of Section 6.6 must address in writing the criteria of Section 6.6.I in addition to the general waiver criteria of Section 7.2
- b. A waiver from Section 5.1.E.21 is not require if the construction details are acceptable to the Reviewing Engineer ok as presented
- 5. The project narrative submitted on 8/6/24 is now out of date. Staff recommends updating the narrative to reflect the new site layout.
- 6. Regarding Section 6.5.D.6.a of the Site Plan Regulations, the applicant noted the following in its letter of 8/7/24: “Interior to the development, the Applicant is considering ways to provide connectivity to existing trails, proposed dedicated open space, and other proposed site features [.]” *Please provide an update.*
 - a. Please coordinate with the Upper Valley Trail Alliance for additional connectivity opportunities/strategies.
- 7. Regarding Section 6.5.D.8 of the Site Plan Regulations, the applicant noted the following in its letter of 8/7/24: “a small extension [of sidewalk] is being considered by the Applicant to provide complete sidewalk coverage between site driveways.” *Please provide an update.*
- 8. Regarding Section 6.5.D.9 of the Site Plan Regulations, the applicant noted the following in its letter of 8/7/24: “The Applicant will coordinate with Advanced Transit and City staff to determine whether a new transit stop location is warranted based on the Project’s presumed increase in ridership demand. The design and maintenance practices described in the comment will be considered as this item progresses.” *Please provide an update.*
- 9. PUD/PURD CUP Support Statement:
 - a. request is for a CUP per 501.1.B & per 501.2
 - b. project narrative needs to be updated (it identifies 440,054 sf of building area and 14 buildings)
 - c. The narrative states that the project is “not expected” to impact floodplain. Is there uncertainty with respect to the project’s impact to the Floodplain District?
 - d. The narrative states that, “Cultural and historic resource assessment will be performed prior to ground disturbing activity.” Please clarify – issue being that such an assessment should be performed at the outset when designing a PURD.
- 10. 55 ft. ht CUP support statement:
 - a. project narrative needs to be updated (it identifies 440,054 sf of building area and 14 buildings)
 - b. The narrative states that the project is “not expected” to impact floodplain. Is there uncertainty with respect to the project’s impact to the Floodplain District?

PLAN SET

General

-
- 11. Sheet 36 – why does the development need to be designed to accommodate a semi-trailer?
- 12. Building 2 is located partially in the R-O District and therefore is restricted to a 45 ft. maximum height, whereas the plan set throughout indicates that Building 2 will be 55 ft. Please update

plan set accordingly.

13. **Remove all lot lines that will be eliminated with voluntary lot merger except on survey and existing conditions sheets.**
14. Can wildlife areas be approximately depicted? See 7/2 PUD narrative letter – page 2
15. Please provide elevation views of the townhouses.
16. **Provide details of short and long-term bike storage sufficient to demonstrate compliance with design requirements of Appendix A of the SPR**
17. **Can a crosswalk be provided across Hanover Street at the northern access drive?**
18. **The following information required by Section 5.1.E of the Site Plan Review Regulations is missing or incomplete (see highlighted text):**
 - a. **5.1.E.4.e.4, 8, 9 and 10: The following basic site information in TABLE FORM (shall be provided on the cover sheet):**
 - **Gross floor area of existing and proposed buildings/ additions**
 - **Height of existing and proposed buildings/additions**
 - **Number of stories and gross square footage of each**
 - b. **5.1.E.8: The location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures. The plan shall indicate those natural and man-made features that are to be removed, retained, or altered. Wetlands on the property shall be delineated by a NH Certified Wetlands Scientist, whose seal and signature shall appear on the plan. In addition, documentation in the form of the U.S. Army Corps of Engineers New England District Wetlands Delineation Data Sheets and/or other field notes and materials concerning the delineation shall be submitted to the Planning and Development Department. Indicate natural and man-made features to be removed, retained or altered on the existing conditions plan.**
18. **The plan set does not satisfy the following design requirements of Section 6.5 of the Site Plan Review Regulations (see highlighted text):**
 - a. **6.5.C.2: At least one primary entrance to the building shall face the public way on which the lot has frontage. Building 1 does not appear to meet this requirement. Building 1 does not appear to meet this requirement.**
 - b. **6.5.C.3: Pedestrian entrances shall be provided at least every 60 linear feet along the ground floor of the primary façade unless such egress would create safety or security concerns for the building's use. In such instances, a significant architectural feature that creates varied massing, such as a bay window or other feature, must be provided every 60 linear feet.**
 - c. **6.5.C.4.a: When parking structure (e.g., parking garage) is located on a lot with frontage, the portion(s) with frontage, shall be designed to include attractive fenestrations, high-quality materials, and varied design elements. At least 1/3 of frontage-facing elements in new construction shall be screened by occupied active interior space for other uses at the ground floor level (retail, lobby, etc.), or at least 1/3 of the frontage must have variation in massing, substantial transparency and additional architectural detail that is**

distinct from the rest of the building and which visually enhances the remainder of the ground floor level. Occupied uses shall have a depth of at least 20 feet.

- d. **6.5.D.5: The development [...] shall install sidewalks along the street frontage(s) in order to support a walkable community that has continuous connections between existing and planned sidewalks.**

19. Phasing Plan - Sheets 30-33 (C8.1-4)

- a. Label each sheet per phase; subphases of phase 3 need to be clearly identified
- b. Does not appear to include information required by Section 4.9.C

20. **Architectural renderings:**

- a. **Garage floor plans should identify use of oil/grit separators**
- b. **Remove “plans and elevations are subject to change” note**

Plan Sheets

22. Cover Sheet

- a. Site information table needs to be reworked to address each proposed building separately:
 - **For each building (Buildings 1, 2, 3, 4, and 5, the maintenance building, and each townhouse cluster): provide total gross floor area in total and per floor/story, number of floors/stories, # of units, unit mix (e.g. studios, 1 bedrooms, 2 bedrooms, 3 bedrooms), building height, number of garage parking spaces, number of long term bike storage spaces**
- b. **Add note that the lots will be voluntarily merged**
- c. **Zoning Summary Chart:**
 - Side and rear yard minimum setbacks are 50 ft. per Section 501.1.H.2 of the ZO
 - Identify building coverage provided in each zoning district (i.e. percentage of building coverage in the R-3, R-O-1, and R-1 portions of the development)
- d. Why are sheets 45-50 identified as “reference drawings”?
- e. “Parking Note”
 - includes a misspelling of “townhome”
 - townhouse use is considered one-family dwelling attached for purposes of 607 of the ZO
- f. All parking calculations and analysis needs to be updated to include the required parking for the townhouse units and **maintenance building**
- g. “Multifamily parking requirements”:
 - update to include townhouse and maintenance building parking.
 - Update parking provided and maximum parking to include all parking on site not just parking for the multifamily buildings
- h. “Multifamily parking summary chart”:
 - update to include requirements for townhouse and maintenance building parking.
 - There does not appear to be any item that references the 5-asterisk note
- i. EV parking requirements:

- update to include townhouse and maintenance building parking.
 - Note that EV parking is provided at 76% of the total parking; however, only a maximum of 65% is required. Please contact staff with any questions or for further clarification.
- j. PURD Calculations table:
- why did the buildable area of the R-1 portion of the property change from prior calculations?
 - Identify date of exhibits referenced
 - The second asterisk applies to both the R-1 and the R-O-1
- k. Open Space Calculations table – identify the amount of open space to be provided
23. Sheet 1 (C1.0)
- a. Demolition note 1 must also be shown graphically on the existing conditions plan or a separate demolition plan sheet
 - b. Local permits: add driveway permit and stormwater permit (check with DPW)
 - c. **Layout materials and notes, note 4: site features need to be consistent with the site plan**
24. Sheet 2 (C1.1)
- a. What is “limited” conservation land and where is it shown on the plan sheet?
 - b. Where is the “125 feet – NH Conservation Land” shown on the plan sheet?
25. Sheet 4 (C1.3)
- a. What is the “potential future pedestrian path” and is it proposed as part of this project?
26. Sheet 5 (C1.4)
- a. Please remove unnecessary layers including existing conditions. Please depict only proposed above-ground conditions.
 - b. Move EV notes to Sheets C2.1-3
 - c. Change side and rear setbacks to 50 ft.
 - d. Plan sheet should show all proposed improvements both on-site and off site including but not limited to:
 - required sidewalks along Hanover Street portion of property
 - crosswalk at northern driveway entrance
27. Sheet 7 (C2.1)
- a. **The plat is very difficult to read. Please remove unnecessary layers including existing conditions, and provide additional labels to identify what’s proposed**
 - Remove underground features, including but not limited to the subsurface detention basin. Please depict only proposed above-ground conditions.
 - b. **What is the circle in the landscaped area in between the parking lots for Bldgs 2 and 6?**
 - c. **“existing mailboxes to be relocated” please show proposed relocation**
 - d. Sidewalk required along hanover street frontage
 - e. Notes on features to be demolished should be removed and shown on the existing conditions plan or a separate demolition plan sheet
 - f. What is meant by the box culvert being “anticipated”?
 - g. Identify outdoor bike storage and number of spaces per rack/fixture

- h. The proposed decorative metal fence will be located behind the retaining wall except along the proposed patio/outlook where the fence will be placed on top of the retaining wall, is that correct?
- i. Where are the show storage areas?

28. Sheet 8 (C2.2)

- a. **The plat is very difficult to read. Please remove unnecessary layers including existing conditions, and provide additional labels to identify what's proposed.**
 - Remove underground features, including but not limited to the subsurface detention basin. Please depict only proposed above-ground conditions.
- b. "Future" EV chargers – what is meant by "future"? When are they proposed to be installed? Please add note re: same
- c. In areas marked "Park space", what is proposed for these spaces other than grass and landscaping?
- d. A grass area is proposed in front of the dumpster at the north end of building 2, is that correct?
- e. Where are the show storage areas?

29. Sheet 9 (C2.3)

- a. **The plat is very difficult to read. Please remove unnecessary layers including existing conditions, and provide additional labels to identify what's proposed**
 - Remove underground features. Please depict only proposed above-ground conditions.
- b. **Sidewalk required along hanover street frontage**
- c. In connection with the maintenance building, add note that no outdoor storage is permitted
- d. Change side and rear setbacks to 50 ft.
- e. What is the purpose of the 6 parking spaces along the north side of the northern access drive?
 - Note that it's not clear that these parking spaces are permitted within the 50 ft. PUD buffer
- f. The maintenance building is identified as 2 stories, but in the rendering it appears to be 3, or at least 2 ½ stories
- g. Where are the show storage areas?
- h. What is meant by the modular block retaining wall being "proposed"? Will it not be constructed?
- i. What is meant by the box culvert being "anticipated"?

30. Sheet 43 (Sv-2)

- a. **Identify limits of disturbance/limit of clearing**
- b. **Identify features to be removed**
- c. "Lane Holdings" and "Loney" incorrectly identified as property owners
- d. Legend does not include/identify "dash-dot-dot-dash" line

31. Sheet 44 (Sv-3)

- a. "Lane Holdings" and "Richard Marchese" incorrectly identified as property owners

32. Sheet 47

- a. To hide unsightly building features including stairwells and elevator shafts, please consider rotating Building 1 so that what's currently identified as the "surface parking area" elevation becomes the Hanover Street facing elevation

TIM CORWIN, AICP

DEPUTY PLANNING AND DEVELOPMENT DIRECTOR

CITY OF LEBANON

(603) 448-1524 (OFFICE)

(603) 442-6127 (DIRECT)

TIM.CORWIN@LEBANONNH.GOV

[BOOK A TIME TO MEET WITH ME](#)

To: Tim Corwin
 Deputy Planning & Development Director
 City of Lebanon
 51 North Park Street
 Lebanon, NH 03766

Date: December 4, 2024

Project #: 52933.00

Re: Brickyard PURD Response to Comments Package

We are sending you: ☒ Attached ☐ Under separate cover via Regular Mail, the following items:

☐ Shop Drawings ☒ Prints ☒ Plans ☐ DVDs ☐ Specifications ☐ Copy of Letter ☐ Change Order

☐ Other: _____

Copies	Date	No.	Description
6	12/4/2024	1	Updated Site Plans (5 11x17s, 1 Full Size)
5	12/4/2024	2	Response to Traffic Comments Letter
5	12/4/2024	3	Response to ConComm Comments Letter
5	12/4/2024	4	Response to Fire Department Comments Letter
5	12/4/2024	5	Response to Heritage Commission Comments Letter
5	12/4/2024	6	Response to Pedestrian-Bicyclist Advisory Committee Comments Letter
-	12/4/2024	7	Updated Stormwater Report (Electronic)

These are transmitted as checked below:

☒ For approval	☐ Approved as submitted	☐ Resubmit	_____ Copies for approval
☐ For your use	☐ Approved as noted	☐ Submit	_____ Copies for distribution
☐ As requested	☐ Return for corrections	☐ Return	_____ Corrected prints
☐ For review and comment	☐ For bids due		
☐ Returned prints on loan to VHB			

Remarks: _____

VHB agrees to provide materials to the Client stored electronically. The Client recognizes that data, plans, specifications, reports, documents, or other information recorded on or transmitted as electronic media, including, but not limit to, CADD Documents (together, "Electronic Documents") are subject to undetectable alteration, either intentional or unintentional, due to, among other causes, transmission, conversion, media degradation, software error, or human alteration. Accordingly, the Electronic Documents are provided to the Client for informational purposes only and not as an end product. VHB makes no warranties, either express or implied, regarding the fitness or suitability of the Electronic Documents.

The Electronic Documents are instruments of professional service, and shall not be used, in whole or in part, for any project other than that for which they were created, without the express written consent of VHB and without suitable compensation to VHB. Accordingly, the Client agrees to waive any and all claims against VHB resulting in any way from the unauthorized alternation, misuse or reuse of the Electronic Documents, and to defend, indemnify, and hold VHB harmless for any claims, losses, damages, or costs, including attorney's fees, arising out of the alteration, misuse or reuse of any Electronic Documents.

Copy to: _____

By: Tom D'Aguiar, PE
Richard Whitehouse, Project Manager



December 4, 2024

Ref: 52933.00

Nathan Reichart
Planning and Development Director
51 North Park Street
City Hall, 5th Floor
Lebanon, NH 03766

Re: Proposed Multi-Family PURD Development
174 Hanover Street
Response to Comments -Lebanon Conservation Commission

Dear Mr. Reichart:

On behalf of Brickyard One Nominee Trust (the "Applicant"), VHB is pleased to provide the following responses to the comments by the Lebanon Conservation Commission dated 10/11/2024, for the Lebanon Brickyard Residential Development (the "Project").

For ease of reference, VHB has provided a copy of each comment in italics followed by responses in plain text.

These responses have been prepared by the project team, including:

- Brickyard One Nominee Trust – Applicant
- VHB – Land Surveyor, Site Civil Engineer, Traffic Engineer, and Landscape Architect

Lebanon Conservation Commission Comments

Comment 1 *Alteration of the terrain*

The proposed development will significantly change the slope of the land and its geology (principally glacial till and associated rock), and it will be important to ask further questions related to how the alteration of the terrain will affect permeability of the slopes and flow of upslope water through to the wetland to the southern margin of the development. The site visit sponsored by the developer revealed remarkable numbers of large boulders, probably derived from glacial activity 10,000 or more years ago. How will removing these boulders affect normal soil and hydrological functions above, within, and below the development site? We recommend a careful and thorough review of the Alteration of Terrain application, and the Conservation Commission's input should be helpful. We understand that the Planning Board and Conservation Commission do not usually have the opportunity to review an AOT application, but we think that it is important to do so in this case.

Response: The project has been largely redesigned to add fill over the existing glacial till with significantly reduced amount of excavation of existing slopes. The addition of clean fill material over the existing substrate will result in a more level surface that will slow the velocity of stormwater



across the landscape and promote infiltration. The additional fill layers will provide more opportunity for stormwater filtration in vegetated areas of the site. The areas of cut will be reinforced with stone rip rap covered with topsoil and revegetated. This will result in a stable vegetated slope that will prevent erosion.

The site plan and stormwater management report to be submitted to the NHDES Alteration of Terrain Bureau are the same materials submitted to the City of Lebanon during the Site Plan approval process. The City of Lebanon is copied on the NHDES AoT application and any subsequent AoT correspondence as required by statute. The Conservation Commission may submit comments to the AoT Bureau to consider during that process. VHB and the Applicant will respond to any Requests for More Information issued by NHDES and copy the City, as required.

Comment 2 *Disturbance of wetlands*

Wetlands on the site will be disturbed and filled, and water flow patterns will likely be changed dramatically by alteration of the terrain and creation of impermeable surfaces by buildings and driveways. The Conservation Commission will welcome the opportunity to review the NHDES wetland impact permit application, when available and as early as possible. We encourage the Planning Board to consider the bigger issue of how this development at the base of Quarry Hill and the Mt. Support upland will affect flood mitigation benefits now provided by wetlands and related forested ecosystems on flood water flow to the Mascoma River and downtown Lebanon. Given the ever-changing nature and frequency of extreme weather events in our region associated with climate disruption, this concern takes on increasing importance each year.

Response: The project as currently designed will not result in direct disturbance or filling of any wetlands within or adjacent to the site and therefore impacts to the flood storage function and capacity of these wetlands are not expected. Additionally, the site stormwater design reduces peak runoff rates pursuant to requirements of NHDES, while still maintaining existing flow patterns. The treatment of stormwater will also be enhanced on site through installation of permanent stormwater BMPs to ensure water quality downstream is not compromised.

Project impacts to be permitted under a NHDES Wetlands Permit Application are related to the installation of two culvert crossings of a mapped unnamed perennial stream which flows through the subject property to permit site access. As part of NHDES permitting, these crossings will be designed in accordance with the criteria listed in the NHDES Stream Crossing Rules (Chapter Env-Wt 900). This will include completion of a hydraulics analysis and geomorphic assessment to characterize the existing stream channel and to ensure that the subject crossings are sized appropriately to maintain existing flow patterns and to adequately accommodate future predicted flows including storm events.

Comment 3 *Changes in soil properties*

The application has provided soils information, including soil series names and basic properties, which is helpful in the review process. Given the nature of the proposed alteration of terrain, the nature and properties of the forest soils on the site will be dramatically changed. To what extent can these changes be quantified and predicted ahead of time? Are the likely changes acceptable,



in light of functions and values associated with the soils of the hillside above and environment of Densmore Pond. How will the permeability and physical stability of the landscape and its soils be changed by the proposed development?

Response: A large portion of the site has been previously disturbed by the operation of the brickyard including the areas around and behind the former buildings, kilns and pond. Due to the disturbance, natural soils were not identified in these areas or in the forested area extending beyond proposed Building 2 and 3 that had visible piles of refuse and brick from the previous operations on the site. Moving up the slope where Buildings 4 and 5 and the town houses are proposed, the soil development in these areas is minimal and discontinuous due to the extremely bouldery condition to the south and the shallow bedrock to the north. As a result, the quantity and quality of forest soils in the development area are minimal.

The proposed project is going to level the site for development by adding clean fill and installing buildings and pavement over existing soils. The resulting impermeable surface area that will be created has been quantified and the stormwater management system has been designed and located to match or reduce peak rates of runoff from the existing condition. The stormwater management system has also been designed to treat stormwater to meet water quality requirements under existing regulations.

A geotechnical engineer will be engaged to complete subsurface investigations across the development area and will provide a report and recommendations for foundation design, slope design and stability, and permeability of the soils. Stormwater management system design will be updated based on the findings of the subsurface investigations, if needed to maintain compliance with NHDES requirements.

Comment 4 *Transformations of groundwater flows and hydrology*

The applicant has designed and quantified how stormwater will be channeled and treated on site before it dumps into the City drainage system on Hanover St. But quantifying groundwater flow rates, paths, and volumes is complex and difficult, and this may complicate the success of the designed stormwater management system for surface waters. We encourage the Planning Board to give special consideration to this issue, given its challenges and importance for ecosystem function, wastewater management, and possibly drinking water supplies.

Response: Groundwater flow rates, paths and volumes are not within the scope of investigation when developing a site. A wetland delineation and soil survey were completed to determine where the water table is present within 12 inches and 40 inches of the soil surface, respectively. This information is used to design the project to avoid and minimize impacts to wetlands and, in part, to design stormwater treatment and other infrastructure with sufficient separation from the groundwater table so that collected water is filtered and discharged at a rate that will not impact downstream resources.

Stormwater from this project is not directed to the City's drainage system and is providing detention and treatment of the runoff from development areas entirely within the project limits



pursuant to NHDES and City of Lebanon requirements. Stormwater management is not anticipated to have any impact on the wastewater management system in the project.

Comment 5 *Maintenance of wildlife habitat and forest ecosystem integrity*

Disturbance of the riparian forest buffers around Densmore Pond, the wetlands on the south end of the proposed development, and the forest ecosystem upslope from the pond and building area could have major effects on wildlife habitat and movement during different times of the year. Given its location at the base of Quarry Hill to the west and the Mt. Support uplands to the north of the site, we encourage the Planning Board to request considerable detail on ecological and wildlife impacts of the proposed development. This may require more study and evaluation than is currently available in New Hampshire and Lebanon reports on the issue.

Response: The Project parcels overlap hemlock-hardwood-pine, developed impervious, and developed or barren land habitat types as mapped by New Hampshire Fish and Game's (NHFG) Wildlife Action Plan (WAP) (2020). Hemlock-hardwood-pine is the most common forest type in New Hampshire and covers almost fifty percent of the state. The Project parcels do not overlap areas mapped by the NHFG WAP as Highest Ranked Habitat in New Hampshire (defined as the top 15% by area of each mapped habitat and rare habitats) or Highest Ranked Habitat in the Region (defined as the top 30% of each mapped habitat in the region and priority natural communities).

The Project aims to minimize impacts to wildlife by confining development closest to Hanover Street and Interstate 89 and associated developed areas along the roadway corridor including surrounding residential homes and the Lebanon High School. Additionally, the Project is primarily sited over areas of previous disturbance/degradation associated with the former Densmore Brickyard. Steep slopes existing along the western periphery of Densmore Pond also limit the migration of species between the pond and the adjacent area to the west.

The Project does not propose any impacts to the existing wetlands or Densmore Pond and will maintain the current mapped unnamed perennial stream that traverses through the site. The Project considers the east/west wildlife connectivity between the large wetland complex to the east (opposite side) of Hanover Street and forested tracts further east and north of Heater Road, and the large undeveloped forested tract to the west and north associated with Quarry Hill and Mount Support by preserving a total of 12 acres of open space to the south and north of the proposed development. Preservation of this open space coupled with the presence of an existing overhead electric utility right-of-way that abuts the Project to the south will allow for continued wildlife movement through the area.

According to the City of Lebanon's Wildlife Corridor Report (November 2016), the Project parcels do not intersect identified "Best" or "Major" wildlife crossings or wildlife crossings from the City's Natural Resource Inventory. In terms of wildlife species, black bear observations were noted in the 2016 Report within the large undeveloped and remote forested tract to the northwest of the Project. Other species that may utilize corridors surrounding the Project include but are not limited to deer, coyote and red fox based on a review of species observations associated with Mt Support as listed in the 2016 Report.



Temporary disturbance to neighboring wildlife related to heightened activity and noise is expected during project construction. Noise generated from excavation, grading and truck traffic is expected to flush wildlife from active project areas. As construction crews work the site, it is expected that disturbed wildlife will ultimately avoid these active construction areas leading to a temporary shift in travel patterns and inhabitation of nearby available habitat. The project post-construction is not expected to have adverse impacts on local species and their behavioral patterns, habitat needs and travel.

Finally, it is important to note that as part of NHDES permitting, the Project will undergo review and consultation with the New Hampshire Natural Heritage Bureau, NHFG, and the U.S. Fish and Wildlife Service with respect to local species concerns. Project approval will be contingent upon the successful conclusion of consultation with these agencies.

We hope that find the responses provided herein satisfactory. We are available to discuss further if helpful.

Sincerely,

A handwritten signature in blue ink, appearing to read "DF", followed by a horizontal line.

David Fenstermacher, PE
Managing Director



December 4, 2024

Ref: 52933.00

Nathan Reichart
Planning and Development Director
51 North Park Street
City Hall, 5th Floor
Lebanon, NH 03766

Re: Proposed Multi-Family PURD Development
174 Hanover Street
Response to Comments -Lebanon Fire Department

Dear Mr. Reichart:

On behalf of Brickyard One Nominee Trust (the "Applicant"), VHB is pleased to provide the following responses to the comments by the Lebanon Fire Department dated November 8, 2024 for the Lebanon Brickyard Residential Development (the "Project").

For ease of reference, VHB has provided a copy of each comment in italics followed by responses in plain text.

These responses have been prepared by the project team, including:

- Brickyard One Nominee Trust – Applicant
- VHB – Land Surveyor, Site Civil Engineer, Traffic Engineer, and Landscape Architect

Lebanon Fire Department Comments

Comment 1 *According to the US Forest Service Wildland Urban Interface 2020 Map Service, the property is in the Wildland-Urban Intermix and Interface area. Per the 2018 NFPA 1, Section 17.1.1: In cases in which the local jurisdiction declares that an area within the jurisdiction is a wildland urban interface as determined by an assessment tool based upon accepted fire services practices, or where new structures will be located in a wildland/urban interface or intermix area, the AHJ shall perform, or cause to be performed, a wildland fire hazard assessment of each structure ignition zone in the development to determine relative risk, the extent of wildland fire hazard, and applicable mitigation measures. Due to this proposed development being in both the intermix and interface, the applicant will be required to complete a wildland fire hazard assessment. The applicant has noted on Page 34 of the "Response to Comments" memo dated August 7, 2024 that a consultant has been retained to provide this evaluation. Please forward the results as soon as possible.*

Response: A Wildland Fire Hazard Assessment Plan has been added to the Site Plans (sheet WU-1).



Comment 2 *An additional fire hydrant should be located in the area of the building for Townhomes 48-51 as it is almost 800 feet between the hydrant near the maintenance building and the next closest hydrant located between Townhome building 1-8 & building 15-21.*

Response: An additional fire hydrant has been added to this location. An updated utility sheet has been provided with this submission showing the location of the hydrant.

Comment 3 *The fire hydrant located in the island in front of Building 3 is not in a suitable location to serve Building 2. Depending upon where the building fire department connections to the automatic fire sprinkler system are located, a hydrant located on each end of the parking island would be better suited for fire department operations. With a hydrant on each end of the island, a responding fire truck can drop a member at the hydrant to allow a forward hose lay when needed. It will also negate the need for a fully dressed member with airpark to drag 4 inch supply line in between vehicles through the island potentially damaging parked vehicles*

Response: An additional fire hydrant has been added to this location and the hydrant in front of building 3 has been relocated. An updated utility sheet has been provided with this submission showing the location of the hydrant.

We hope that find the responses provided herein satisfactory. We are available to discuss further if helpful.

Sincerely,

A handwritten signature in blue ink, appearing to read "DF", followed by a long horizontal stroke.

David Fenstermacher, PE
Managing Director



December 4, 2024

Ref: 52933.00

Nathan Reichart
Planning and Development Director
51 North Park Street
City Hall, 5th Floor
Lebanon, NH 03766

Re: Proposed Multi-Family PURD Development
174 Hanover Street
Response to Comments -Heritage Commission

Dear Mr. Reichart:

On behalf of Brickyard One Nominee Trust (the "Applicant"), VHB is pleased to provide the following responses to the comments by the Heritage Commission dated October 6, 2024, for the Lebanon Brickyard Residential Development (the "Project").

For ease of reference, VHB has provided a copy of each comment in italics followed by responses in plain text.

These responses have been prepared by the project team, including:

- Brickyard One Nominee Trust – Applicant
- VHB – Land Surveyor, Site Civil Engineer, Traffic Engineer, and Landscape Architect

Heritage Commission Recommendations

Comment 1 Assessment

- *Conduct a historical survey of the project site, including the Densmore Brickyard, Chandler's Cabins, and the quarries.*
 - *The majority of structures on the site will be destroyed as part of this project but no action should be taken until the impact of the demolitions on the historical significance of the site and structures is fully understood.*
- *Conduct an archeological study of the project site, including the Densmore brickyard, Chandler's Cabins, and the quarries.*
 - *The archaeology of the site will largely be destroyed by the new construction, so it will be important to have a thorough record of the existing archaeological evidence.*

Response: A Request for Project Review (RPR) has been submitted to NH Division of Historical Resources (NHDHR) to initiate consultation. The RPR includes a description of the proposed project, the proposed project plan set, and the identification of properties and resources 50 years or older on the site or in the vicinity of the project. An evaluation of the integrity and eligibility of



the resources to be listed on the National Register within the project site will be conducted as part of the consultation with NHDHR. An effects evaluation will be conducted after the significance of the historic resources is established with NHDHR. The consultation is ongoing at the time of this letter.

Comment 2 Preservation

- *Preserve and rehabilitate the two beehive kilns.*
 - *Under the current site plan, the kilns are intended to be retained, but active preservation and rehabilitation, if possible, should be undertaken to ensure that the kilns remain intact for future generations.*

Response: The proposed project has made the preservation of the kilns a priority, which ensures their preservation regardless of whether the state or federal regulatory requirements dictate it based on an adverse effect finding.

Comment 3 Access and education

- *Provide public access to the beehive kilns, including the interiors.*
 - *Much of the significance of the kilns is their interiors, including the ceilings. Without access, much of their impact is lost.*
 - *As a significant part of Lebanon's history, the kilns should be accessible to Lebanon's residents, not only project residents.*
- *Create interpretative materials to educate the public about the history and significance of the site.*
- *Enact any practicable recommendations resulting from site assessments, including preservation and education guidance.*

Response: The access to the interior of the kilns has been discussed in several different ways. Potential "exposure" to the interior may not be in the physical sense, but interpretive materials in which the public could interact with is under discussion, including interpretive panels or display materials. The proposed project plans integrate public accessibility near Building 1, including parking and a potential "overlook" from the parking level.

We hope that find the responses provided herein satisfactory. We are available to discuss further if helpful.

Sincerely,

A handwritten signature in blue ink, appearing to read "DFenstermacher".

David Fenstermacher, PE
Managing Director



December 4, 2024

Ref: 52933.00

Nathan Reichart
Planning and Development Director
51 North Park Street
City Hall, 5th Floor
Lebanon, NH 03766

Re: Proposed Multi-Family PURD Development
174 Hanover Street
Response to Comments -Pedestrian-Bicyclist Advisory Committee

Dear Mr. Reichart:

On behalf of Brickyard One Nominee Trust (the "Applicant"), VHB is pleased to provide the following responses to the comments by the Pedestrian-Bicyclist Advisory Committee from the hearing dated September 9, 2024 for the Lebanon Brickyard Residential Development (the "Project").

For ease of reference, VHB has provided a copy of each comment in italics followed by responses in plain text.

These responses have been prepared by the project team, including:

- Brickyard One Nominee Trust – Applicant
- VHB – Land Surveyor, Site Civil Engineer, Traffic Engineer, and Landscape Architect

Pedestrian-Bicyclist Advisory Committee Comments

Comment 1 *Construct a sidewalk the length of the development on all areas it touches Hanover Street -north and south ends.*

Response: The Applicant is currently exploring the ability to provide additional sidewalk from the northern proposed site driveway to new crosswalks at the intersection of Hanover Street and Old Etna Road. This extension of the existing sidewalk would provide continuous sidewalk coverage between both proposed site driveways and to the greater existing sidewalk network beyond Hanover Street, including the pedestrian bridge over I-89. Construction of additional sidewalk beyond the current proposal along Hanover Street or Hanover Street Extension requires extensive enabling work including but not limited to wetland impacts, tree clearing, utility pole relocation, closed drainage system expansion, roadside drainage and outfall relocation, private driveway impacts, and mailbox relocation. The Applicant is amenable to contributing to a study along Hanover Street and/or Hanover Street Extension aimed at better understanding the need for pedestrian improvements in the immediate project area.



Comment 2 *Move the Northern Street crossing south so it's at the school's northern driveway. This will shorten the time pedestrians and kids riding bikes will have to spend in the road because this area to cross is a lot narrower.*

Response: Extending the sidewalk further south along Hanover Street than currently contemplated would require direct impacts wetlands. Pedestrian refuge is available at the existing island at the northeast corner of Hanover Street and Old Etna Road.

Comment 3 *"T" up Old Etna Road and the Northern Driveway to create a safe 4 way stop intersection. If this is not possible, try to get it as close as possible to create an all way stop intersection.*

Response: Based on discussions with City of Lebanon officials and the peer review consultant, consideration was previously provided in constructing the northern site driveway across from Old Etna Road but was not pursued due to wetland concerns along the west side of Hanover Street. In addition, the consideration of placing the existing Hanover Street and Old Etna Road intersection under All-Way Stop-Control was discussed and determined not to be desirable due to a right-turn movement from Old Etna Road (onto Hanover Street northbound) that may conflict with a stopped vehicle on the Hanover Street southbound approach. Further, preliminary review of geographic information system (GIS) data showed that the property lines for 237 Hanover Street (property located on the northeast corner of the intersection) would limit the ability of realigning the Old Etna Road leg without land acquisition.

During the initial stages of the process, the Applicant purchased the 238 Hanover Street property. This effort was conducted to separate the conflicts between the turning movements at the Hanover Street intersections with Old Etna Road and the proposed northern driveway. In addition, this land purchase allowed the northern driveway to be designed in a location to reduce wetland impacts.

Comment 4 *Evans Drive/Hanover Street 4 way stop intersection needs a pedestrian-controlled stop light.*

Response: The Hanover Street intersection with Evans Drive and the proposed south site driveway is to be placed under All-Way Stop-Control to help control left-turn conflicts, improve traffic operational characteristics of the intersection, and account for pedestrian and bicycle movements. If the criteria are satisfied, Federal Highway Administration (FHWA) officials support rectangular rapid flashing beacons (RRFBs) to be installed at uncontrolled, marked crosswalks but not for crosswalks across approaches controlled by YIELD signs, STOP signs, traffic control signals, or pedestrian hybrid beacons (except for the approach to or egress from a roundabout). Although RRFBs would not be supported at the All-Way Stop Control intersection because all four approaches would be under STOP sign control, a crosswalk would be striped across the Hanover Street north leg with accompanying signage for pedestrian travel when motorists are stopped.

Comment 5 *Perform new traffic/pedestrian/bike counts in September or in May when more people are riding and walking.*

Response: Based on historical weather data at the time of the data collection efforts, November 10 and 12, 2022 reached temperatures of 68 and 70 degrees, respectively. There was no precipitation



recorded on Thursday, November 10, 2022, and the precipitation was 0.54 inches on Saturday, November 12, 2022. In comparison, temperatures were recorded to have reached 66 degrees and there was no precipitation on Thursday, September 15, 2022, and temperatures reached 55 degrees and there was 0.01 inches of precipitation on Thursday, May 19, 2022. These weather conditions suggest that recounting specific locations within the study area in May or September would not result in noticeable differences since the weekday weather mimicked that of the conditions in September and May 2022.

Comment 6 *Wording “Potential Future” to describe the sidewalk on the north side. This needs to be an item that will definitely happen.*

Response: The Applicant is amenable to constructing this sidewalk connection, however the right-of-way boundary location is unclear despite significant land records research and additional land surveyor field work. This matter is being investigated further to determine the available area to accommodate the sidewalk connection. If it's determined that the sidewalk will be located on private property, construction of the sidewalk would be dependent on the private landowner granting a permanent sidewalk/public access easement.

Comment 7 *Create a link to the existing trail network at Boston Lot and have trail access parking available to the public.*

Response: Six parking spaces have been added at the southern driveway to allow for public access to these trail networks. A connector trail will be provided to existing trail network. This has been clarified on the updated site plans.

Comment 8 *Install more long-term bike parking.*

Response: Each of the 51 townhomes have a garage providing an area for long term bike storage that was not accounted for in the provided storage for our multifamily units. As designed, the multifamily units are to meet the requirement of 127 total long term spaces, however, the architect is considering a long term space at the head of each garage parking space. This would provide a total of 237 total long term bike spaces for the multifamily units.

We hope that find the responses provided herein satisfactory. We are available to discuss further if helpful.

Sincerely,

A handwritten signature in blue ink, appearing to read "DF", with a stylized flourish extending to the right.

David Fenstermacher, PE
Managing Director



December 4, 2024

Ref: 52933.00

Nathan Reichart
Planning and Development Director
51 North Park Street
City Hall, 5th Floor
Lebanon, NH 03766

Re: Proposed Multi-Family PURD Development
174 Hanover Street
Response to Comments -Peer Review Weston & Sampson

Dear Mr. Reichart:

On behalf of Brickyard One Nominee Trust (the "Applicant"), VHB is pleased to provide the following responses to the peer review comments by Weston & Sampson, the traffic reviewer for the Lebanon Brickyard Residential Development (the "Project").

For ease of reference, VHB has provided a copy of each comment in italics followed by responses in plain text. Please note in Weston & Sampson's latest comment letter, several comments are noted as satisfied/no further comment or action needed. For clarity, the satisfied comments are not included in this response letter.

These responses have been prepared by the project team, including:

- Brickyard One Nominee Trust – Applicant
- VHB – Land Surveyor, Site Civil Engineer, Traffic Engineer, and Landscape Architect

Traffic Report Comments

Comment 1a *The revised traffic study was sealed. The Trip Generation Letter would also be expected to be sealed.*

Response: The sealed Trip Generation Letter has been provided along with this response letter.

Comment 2b *Please provide truck turning templates for the city's Fire Truck, a trash truck and a WB-67 to enter/exit both driveways from all directions and circulate within the site. The applicant added sheets depicting vehicle pathing for a fire truck, a WB-50 truck, and a trash truck. The latest sheets reviewed with the updated proposed site plan. Both proposed driveways appear to be approximately 24-feet wide. The firetruck is shown encroaching Hanover Street's opposing northbound lane and the driveway's opposing eastbound lane. Recommend configuring the driveway so a firetruck may enter the site at either driveway, via left turn or right turn, without encroaching the opposing lane on the driveway. The garbage truck is shown encroaching Hanover Street's opposing northbound lane and the driveway's opposing eastbound lane. Recommend*



configuring the driveway so a trash truck may enter driveways without encroaching lanes on Hanover Street or the driveway.

Response: The vehicle tracking sheets have been updated (attached) showing both the trash truck, and the fire truck entering the site driveway without encroaching into Hanover Street's opposing northbound lane. Both vehicles still encroach on the driveway's opposing eastbound lane, however, VHB believes that there is a greater risk of losing the integrity of the four-way intersection at Evan's Drive by widening the driveway, than need for ability of these vehicles to enter the driveway within their own lane due to the difference in frequency of each occurrence.

Comment 2d *Extend sidewalk along the west side of Hanover Street from the north driveway south to Old Etna Street and add a crosswalk(s) and ADA ramps as required across Hanover Street connecting to the existing sidewalk on Old Etna Street. This will provide a pedestrian connection from the site to the existing bus stop on Heater Road. Weston & Sampson recommends the planning commission decide if the additional sidewalk and crosswalk should be part of the project.*

Response: The Applicant has committed to installing portions of sidewalk along the subject property's frontage and will continue to coordinate with the City of Lebanon regarding off-site sidewalk improvements, including the location described in this comment.

We hope that find the responses provided herein satisfactory. We are available to discuss further if helpful.

Sincerely,

A handwritten signature in blue ink, appearing to read "DF".

David Fenstermacher, PE
Managing Director

A handwritten signature in blue ink, appearing to read "Jason R. Plourde".

Jason R. Plourde, PE, PTP
Transportation Systems Team Leader



October 25, 2024

Ref: 52933.00

Tim Corwin
Deputy Planning and Development Director
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Trip-Generation Letter
Lebanon Brickyard Residential Development
Hanover Street, Lebanon, New Hampshire

Dear Tim:

VHB prepared and submitted an August 2024 Traffic Impact Study for the proposed Lebanon Brickyard residential development to be located along the west side of Hanover Street in Lebanon, New Hampshire. At that time, the development program consisted of constructing 474 apartment units in 10 four-story buildings. During the local permitting process, the development program has changed to consist of 474 multifamily units to include 422 apartment units, 51 townhouse units, and 1 residential unit for the property caretaker within the maintenance building. VHB has prepared this letter to summarize the trip-generation estimates for the revised build program and provide a comparison to the site trips estimated within the Traffic Impact Study. In summary, the additional trips to be generated by the current development would generally result in the same intersection operational results as those documented within the August 2024 Traffic Impact Study.

Trip Generation Methodology

To estimate the volume of traffic to be generated by the proposed project, trip rates that are published in the Institute of Transportation Engineers (ITE) Trip Generation Manual¹ were reviewed. The site trips were estimated using ITE Land Use Code 221: Multifamily Housing (Mid-Rise) for 301 apartment units (4-10 residential floors), ITE Land Use Code 220: Multifamily Housing (Low-Rise) for 121 apartment units (2-3 residential floors), and ITE Land Use Code 220: Multifamily Housing (Low-Rise) for 51 townhouse units (2-3 residential floors). The property caretaker is not anticipated to generate vehicle trips to and from the site during the peak time periods (i.e., these trips would occur off-peak). Table 1 summarizes the peak hour trip-generation estimates of the proposed development. In addition, Table 1 includes a trip comparison to those estimates evaluated within the August 2024 Traffic Impact Study. The trip-generation calculations are attached to this letter. These site trips may be higher than anticipated as residents may use the other modes of available transportation rather than personal vehicles (e.g., Advance Transit, Upper Valley Loop Trail, and pedestrian bridge over I-89).

¹ Institute of Transportation Engineers. Trip Generation Manual, 11th ed. Washington, DC, Sept. 2021.



Table 1 Trip-Generation Summary

Peak Hour/Direction	Mid-Rise Multifamily Trips ^a	Low-Rise Multifamily Trips ^b	Total Proposed Trips ^c	Traffic Study Trips ^d	Additional Trips ^e
Weekday AM					
Enter	28	18	46	45	1
Exit	93	58	151	152	(1)
Total	121	76	197	197	0
Weekday PM					
Enter	72	60	132	113	19
Exit	46	35	81	72	9
Total	118	95	213	185	28
Saturday Midday					
Enter	62	36	98	97	1
Exit	59	35	94	93	1
Total	121	71	192	190	2

a ITE Land Use Code 221: Multifamily Housing (Mid-Rise) for 301 units.

b ITE Land Use Code 220: Multifamily Housing (Low-Rise) for 172 units (121 apartment units and 51 townhouse units).

c Mid-Rise Multifamily Trips plus Low-Rise Multifamily Trips.

d ITE Land Use Code 221: Multifamily Housing (Mid-Rise) for 474 units.

e Traffic Study Trips minus Total Proposed Trips.



In comparison to the project evaluated within the Traffic Impact Study, the proposed development program is estimated to result in the same total trips during the weekday AM peak hour, 28 additional vehicle trips (19 entering and 9 exiting) during the weekday PM peak hour, and 2 additional vehicle trips (1 entering and 1 exiting) during the Saturday midday peak hour. Based on ITE methodologies² and New Hampshire Department of Transportation (NHDOT) guidance,³ a development may result in a change in vehicular operations (i.e., noticeably drop level of service or increase volume-to-capacity ratios) if the addition of site trips would increase peak hour traffic volumes at an intersection by 100 vehicles or more. In general, traffic increases less than this threshold could be attributed to the fluctuation of vehicles due to driver patterns that occur during the day, on different days of the week, or different months of the year. As shown in Table 1, the additional trips to be generated by the proposed build program would generally result in the same intersection operational results documented within the August 2024 Traffic Impact Study.

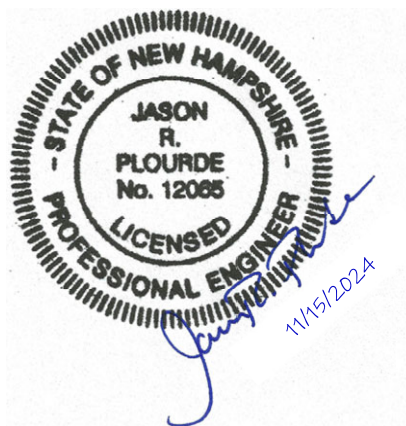
Sincerely,

VHB

A handwritten signature in blue ink that reads "Jason R. Plourde".

Jason R. Plourde, PE, PTP
Transportation Systems Team Leader

Attachments



² ITE Recommended Practice: Multimodal Transportation Impact Analysis for Site Development. Washington, DC: Institute of Transportation Engineers. 2023.

³ Bollinger, Robert E. Inter-Department Communication. New Hampshire Department of Transportation, Bureau of Traffic. 17 Feb. 2010.

Attachments

Trip-Generation Calculations

ITE TRIP GENERATION WORKSHEET
(11th Edition, Updated 2021)

LANDUSE: Multifamily Housing (Mid-Rise) - Not Close to Rail Transit: 4-10 stories
LANDUSE CODE: 221 Independent Variable --- Number of Dwelling Units
SETTING/LOCATION: General Urban/Suburban
JOB NAME: 301 dwelling units
JOB NUMBER:

WEEKDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	11	0.93	4.54	3.76	5.40	201	60	330	50%	50%
	AM PEAK OF GENERATOR	23	0.89	0.35	0.13	0.53	226	21	1,168	26%	74%
	PM PEAK OF GENERATOR	22	0.93	0.39	0.19	0.60	221	21	1,168	60%	40%
	AM PEAK (ADJACENT ST)	30	0.91	0.37	0.15	0.53	173	26	490	23%	77%
	PM PEAK (ADJACENT ST)	31	0.91	0.39	0.19	0.57	169	26	490	61%	39%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	1,368	684	684	1,390	695	695
	AM PEAK OF GENERATOR	105	27	78	102	27	76
	PM PEAK OF GENERATOR	117	70	47	112	67	45
	AM PEAK (ADJACENT ST)	111	26	86	121	28	93
	PM PEAK (ADJACENT ST)	117	72	46	118	72	46

SATURDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	5	0.91	4.57	4.03	5.31	250	140	330	50%	50%
	PEAK OF GENERATOR	5	0.92	0.39	0.34	0.43	250	140	330	51%	49%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	1,376	688	688	1,346	673	673
	PEAK OF GENERATOR	117	60	58	121	62	59

SUNDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	5	0.85	3.77	3.06	4.24	250	140	330	50%	50%
	PEAK OF GENERATOR	5	0.79	0.32	0.26	0.42	250	140	330	55%	45%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	1,136	568	568	1,092	546	546
	PEAK OF GENERATOR	96	53	43	94	52	42

ITE TRIP GENERATION WORKSHEET
(11th Edition, Updated 2021)

LANDUSE: Multifamily Housing (Low-Rise): 2-3 Story - Not Close to Rail Transit
LANDUSE CODE: 220 Independent Variable --- Number of Dwelling Units
SETTING/LOCATION: General Urban/Suburban
JOB NAME: 172 dwelling units
JOB NUMBER:

WEEKDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	22	0.86	6.74	2.46	12.50	229	33	494	50%	50%
	AM PEAK OF GENERATOR	40	0.76	0.47	0.25	0.98	234	12	1,103	24%	76%
	PM PEAK OF GENERATOR	38	0.80	0.57	0.25	1.26	231	12	1,103	62%	38%
	AM PEAK (ADJACENT ST)	49	0.79	0.40	0.13	0.73	249	12	1,103	24%	76%
	PM PEAK (ADJACENT ST)	59	0.84	0.51	0.08	1.04	241	12	1,103	63%	37%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	1,160	580	580	1,178	589	589
	AM PEAK OF GENERATOR	81	19	61	88	21	67
	PM PEAK OF GENERATOR	98	61	37	107	66	41
	AM PEAK (ADJACENT ST)	69	17	52	76	18	58
	PM PEAK (ADJACENT ST)	88	55	32	95	60	35

SATURDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	1	--	4.55	4.55	4.55	282	282	282	50%	50%
	PEAK OF GENERATOR	1	--	0.41	0.41	0.41	282	282	282	51%	49%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	784	392	392	--	--	--
	PEAK OF GENERATOR	71	36	35	--	--	--

SUNDAY

RATES:		# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
				Average	Low	High	Average	Low	High	Enter	Exit
	DAILY	1	--	3.86	3.86	3.86	282	282	282	50%	50%
	PEAK OF GENERATOR	1	--	0.36	0.36	0.36	282	282	282	55%	45%

TRIPS:		BY AVERAGE			BY REGRESSION		
		Total	Enter	Exit	Total	Enter	Exit
	DAILY	664	332	332	--	--	--
	PEAK OF GENERATOR	62	34	28	--	--	--

Site Plans

Issued for	Permitting
Date Issued	May 10, 2024
Latest Issue	December 4, 2024

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766
Grafton County

Owner/Applicant

Brickyard One Nominee Trust

Richard M. Marchese, Trustee

P.O. Box 720, Middleton, MA 01949

Assessor's Map/Lot:

Map 48 Lots 01, 02, & 04

Map 63 Lot 01

PARKING NOTE:

TOMEHOMES REQUIRE 2 SPACES PER UNIT AS THE USE IS CONSIDERED DWELLING, ONE-FAMILY. EACH TOWNHOUSE PROVIDES 2 SPACES FULFILLING THE REQUIREMENT AT EACH UNIT. MULTIFAMILY PARKING CALCULATIONS WERE DONE SEPARATELY.

Multifamily Parking Requirements:

DWELLING, STUDIO APARTMENT	316 UNITS	x	1.0 SPACES	/	1 UNIT	=	316 SPACES
DWELLING, APARTMENT, ONE BEDROOM AND UP	106 UNITS	x	1.5 SPACES	/	1 UNIT	=	159 SPACES
TOTAL PARKING REQUIRED							= 475 SPACES
TOTAL PARKING PROVIDED (111% OF REQUIRED)							= 526 SPACES
MAXIMUM PARKING ALLOWED (120% OF REQUIRED)							= 570 SPACES

EV Parking Requirements

(Included within Total Parking Required):

EVSE-INSTALLED PARKING SPACES*	526 SPACES	x	5%	=	27 SPACES
EV-READY PARKING SPACES (EVRI)*	526 SPACES	x	20%	=	106 SPACES
EV-CAPABLE PARKING SPACES (EVC)*	526 SPACES	x	65%	=	342 SPACES
TOTAL EV PARKING REQUIRED (INCLUDED IN TOTAL PARKING REQUIRED)					= 475 SPACES

* REQUIRED EVSE-INSTALLED PARKING SPACES = 5% OF TOTAL PROVIDED PARKING
** REQUIRED EV-READY PARKING SPACES = 20% OF TOTAL PROVIDED PARKING
*** REQUIRED EV-CAPABLE PARKING SPACES = 65% OF TOTAL PROVIDED PARKING

Multifamily Parking Summary Chart

Description	Size		Spaces	
	Required	Provided	Required	Provided
STANDARD SPACES	9 x 18	9 x 18*	0	30
EVSE-INSTALLED PARKING SPACES**	9 x 18	9 x 18	27	28**
EV-READY PARKING SPACES***	9 x 18	9 x 18	106	108***
EV-CAPABLE PARKING SPACES****	9 x 18	9 x 18	342	345****
TOTAL/VAN ACCESSIBLE SPACES*****	8 x 18	9 x 18	10 / 2	15*****
LOADING BAYS			0	0

* 8 x 18 SPACES BELOW BUILDINGS REQUESTED AS ALTERNATE PARKING DESIGN PER SECTION 6.5.E(3) OF THE SITE PLAN REVIEW REGULATIONS. 9 x 16 SPACES AT LANDSCAPE AREAS PER SECTION 6.5.E(3) OF THE SITE PLAN REVIEW REGULATIONS.
** 28 SPACES LOCATED EXTERNALLY, 0 INTERNALLY
*** 98 SPACES LOCATED EXTERNALLY, 10 INTERNALLY
**** 128 SPACES LOCATED EXTERNALLY, 217 INTERNALLY
***** ADA/STATE/LOCAL REQUIREMENTS
***** INCLUDES 2 ACCESSIBLE STALLS BELOW EACH APARTMENT BUILDING
***** ACCESSIBLE SPACES ARE INCLUDED IN THE PARKING TOTAL

Multifamily Bicycle Parking Requirements:

SHORT TERM PARKING	422 UNITS	x	0.15 SPACES	/	1 UNIT	=	64 SPACES
LONG TERM PARKING	422 UNITS	x	0.3 SPACES	/	1 UNIT	=	127 SPACES
TOTAL PARKING REQUIRED							= 191 SPACES

Bicycle Parking Summary Chart

Description	Spaces	
	Required	Provided
SHORT TERM SPACES	64	70
LONG TERM SPACES	127	127
TOTAL SPACES	191	197



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Page No.	Drawing No.	Drawing Title	Latest Issue
1	C1.0	Legend and General Notes	December 4, 2024
2	C1.1	Abutter and Zoning Plan	December 4, 2024
3	C1.2	Open Space Plan	December 4, 2024
4	C1.3	Access and Circulation Plan	December 4, 2024
5	C1.4	Site Preparation & Demolition Plan	December 4, 2024
6	C1.5	Overall Site Plan	December 4, 2024
7	C2.0	Overall Layout and Materials Plan	December 4, 2024
8	C2.1	Layout and Materials Plan 1	December 4, 2024
9	C2.2	Layout and Materials Plan 2	December 4, 2024
10	C2.3	Layout and Materials Plan 3	December 4, 2024
11	C3.0	Overall Grading and Drainage Plan	December 4, 2024
12	C3.1	Grading and Drainage Plan 1	December 4, 2024
13	C3.2	Grading and Drainage Plan 2	December 4, 2024
14	C3.3	Grading and Drainage Plan 3	December 4, 2024
15	C4.0	Overall Utility Plan	December 4, 2024
16	C4.1	Utility Plan 1	December 4, 2024
17	C4.2	Utility Plan 2	December 4, 2024
18	C4.3	Utility Plan 3	December 4, 2024
19	C5.0	Overall Erosion Control Plan	December 4, 2024
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21	C5.2	Erosion Control Plan 2	December 4, 2024
22	C5.3	Erosion Control Plan 3	December 4, 2024
23	C6.1	Plan and Profile 1	December 4, 2024
24	C6.2	Plan and Profile 2	December 4, 2024
25	C6.3	Plan and Profile 3	December 4, 2024
26	C7.1	Site Details 1	October 24, 2024
27	C7.2	Site Details 2	October 24, 2024
28	C7.3	Site Details 3	December 4, 2024
29	C7.4	Site Details 4	December 4, 2024
30	C7.5	Site Details 5	December 4, 2024
31	C7.6	Site Details 6	October 24, 2024
32	C8.1	Phasing Plan 1	October 24, 2024
33	C8.2	Phasing Plan 2	October 24, 2024
34	C8.3	Phasing Plan 3	October 24, 2024
35	C8.4	Phasing Plan 4	October 24, 2024
36	C9.1	Vehicle Tracking 1	October 24, 2024
37	C9.2	Vehicle Tracking 2	October 24, 2024
38	C9.3	Vehicle Tracking 3	October 24, 2024
39	L1.0	Overall Landscape and Tree Shading Plan	October 24, 2024
40	L1.1	Landscape Plan 1	December 4, 2024
41	L1.2	Landscape Plan 2	December 4, 2024
42	L1.3	Landscape Plan 3	December 4, 2024
43	L2.1	Landscape Details	December 4, 2024
44	Sv-1	Existing Conditions Plan of Land	April 1, 2024
45	Sv-2	Existing Conditions Plan of Land	April 1, 2024
46	Sv-3	Existing Conditions Plan of Land	April 1, 2024
47	WU-1	Wildland-Urban Interface Plan	December 4, 2024

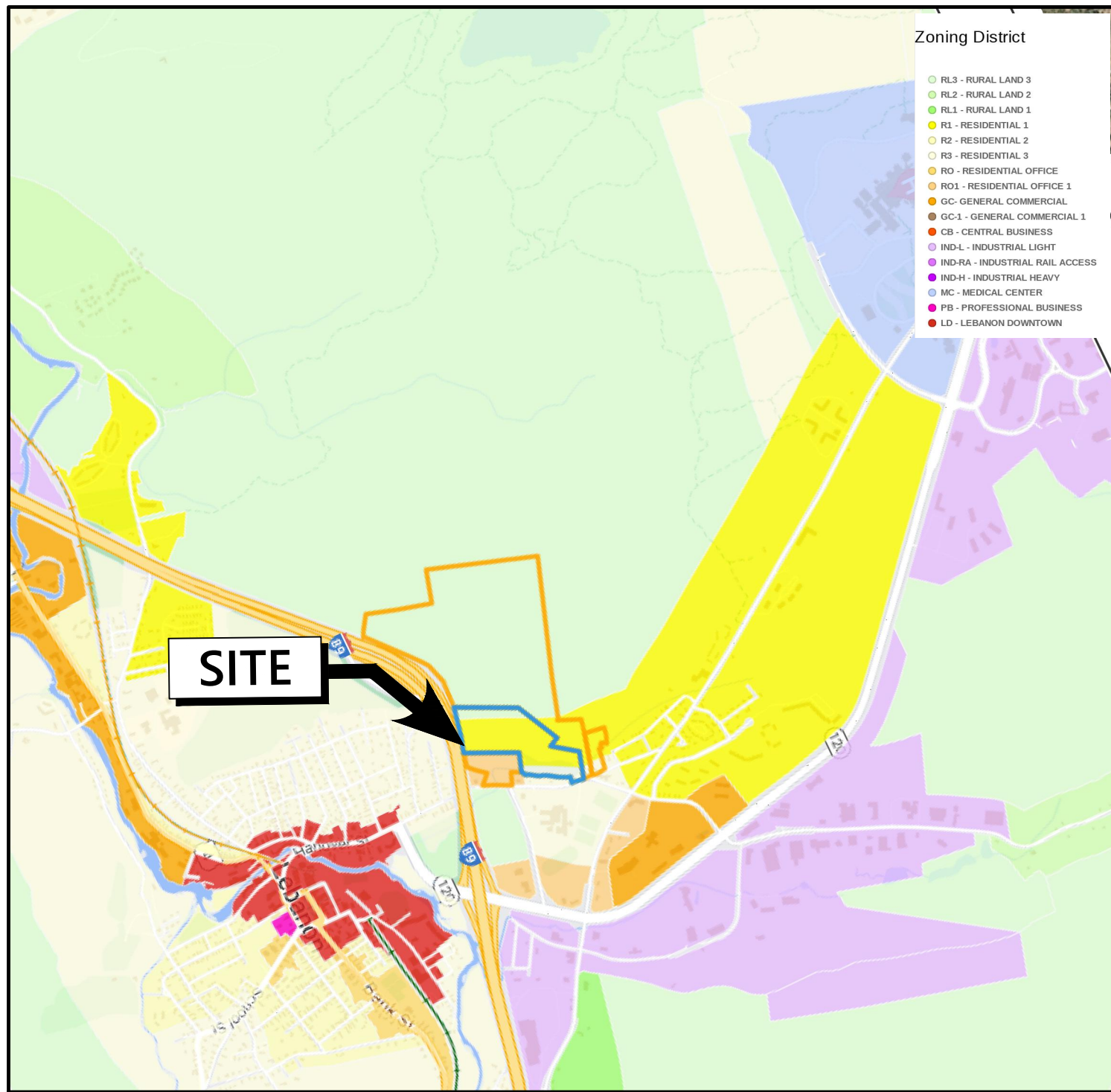


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Page No.	Drawing No.	Drawing Title	Latest Issue
48	SL-1C	Site Lighting Photometric Calculation	October 23, 2024
49	SL-2C	Site Lighting Detail Sheet	October 24, 2024
50	0089-1201	Building 1 Proposed Plan & Elevations	August 2, 2024
51	0089-1202	Building 3 Proposed Plan & Elevations	August 2, 2024
52	0089-1203	Building 2 Proposed Plan & Elevations	August 2, 2024
53	0089-1204	Building 4-5 Proposed Plan & Elevations	August 2, 2024

Zoning Summary Chart

Zoning Districts: Residential 1 (R-1), Residential 3 (R-3), Residential-Office-1 (R-O-1), Rural Lands 3 (RL-3)

Overlay District: Floodplain District, Wetlands Conservation District, Steep Slopes

Use: 474-unit multi-family Planned Unit Residential Development (PURD)

Tax Map & Lot #: 48-01, 48-02, 48-04, & 63-01

Zoning Regulation Requirements	Required (R-1)	Required (R-3)	Required (R-O-1)	Required (RL-3)	Required (PURD)	Provided (PURD)
MINIMUM LOT AREA	0.2 Acres	0.2 Acres	0.2 Acres	10.0 Acres	28.5 Acres	126.3 Acres
FRONTAGE	NA	NA	NA	20.0 Feet	20.0 Feet	932.0 Feet
FRONT YARD SETBACK	20 Feet	20 Feet	20 Feet	50 Feet	20 Feet	21 Feet
SIDE YARD SETBACK	15 Feet	15 Feet	15 Feet	50 Feet	15 Feet	89 Feet
REAR YARD SETBACK	20 Feet	20 Feet	20 Feet	50 Feet	20 Feet	127 Feet
MINIMUM LOT WIDTH	75 Feet	75 Feet	75 Feet	NA	75 Feet	932 Feet
MAXIMUM BUILDING HEIGHT*	45/55 Feet	35 Feet	45 Feet	35 Feet	55 Feet	55 Feet (R-1) 45 Feet (R-O-1) 35 Feet (R-3)
MAXIMUM BUILDING COVERAGE	25.0 %	25.0 %	25.0 %	1.0 %	25.0 %	7.2 %
MAXIMUM BUILDING COVERAGE	1,375,407 SF	1,375,407 SF	1,375,407 SF	55,016 SF	1,375,407 SF	89,350 SF
GROSS FLOOR AREA	N/A	N/A	N/A	N/A	N/A	440,054 SF
IMPERVIOUS COVERAGE	N/A	N/A	N/A	N/A	N/A	330,185 SF (26.6%)
USE	N/A	N/A	N/A	N/A	N/A	Planned Unit Residential Development (PURD)

* Proposed height is permitted by CUP per section 308.4 of the City of Lebanon, New Hampshire Zoning Ordinance last amended April 3, 2024

PURD Calculations

SEE PURD DENSITY AND PURD CALCULATION EXHIBITS UNDER SEPARATE COVER

Zone	Buildable Area (SF)*	/	Permitted Dwelling Units
RESIDENTIAL 1 (R-1)	989,956	3,000	330.0
RESIDENTIAL-OFFICE-1 (R-O-1)	249,920	3,000	83.3
RESIDENTIAL 3 (R-3)	81,820	10,000	8.2
1 PER 10,000*	20,000	10,000	2.0
SUBTOTAL	1,239,876		423
12% BONUS***			51
*TOTAL (INCLUDES 12% BONUS)			474

* FOR THE PURD CALCULATIONS THE RL-3 ZONE (97.8 ACRES) HAS BEEN EXCLUDED, AREA RESERVED FOR POTENTIAL FUTURE BUILDOUT.
** FIRST 10,000 SQUARE FEET OF ZONE R-1 SUBTRACTED FROM TOTAL SQUARE FOOTAGE.
*** 12% BONUS PERMITTED THROUGH APPROVAL BY PLANNING BOARD.

Open Space Calculations

Zone*	Total Area (SF)	% Required	Open Space Required
RESIDENTIAL 1 (R-1)	1,252,605	30	375,782 SF
RESIDENTIAL-OFFICE-1 (R-O-1)	286,532	30	85,960 SF
RESIDENTIAL 3 (R-3)	123,849	50	61,925 SF
TOTAL OPEN SPACE REQUIRED			523,666 SF

* THE RL-3 ZONE HAS BEEN EXCLUDED FROM THE PURD CALCULATIONS, AREA RESERVED FOR POTENTIAL FUTURE BUILDOUT

vhb.com



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Civil Engineer (VHB)
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Surveyor (VHB)
Mike Hammer, L.L.S.

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Landscape Architect (VHB)
Erik Bednarek, RLA

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

Architect
Studio Integrate

73 Commercial Street,
London E1, England
0203.722.7358

Wetland Scientist (Goddard)
Scott G. Goddard

291 Main Street
Suite 8

Northborough, MA 01532

Site Information

	EXISTING	PROPOSED
GROSS FLOOR AREA	13,325 SF*	TOTAL: 440,054 SF 75,600 SF (BLDG 2, 4 AND 5) 56,700 SF (BLDG 3) 34,650 SF (BLDG 1) 4,400 SF (MAINTENANCE BLDG) 2,304 SF (TOWNHOMES)
BUILDING HEIGHT	+/- 30' (FORMER CHIMNEY)	55' (BLDG 2, 4 AND 5) 45' (TOWNHOMES, BLDGS 1 AND 3) 35' (MAINTENANCE BLDG)
NUMBER OF STORIES; GROSS FLOOR AREA OF EACH STORY	1 STORY, 8,179 SF (48-4) 2 STORIES, 1,595 SF (63-1)	5 STORIES, 18,900 SF (BLDG 2, 4 AND 5) 4 STORIES, 18,900 SF (BLDG 3) 4 STORIES, 11,550 SF (BLDG 1) 2 STORIES, 2,200 SF (MAINTENANCE BLDG) 3 STORIES, 768 SF (TOWNHOMES)
LAND USE	MANUFACTURING, STORAGE	MULTIFAMILY RESIDENTIAL

* PER CITY OF LEBANON TAX ASSESSOR DATABASE





2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

Exist.	Prop.		Exist.	Prop.	
		PROPERTY LINE			CONCRETE
		PROJECT LIMIT LINE			HEAVY DUTY PAVEMENT
		RIGHT-OF-WAY/PROPERTY LINE			BUILDINGS
		EASEMENT			RIPRAP
		BUILDING SETBACK			CONSTRUCTION EXIT
		PARKING SETBACK			
		BASELINE	27.35 TC x	27.35 TC x	TOP OF CURB ELEVATION
		CONSTRUCTION LAYOUT	28.85 BC x	28.85 BC x	BOTTOM OF CURB ELEVATION
		ZONING LINE	132.75 x	132.75 x	SPOT ELEVATION
		TOWN LINE	45.0 TW x 38.5 BW x	45.0 TW x 38.5 BW x	TOP & BOTTOM OF WALL ELEVATION
		LIMIT OF DISTURBANCE			BORING LOCATION
		WETLAND LINE WITH FLAG			TEST PIT LOCATION
		FLOODPLAIN			MONITORING WELL
		BORDERING LAND SUBJECT TO FLOODING			UNDERDRAIN
		WETLAND BUFFER ZONE			DRAIN
		NO DISTURB ZONE			ROOF DRAIN
		200' RIVERFRONT AREA			SEWER
					FORCE MAIN
					OVERHEAD WIRE
		EDGE OF PAVEMENT			WATER
		BITUMINOUS BERM			FIRE PROTECTION
		BITUMINOUS CURB			DOMESTIC WATER
		CONCRETE CURB			GAS
		CURB AND GUTTER			ELECTRIC
		EXTRUDED CONCRETE CURB			STEAM
		MONOLITHIC CONCRETE CURB			TELEPHONE
		PRECAST CONC. CURB			FIRE ALARM
		SLOPED GRAN. EDGING			CABLE TV
		VERT. GRAN. CURB			CATCH BASIN CONCENTRIC
		LIMIT OF CURB TYPE			CATCH BASIN ECCENTRIC
		SAWCUT			DOUBLE CATCH BASIN CONCENTRIC
					DOUBLE CATCH BASIN ECCENTRIC
					GUTTER INLET
					DRAIN MANHOLE CONCENTRIC
					DRAIN MANHOLE ECCENTRIC
					TRENCH DRAIN
					PLUG OR CAP
					CLEANOUT
					FLARED END SECTION
					HEADWALL
					SEWER MANHOLE CONCENTRIC
					SEWER MANHOLE ECCENTRIC
					CURB STOP & BOX
					WATER VALVE & BOX
					TAPPING SLEEVE, VALVE & BOX
					FIRE DEPARTMENT CONNECTION
					FIRE HYDRANT
					WATER METER
					POST INDICATOR VALVE
					WATER WELL
					GAS GATE
					GAS METER
					ELECTRIC MANHOLE
					ELECTRIC METER
					LIGHT POLE
					TELEPHONE MANHOLE
					TRANSFORMER PAD
					UTILITY POLE
					GUY POLE
					GUY WIRE & ANCHOR
					HAND HOLE
					PULL BOX
					MATCHLINE

Abbreviations

General	
ABAN	ABANDON
ACR	ACCESSIBLE CURB RAMP
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BS	BOTTOM OF SLOPE
BWLL	BROKEN WHITE LANE LINE
CONC	CONCRETE
DYCL	DOUBLE YELLOW CENTER LINE
EL	ELEVATION
ELEV	ELEVATION
EVC	ELECTRIC VEHICLE CAPABLE PARKING SPACE
EVR	ELECTRIC VEHICLE READY PARKING SPACE
EX	EXISTING
FDN	FOUNDATION
FFE	FIRST FLOOR ELEVATION
GRAN	GRANITE
GFE	GARAGE FLOOR ELEVATION
GTD	GRADE TO DRAIN
LA	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
MAX	MAXIMUM
MIN	MINIMUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
PERF	PERFORATED
PROP	PROPOSED
REM	REMOVE
RET	RETAIN
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
SWEL	SOLID WHITE EDGE LINE
SWLL	SOLID WHITE LANE LINE
TS	TOP OF SLOPE
TYP	TYPICAL
Utility	
AD	AREA DRAIN
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
DCB	DOUBLE CATCH BASIN
DMH	DRAIN MANHOLE
CIP	CAST IRON PIPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
DW	DRYWELL
FA	FIRE ALARM
FES	FLARED END SECTION
FM	FORCE MAIN
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
GI	GUTTER INLET
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT ELEVATION
I=	INVERT ELEVATION
LP	LIGHT POLE
MES	METAL END SECTION
PIV	POST INDICATOR VALVE
PWW	PAVED WATER WAY
PVC	POLYVINYLCHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R=	RIM ELEVATION
RIM=	RIM ELEVATION
SMH	SEWER MANHOLE
TSV	TAPPING SLEEVE, VALVE AND BOX
UG	UNDERGROUND
UGE/T	UNDERGROUND ELECTRIC/TELECOM
UP	UTILITY POLE

Notes

General

1. THE PURPOSE OF THESE SITE PLANS ARE TO SHOW A PROPOSED SITE DESIGN FOR THE PERMITTING OF A MULTI-FAMILY RESIDENTIAL PROJECT.
2. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
4. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
5. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE 6-INCHES LOAM AND SEED.
6. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
7. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS, WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
8. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
9. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
13. DAMAGE RESULTING FROM CONSTRUCTION LOADS AND ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
14. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
15. THIS PROJECT DISTURBS MORE THAN ONE ACRE OF LAND AND FALLS WITHIN THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) PROGRAM AND EPA JURISDICTION. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR IS TO FILE A CGP NOTICE OF INTENT WITH THE EPA AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE NPDES REGULATIONS. CONTRACTOR SHALL CONFIRM THE PLAN HAS ALSO FILED A NOTICE OF INTENT WITH THE EPA.
16. SNOW STORAGE LOCATIONS SHOWN ON LAYOUT AND MATERIALS PLAN. FUTURE SNOW REMOVAL AT THE FACILITY WILL FOLLOW THE CURRENT SNOW MANAGEMENT PLAN TO REMOVE SNOW TO REMOTE LOCATIONS AS NECESSARY.
17. TREE CLEARING SHALL NOT BE CONDUCTED DURING JUNE 1 TO JULY 31 IN ORDER TO MINIMIZE ADVERSE IMPACTS TO THE NORTHERN LONGEARED BAT.
18. CONTRACTOR TO FOLLOW STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (NHDOT) AND GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (AASHTO) FOR CONSTRUCTIONS STANDARDS,

Utilities

1. THE UTILITY COMPANIES SERVICING THE PROJECT AREA ARE:

A. WATER: CITY OF LEBANON
B. SEWER: CITY OF LEBANON
C. ELECTRIC: LIBERTY UTILITIES
D. TELEPHONE: CONSOLIDATED COMMUNICATIONS
E. CABLE TV: COMCAST
F. GAS: NONE

2. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
 - A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
 - B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
 - C. LANDSCAPE, LOAM AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT. COORDINATE WITH CITY OF LEBANON FOR PUBLIC UTILITY INSTALLATION AND CONNECTION.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:

- UTILITY PIPE MATERIALS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED ON THE PLAN:
- A. WATER PIPES SHALL BE CEMENT LINED DUCTILE IRON CLASS 52.
 - B. SANITARY SEWER PIPES SHALL BE POLYVINYL CHLORIDE (PVC) SEWER PIPE SDR 35.
 - C. STORM DRAINAGE PIPES SHALL BE SMOOTH INTERIOR DUAL WALL HIGH DENSITY POLYETHYLENE (HDPE).

9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4" MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.
12. CONTRACTOR TO NOTIFY ENGINEER IN ADVANCE OF ANY INSTALLATION OF UNDERGROUND DETENTION, INFILTRATION OR FILTERING SYSTEMS. A LETTER signed by a QUALIFIED ENGINEER must be PROVIDED TO DES STATING THAT THE INDIVIDUAL OBSERVED ANY UNDERGROUND DETENTION, INFILTRATION, OR FILTERING SYSTEMS PRIOR TO BACKFILLING, AND WHETHER, IN HIS OR HER PROFESSIONAL OPINION, THE SYSTEM(S) CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

Layout and Materials

Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE 3 FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE PRECAST CONCRETE (PCC) WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING BUILDING ENTRANCES, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A LICENSED LAND SURVEYOR (LLS).
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.

Demolition

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS, REMOVE AND DISPOSE OF EXISTING UTILITIES, STRUCTURES, AND MATERIALS TO A MINIMUM DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING REMOVAL OF COLUMNS.
2. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
3. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
4. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL. TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
5. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL HAVE NO LIABILITY FOR ANY AND ALL CLAIMS, DAMAGES, LOSSES, COSTS, EXPENSE, DELAY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH; MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AVOIDING OR MINIMIZING THE ISSUES OF DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.

Existing Conditions Information

1. BASE PLAN: PROVIDED BY VHB, INC., DATED NOVEMBER, 2022. FIELD SURVEY OF PROJECT LOCUS PROVIDED BY VHB, IN SEPTEMBER THRU NOVEMBER, 2022.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD 1988.

Local Permits

1. NOTICE OF ACTION ISSUED BY THE PLANNING BOARD: PENDING
2. BUILDING PERMIT TO BE SUBMITTED.
3. WATER USE PERMIT TO BE SUBMITTED
4. SEWER USE PERMIT TO BE SUBMITTED

State Permits

1. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES) ALTERATION OF TERRAIN PERMIT AOT-TO BE SUBMITTED.
2. NHDES SEWER CONNECTION PERMIT TO BE SUBMITTED.
3. NHDES WETLANDS AND NON-SITE SPECIFIC PERMIT TO BE SUBMITTED.

Federal Permits

1. US EPA NPDES CONSTRUCTION GENERAL PERMIT (CGP) NOTICE OF INTENT TO BE SUBMITTED

Document Use

1. THESE PLANS AND CORRESPONDING CAD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATIC CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

New Hampshire Fish and Game

1. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT NHFGreiwew@wildlife.nh.gov. EMAIL SUBJECT LINE:
2. PHOTOGRAPHS OF THE OBSERVED SPECIES AND NEARBY ELEMENTS OF HABITAT OR AREAS OF LAND DISTURBANCE SHALL BE PROVIDED TO NHF&G IN DIGITAL FORMAT AT THE ABOVE EMAIL ADDRESS FOR VERIFICATION AS FEASIBLE.
3. IN THE EVENT A THREATENED OR ENDANGERED SPECIES IS OBSERVED ON THE PROJECT SITE DURING THE TERM OF THE PERMIT, THE SPECIES SHALL NOT BE DISTURBED, HANDLED, OR HARMED IN ANY WAY PRIOR TO CONSULTATION WITH NHF&G AND IMPLEMENTATION OF CORRECTIVE ACTIONS RECOMMENDED BY NHF&G, IF ANY. TO ENSURE THE PROJECT DOES NOT APPRECIABLY JEOPARDIZE THE CONTINUED EXISTENCE OF THREATENED AND ENDANGERED SPECIES AS DEFINED IN FS 1002.04.
4. THE NHF&G INCLUDING ITS EMPLOYEES AND AUTHORIZED AGENTS, SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.
5. EMV-WQ 1506.15 REQUIRES THAT:
 - 5.1. ALL MANUFACTURED EROSION AND SEDIMENT CONTROLS PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH EMV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO , SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL BE CONTAING WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR NON-FILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCH.
 - 5.2. TURF REINFORCEMENT MATS SHALL BE COVERED WITH SOIL TO PREVENT EXPOSURE OF THE MATS TO THE SURFACE.



C1.0

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Project Number
52933.00

MAP THEME LEGENDS



vhb.com

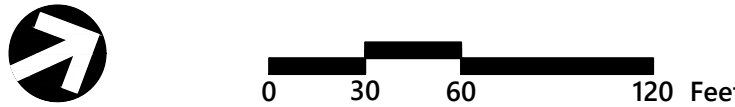
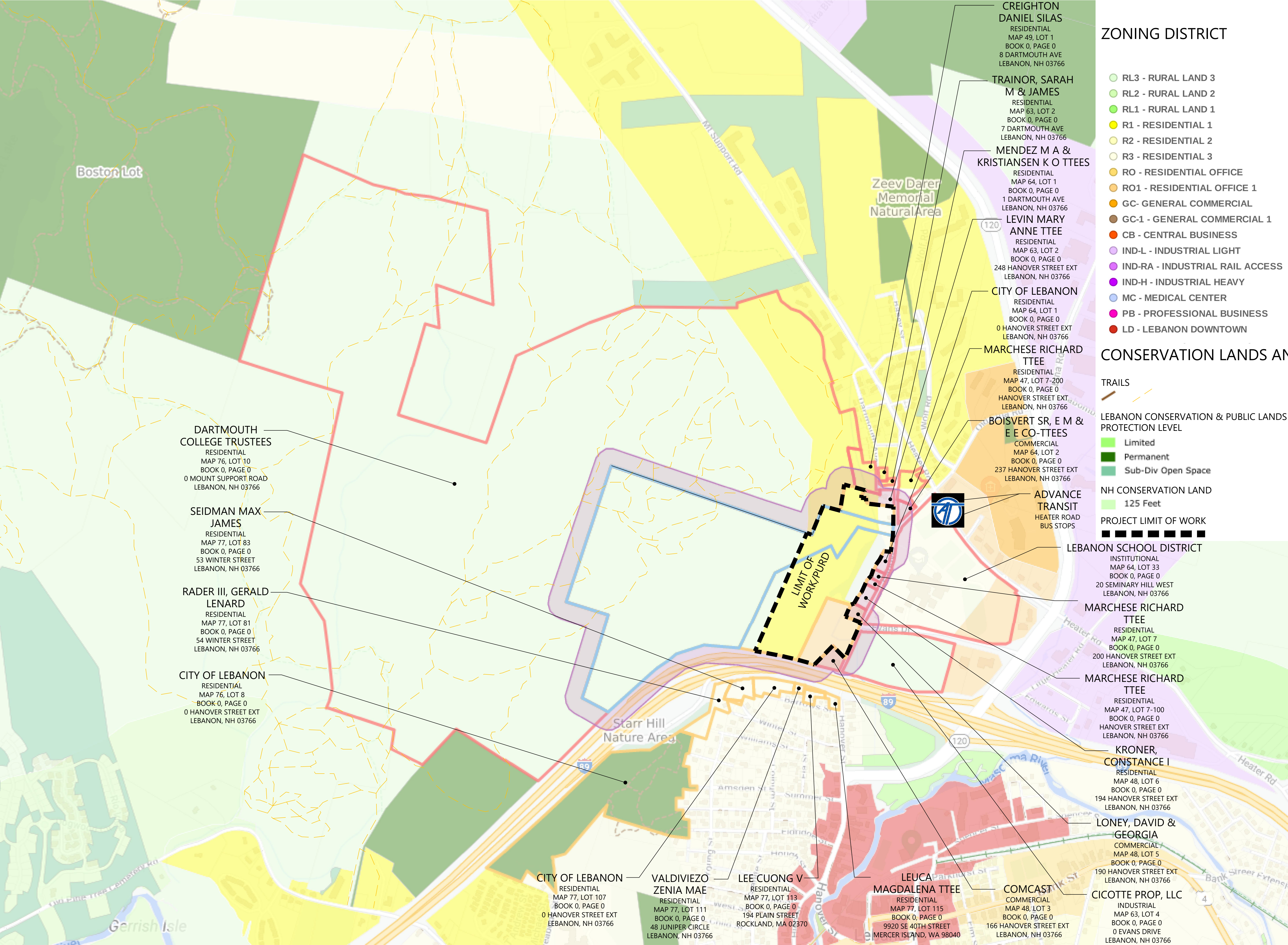
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

ZONING DISTRICT

- RL3 - RURAL LAND 3
- RL2 - RURAL LAND 2
- RL1 - RURAL LAND 1
- R1 - RESIDENTIAL 1
- R2 - RESIDENTIAL 2
- R3 - RESIDENTIAL 3
- RO - RESIDENTIAL OFFICE
- RO1 - RESIDENTIAL OFFICE 1
- GC- GENERAL COMMERCIAL
- GC-1 - GENERAL COMMERCIAL 1
- CB - CENTRAL BUSINESS
- IND-L - INDUSTRIAL LIGHT
- IND-RA - INDUSTRIAL RAIL ACCESS
- IND-H - INDUSTRIAL HEAVY
- MC - MEDICAL CENTER
- PB - PROFESSIONAL BUSINESS
- LD - LEBANON DOWNTOWN

CONSERVATION LANDS AND TRAILS

- TRAILS
- LEBANON CONSERVATION & PUBLIC LANDS PROTECTION LEVEL
- Limited
 - Permanent
 - Sub-Div Open Space
- NH CONSERVATION LAND
- 125 Feet
- PROJECT LIMIT OF WORK
- ■ ■ ■ ■ ■ ■ ■ ■ ■



The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
1	Completeness Review Comments	07/02/24	DF
2	Response to Comments Update	08/06/24	DF
3	Revised Layout Resubmission	10/24/24	DF
4	Response to Comments Rev 2	12/04/24	DF

Designed by: TMD
Checked by: MJV

Issued for: Permitting
Date: May 10, 2024

Not Approved for Construction
Drawing Title: Abutter and Zoning Plan



C1.1

Sheet 2 of 53

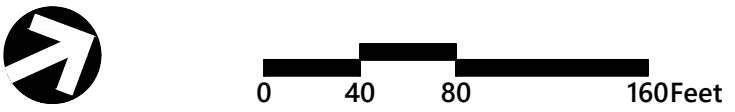
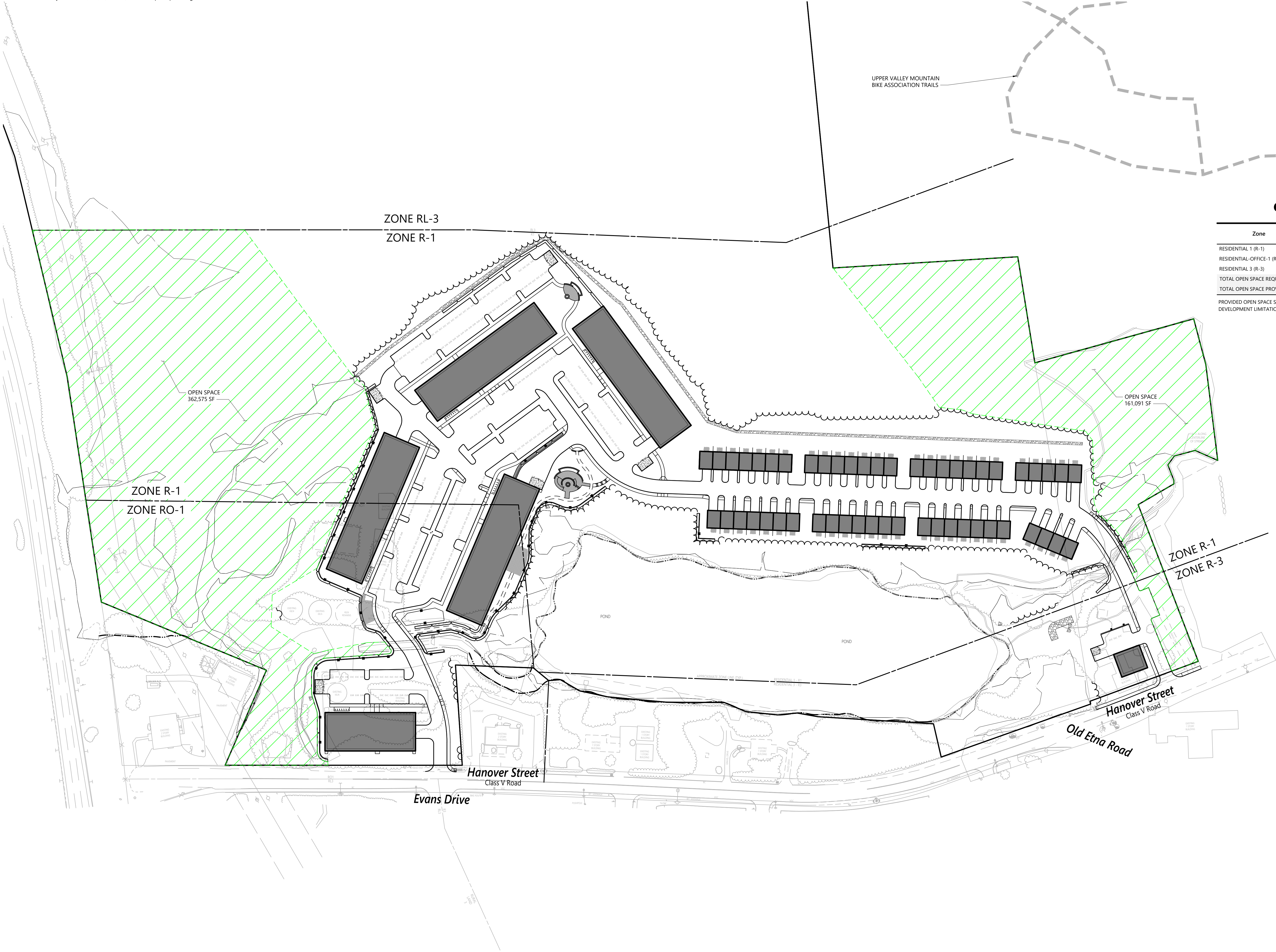
Project Number: 52933.00

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Open Space Calculations

Zone	Total Area (SF)	% Required	Open Space Required
RESIDENTIAL 1 (R-1)	1,252,605	30	375,782 SF (8.62 AC)
RESIDENTIAL-OFFICE-1 (R-O-1)	286,532	30	85,960 SF (1.97 AC)
RESIDENTIAL 3 (R-3)	123,849	50	61,925 SF (1.42 AC)
TOTAL OPEN SPACE REQUIRED			523,666 SF (12.02 AC)
TOTAL OPEN SPACE PROVIDED			523,666 SF (12.02 AC)

PROVIDED OPEN SPACE SHOULD MATCH OR SLIGHTLY EXCEED REQUIRED SO THAT IT IS NOT A FUTURE DEVELOPMENT LIMITATION.



The Brickyard
Residential Development

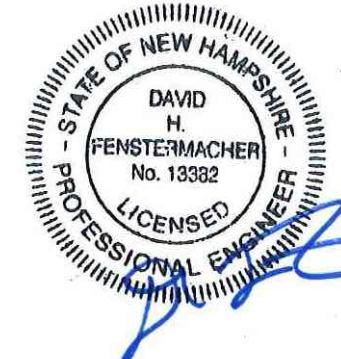
174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Issued for Permitting	Date May 10, 2024

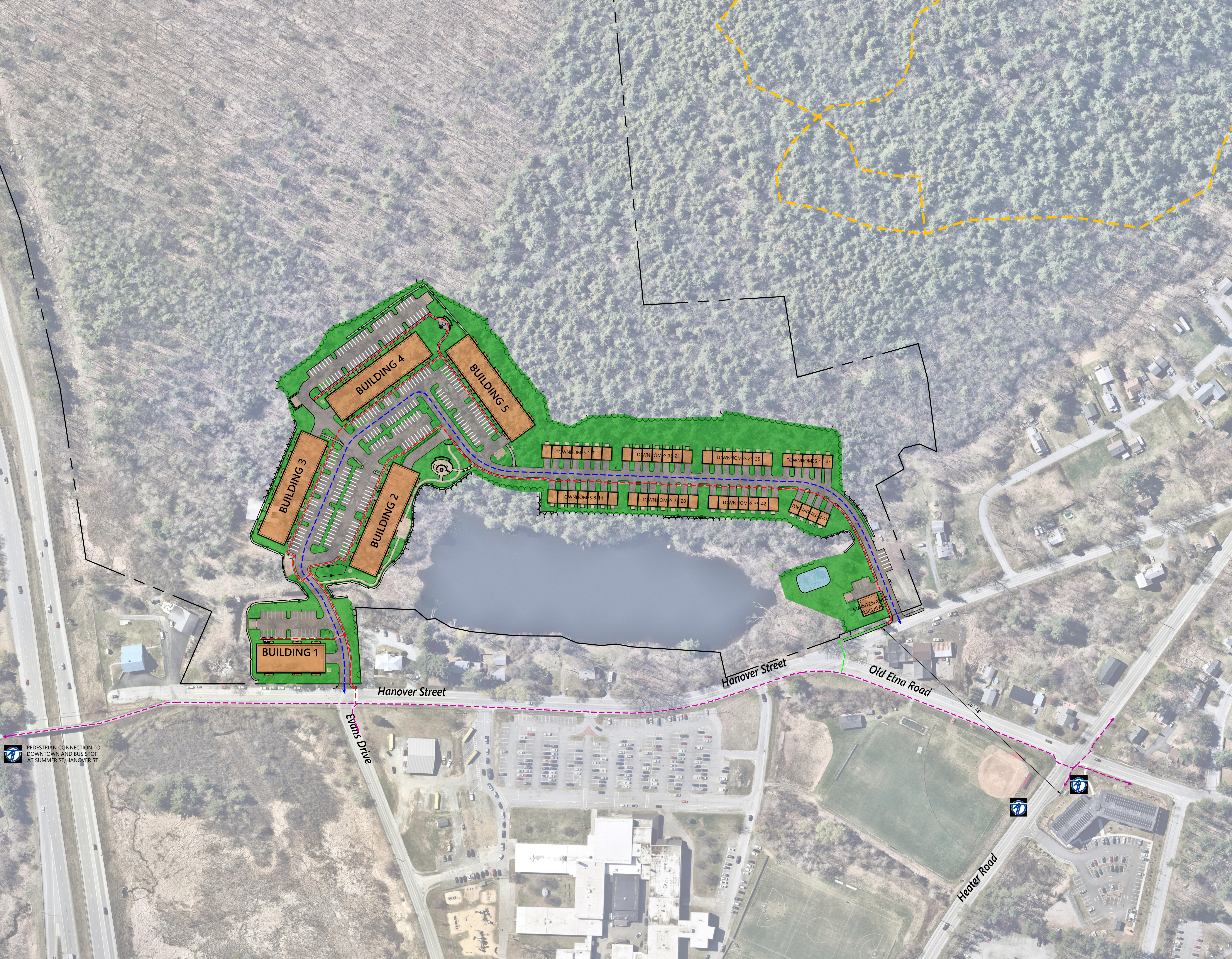
Not Approved for Construction

Open Space Plan



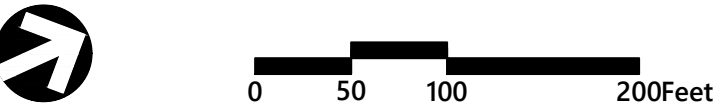
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Sheet 3 of 53



Legend

- PEDESTRIAN PATH TO PUBLIC R.O.W.
- VEHICLE PATH TO PUBLIC R.O.W.
- EXISTING PEDESTRIAN PATHS
- UPPER VALLEY MOUNTAIN BIKE ASSOCIATION TRAILS
- POTENTIAL FUTURE PEDESTRIAN PATH



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Designed by	Checked by
TMD	MJV
Issued for	Date
Permitting	May 10, 2024

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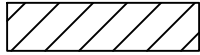
Drawing Title

Access and Circulation Plan

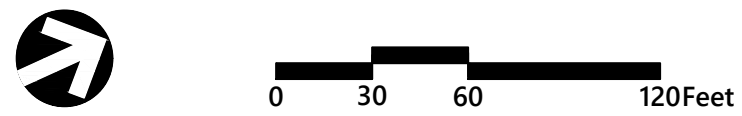
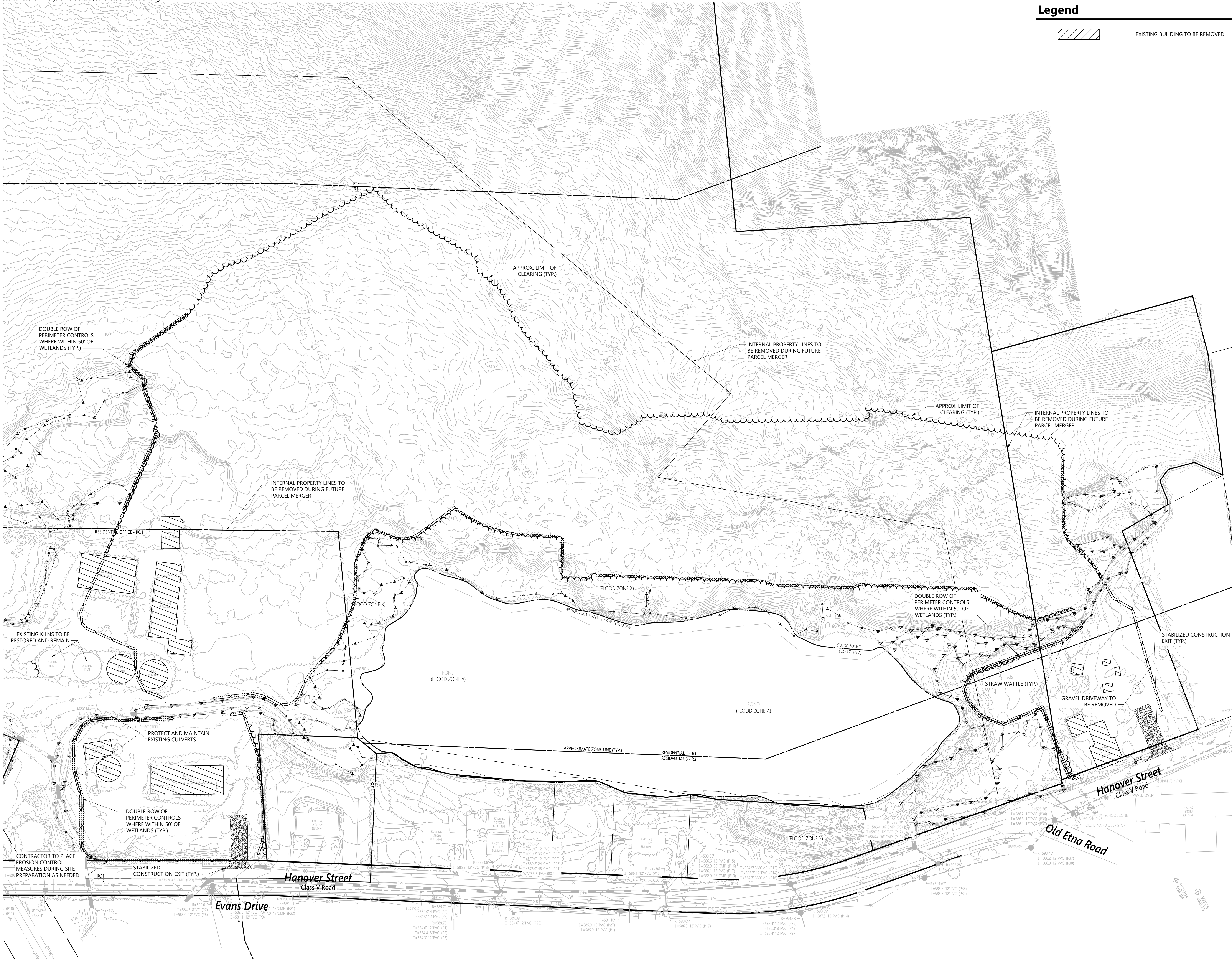


2 Bedford Farms Drive
Suite 200
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Legend



EXISTING BUILDING TO BE REMOVED



The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Apprv.
1	Response to Comments Rev 2	12/04/24	DF

Designed by	TMD	Checked by	DHF
Issued for		Date	May 10, 2024

Permitting

Not Approved for Construction

Site Preparation
& Demolition Plan

Drawing Number

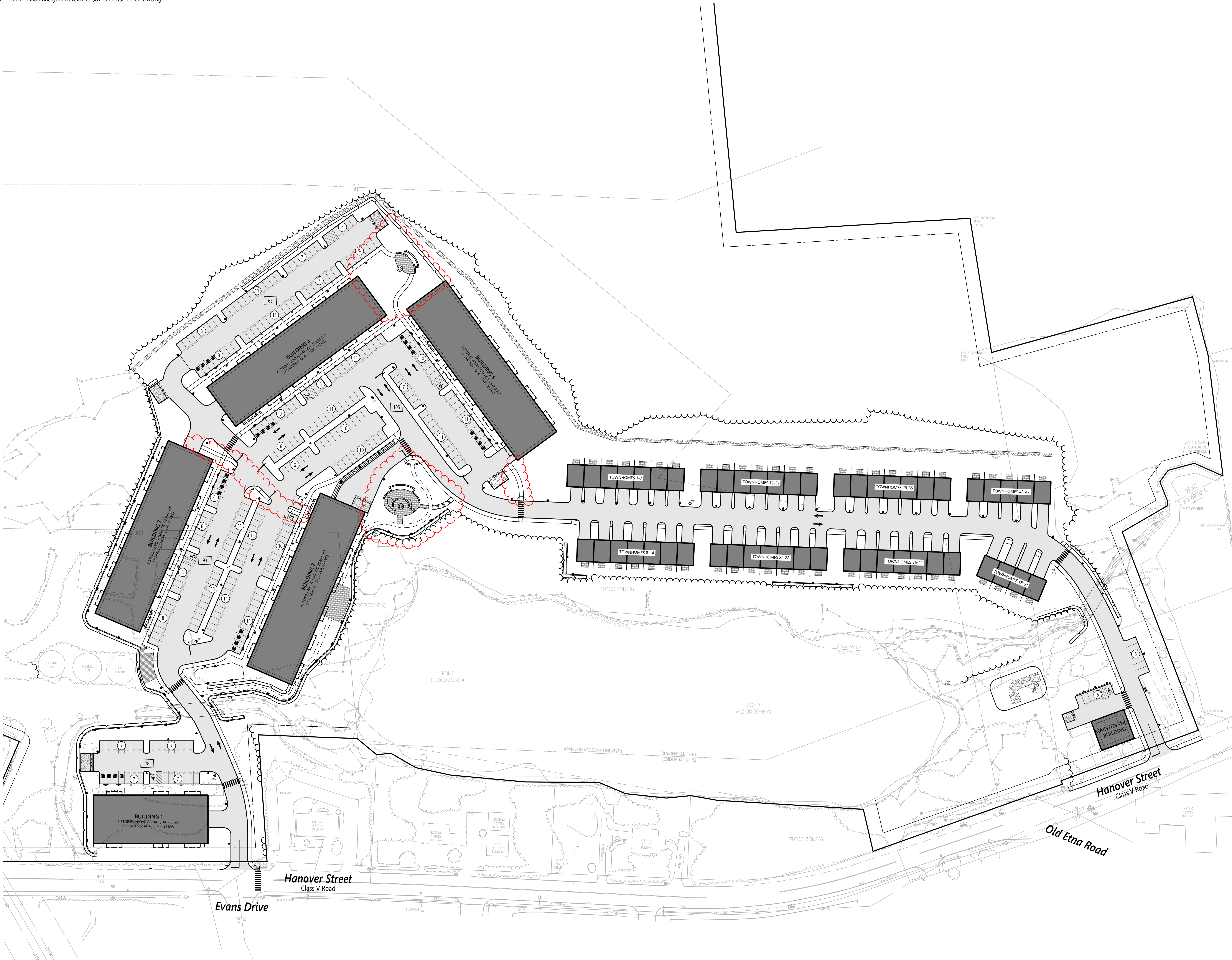
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Project Number
52933.00

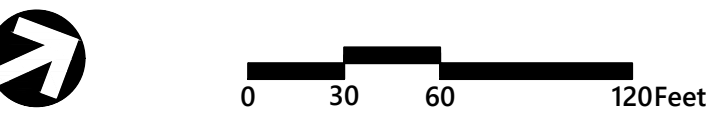
Page 53 of 668

DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE



Notes

- EVC ELECTRIC VEHICLE CAPABLE PARKING SPACE
- EVR ELECTRIC VEHICLE READY PARKING SPACE
-  ELECTRIC VEHICLE INSTALLED PARKING



The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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4	Response to Comments Rev 2	12/04/24	DF

Designed by	Checked by
TMD	MJV
Issued for	Date
Permitting	May 10, 2024

Not Approved for Construction
Drawing Title
Overall Site Plan

DAVID H. FENSTERMACHER
No. 13382
LICENSED PROFESSIONAL ENGINEER

C1.5

Sheet 6 of 53

Project Number
52933.00



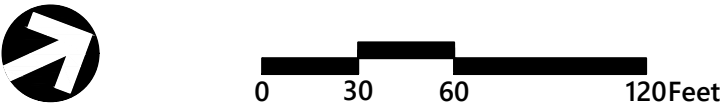
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

ABUTTING PROPERTIES ACROSS INTERSTATE 89 INCLUDE THE FOLLOWING:

1. CITY OF LEBANON
MAP 76, LOT 8
BOOK 0, PAGE 0
51 NORTH PARK STREET
LEBANON, NH 03766
2. RADER III, GERALD LENARD
MAP 77, LOT 81
BOOK 0, PAGE 0
54 WINTER STREET
LEBANON, NH 03766
3. SEIDMAN, MAX JAMES
MAP 77, LOT 83
BOOK 0, PAGE 0
53 WINTER STREET
LEBANON, NH 03766
4. CITY OF LEBANON
MAP 77, LOT 107
BOOK 0, PAGE 0
51 NORTH PARK STREET
LEBANON, NH 03766
5. VALDIVIEZO ZENIA MAE
MAP 77, LOT 111
BOOK 0, PAGE 0
48 JUNIPER CIRCLE
LEBANON, NH 03766
6. LEE, CUONG V
MAP 77, LOT 113
BOOK 0, PAGE 0
194 PLAIN STREET
ROCKLAND, MA 02370
7. LEUCA MAGDALENA TTEE
MAP 77, LOT 115
BOOK 0, PAGE 0
9920 SE 40TH STREET
MERCER ISLAND, WA 98040

Notes

1. EXISTING BUS STOP AT CORNER OF HEATER RD AND OLD ETNA ROAD IS APPROXIMATELY 0.20 MILES AWAY FROM PROJECT SITE.
2. LOTS 48-01, 48-02, 48-04, AND 63-01 ARE TO BE CONSOLIDATED INTO ONE PARCEL



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Apprv.
1	Completeness Review Comments	07/02/24	DF
2	Response to Comments Update	08/06/24	DF
3	Revised Layout Resubmission	10/24/24	DF
4	Response to Comments Rev 2	12/04/24	DF

Designed by	Checked by
TMD	MJV
Issued for	Date
Permitting	May 10, 2024

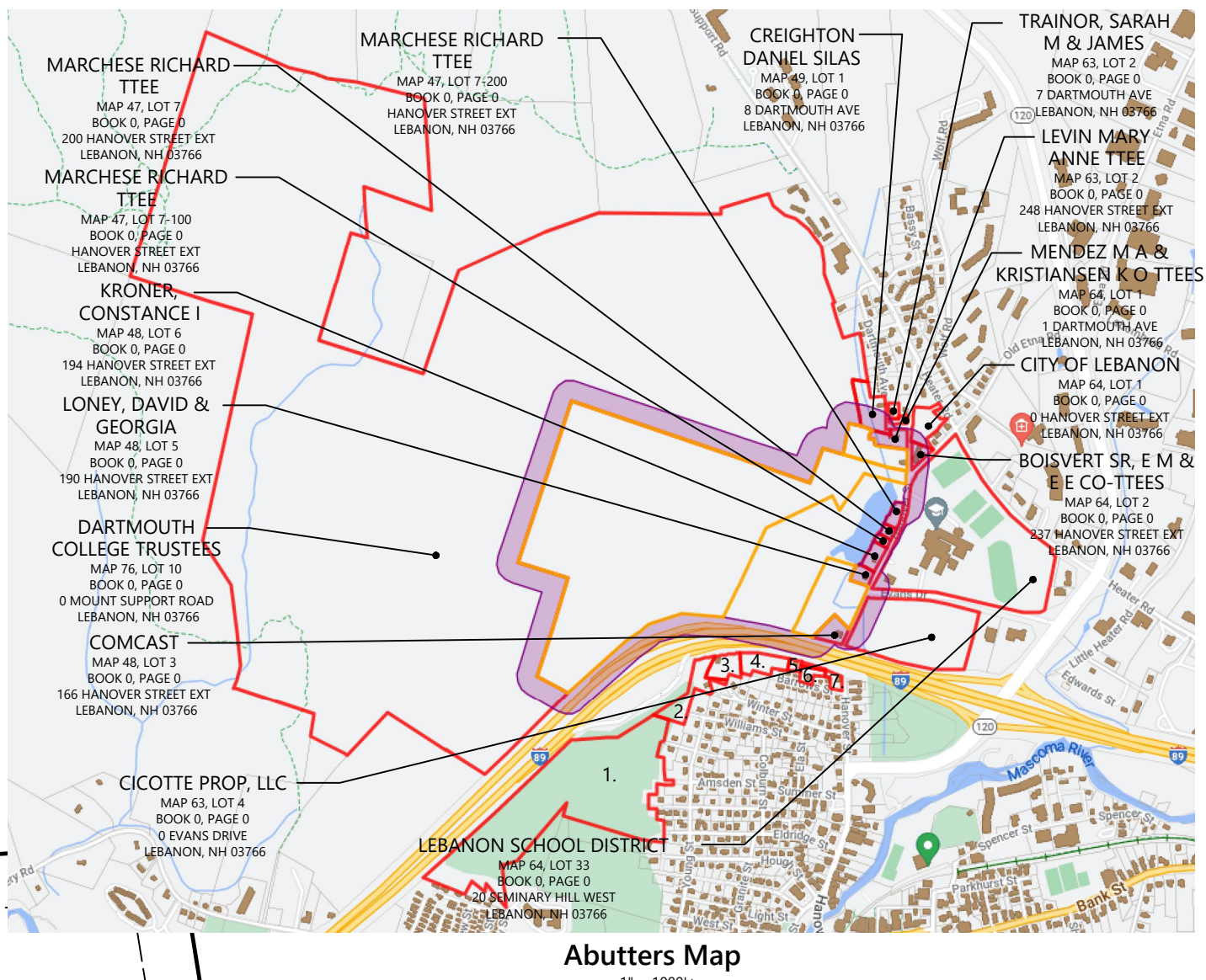
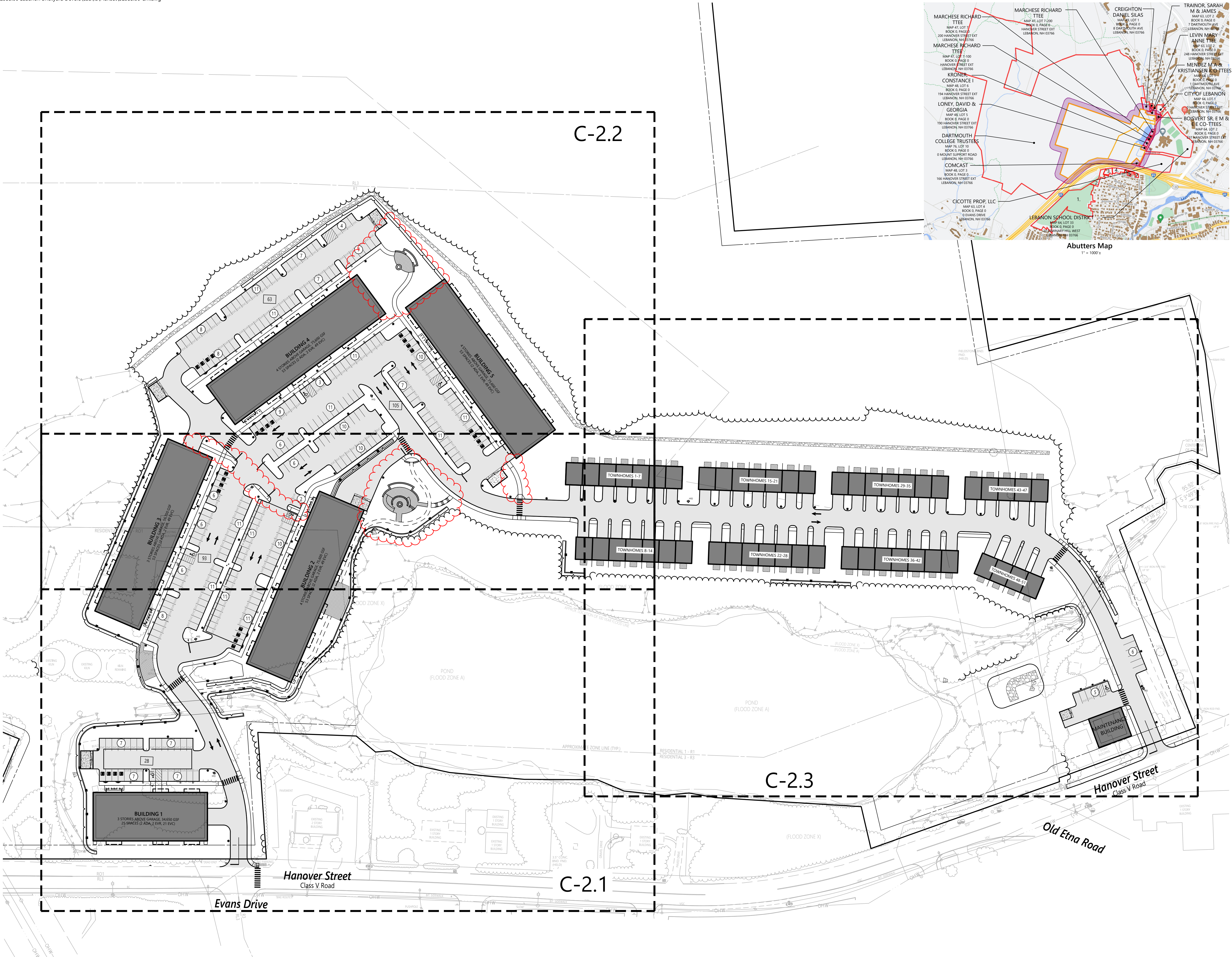
Not Approved for Construction
Drawing Title
**Overall Layout and
Materials Plan**

Drawing Number

C2.0

Sheet 7 of 53

Project Number
52933.00



Abutters Map

1" = 1000'

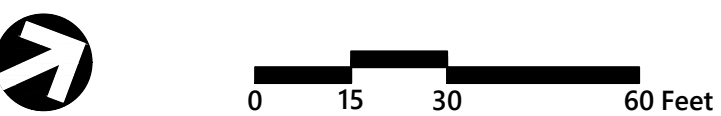


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Sign Summary

M.U.T.C.D. Number	Specification Width	Height	Desc.
R1-1	30"	30"	
R7-1	12"	18"	
R7-8	12"	18"	
R7-8P	12"	6"	
D9-11B	12"	18"	
D9-11BP	12"	12"	

SNOW STORAGE AREA



The Brickyard Residential Development

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Designed by: TMD
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Issued for: Permitting
Date: May 10, 2024

Not Approved for Construction
Drawing Title: Layout and Materials
Plan 1

Sheet 8 of 53

Project Number: 52933.00

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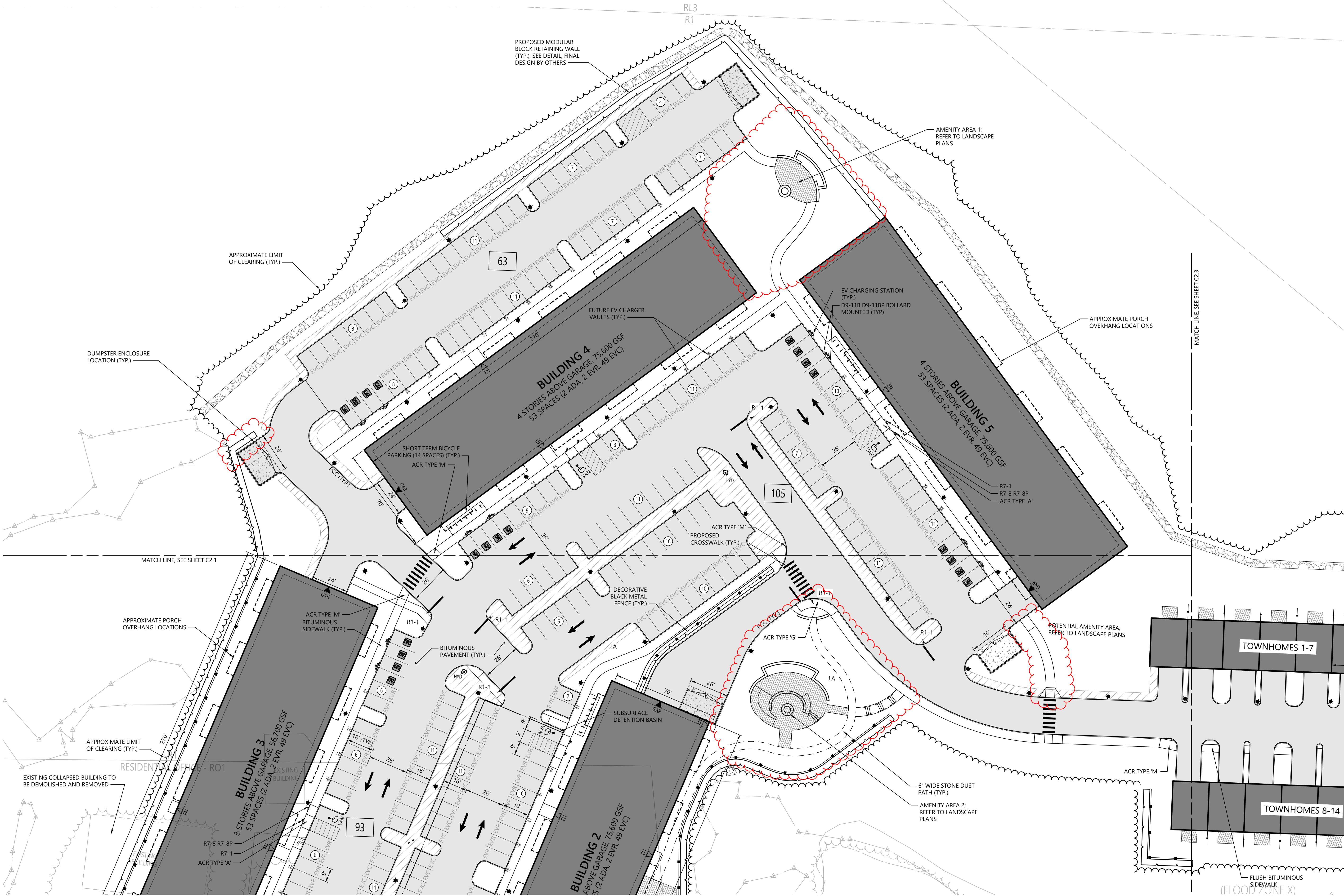
C2.1

DAVID H. FENSTERMACHER
No. 10382
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE





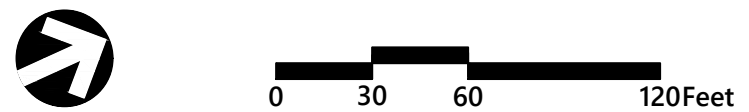
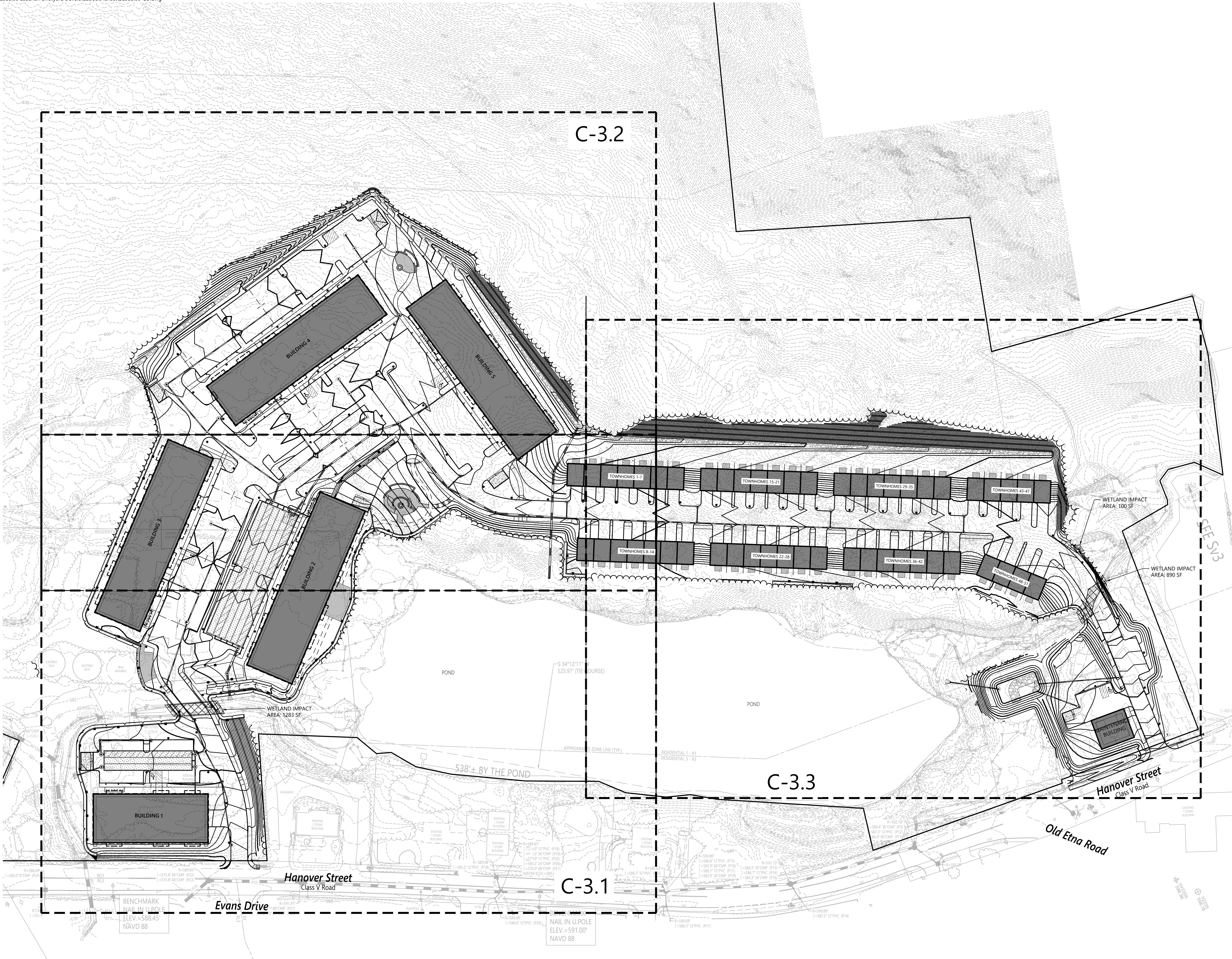
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The Brickyard Residential Development

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Issued for	Date
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Not Approved for Construction
Overall Grading
and Drainage Plan



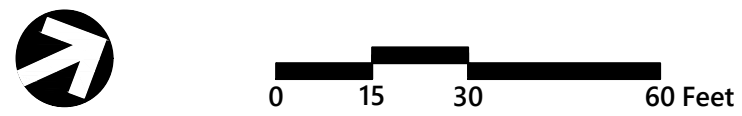
C3.0

Sheet 11 of 53

Project Number
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The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

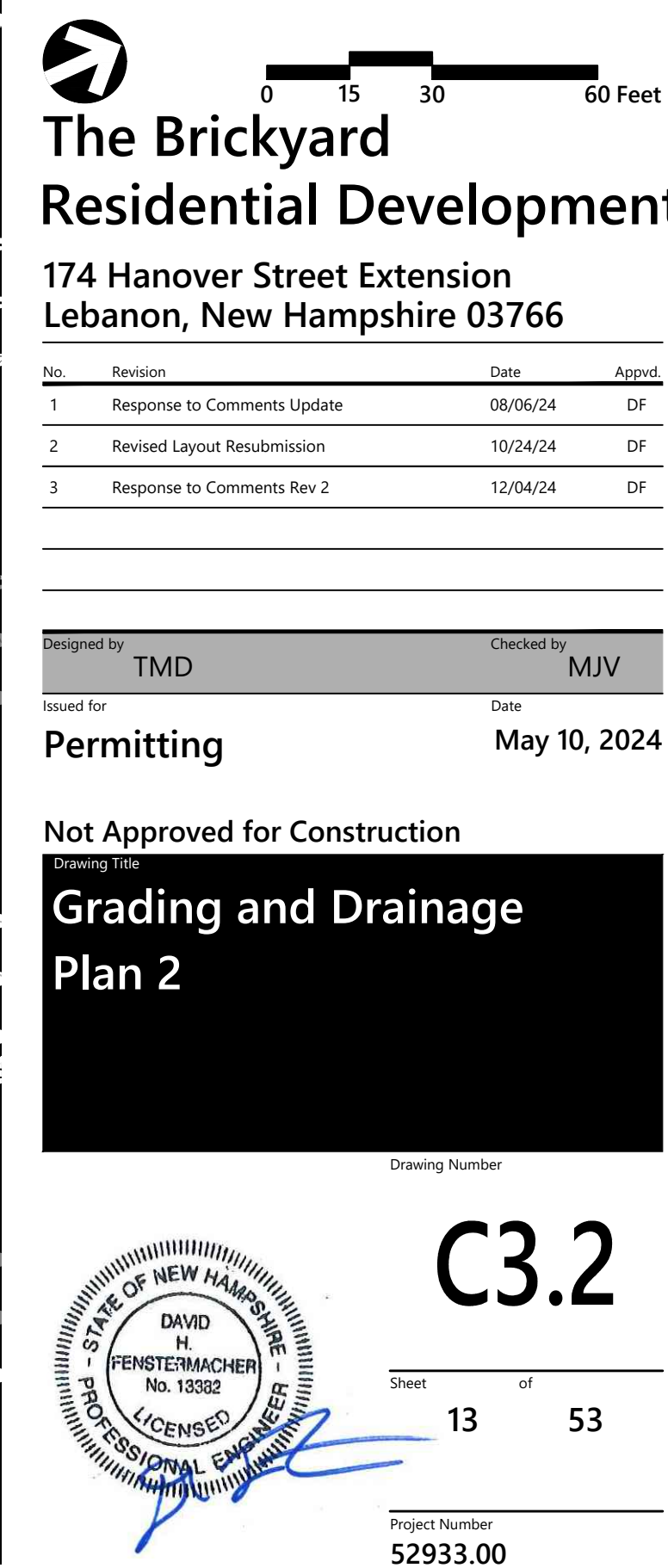
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Designed by TMD
Checked by MJV
Issued for Permitting
Date May 10, 2024

Not Approved for Construction
Drawing Title
**Grading and Drainage
Plan 1**

Drawing Number
C3.1
Sheet 12 of 53
Project Number
52933.00
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DAVID H. FENSTERMACHER
No. 13582
LICENSED PROFESSIONAL ENGINEER





**The Brickyard
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174 Hanover Street Extension
Lebanon, New Hampshire 03766

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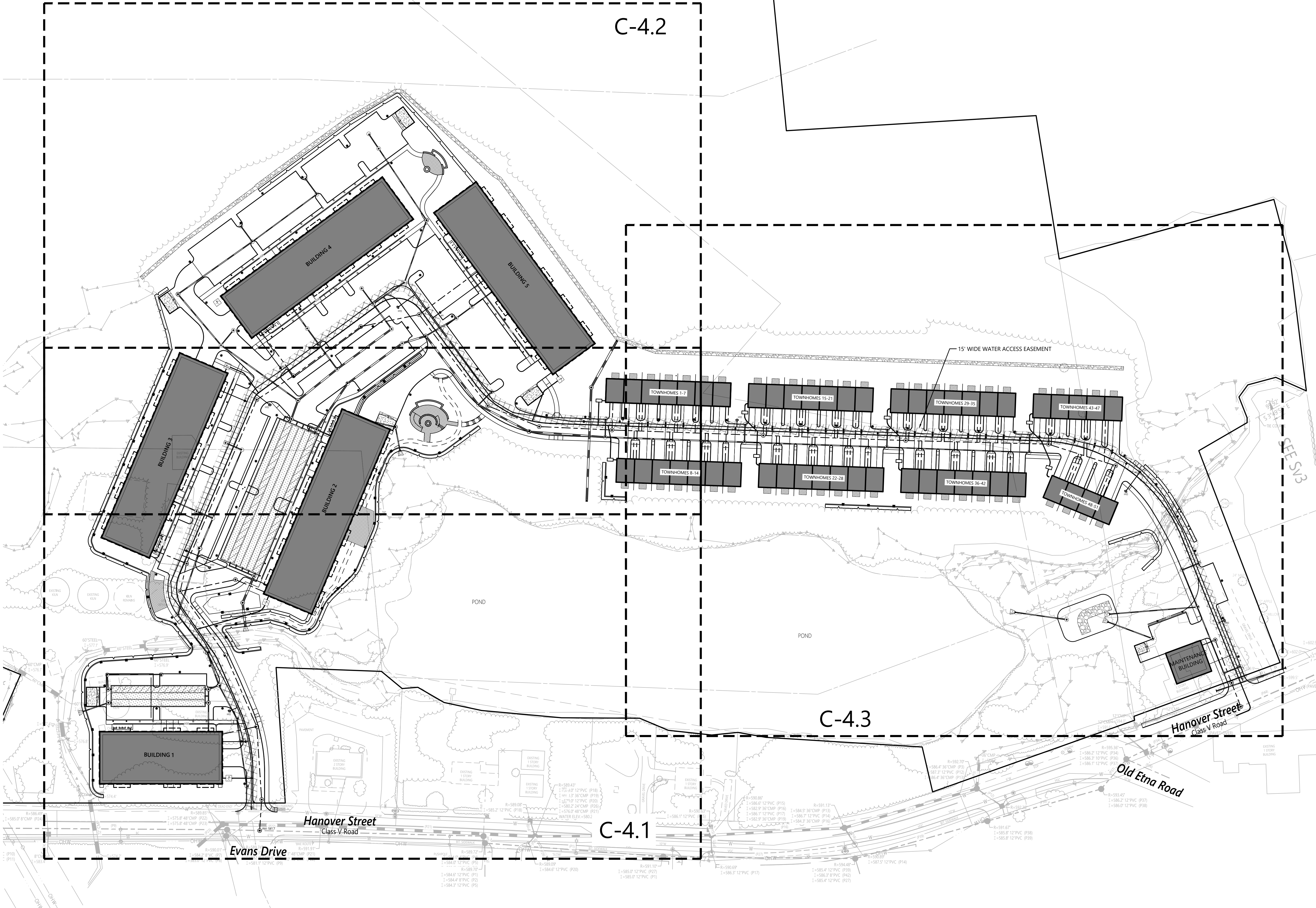
Designed by	Checked by
TMD	MJV
Issued for	Date
Permitting	May 10, 2024

Not Approved for Construction
Drawing Title
**Grading and Drainage
Plan 3**

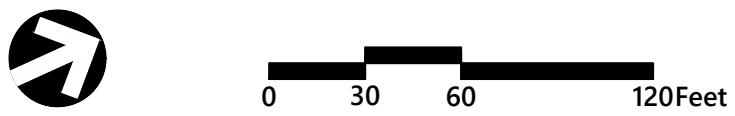




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- NOTE:
- 1) AN ACCESS AND MAINTENANCE EASEMENT BENEFITING THE CITY OF LEBANON WILL BE PROVIDED FOLLOWING WATER INFRASTRUCTURE ACROSS THE SITE, WHICH WILL BE OWNED BY THE CITY OF LEBANON. THE EASEMENT BOUNDARIES WILL BE PROVIDED FOR CITY REVIEW FOLLOWING COORDINATION OF BUILDING PLUMBING DESIGN FINAL DESIGN ACCEPTANCE FROM THE LEBANON FIRE DEPARTMENT.
 - 2) SANITARY SEWER PIPE LESS THAN 6 FEET BELOW FINISHED GROUND SURFACE ELEVATION MUST BE INSULATED.



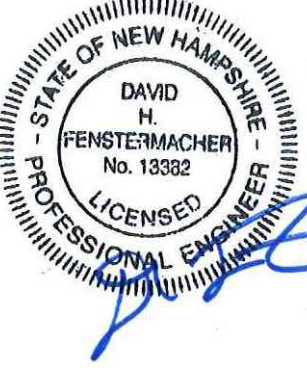
The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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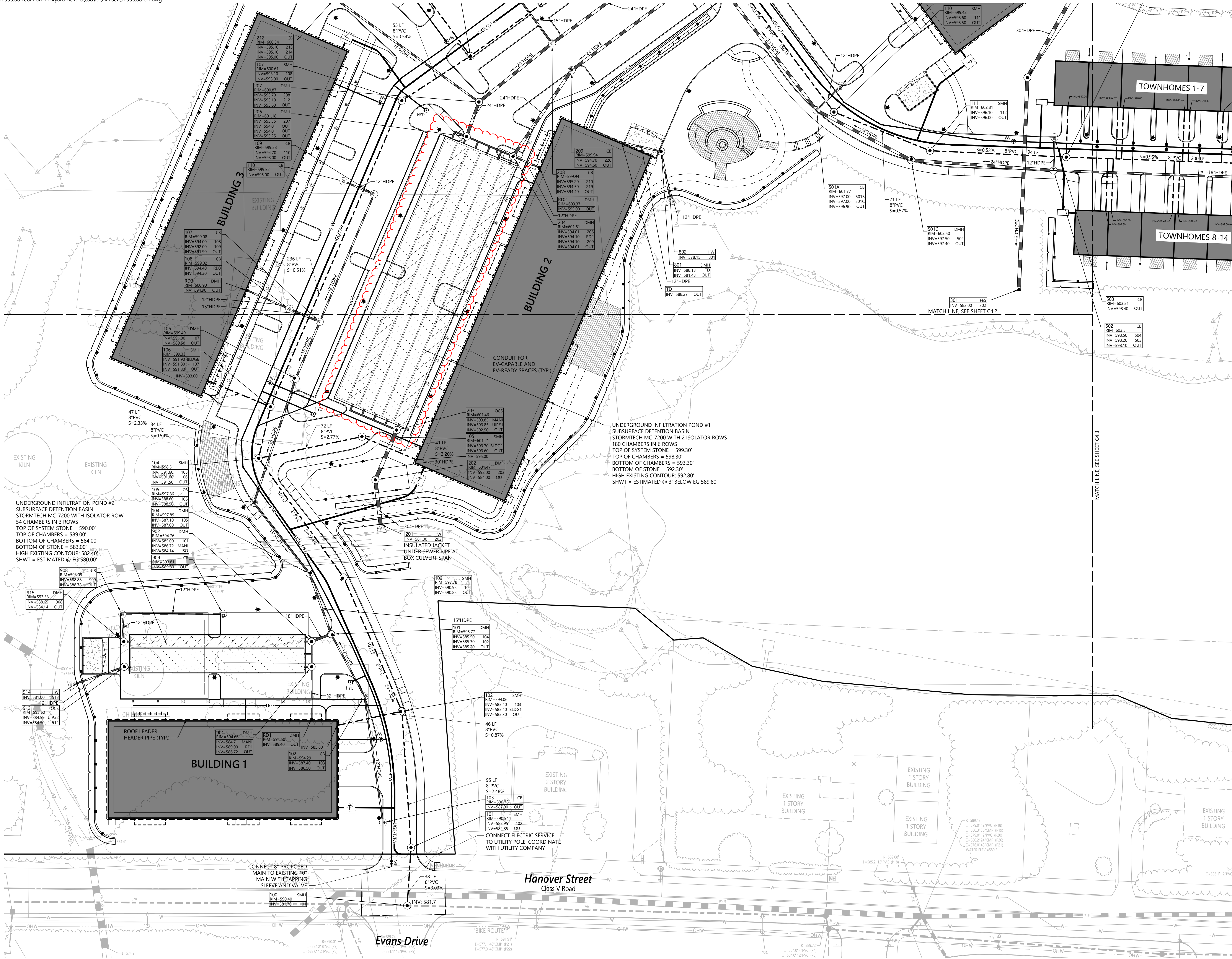
Not Approved for Construction
Drawing Title
Overall Utility Plan



C4.0

Sheet 15 of 53

Project Number
52933.00

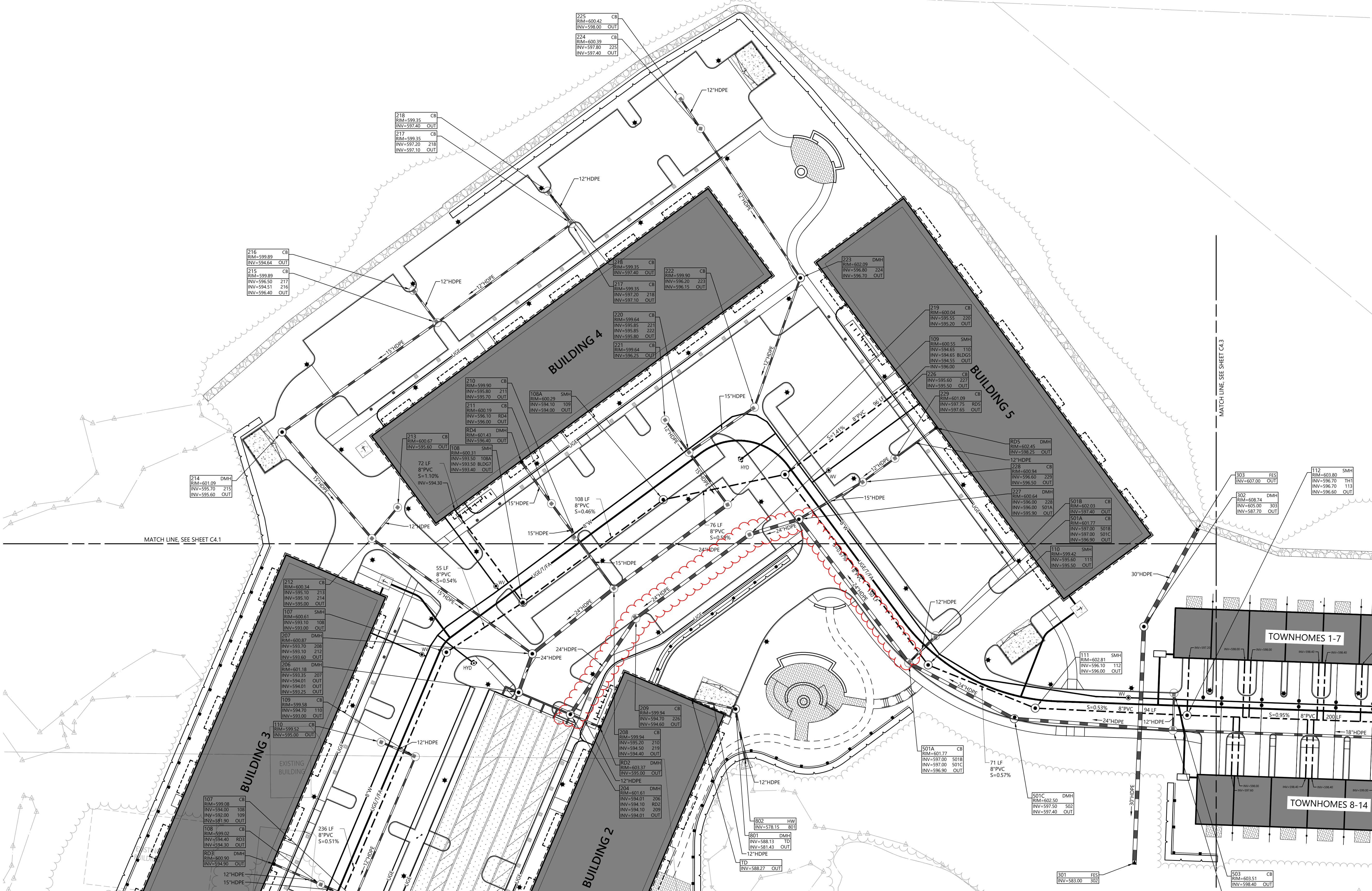


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Utility Plan 1



NOTE:

1) TOWNHOME SEWER SERVICE CONNECTIONS ARE TO BE 6" SDR 35 PVC PIPE CONNECTING TO THE SEWER MAIN WITH SLOPES GREATER THAN 1%.

 0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Designed by **TMD** Checked by **MJV**

Issued for **Permitting** Date **May 10, 2024**

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Drawing Title
Utility Plan 2

Drawing Number

C4.2

Sheet **17** of **53**

Project Number
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2 Bedford Farms Drive
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NOTE:
1) TOWNHOME SEWER SERVICE CONNECTIONS ARE TO BE 6" SDR 35 PVC PIPE CONNECTING TO THE SEWER MAIN WITH SLOPES GREATER THAN 1%.



The Brickyard Residential Development

174 Hanover Street Extension
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Date May 10, 2024

Not Approved for Construction
Drawing Title
Utility Plan 3

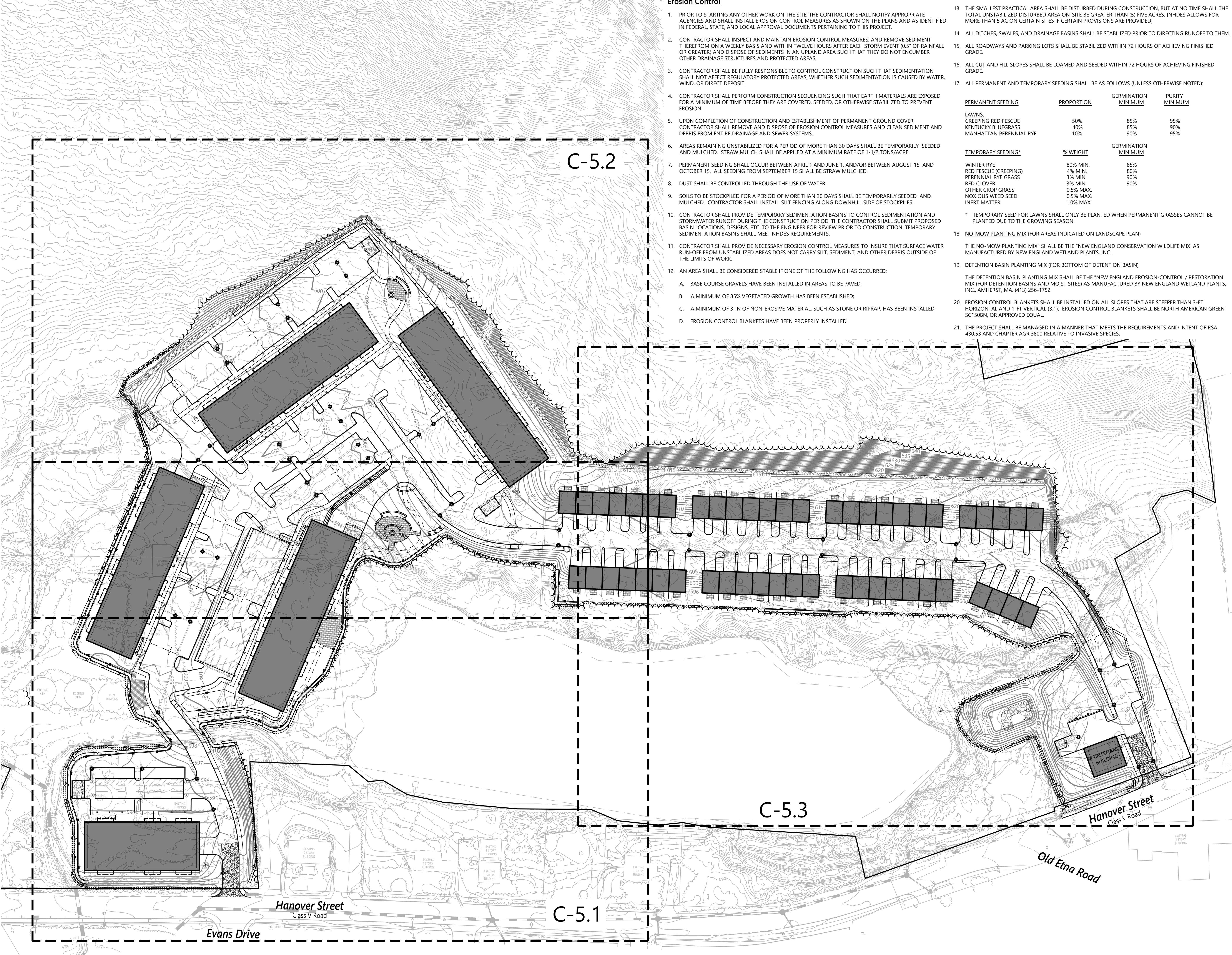


C4.3

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2 Bedford Farms Drive
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Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT (0.5" OF RAINFALL OR GREATER) AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
6. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. STRAW MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS/ACRE.
7. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE STRAW MULCHED.
8. DUST SHALL BE CONTROLLED THROUGH THE USE OF WATER.
9. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED AND MULCHED. CONTRACTOR SHALL INSTALL SILT FENCING ALONG DOWNHILL SIDE OF STOCKPILES.
10. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION BASINS TO CONTROL SEDIMENTATION AND STORMWATER RUNOFF DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT PROPOSED BASIN LOCATIONS, DESIGNS, ETC. TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. TEMPORARY SEDIMENTATION BASINS SHALL MEET NHDES REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE NECESSARY EROSION CONTROL MEASURES TO INSURE THAT SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS DOES NOT CARRY SILT, SEDIMENT, AND OTHER DEBRIS OUTSIDE OF THE LIMITS OF WORK.
12. 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-IN OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED;
 - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

13. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES. [NHDES ALLOWS FOR MORE THAN 5 AC ON CERTAIN SITES IF CERTAIN PROVISIONS ARE PROVIDED]
14. ALL DITCHES, SWALES, AND DRAINAGE BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
15. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL PERMANENT AND TEMPORARY SEEDING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

PERMANENT SEEDING	PROPORTION	GERMINATION MINIMUM	PURITY MINIMUM
LAWNS:			
CREeping RED FESCUE	50%	85%	95%
KENTUCKY BLUEGRASS	40%	85%	90%
MANHATTAN PERENNIAL RYE	10%	90%	95%

TEMPORARY SEEDING*	% WEIGHT	GERMINATION MINIMUM
WINTER RYE	80% MIN.	85%
RED FESCUE (CREEPING)	4% MIN.	80%
PERENNIAL RYE GRASS	3% MIN.	90%
RED CLOVER	3% MIN.	90%
OTHER CROP GRASS	0.5% MAX.	
NOXIOUS WEEED SEED	0.5% MAX.	
INERT MATTER	1.0% MAX.	

* TEMPORARY SEED FOR LAWNS SHALL ONLY BE PLANTED WHEN PERMANENT GRASSES CANNOT BE PLANTED DUE TO THE GROWING SEASON.

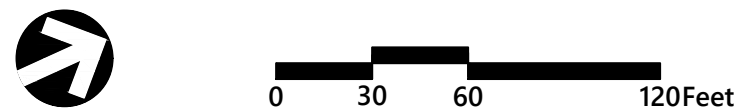
18. NO-MOW PLANTING MIX (FOR AREAS INDICATED ON LANDSCAPE PLAN)

THE NO-MOW PLANTING MIX* SHALL BE THE "NEW ENGLAND CONSERVATION WILDLIFE MIX" AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.

19. DETENTION BASIN PLANTING MIX (FOR BOTTOM OF DETENTION BASIN)

THE DETENTION BASIN PLANTING MIX SHALL BE THE "NEW ENGLAND EROSION-CONTROL / RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA. (413) 256-1752

20. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3-FT HORIZONTAL AND 1-FT VERTICAL (3:1). EROSION CONTROL BLANKETS SHALL BE NORTH AMERICAN GREEN SC150BN, OR APPROVED EQUAL.
21. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.



The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Designed by	TMD	Checked by	MJV
Issued for		Date	May 10, 2024

Permitting

Not Approved for Construction

Overall Erosion
Control Plan

Drawing Number

C5.0

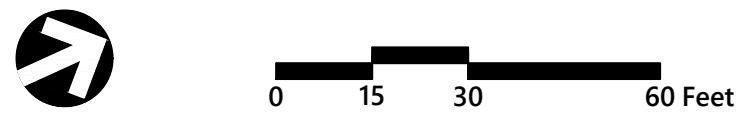
Sheet 19 of 53

Project Number 52933.00

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2 Bedford Farms Drive
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The Brickyard Residential Development

174 Hanover Street Extension
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TMD	MJV

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Date
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Erosion Control Plan 1

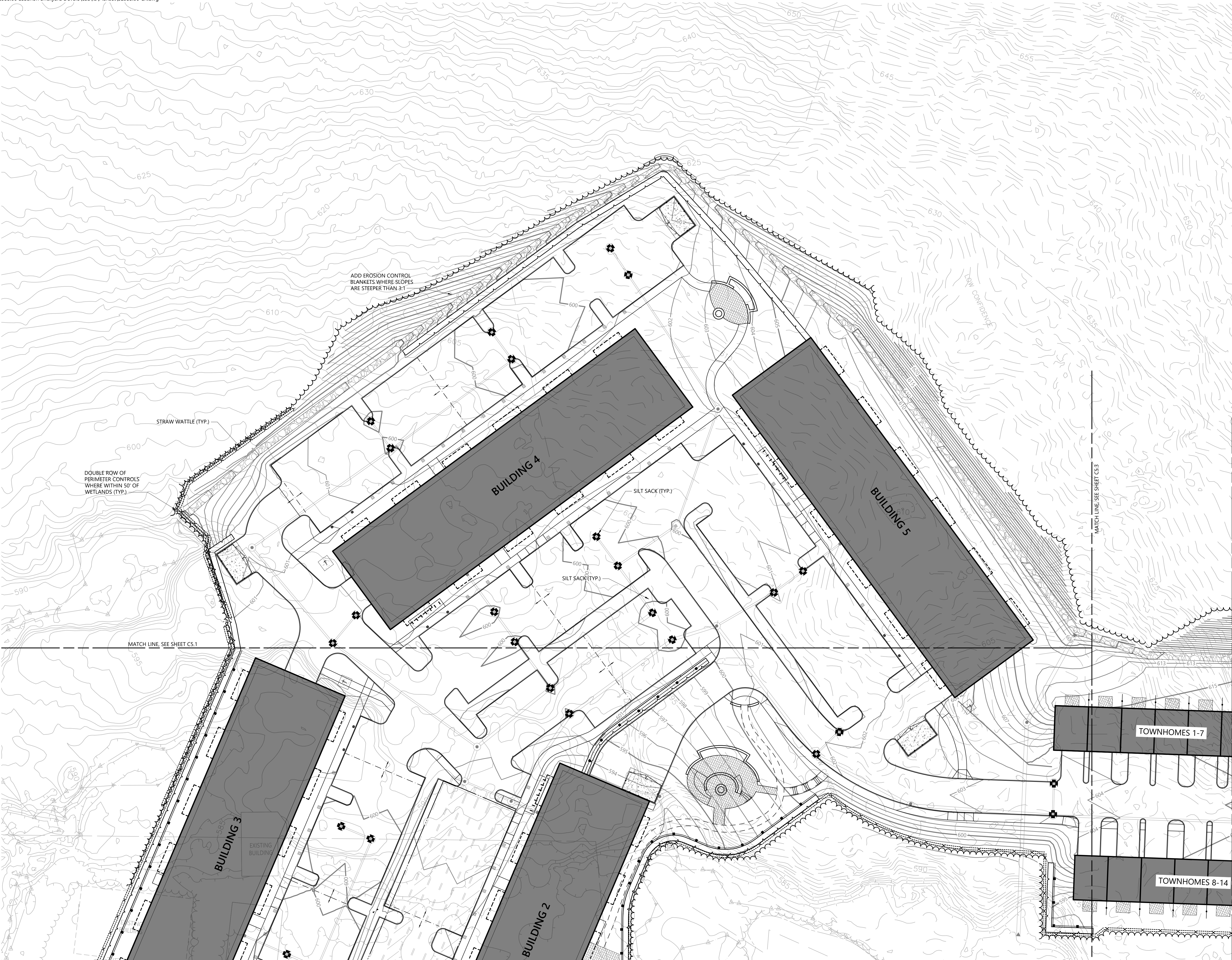
Drawing Number

C5.1

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The Brickyard

Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

0153060

0 15 30 60 Feet

No.	Revision	Date	Appr'd.
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Designed by

TMD

Checked by

MJV

Issued for

Permitting

Date

May 10, 2024

Not Approved for Construction

Erosion Control Plan 2

Drawing Title

C5.2

Sheet

21

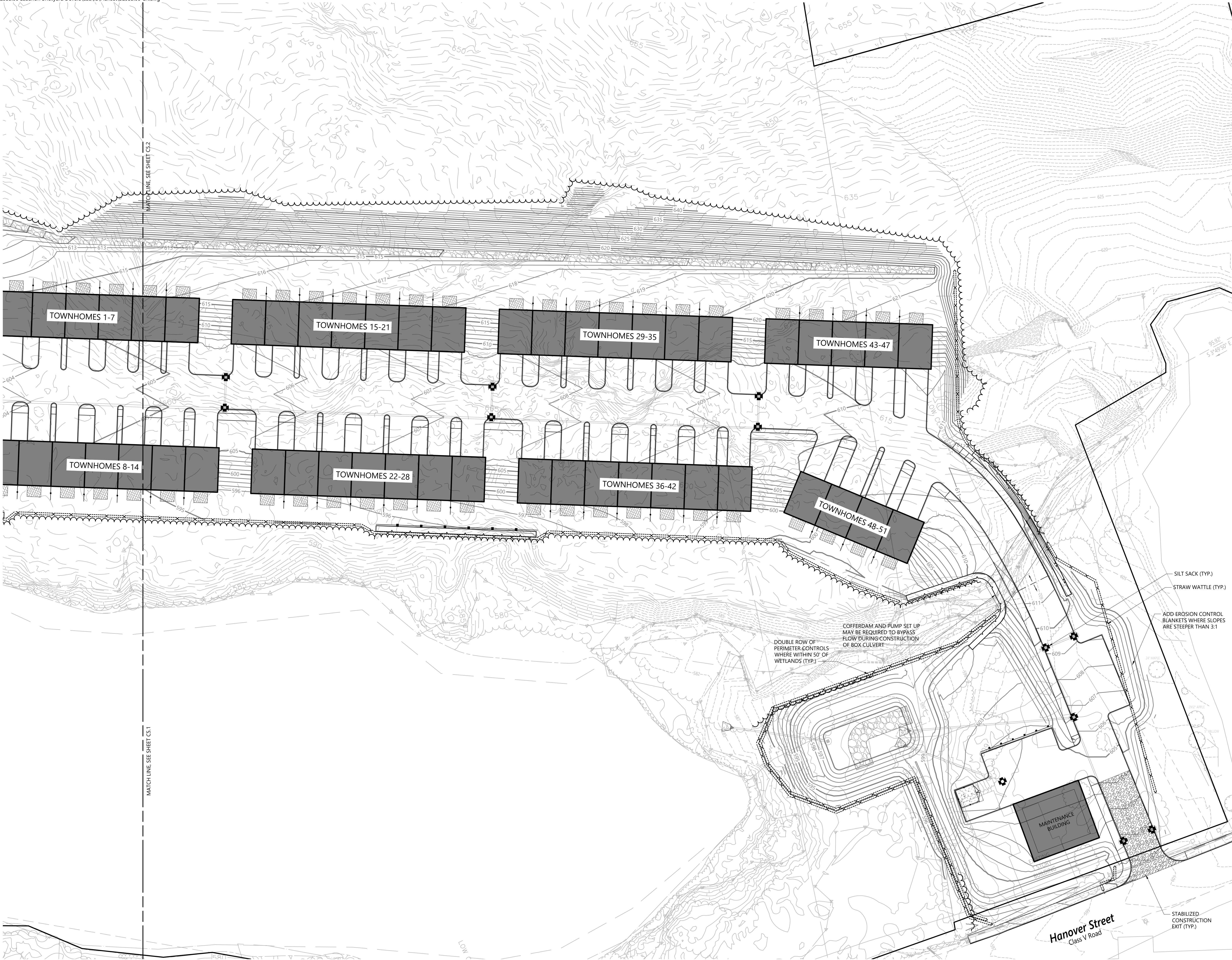
of

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Residential Development
174 Hanover Street Extension
Lebanon, New Hampshire 03766

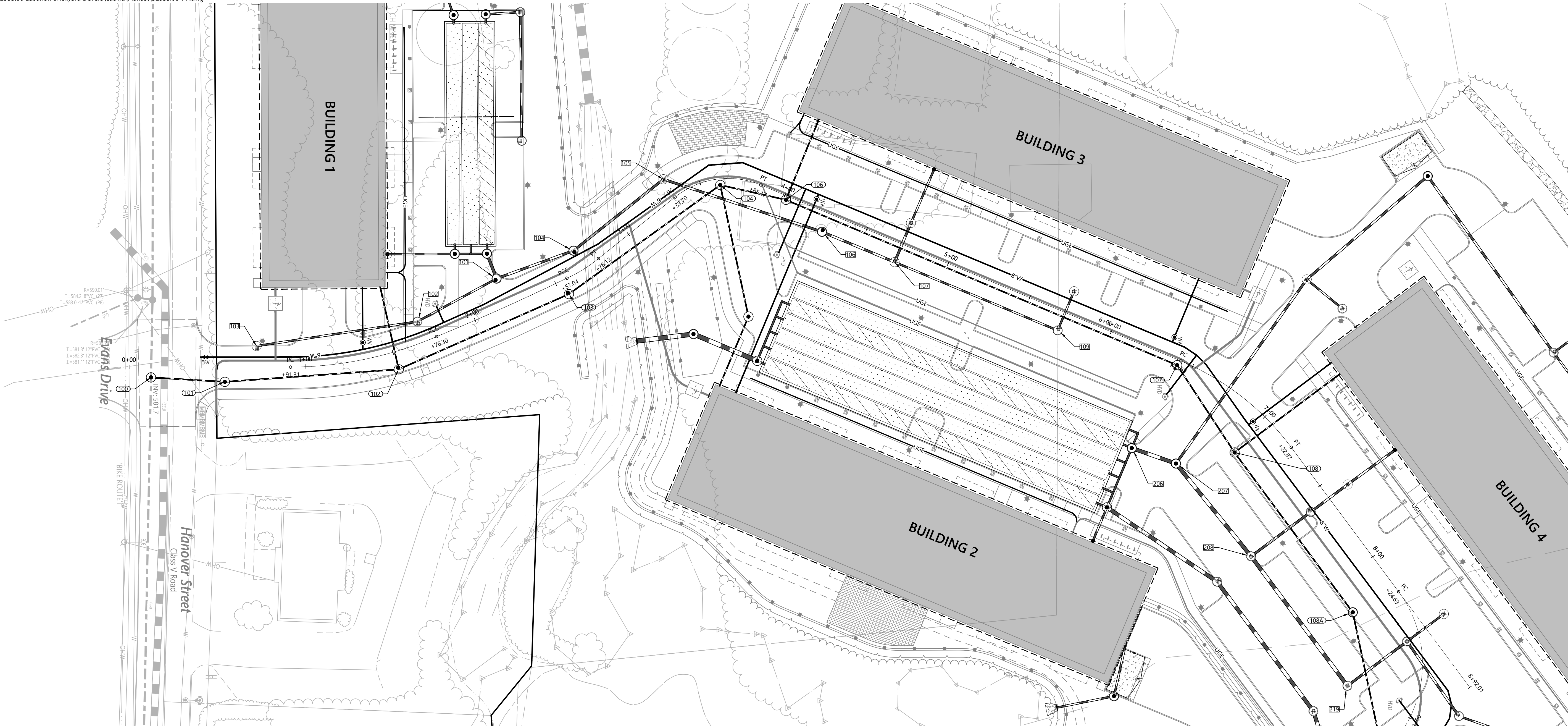
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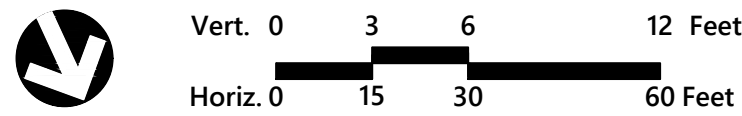
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Drawing Title
Erosion Control Plan 3
Drawing Number

C5.3
Sheet 22 of 53
Project Number
52933.00
Page 70 of 668

STATE OF NEW HAMPSHIRE
DAVID H. FENSTERMACHER
No. 13682
LICENSED PROFESSIONAL ENGINEER



NOTE:
1) SANITARY AND WATER CROSSINGS HAVE 18" MINIMUM SEPARATION AND WATER PIPES SHALL USE VERTICAL BENDS AS NEEDED TO MEET THAT SEPARATION.



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

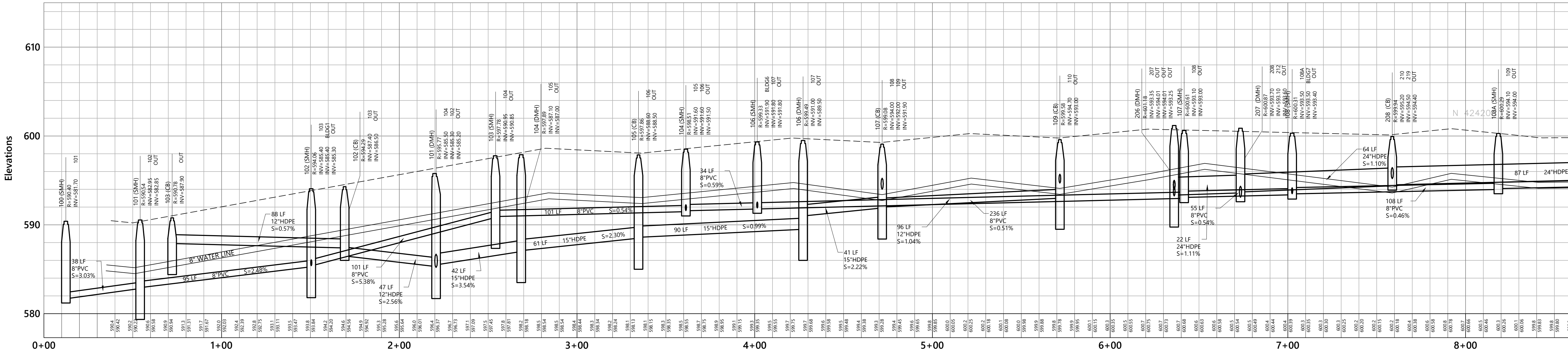
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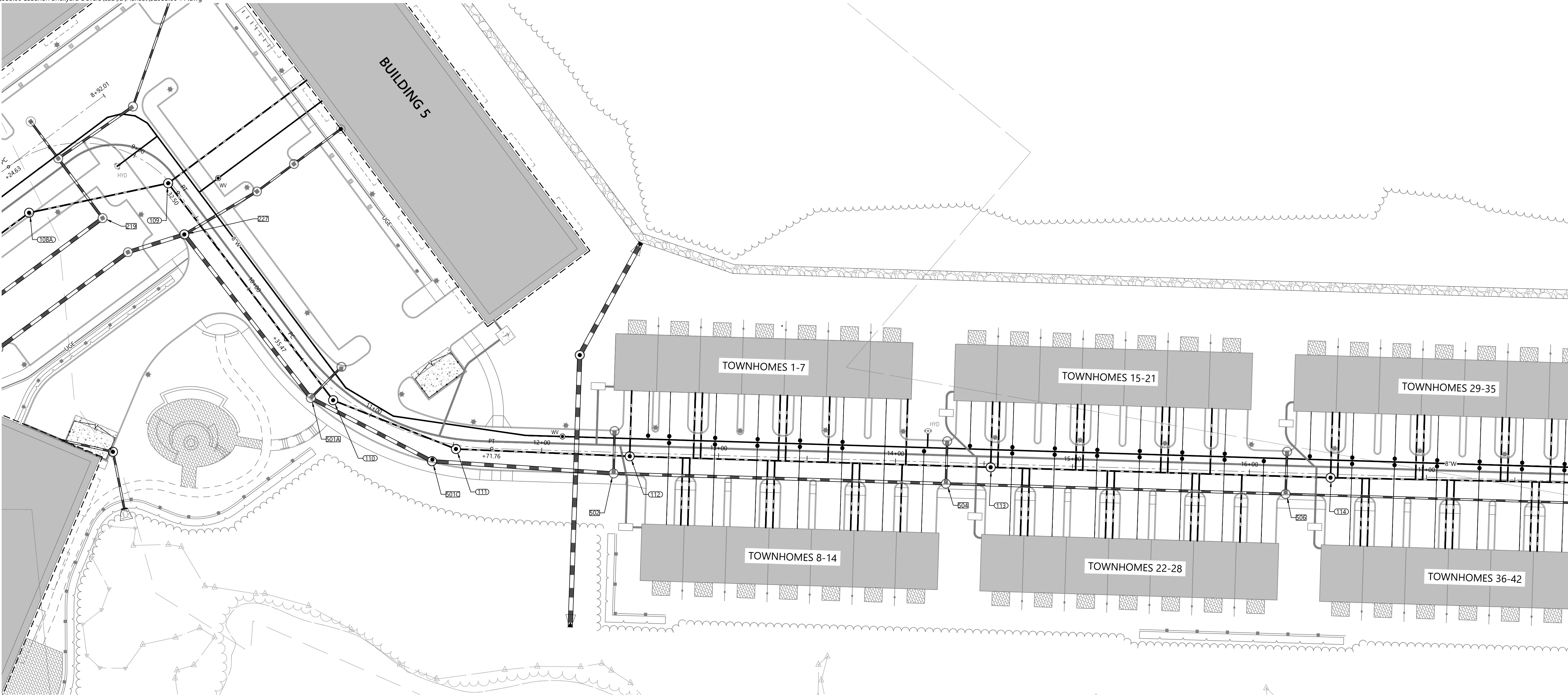
Designed by **TMD** Checked by **MJV**

Issued for **Permitting** Date **May 10, 2024**

Not Approved for Construction
Drawing Title
**Plan and Profile 1
Sewer, Drainage and Water**

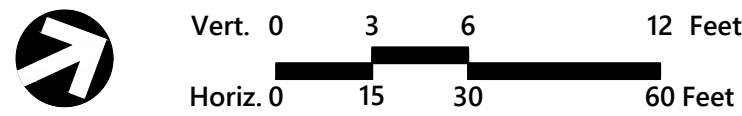
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Sheet 23 of 53
Project Number
52933.00
Professional Engineer
DAVID H. PENSTERMACHER
No. 15882
LICENSED PROFESSIONAL ENGINEER
May 10, 2024





NOTE

1) SANITARY AND WATER CROSSINGS HAVE 18" MINIMUM SEPARATION AND WATER PIPES SHALL USE VERTICAL BENDS AS NEEDED TO MEET THAT SEPARATION.



The Brickyard Residential Development

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Lebanon, New Hampshire 03766

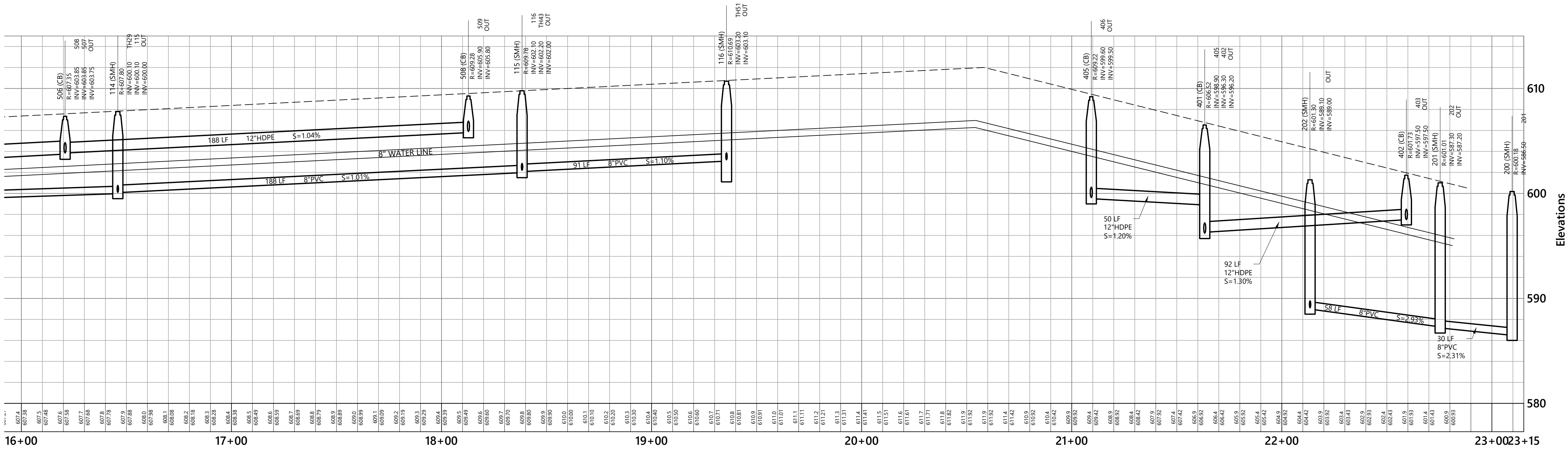
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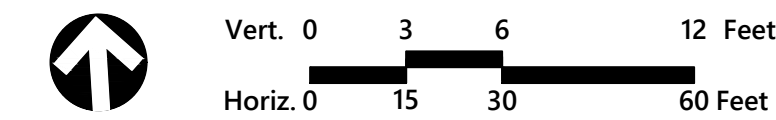
Issued for Permitting Date May 10, 2024

Not Approved for Construction

Drawing Title
**Plan and Profile 2
Sewer, Drainage and Water**



NOTE
1) SANITARY AND WATER CROSSINGS HAVE 18" MINIMUM SEPARATION AND WATER PIPES SHALL USE VERTICAL BENDS AS NEEDED TO MEET THAT SEPARATION.



The Brickyard Residential Development

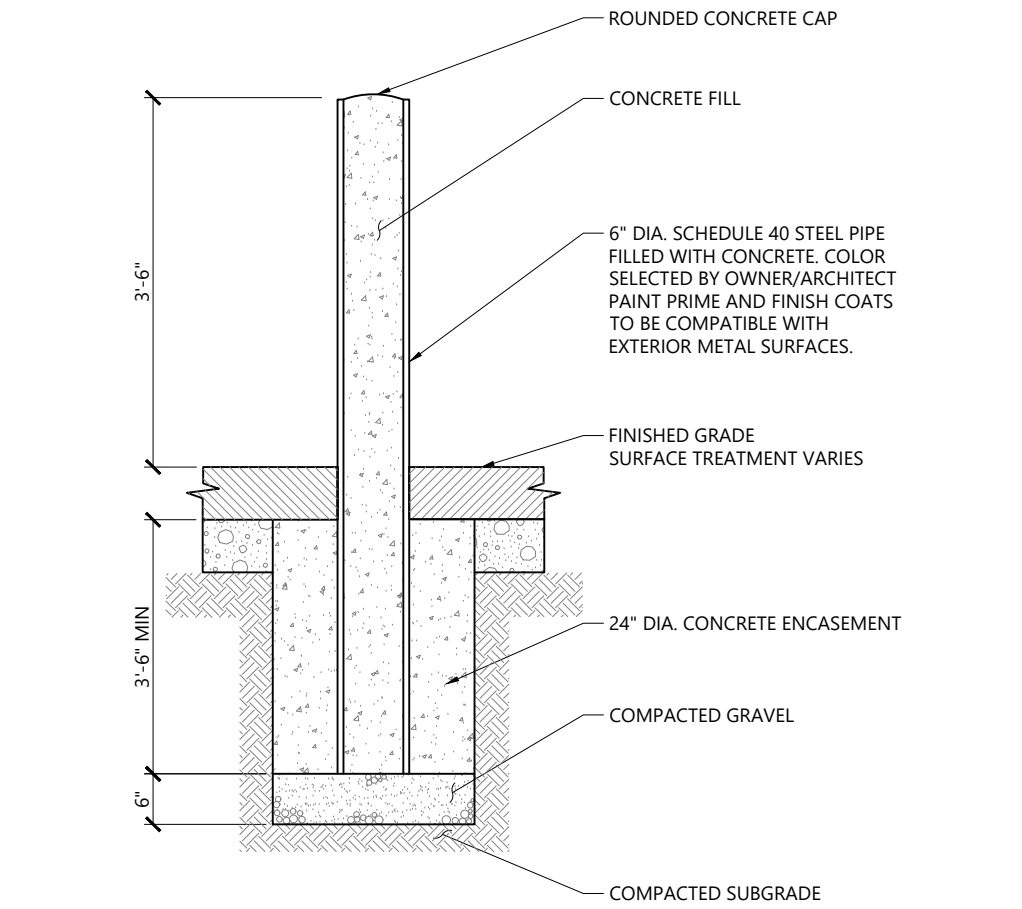
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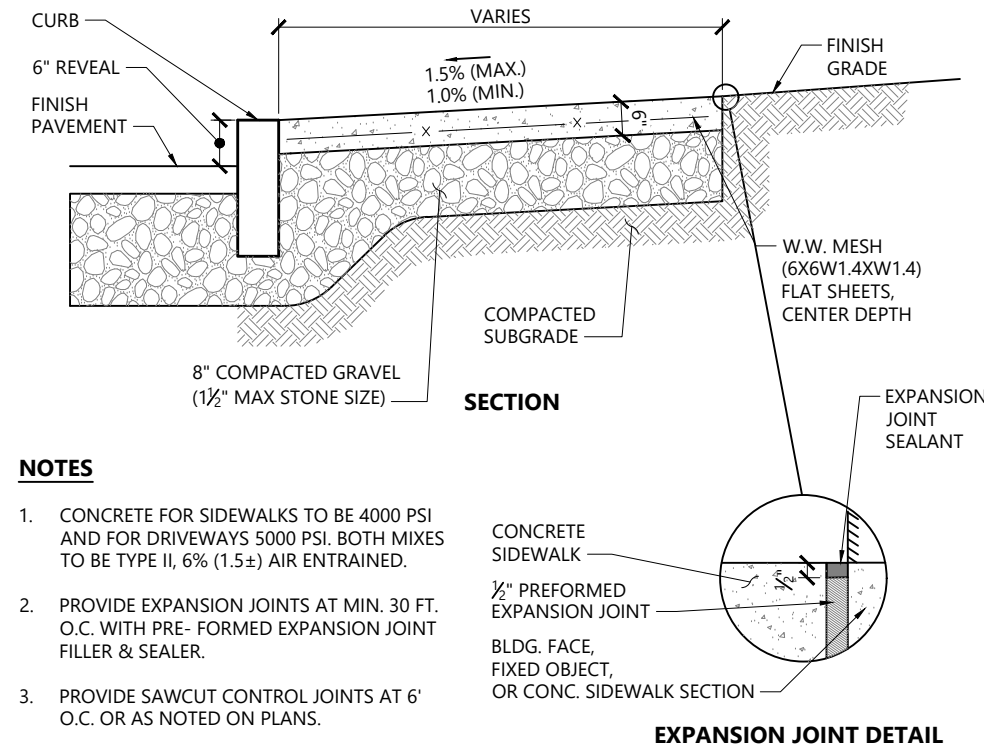
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Checked by: MJV

Issued for: Permitting
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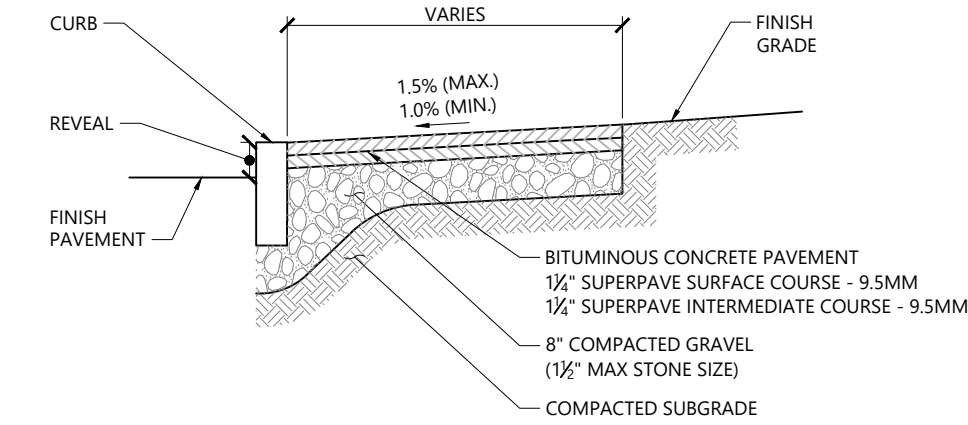
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Sewer, Drainage and Water



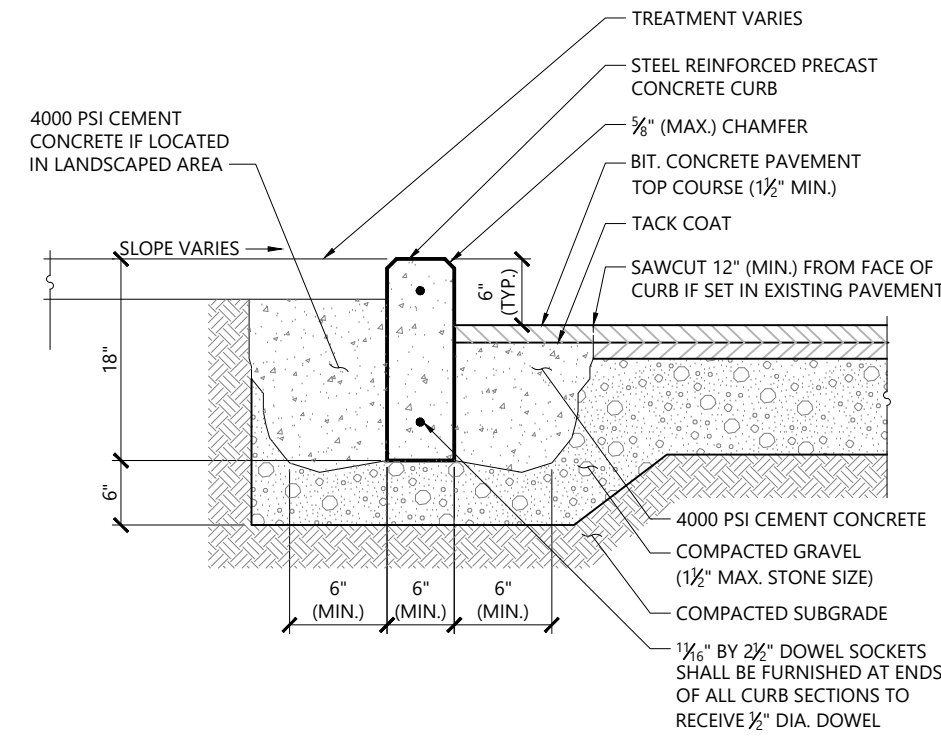
Bollard 12/19
N.T.S. Source: VHB REV LD_700



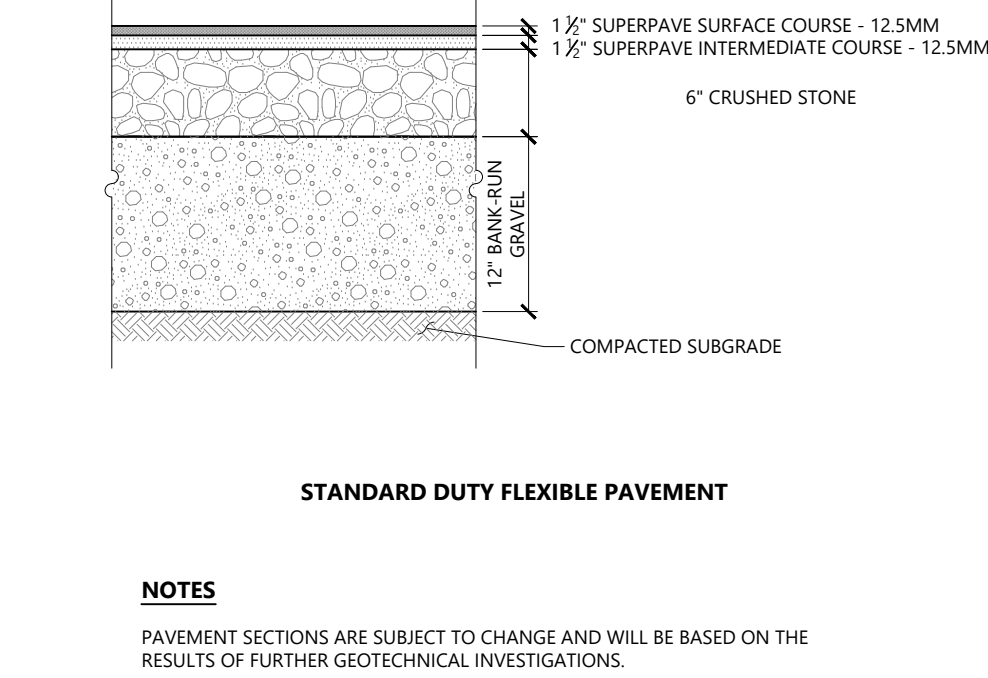
Concrete Sidewalk 3/20
N.T.S. Source: VHB REV LD_420



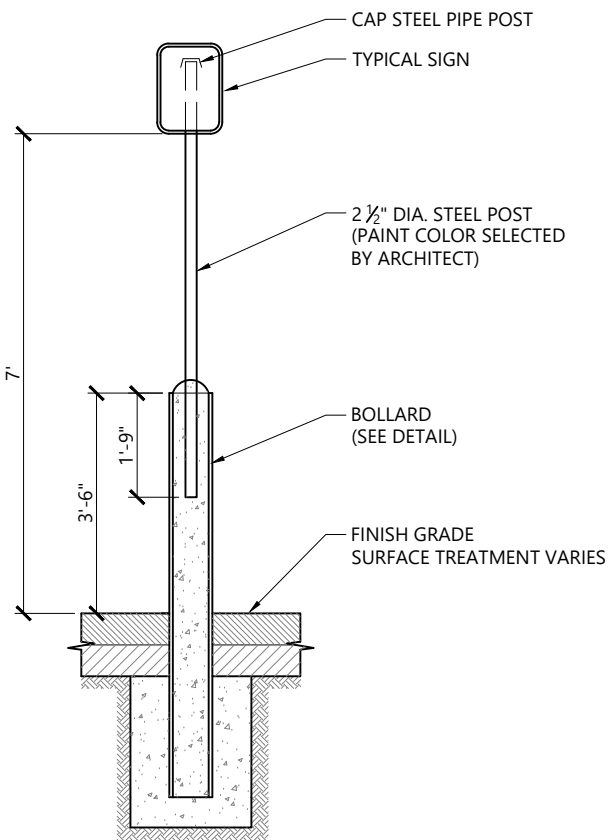
Bituminous Concrete Sidewalk 3/20
N.T.S. Source: VHB REV LD_422



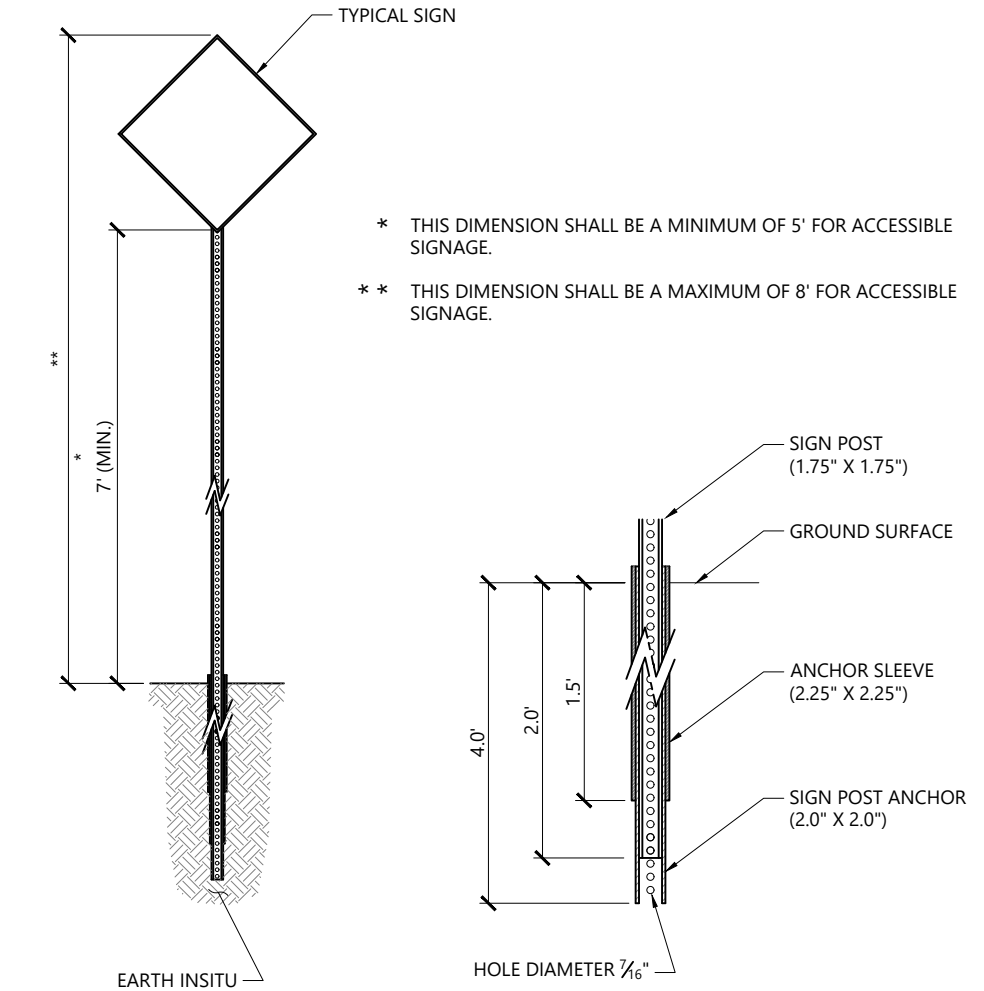
Precast Concrete Curb (PCC) 3/20
N.T.S. Source: VHB REV LD_404



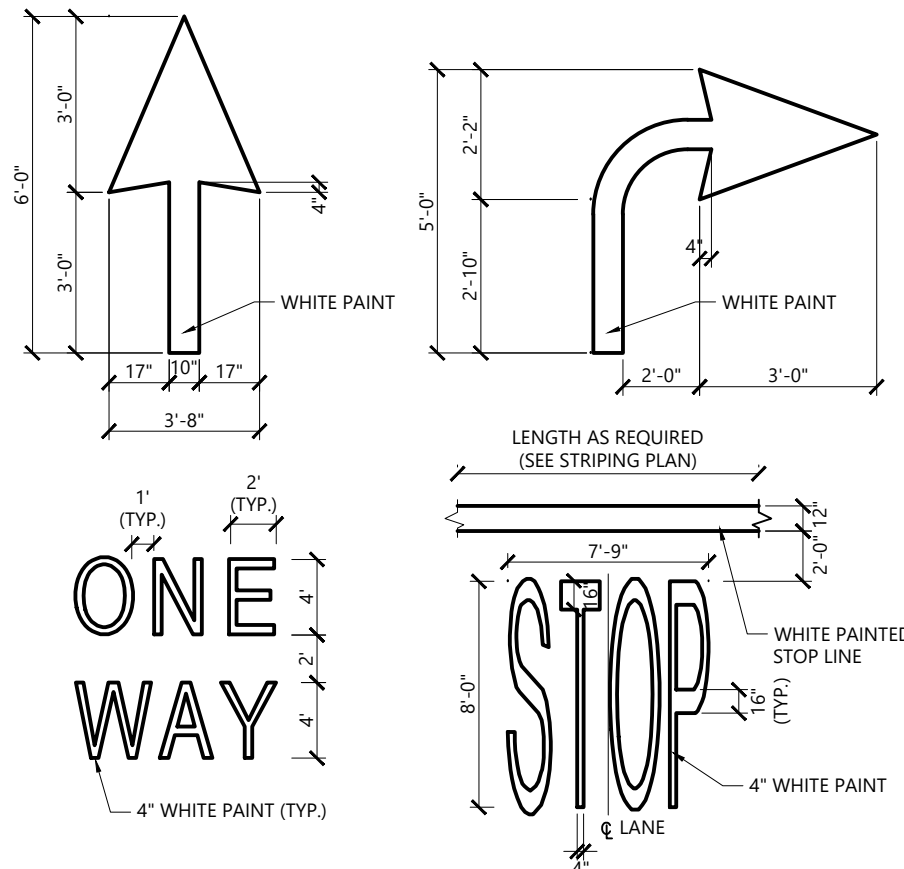
Bituminous Concrete Pavement Sections 7/22
N.T.S. Source: VHB REV LD_430



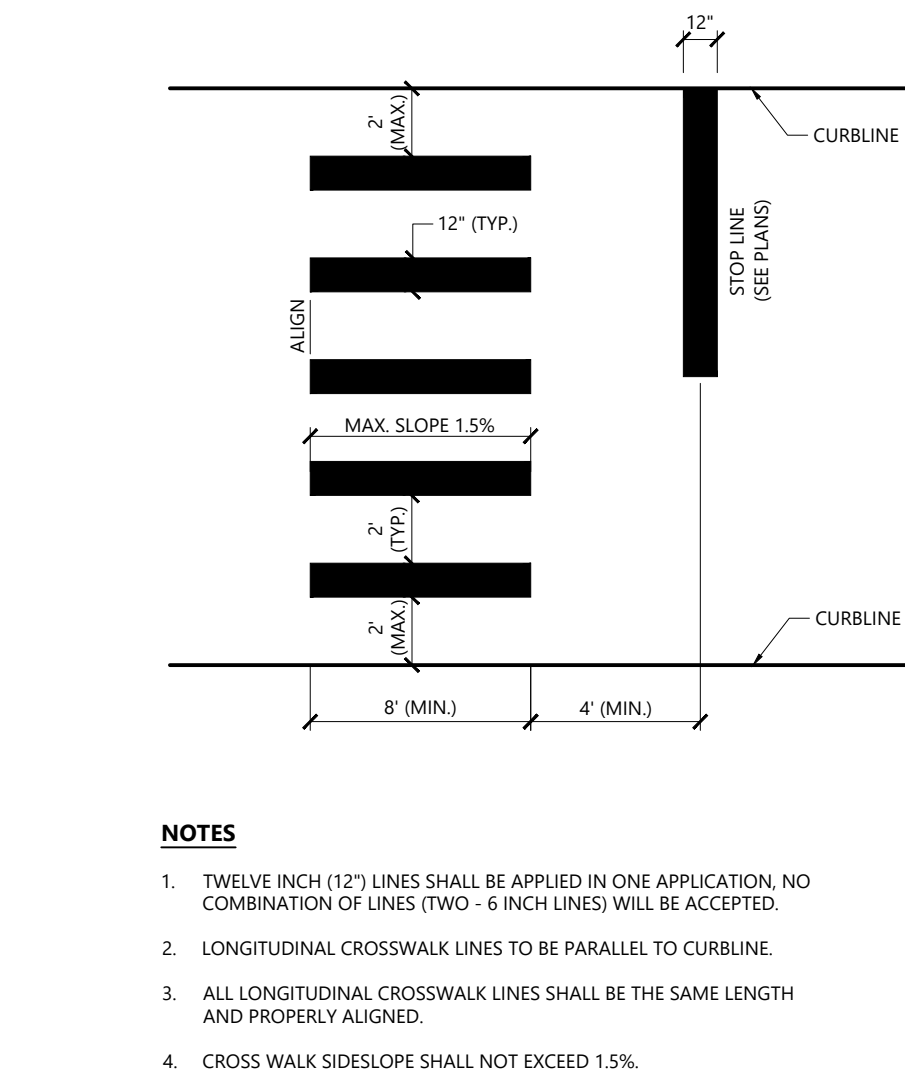
Bollard Mounted Sign 1/16
N.T.S. Source: VHB REV LD_703-NH



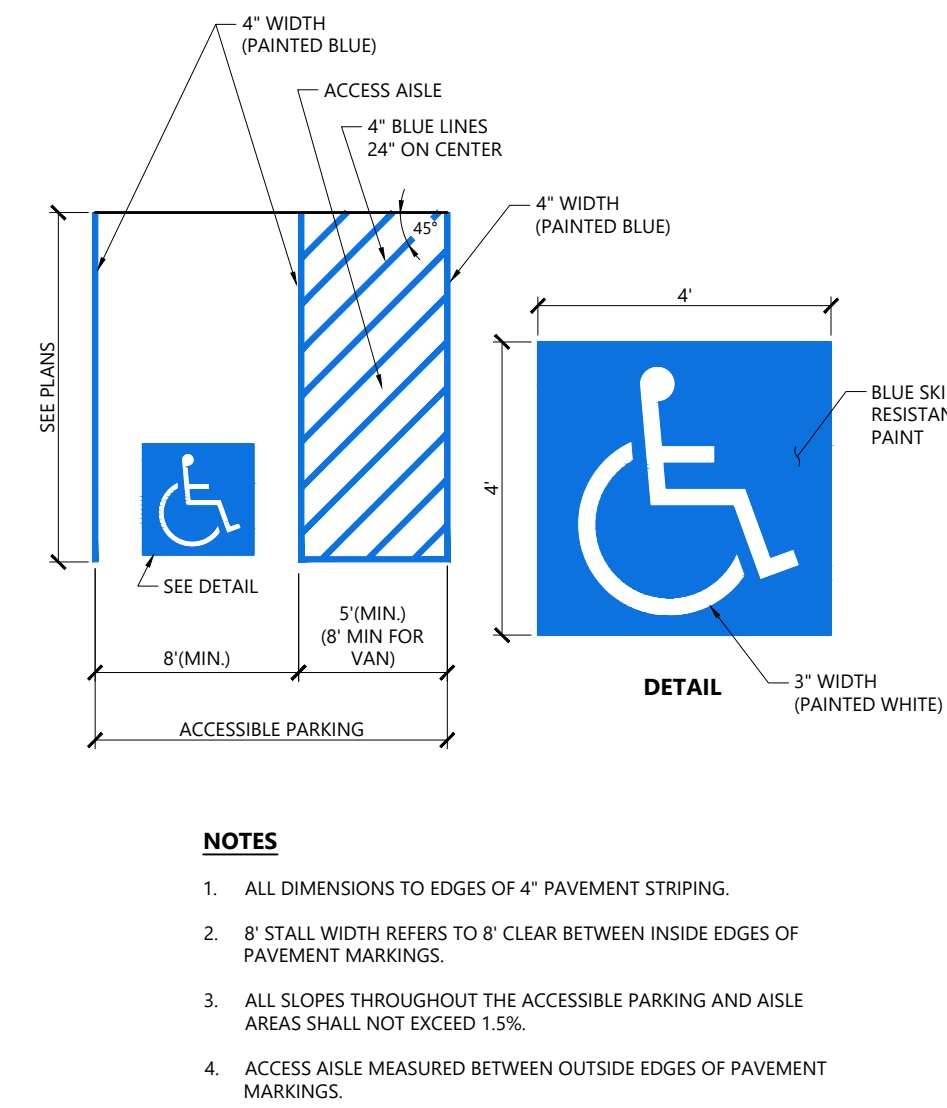
Sign Post - Type 'B' 1/16
N.T.S. Source: VHB REV LD_702



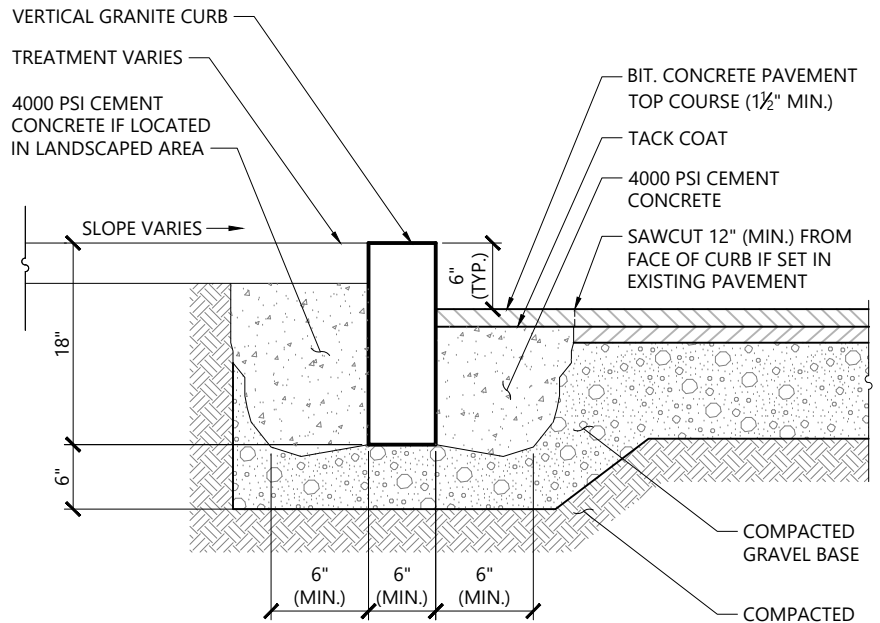
Painted Pavement Markings - On Site 1/16
N.T.S. Source: VHB REV LD_554



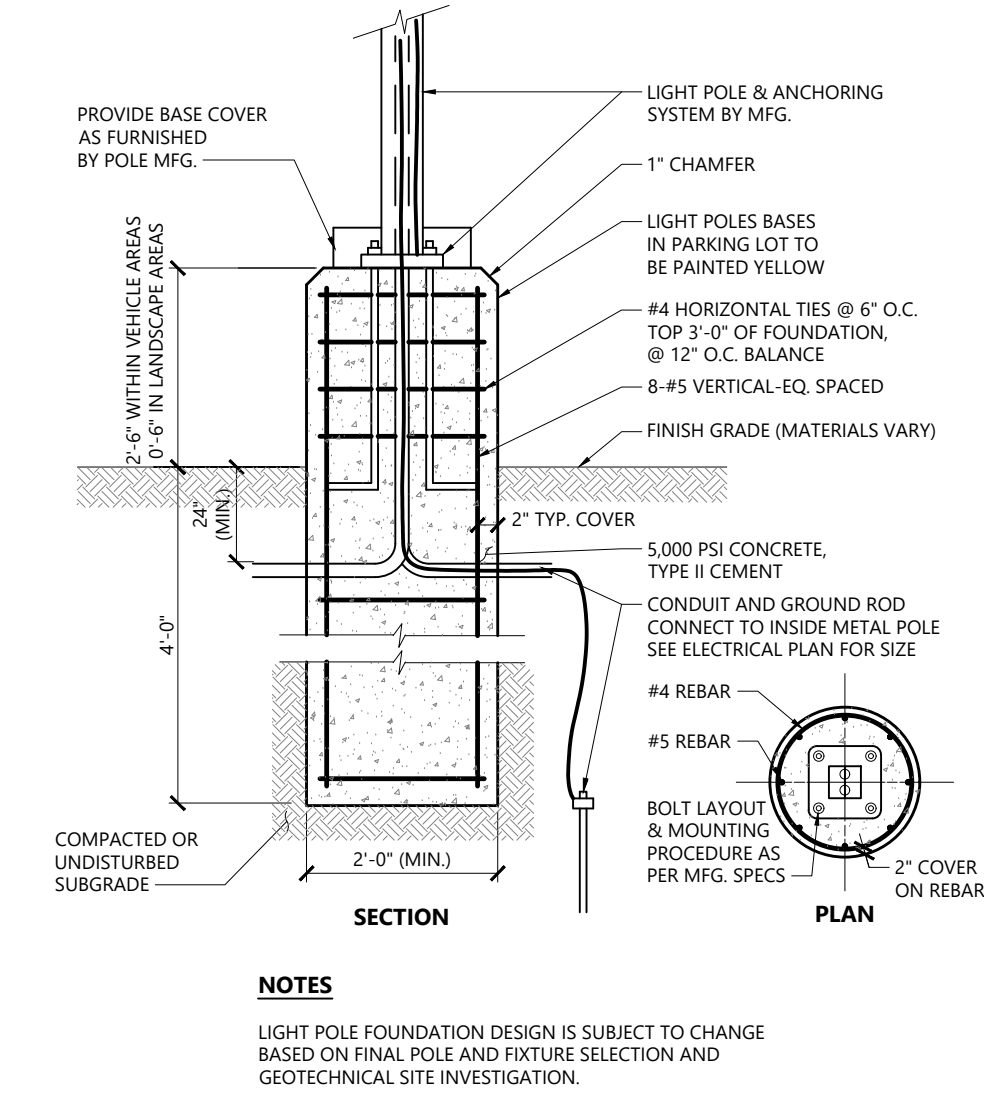
Crosswalk 12/19
N.T.S. Source: VHB REV LD_553A



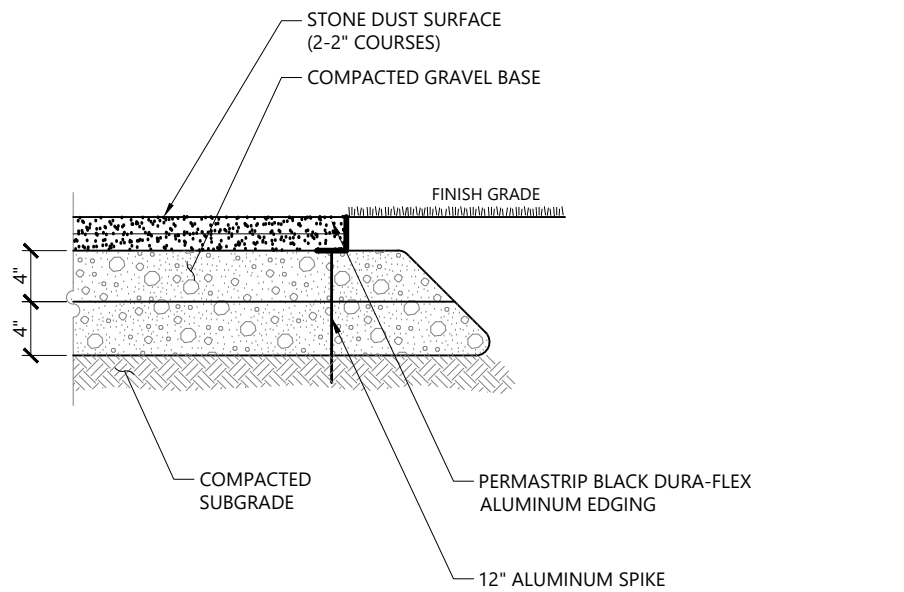
Accessible Parking Space 1/16
N.T.S. Source: VHB REV LD_552-NH



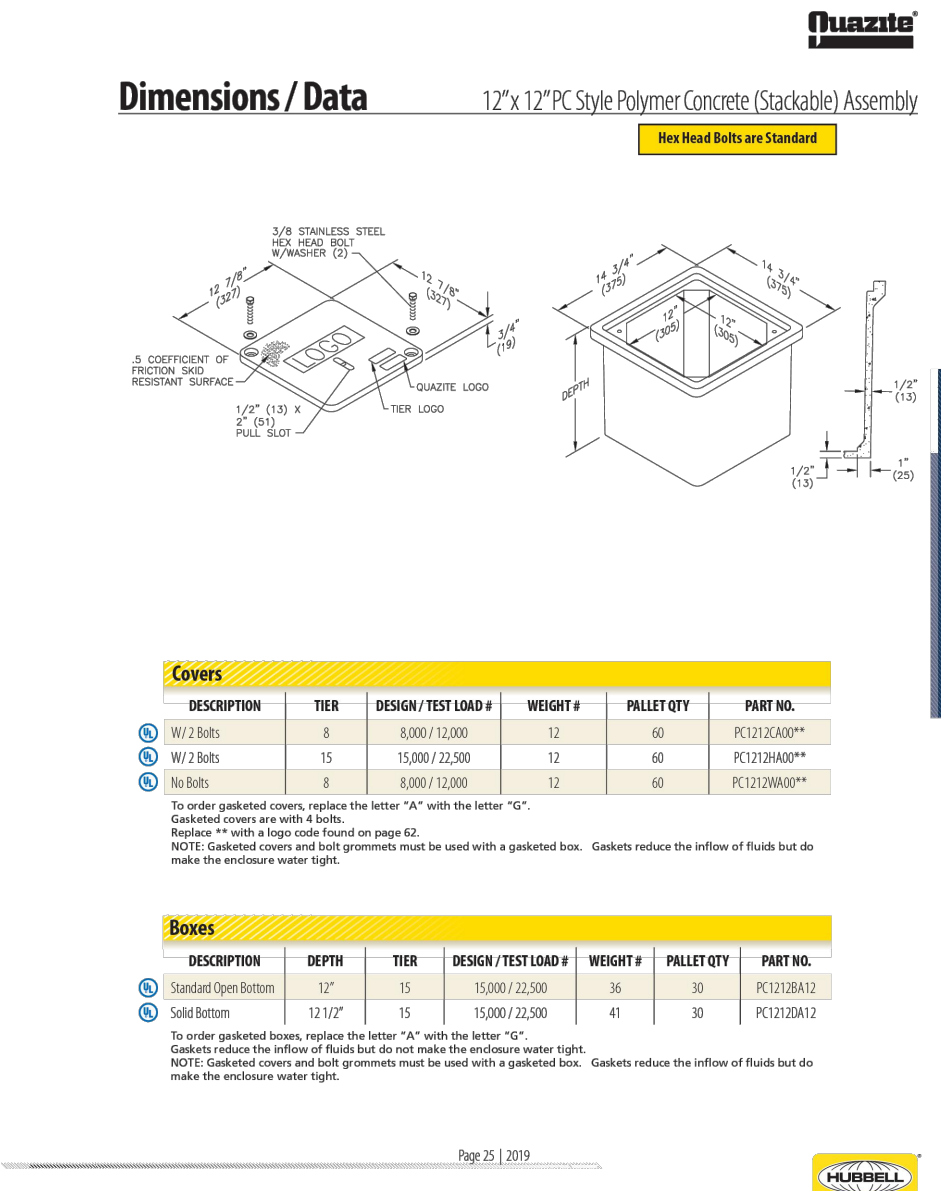
Vertical Granite Curb (VGC) 3/20
N.T.S. Source: VHB REV LD_402



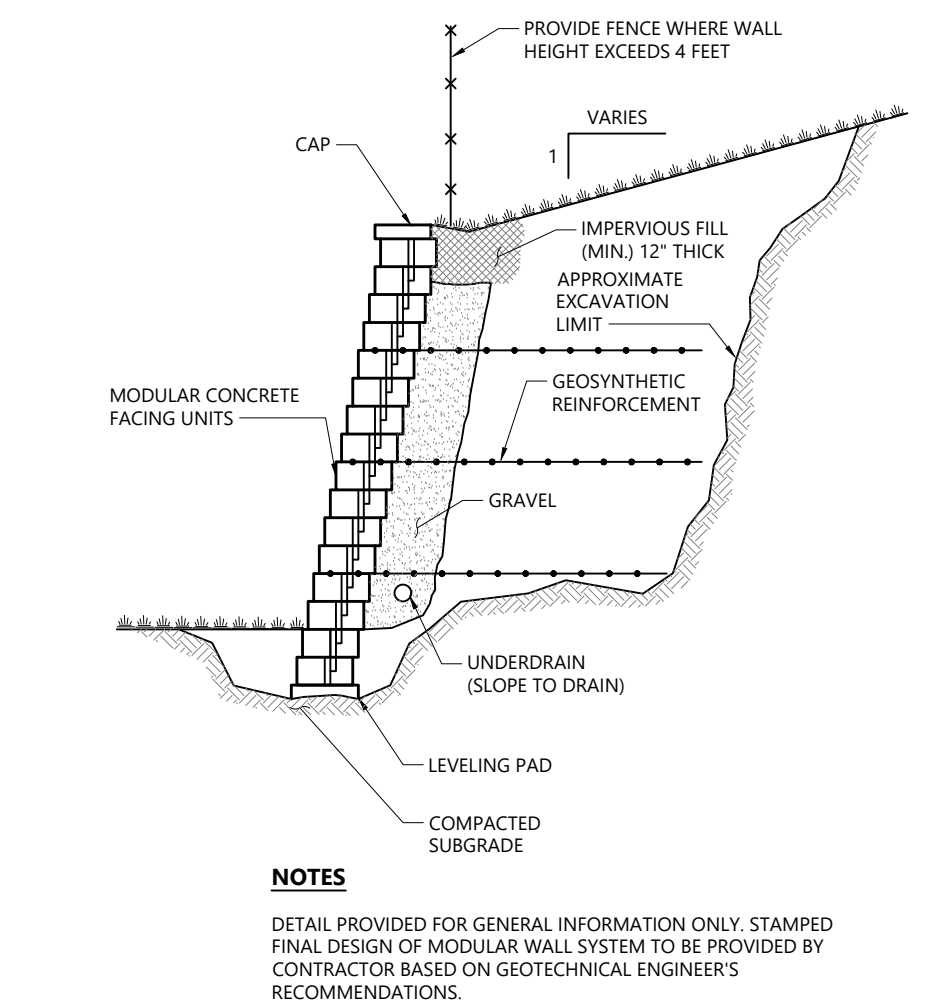
Light Pole Foundation Detail (Up to 15' Pole) 5/23
N.T.S. Source: VHB REV LD_310A



Stonedust Path 1/16
N.T.S. Source: VHB REV LD_447



Future EV Charging Vault 1/16
N.T.S. Source: VHB REV LD_447



Modular Retaining Wall 10/20
N.T.S. Source: VHB REV LD_750

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

Designed by	TMD	Checked by	MJV
Issued for		Date	May 10, 2024

Not Approved for Construction

Drawing Title

Detail Sheet 1

Drawing Number

STATE OF NEW HAMPSHIRE

DAVID H. FENSTERMACHER

PROFESSIONAL ENGINEER

13852

C7.1

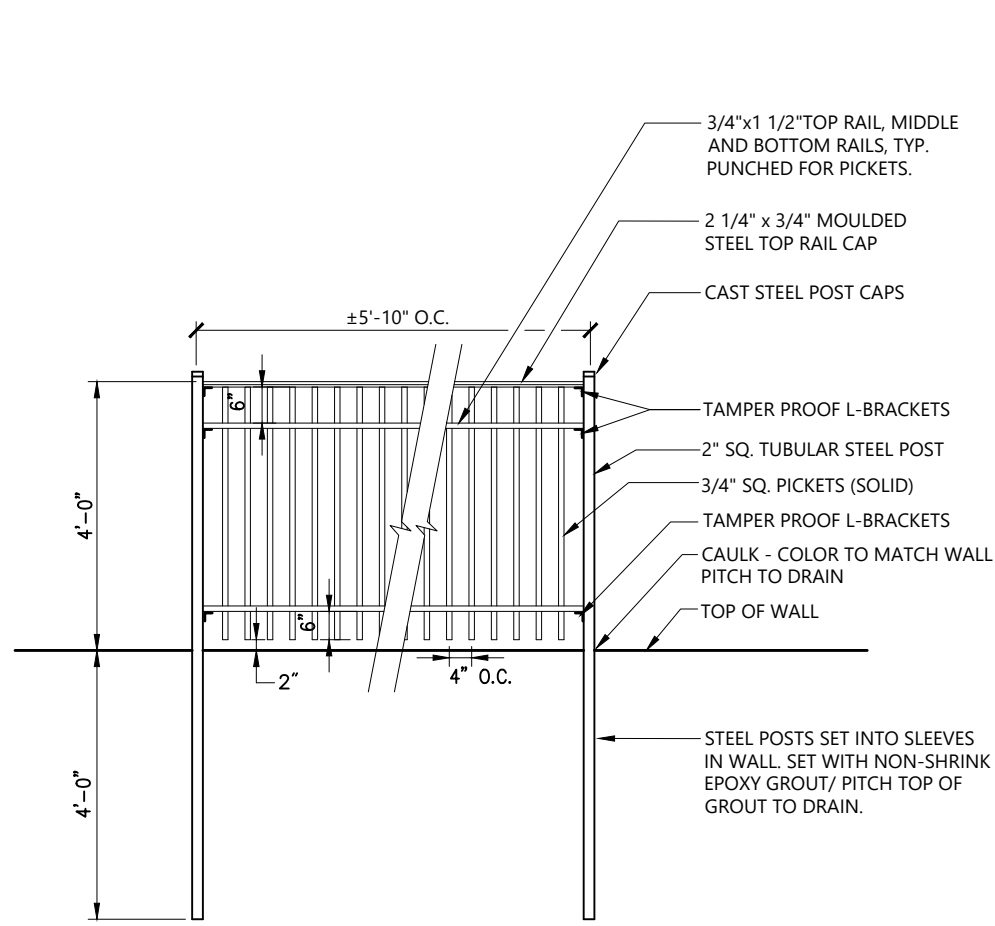
Sheet 26 of 53

Project Number 52933.00

Page 74 of 668

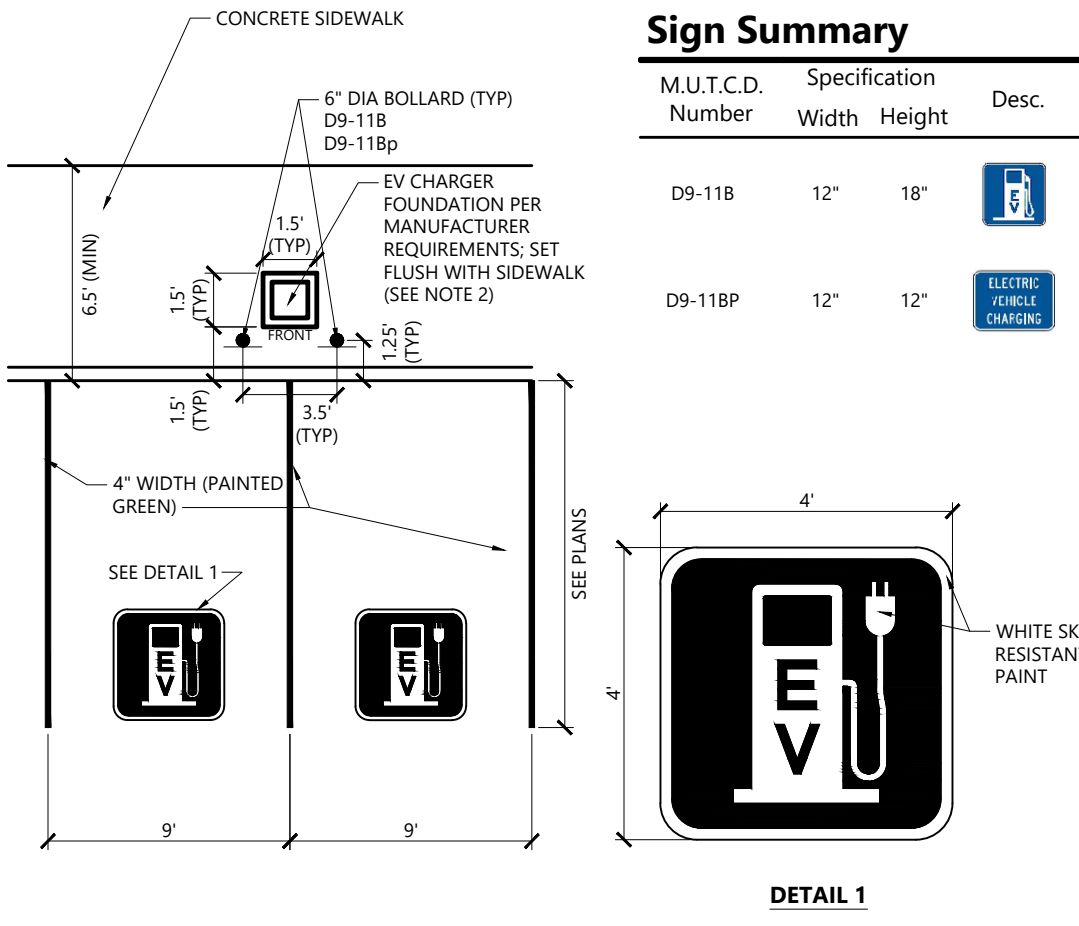


2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



- NOTES:
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, BASED ON FIELD MEASUREMENTS, FOR APPROVAL PRIOR TO FABRICATION.
 - ALL STEEL SHALL BE HOT DIPPED GALVANIZED WITH FACTORY APPLIED EPOXY ENAMEL FINISH TO MATCH EXISTING FENCE.

4' Ht. Metal Fence on Wall 5/23
N.T.S. Source: VHB LD_

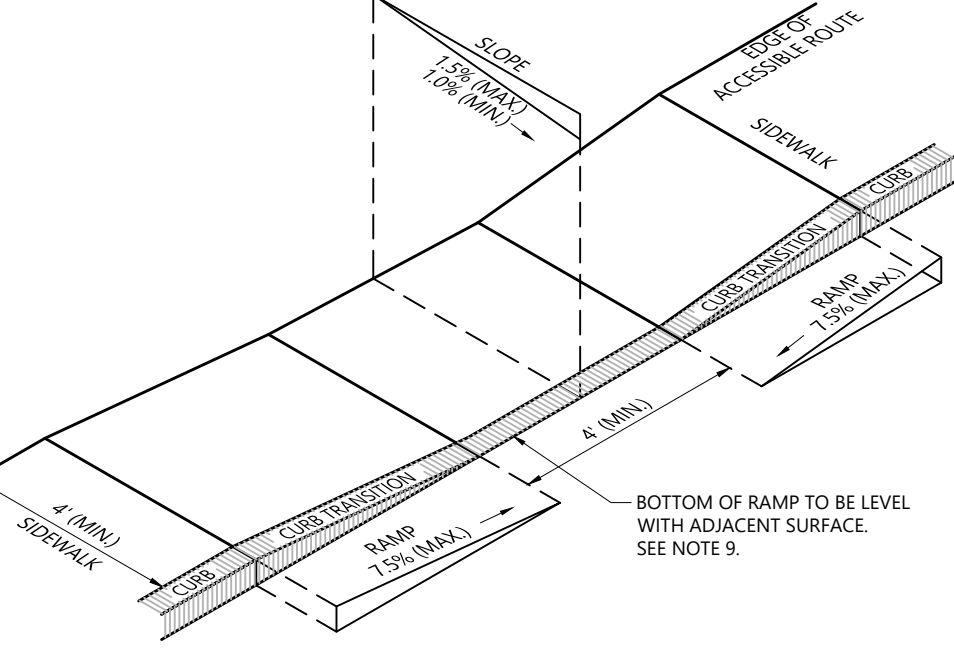
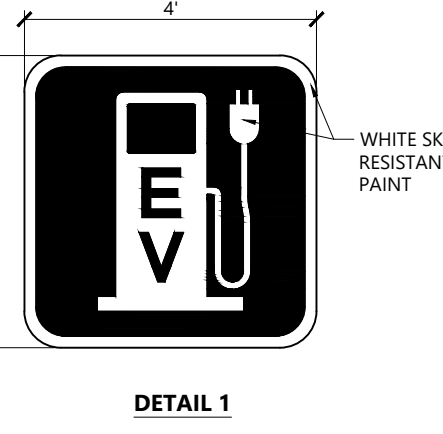


- NOTES
- ALL DIMENSION TO CENTER OF STRIPING.
 - FOR FUTURE EV CHARGING LOCATIONS, CONTRACTOR SHALL INSTALL A 18"W x 18"H x 24" CONCRETE SECTION WITH EV CHARGING VAULT INSET WITHIN (SEE DETAIL).

Electric Vehicle Charging Spaces
N.T.S. Source: VHB

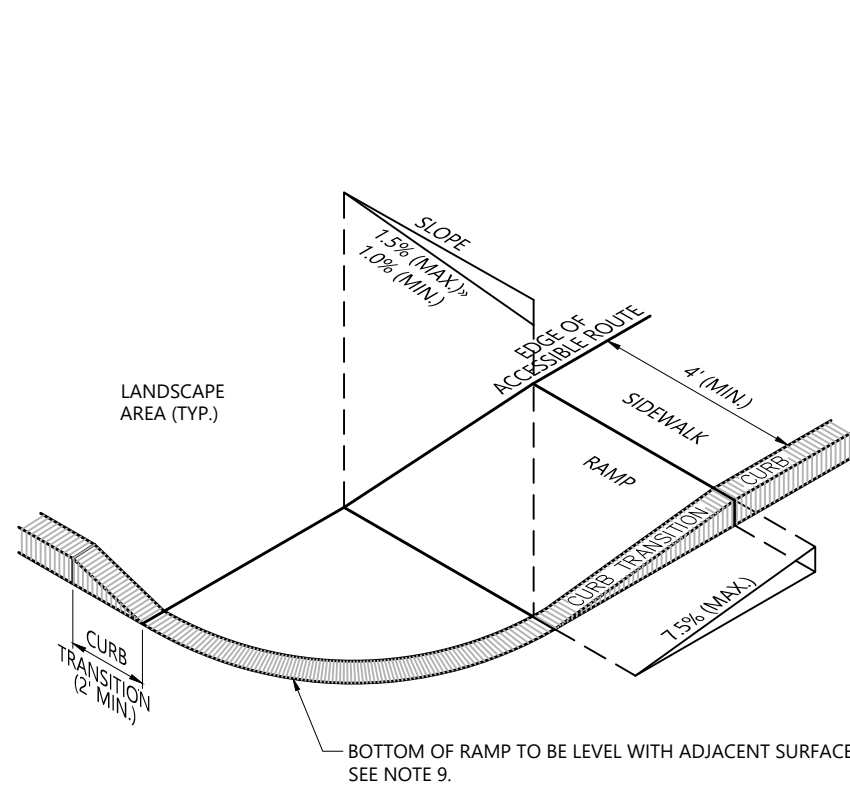
Sign Summary

M.U.T.C.D. Number	Specification	Width	Height	Desc.
D9-11B	12"	18"		
D9-11BP	12"	12"		



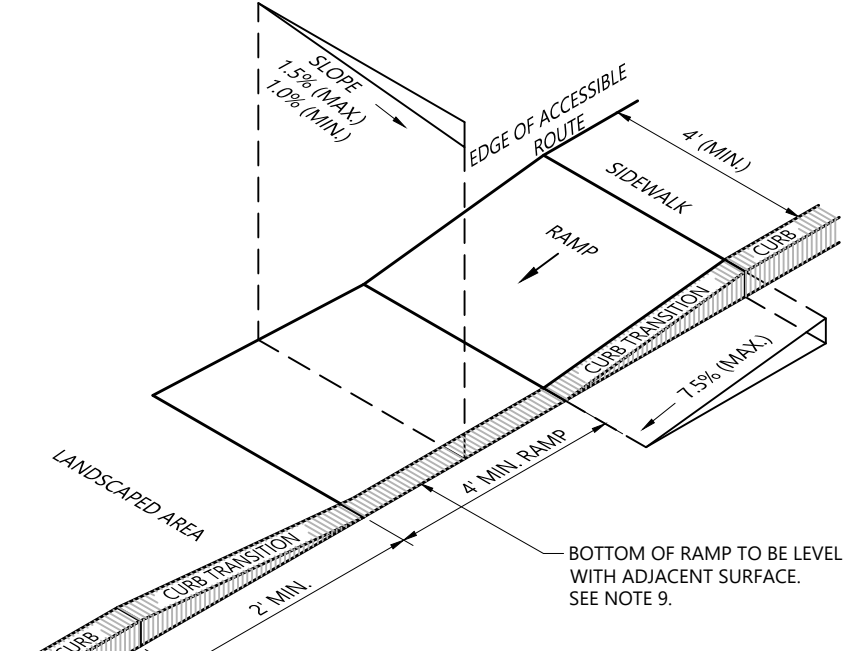
- NOTES
- THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
 - A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
 - RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
 - SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
 - ELIMINATE CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY.

Accessible Curb Ramp (ACR) Type 'A' 12/20
N.T.S. Source: VHB REV LD_500



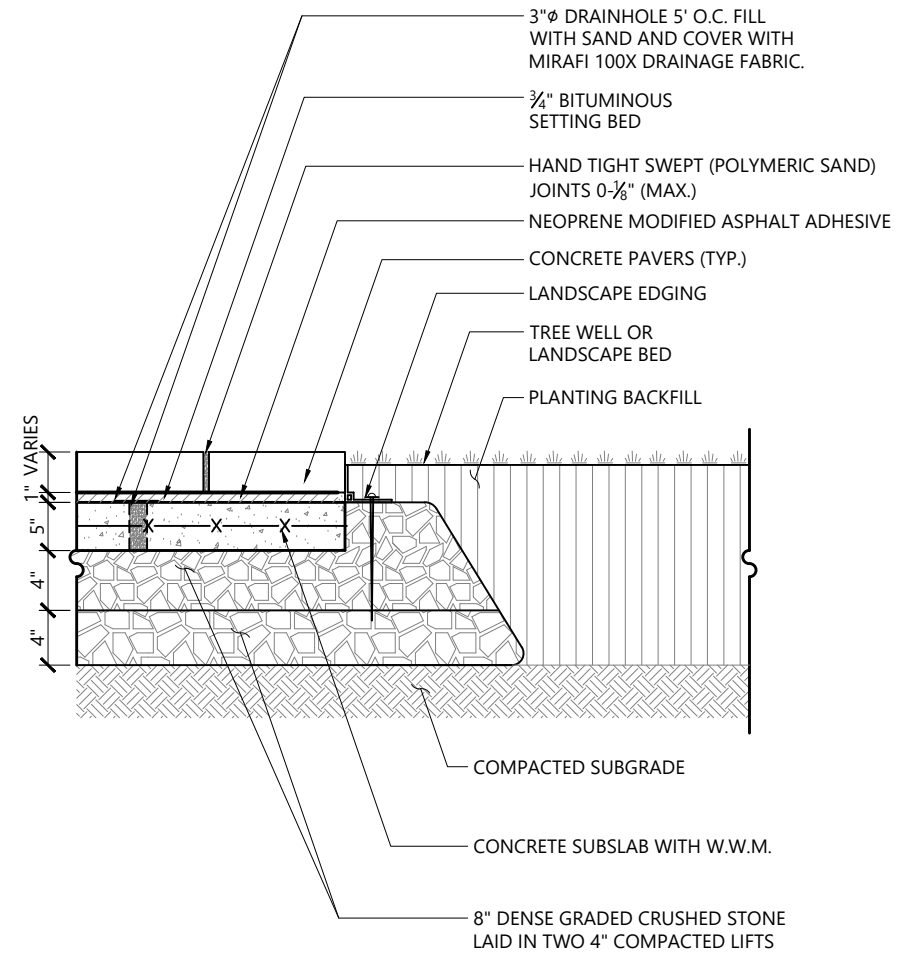
- NOTES
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 - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
 - RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
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 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
 - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.

Accessible Curb Ramp (ACR) - Type 'B' 12/20
N.T.S. Source: VHB REV LD_501

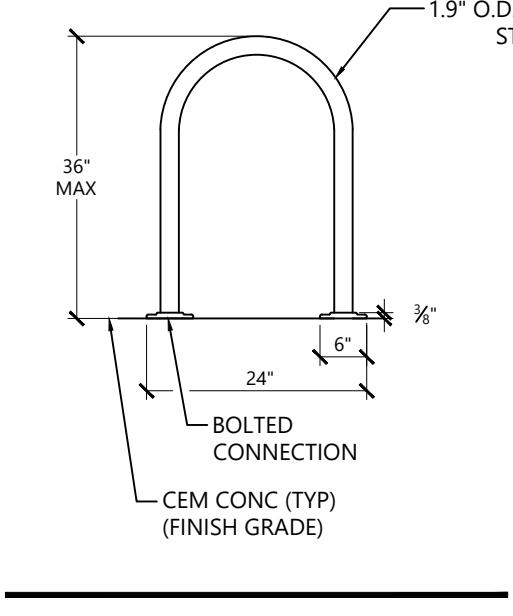
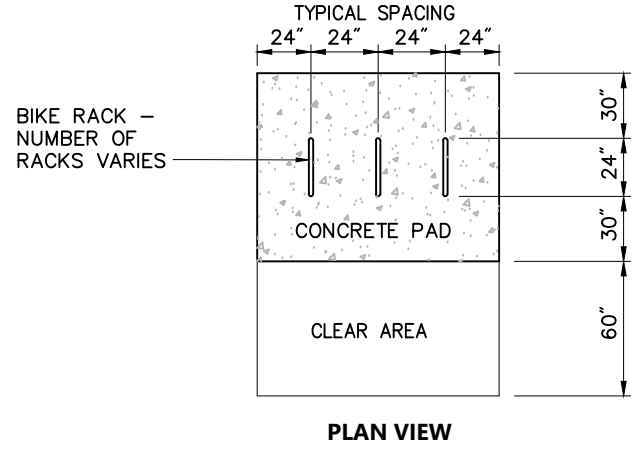


- NOTES
- THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
 - A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
 - RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
 - SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
 - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.

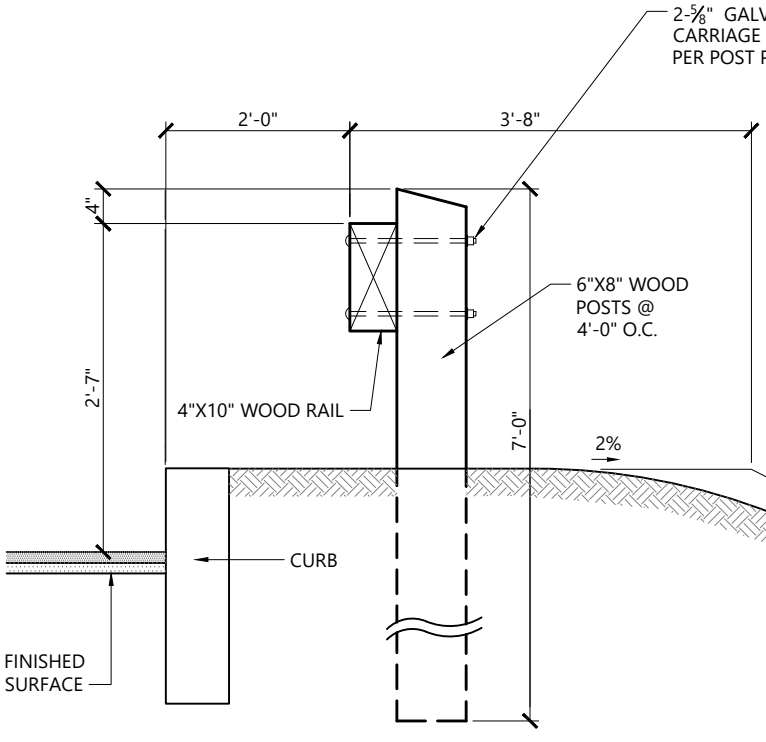
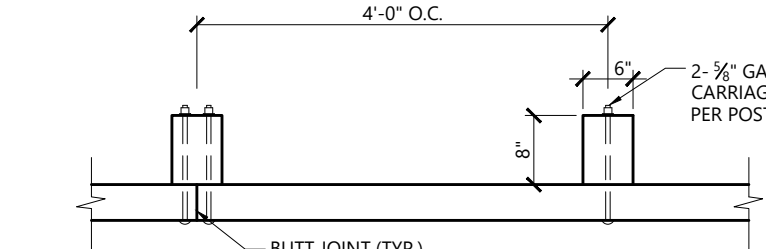
Accessible Curb Ramp (ACR) Type 'G' 12/20
N.T.S. Source: VHB REV LD_506



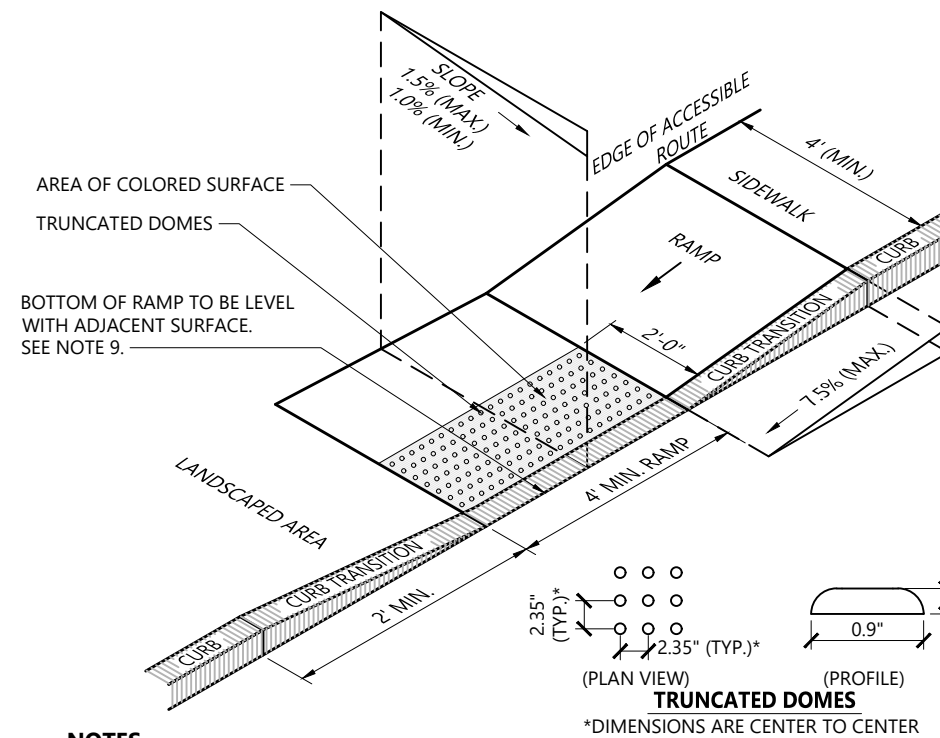
Unit Paver on Concrete Base at Landscape Edge 1/16
N.T.S. Source: VHB REV LD_830-B



Bicycle Parking
N.T.S.

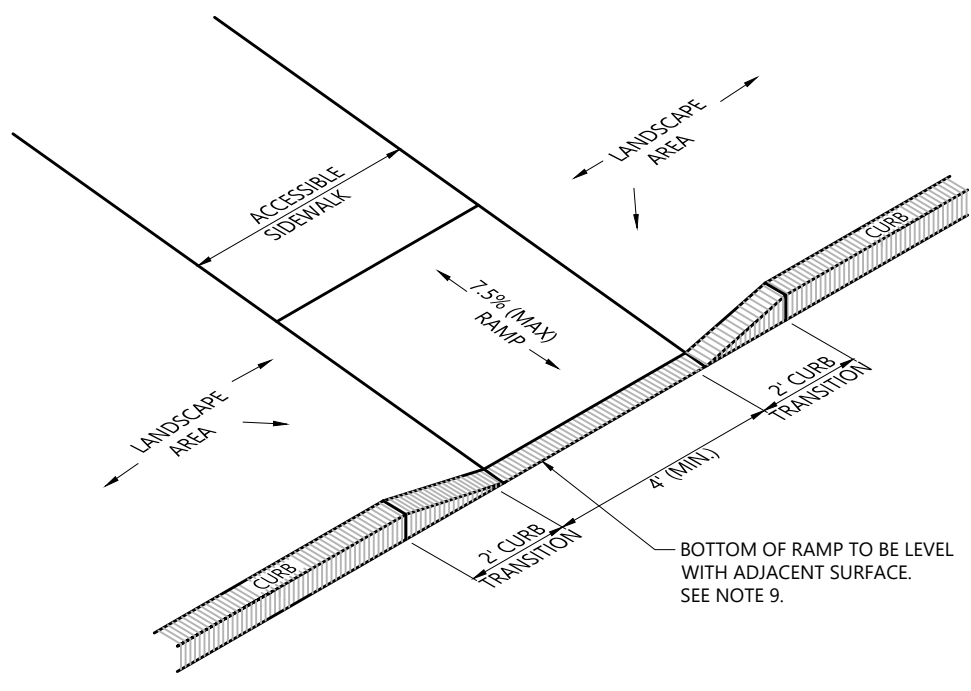


Wood Guardrail 10/20
N.T.S. Source: VHB REV LD_450



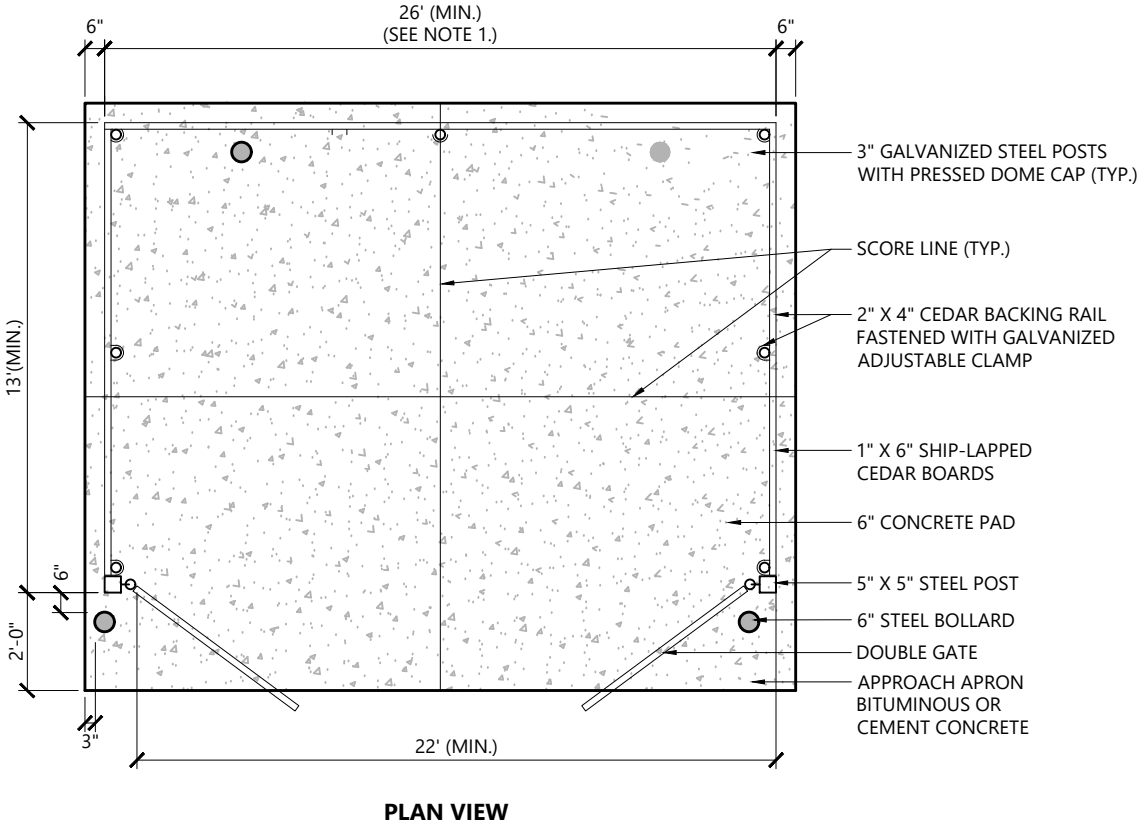
- NOTES
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 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
 - A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
 - RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
 - SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
 - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY, EXCEPT WHERE VERTICAL CURBING IS INDICATED ON THE DRAWINGS TO BE INSTALLED AND SET FLUSH.
 - DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES.
 - DETECTABLE WARNINGS SHALL BE INSTALLED PERPENDICULAR TO THE ACCESSIBLE ROUTE.
 - CONTRACTOR TO SUBMIT R.F.I. FOR THIS TYPE OF ACCESSIBLE CURB RAMP FOR APEX ROADWAY CROSSINGS.

Accessible Curb Ramp (ACR) Type 'G-D' 12/20
N.T.S. Source: VHB REV LD_506



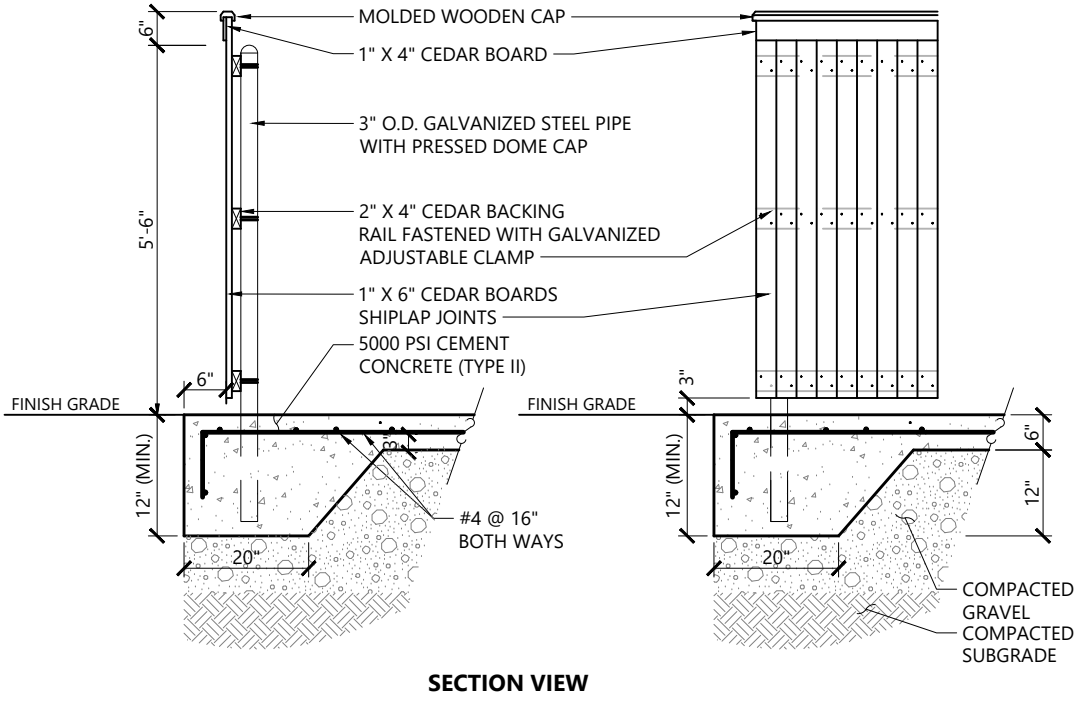
- NOTES
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 - THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
 - A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 - CURB TREATMENT VARIES. SEE PLANS FOR CURB TYPE.
 - RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
 - SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
 - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAYS.

Accessible Curb Ramp (ACR) Type 'M' 12/20
N.T.S. Source: VHB REV LD_512



- NOTES
- DUMPSTER PAD DIMENSIONS SHOWN AS MINIMUM. REFER TO PLAN FOR ACTUAL DIMENSION.
 - PAD DESIGNED FOR TWO 6 YARD DUMPSTERS.

Double Dumpster Pad w/ Enclosure 1/20
N.T.S. Source: VHB REV LD_713



- NOTES
- DUMPSTER PAD DIMENSIONS SHOWN AS MINIMUM. REFER TO PLAN FOR ACTUAL DIMENSION.
 - PAD DESIGNED FOR 6 YARD DUMPSTER.

Dumpster Pad w/ Enclosure 1/20
N.T.S. Source: VHB REV LD_713

The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

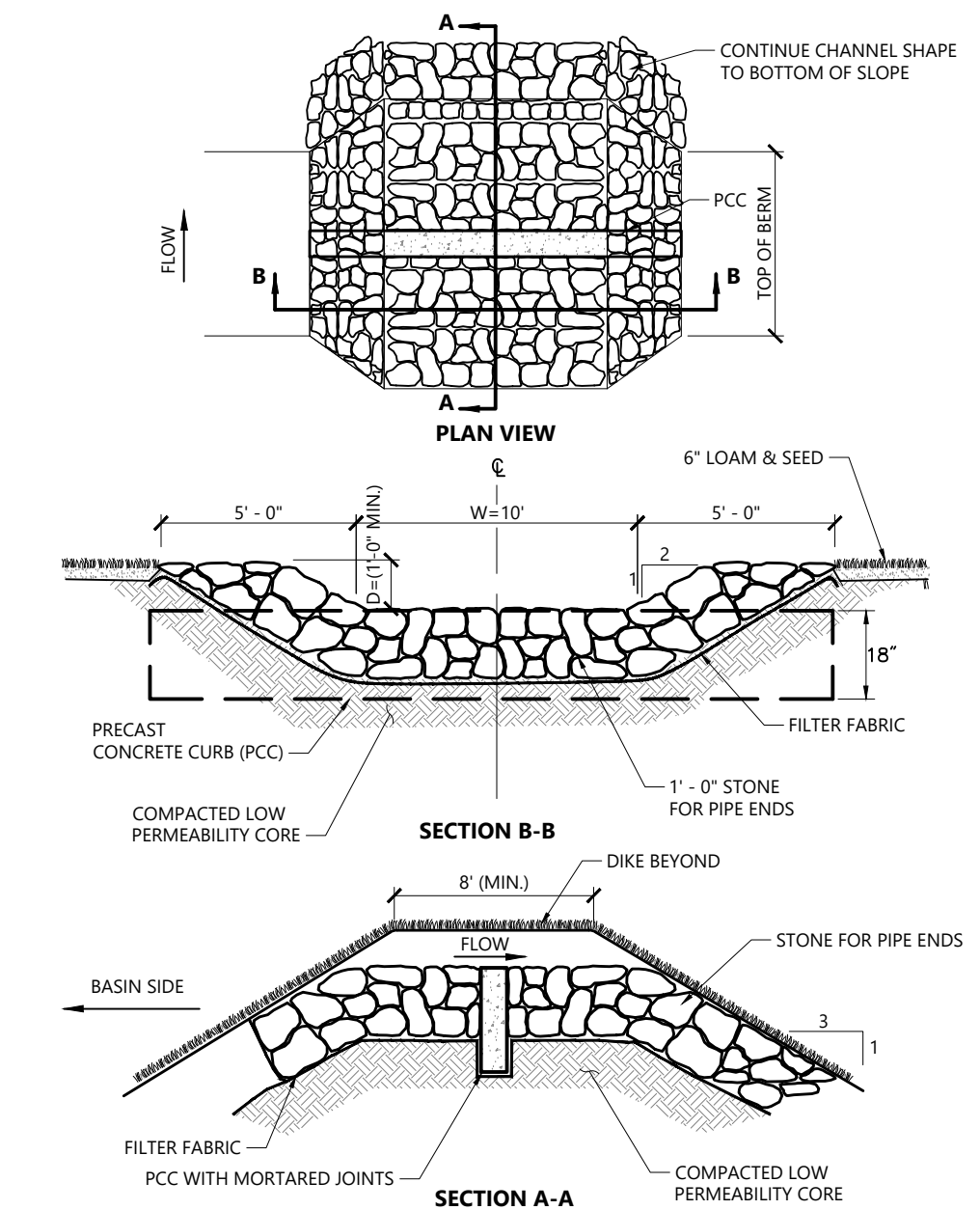
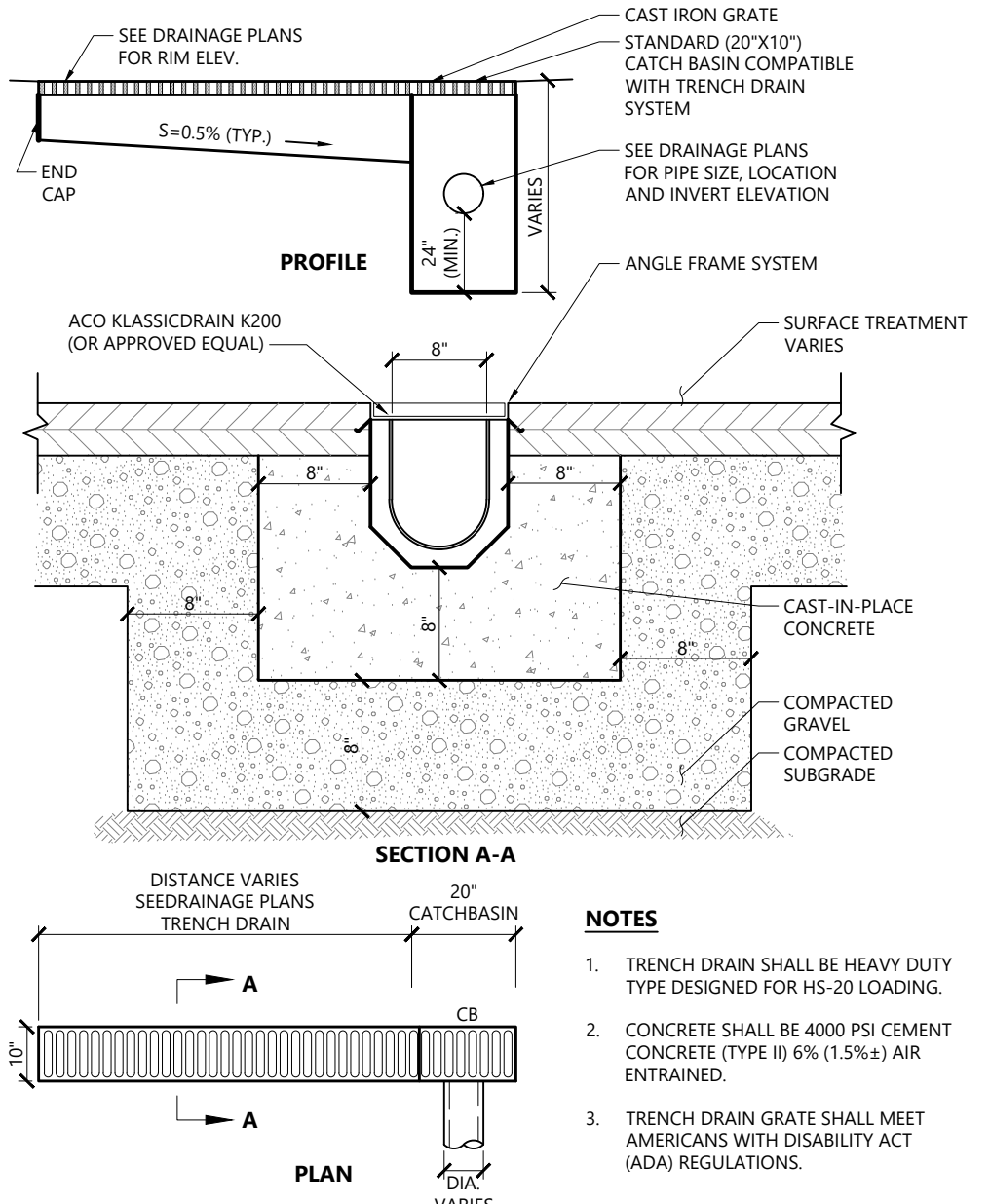
Designed by MJV Checked by
Issued for Permitting Date May 10, 2024

Not Approved for Construction
Detail Sheet 2

STATE OF NEW HAMPSHIRE
DAVID H. PENSTENMACHER
No. 13892
PROFESSIONAL ENGINEER
C7.2
Sheet 27 of 53

Storm Sewer Pipe Schedule

Start Str.	End Str.	Size	Material	Length	Slope	Start Inv.	End Inv.
101	902	18	HDPE	15.067	1.33%	585.20	585.00
102	101	12	HDPE	50.933	2.36%	586.50	585.30
103	102	12	HDPE	91.944	0.54%	587.90	587.40
104	101	15	HDPE	46.274	3.24%	587.00	585.50
105	104	15	HDPE	64.942	2.16%	588.50	587.10
106	105	15	HDPE	94.485	0.95%	589.50	588.60
107	106	15	HDPE	44.501	2.02%	591.90	591.00
108	107	15	HDPE	24.000	1.25%	594.30	594.00
109	107	12	HDPE	100.000	1.00%	593.00	592.00
110	109	12	HDPE	24.000	1.25%	595.00	594.70
202	201	30	HDPE	32.230	9.31%	584.00	581.00
203	202	30	HDPE	39.071	1.28%	592.50	592.00
207	206	24	HDPE	26.465	0.94%	593.60	593.35
208	207	24	HDPE	67.531	1.04%	594.40	593.70
209	204	24	HDPE	75.131	0.67%	594.60	594.10
210	208	15	HDPE	42.000	1.19%	595.70	595.20
211	210	15	HDPE	26.000	0.77%	596.00	595.80
212	207	15	HDPE	127.691	1.49%	595.00	593.10
213	212	12	HDPE	26.053	1.92%	595.60	595.10
214	212	15	HDPE	89.967	0.56%	595.60	595.10
215	214	15	HDPE	122.618	0.57%	596.40	595.70
216	215	12	HDPE	26.000	0.50%	594.64	594.51
217	215	12	HDPE	108.000	0.56%	597.10	596.50
218	217	12	HDPE	26.000	0.77%	597.40	597.20
219	208	24	HDPE	91.243	0.77%	595.20	594.50
220	219	15	HDPE	42.000	0.60%	595.80	595.55
221	220	12	HDPE	26.000	1.54%	596.25	595.85
222	220	15	HDPE	51.411	0.58%	596.15	595.85
223	222	12	HDPE	88.684	0.56%	596.70	596.20
224	223	12	HDPE	116.036	0.52%	597.40	596.80
225	224	12	HDPE	24.021	0.83%	598.00	597.80
226	209	24	HDPE	91.243	0.88%	595.50	594.70
227	226	24	HDPE	33.385	0.90%	595.90	595.60
228	227	15	HDPE	47.687	1.05%	596.50	596.00
229	228	12	HDPE	26.000	4.04%	597.65	596.60
302	301	30	HDPE	152.935	3.07%	587.70	583.00
303	302	30	HDPE	71.412	2.80%	607.00	605.00
401	400	12	HDPE	118.227	0.59%	596.20	595.50
402	401	12	HDPE	95.980	1.25%	597.50	596.30
403	402	12	HDPE	24.012	1.25%	597.80	597.50
405	401	12	HDPE	54.001	1.11%	599.50	598.90
406	405	12	HDPE	23.869	1.68%	600.00	599.60
501A	227	24	HDPE	116.834	0.77%	596.90	596.00
501B	501A	12	HDPE	24.688	1.62%	597.40	597.00
501C	501A	24	HDPE	77.183	0.52%	597.40	597.00
502	501C	24	HDPE	102.858	0.58%	598.10	597.50
503	502	12	HDPE	24.001	0.83%	598.40	598.20
504	502	18	HDPE	187.804	1.65%	601.60	598.50
505	504	12	HDPE	24.000	2.08%	602.20	601.70
506	504	15	HDPE	192.000	1.07%	603.75	601.70
507	506	12	HDPE	24.000	1.25%	604.15	603.85
508	506	12	HDPE	192.000	1.02%	605.80	603.85
509	508	12	HDPE	24.000	1.67%	606.30	605.90
601	602	12	HDPE	98.236	0.31%	599.00	598.70
701	700	12	HDPE	74.335	1.35%	597.00	596.00
RD1	901	12	HDPE	38.061	1.05%	589.40	589.00
RD2	204	12	HDPE	20.500	4.39%	595.00	594.10
RD3	108	12	HDPE	33.002	1.52%	594.90	594.40
RD4	211	15	HDPE	33.002	0.91%	596.40	596.10
RD5	229	12	HDPE	33.013	1.51%	598.25	597.75



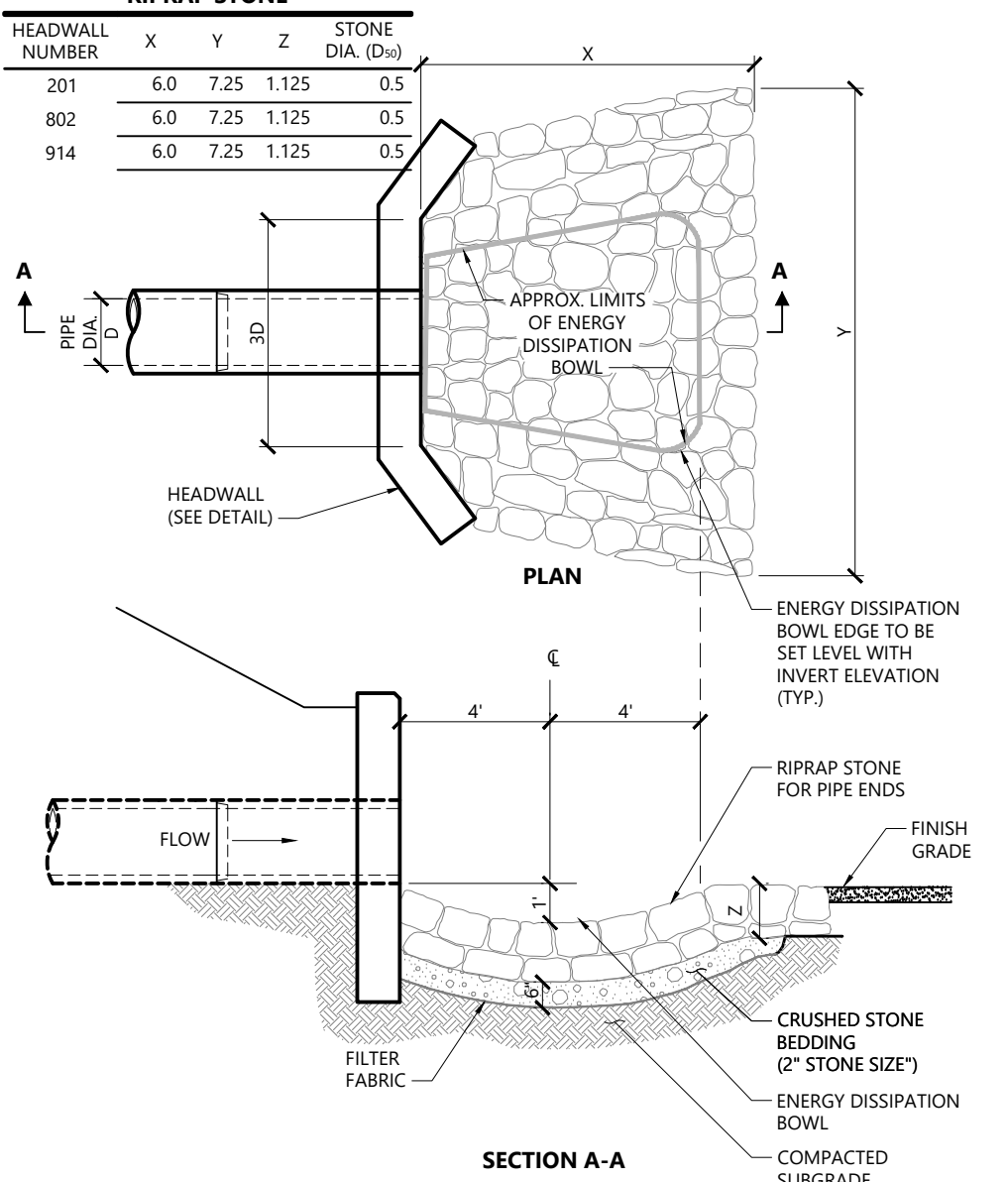
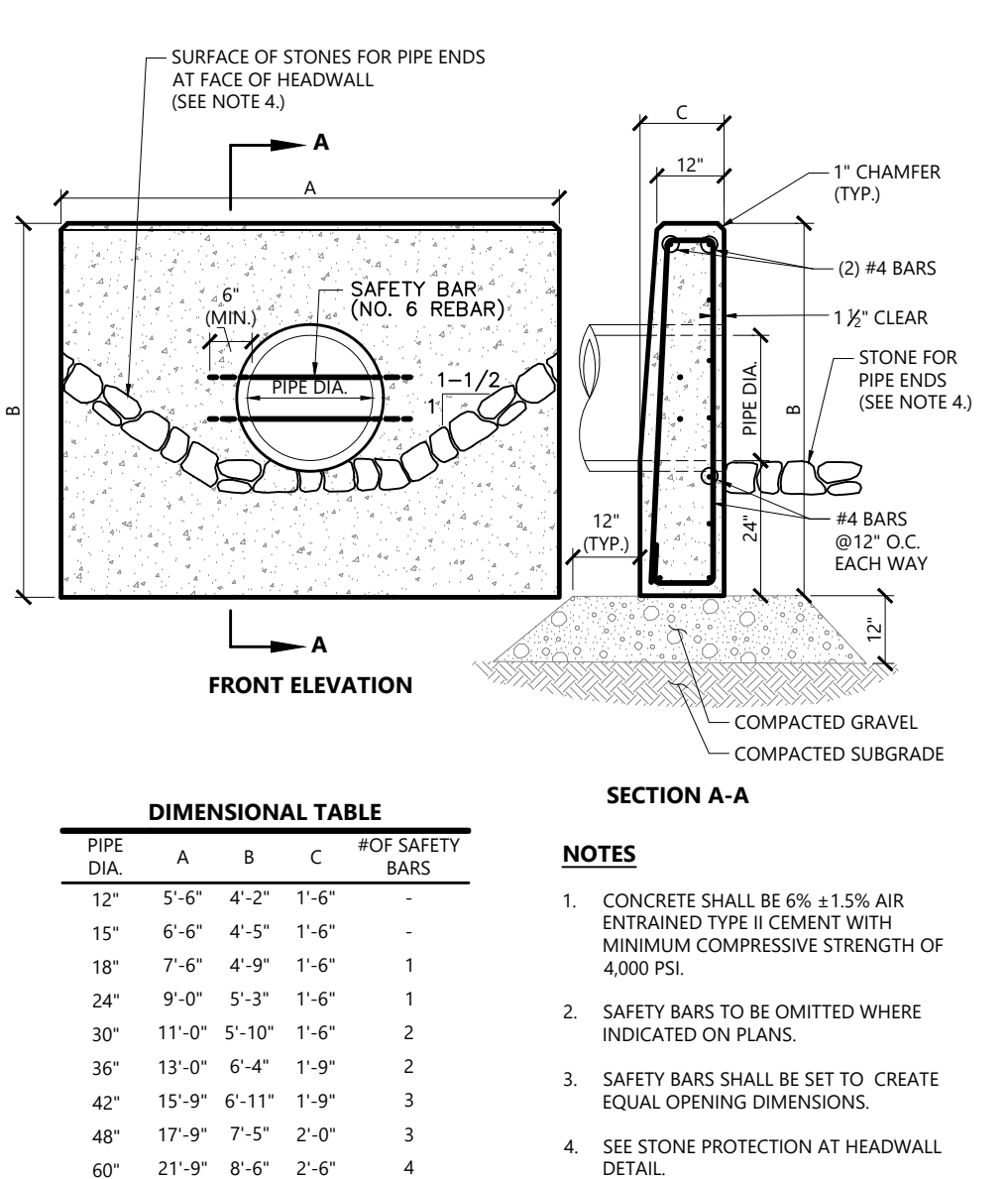
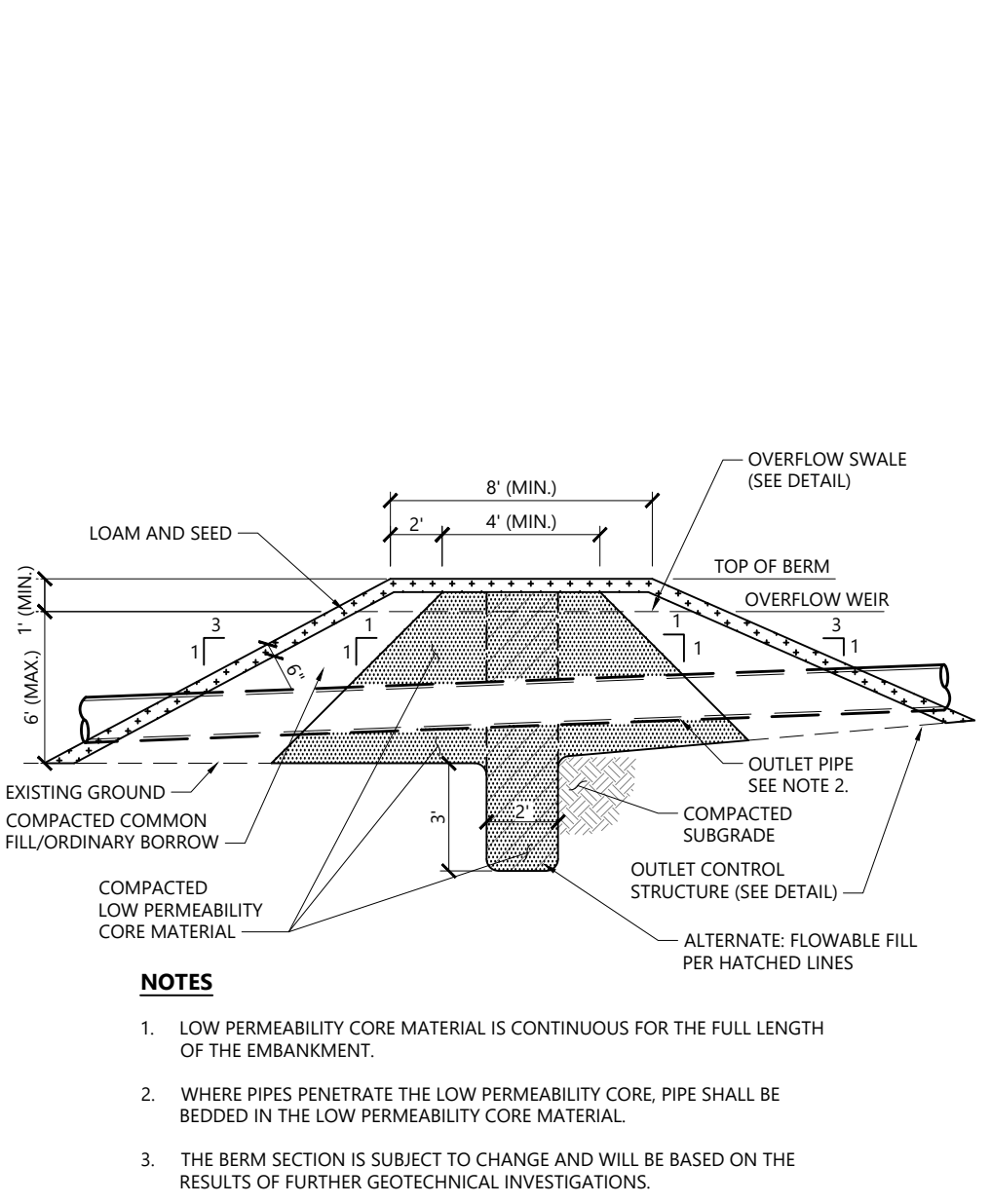
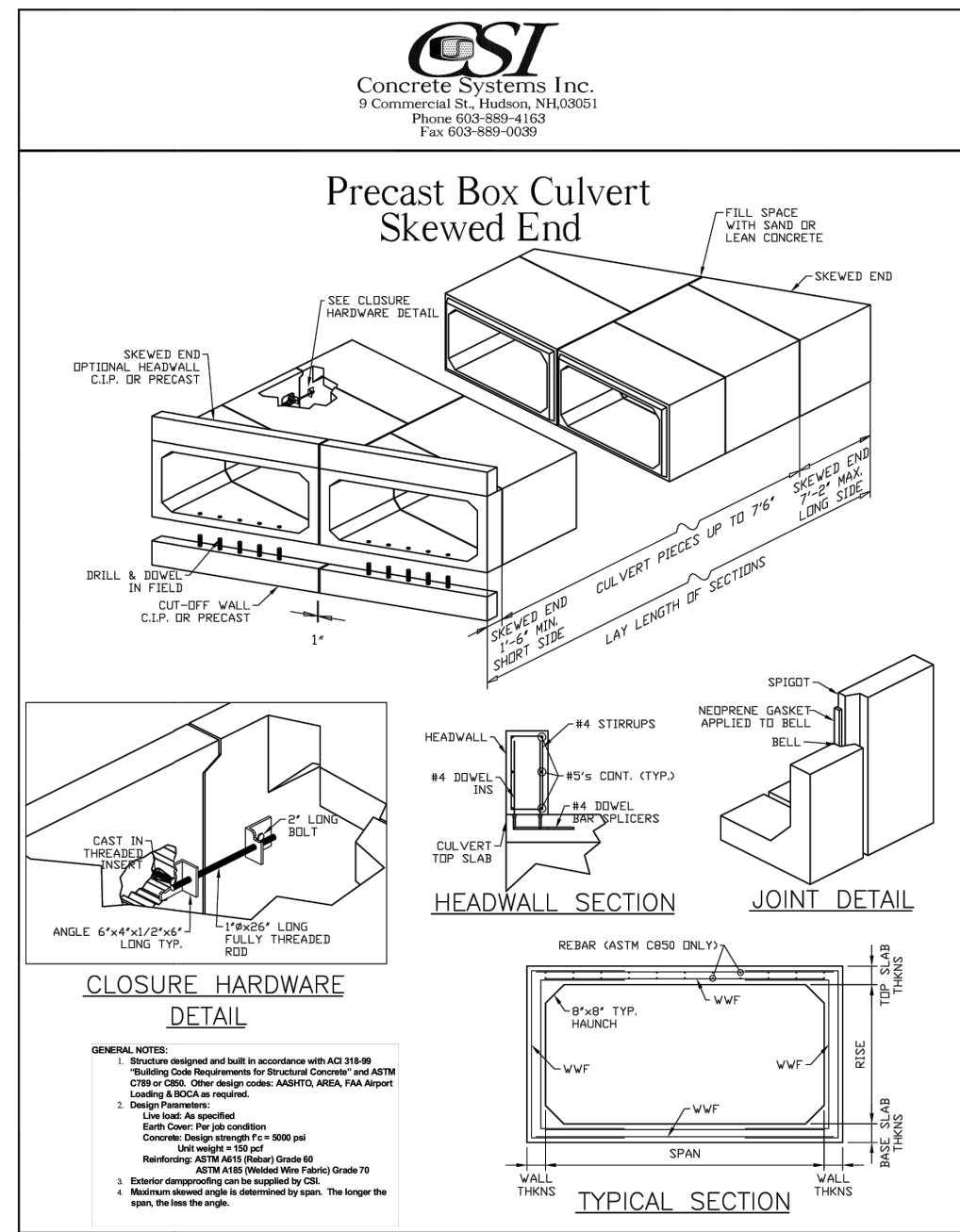
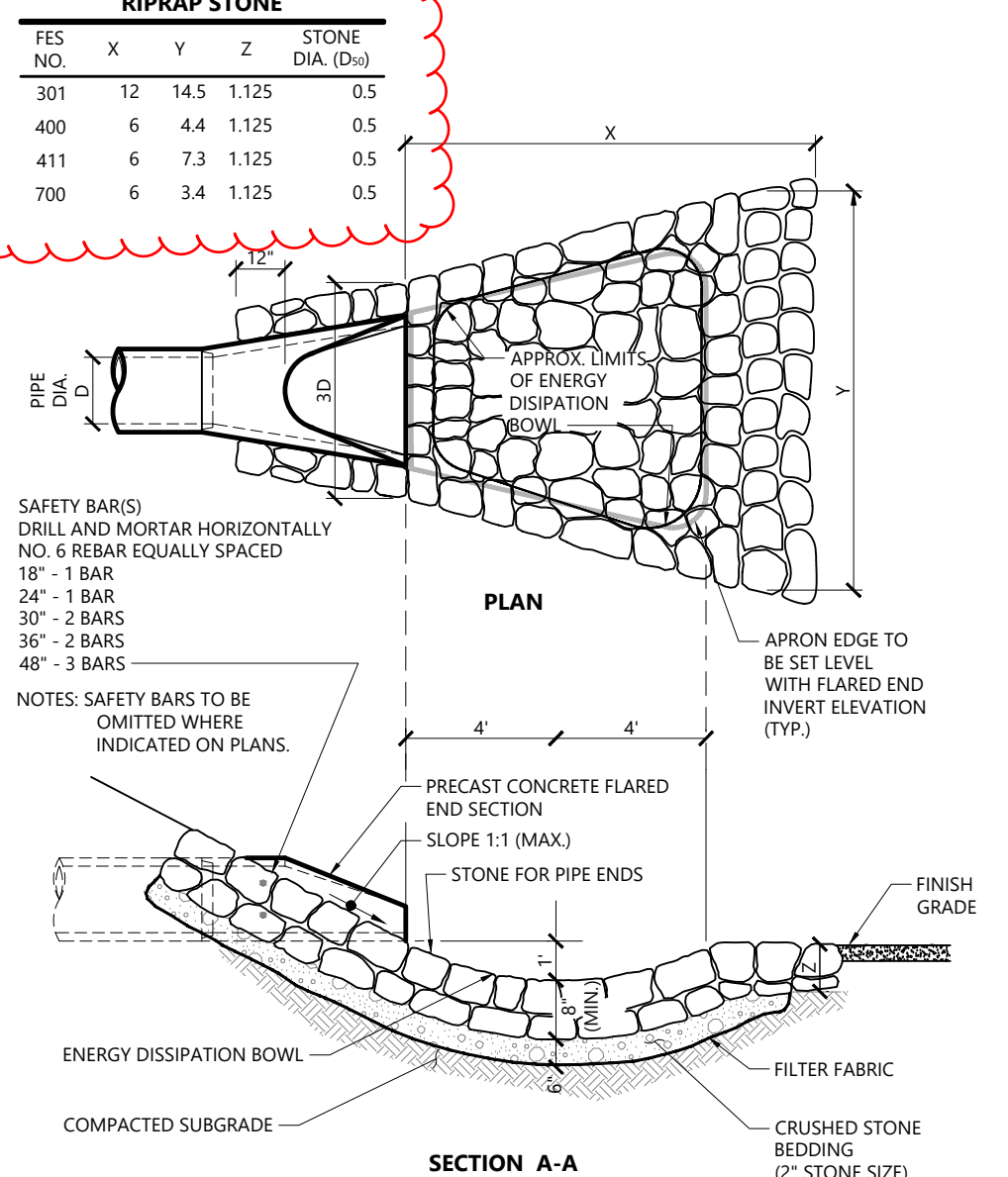
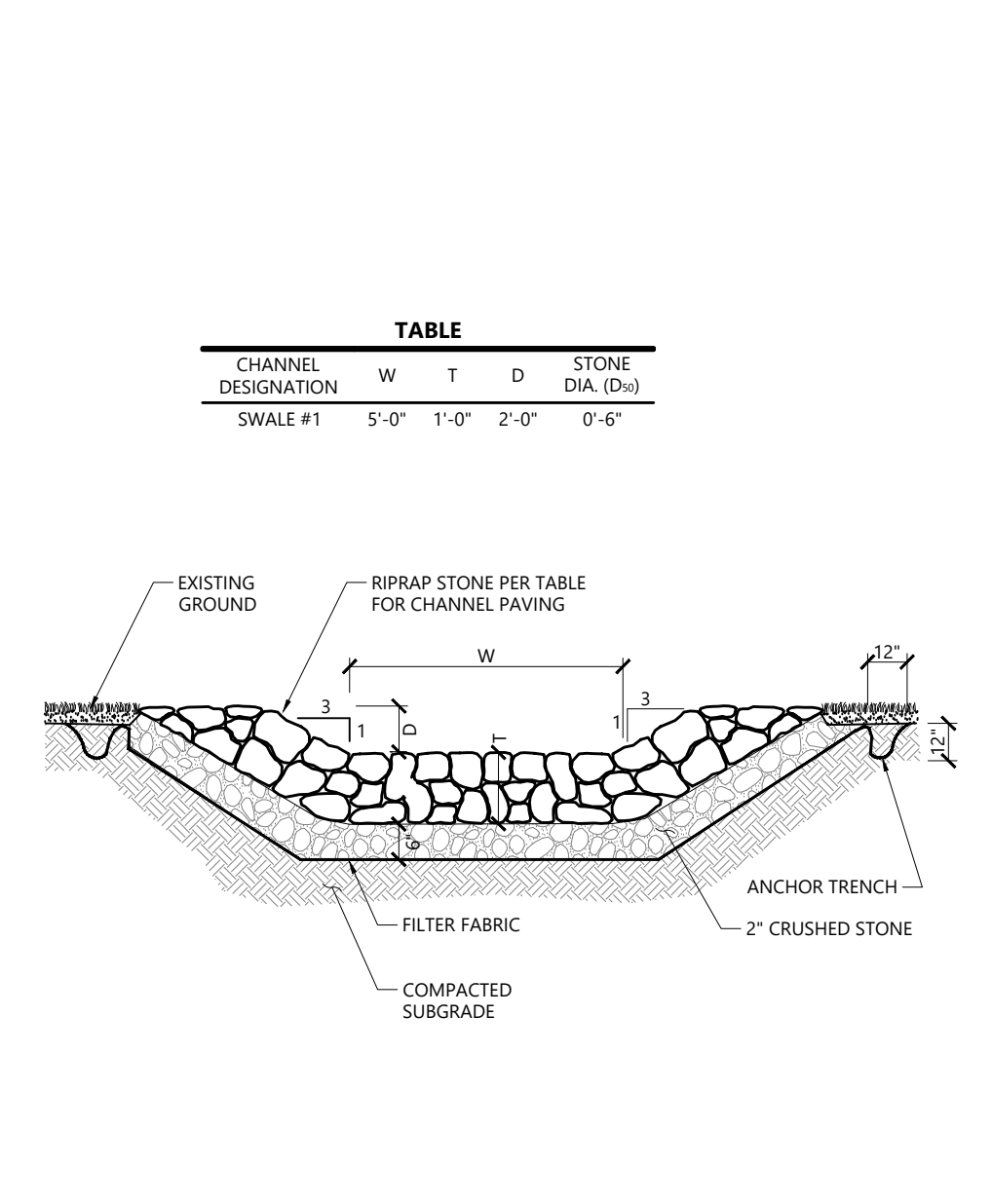
Paved Sluice

Source: VHB

REV 07/24

LD

N.T.S.



vhb

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

The Brickyard Residential Development

No.	Revision	Date	Appr.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF

Designed by **TMD** Checked by **MJV**

Issued for **Permitting** Date **May 10, 2024**

Not Approved for Construction

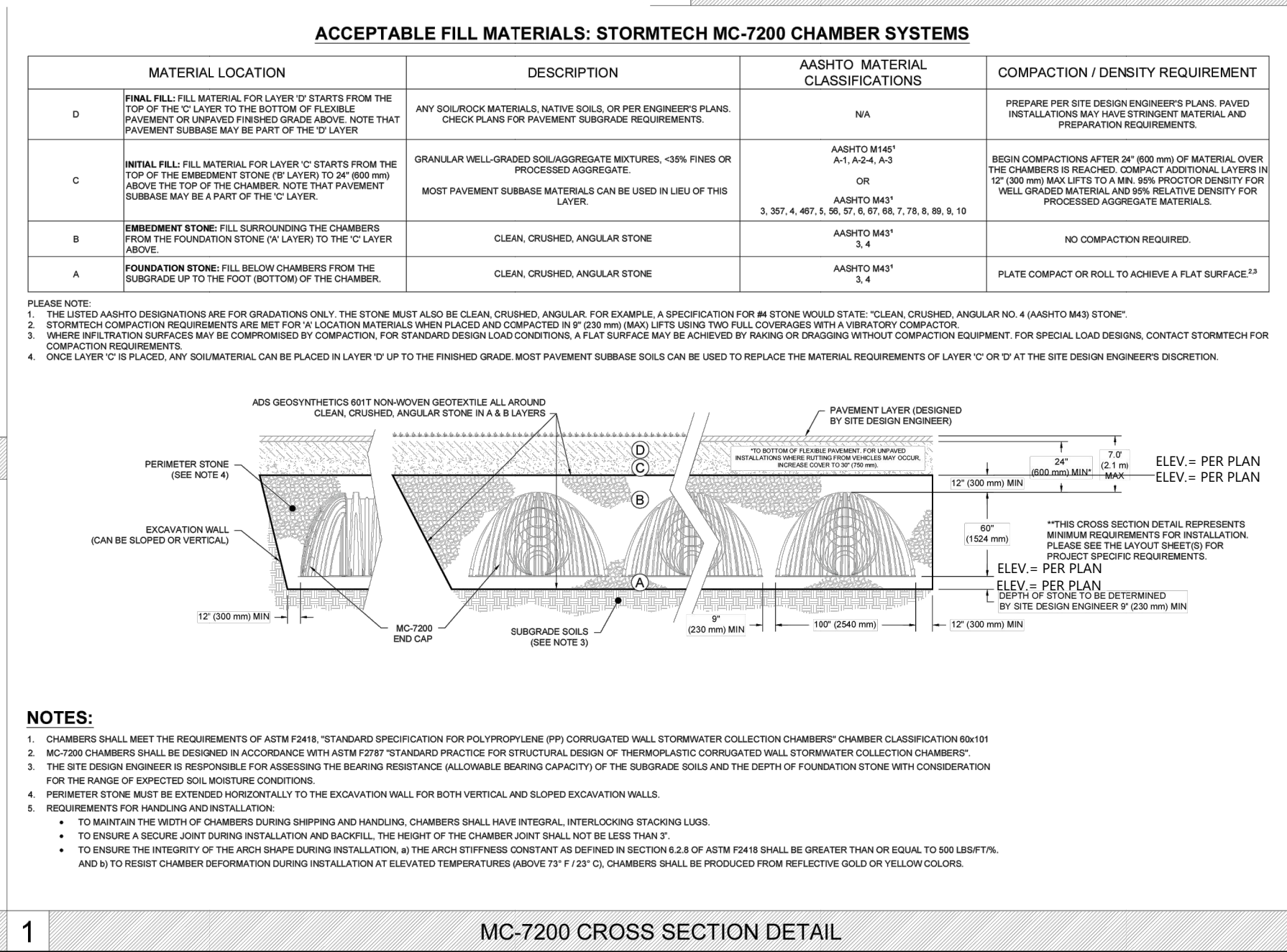
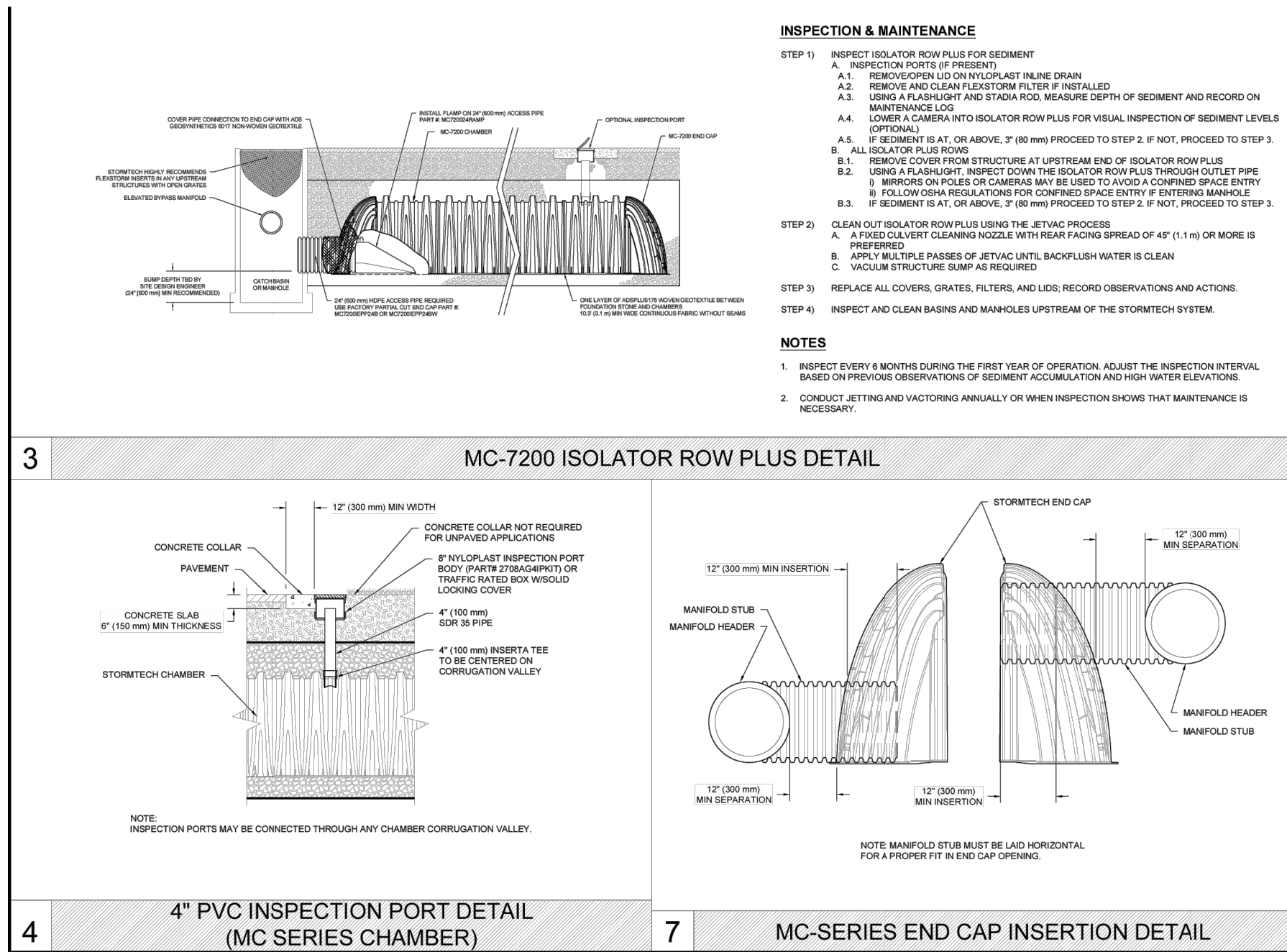
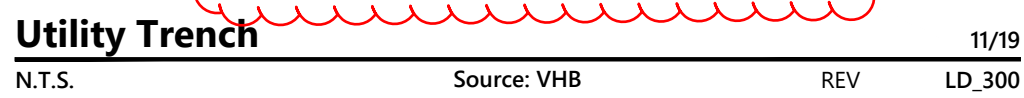
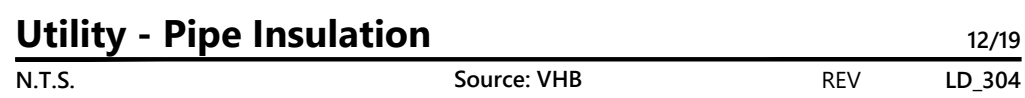
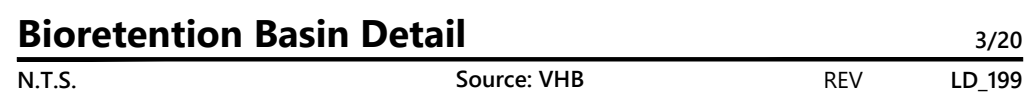
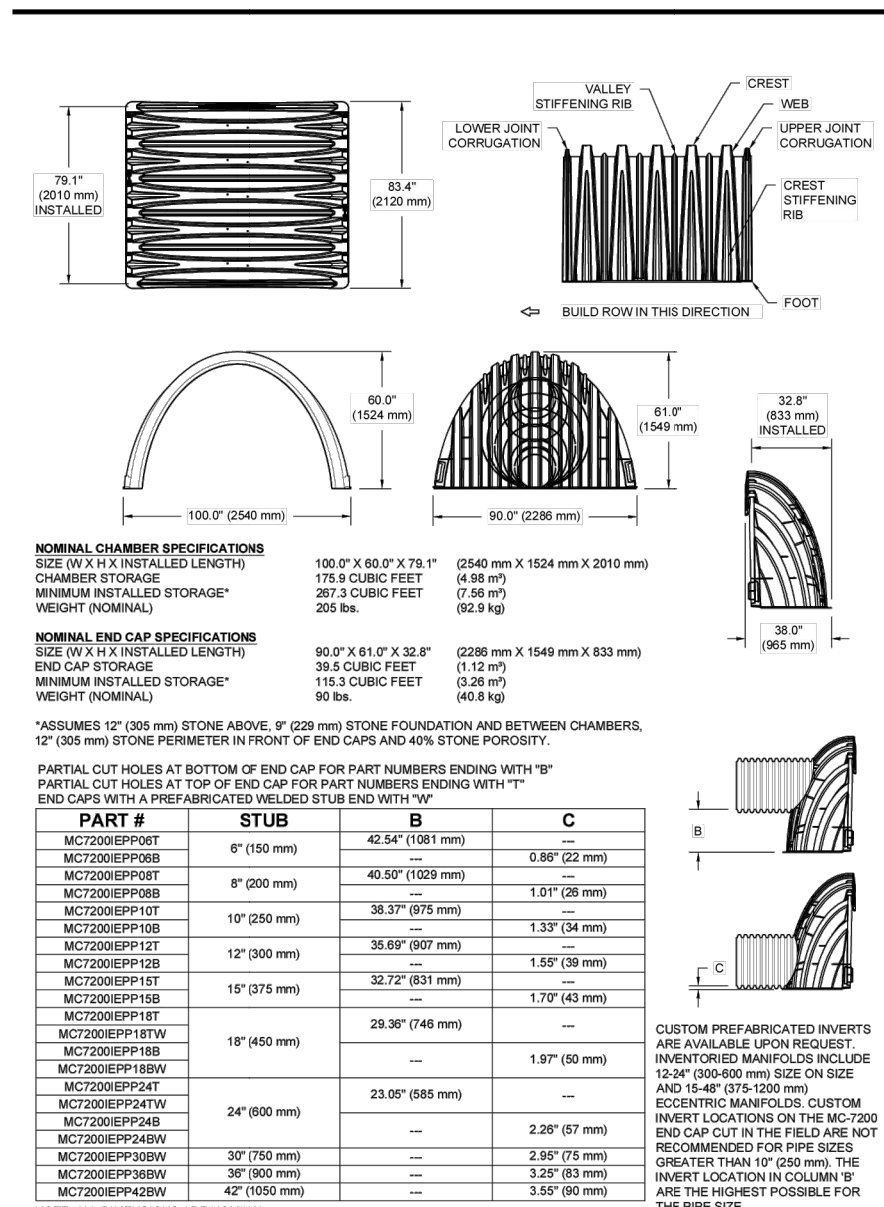
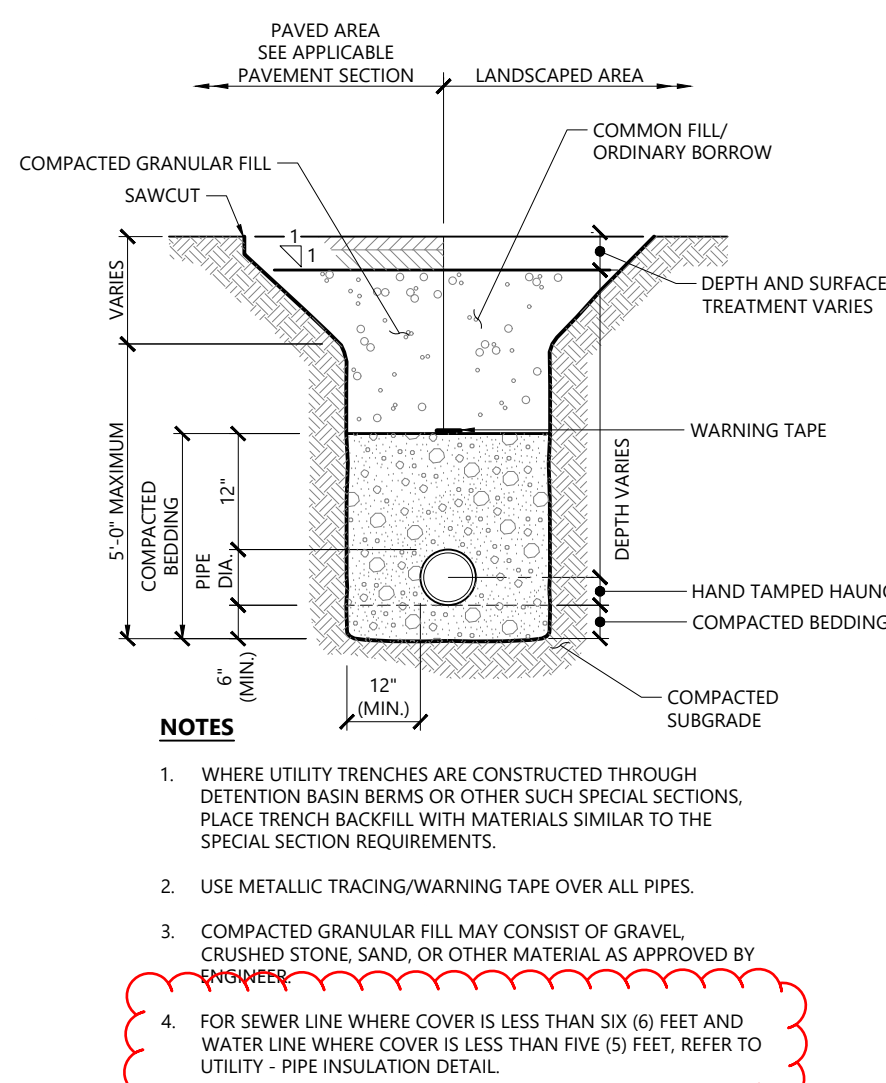
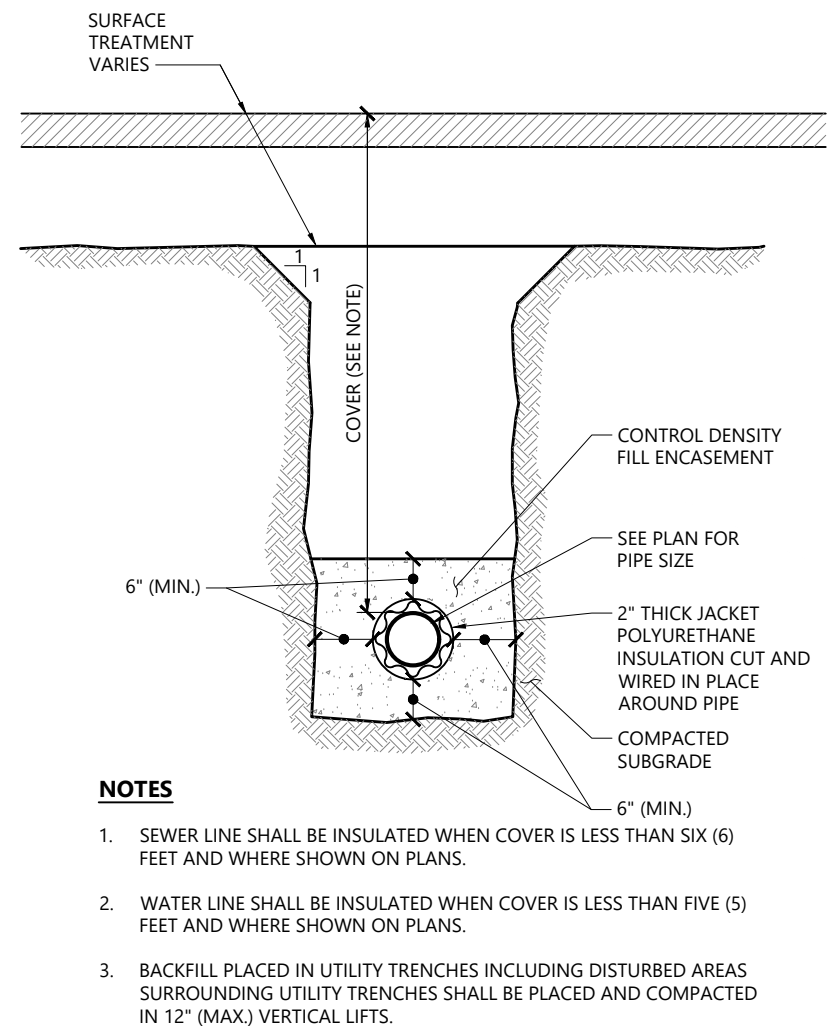
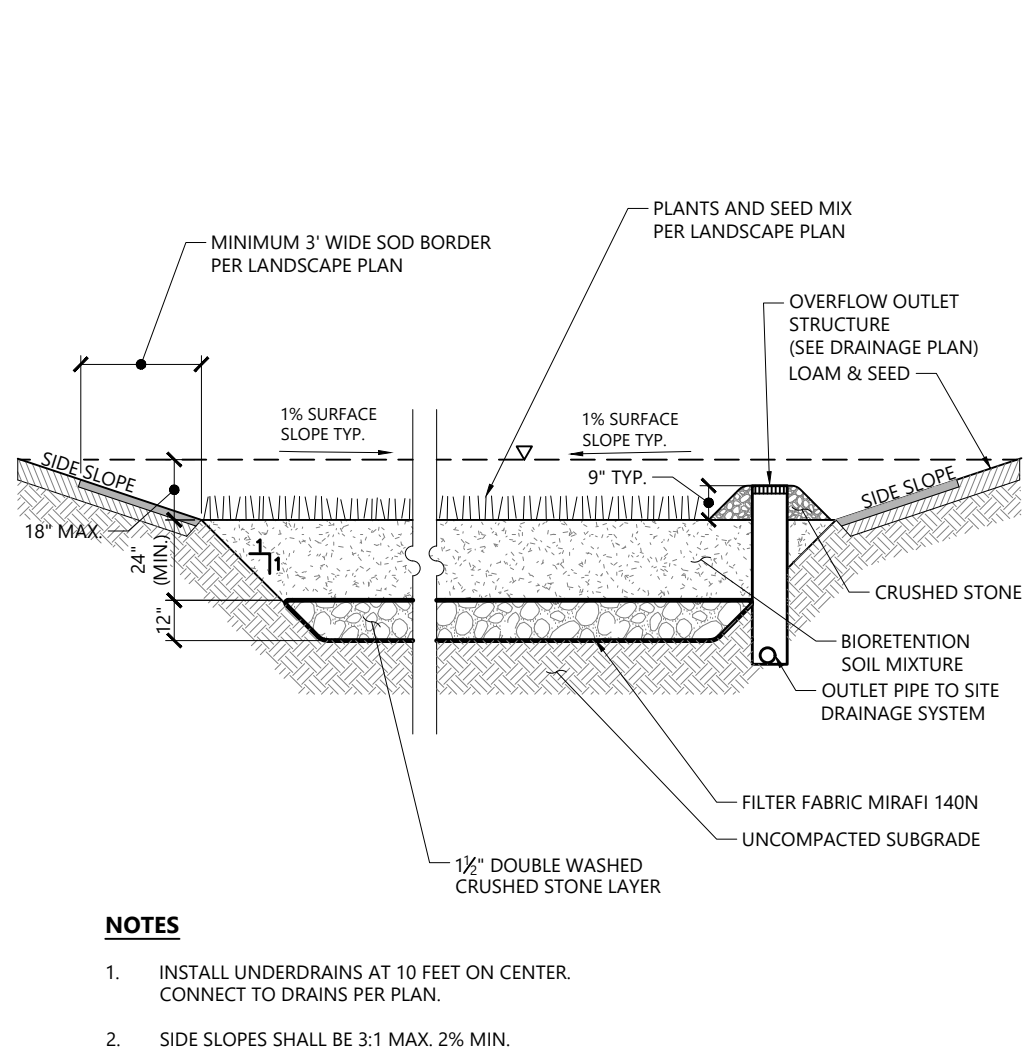
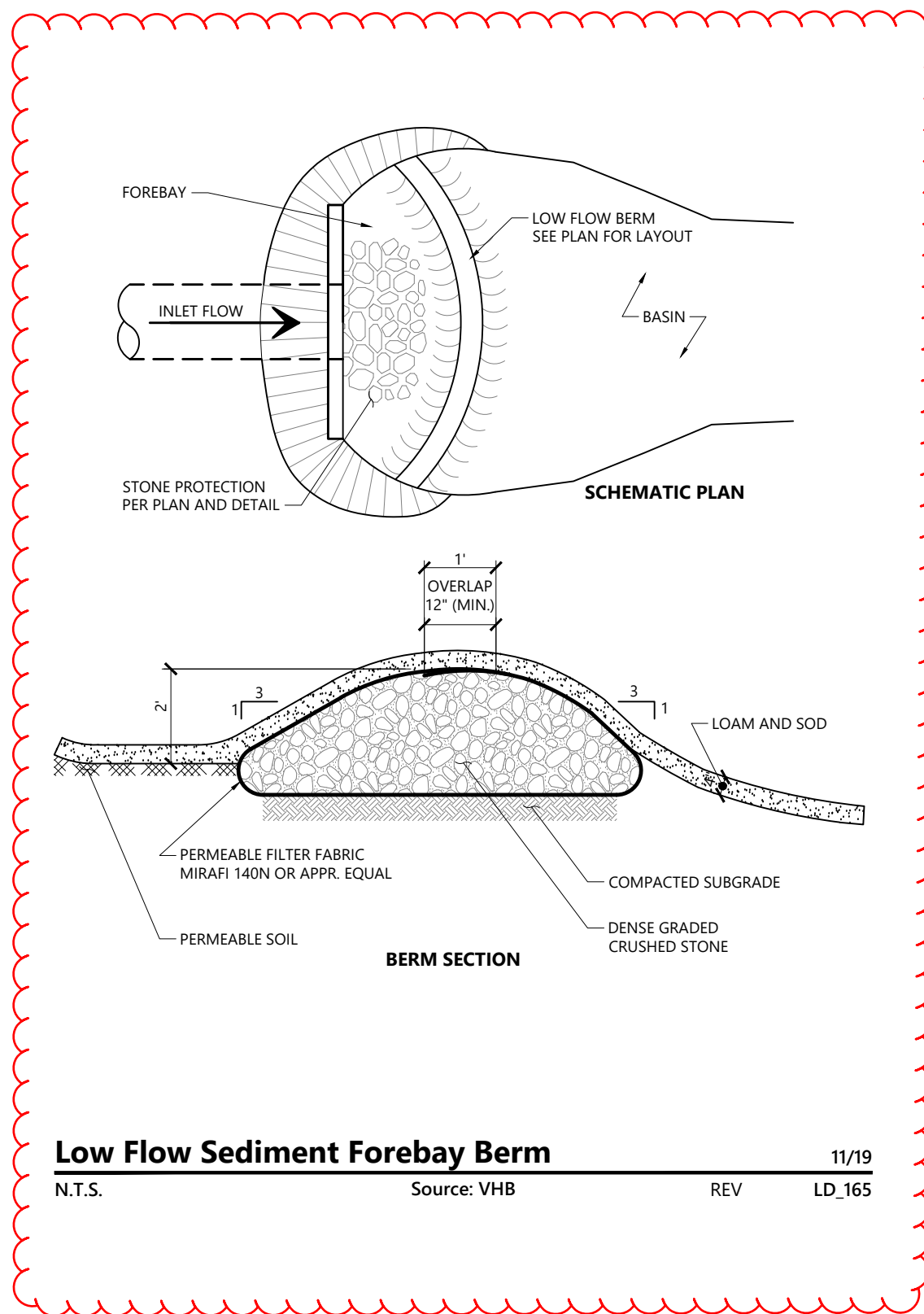
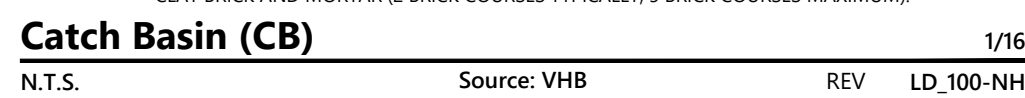
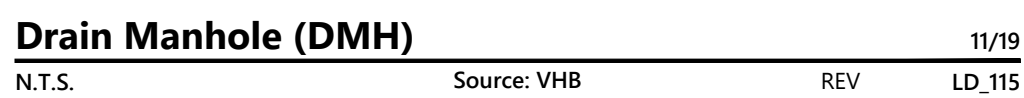
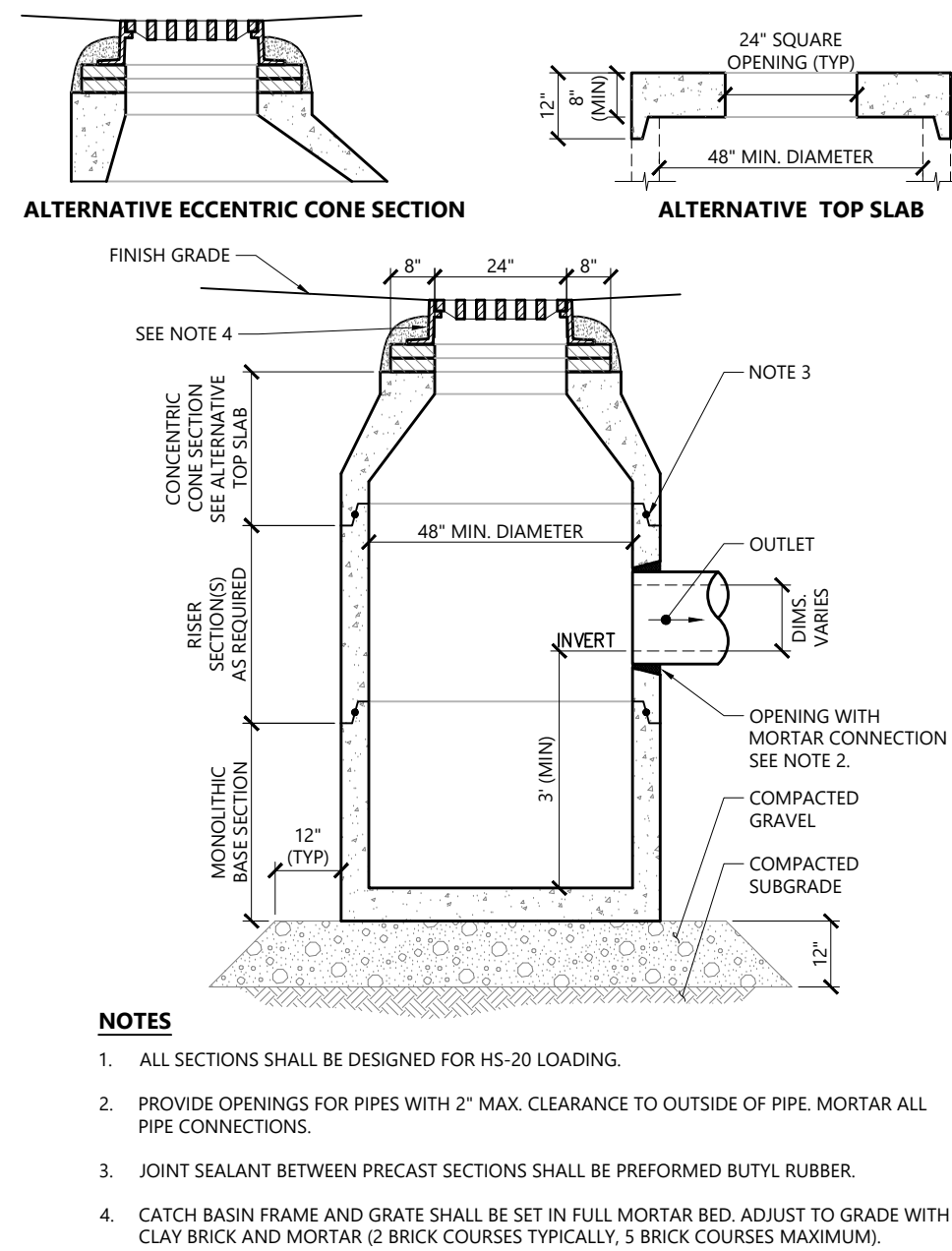
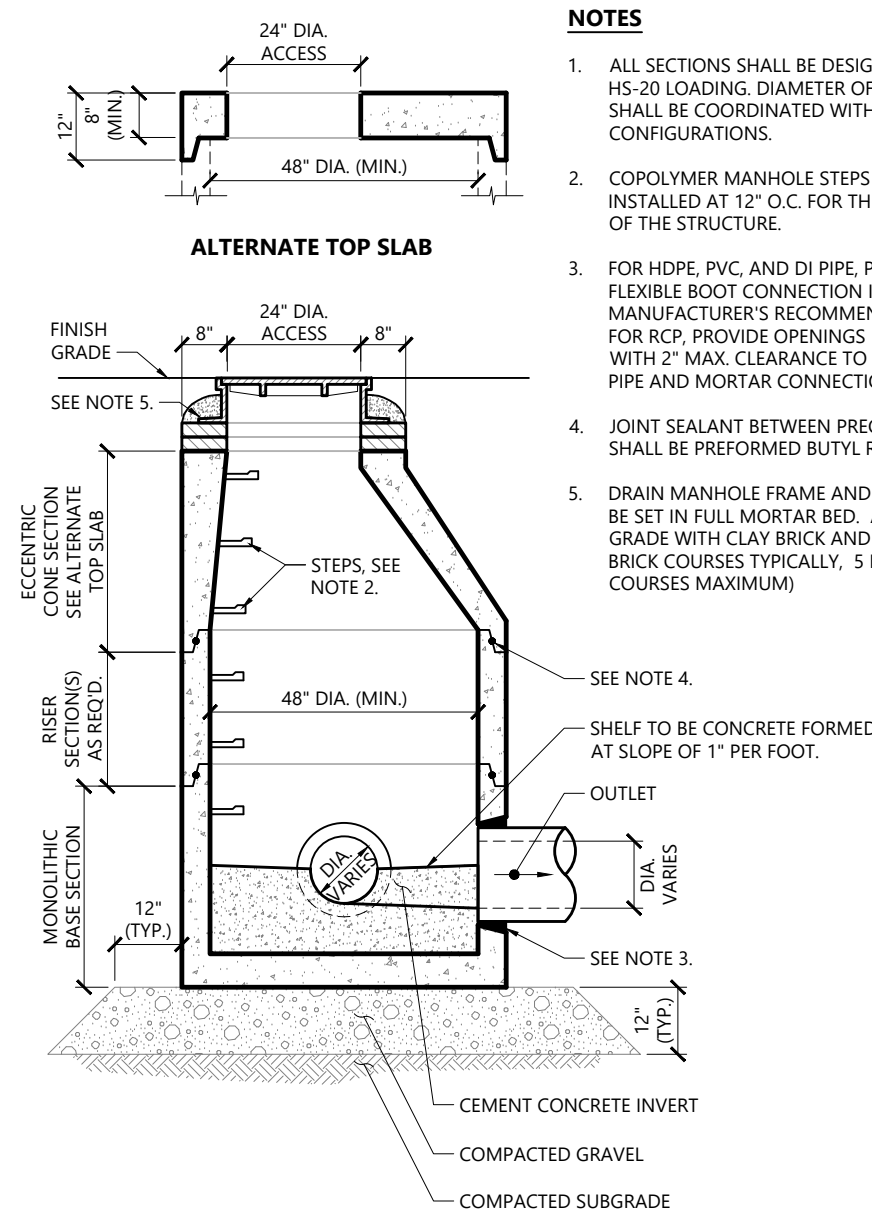
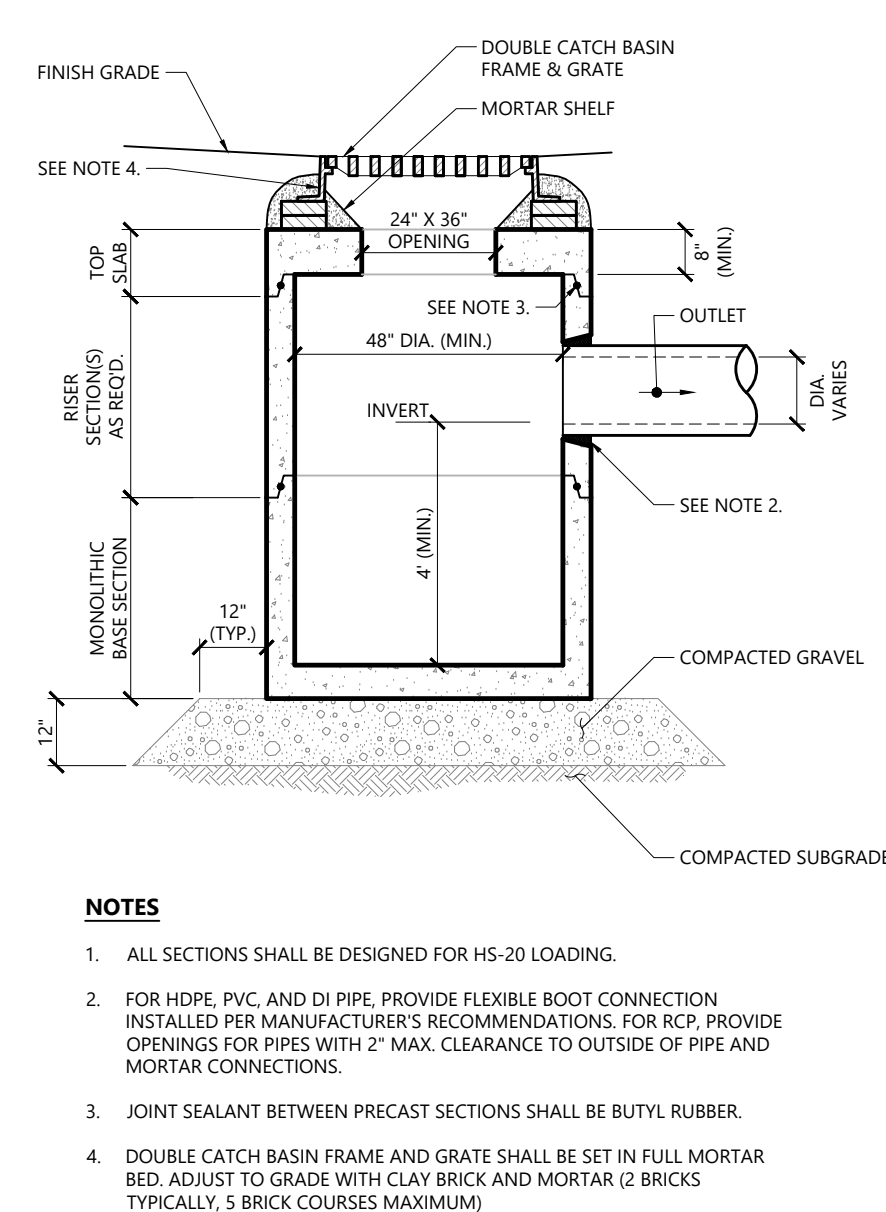
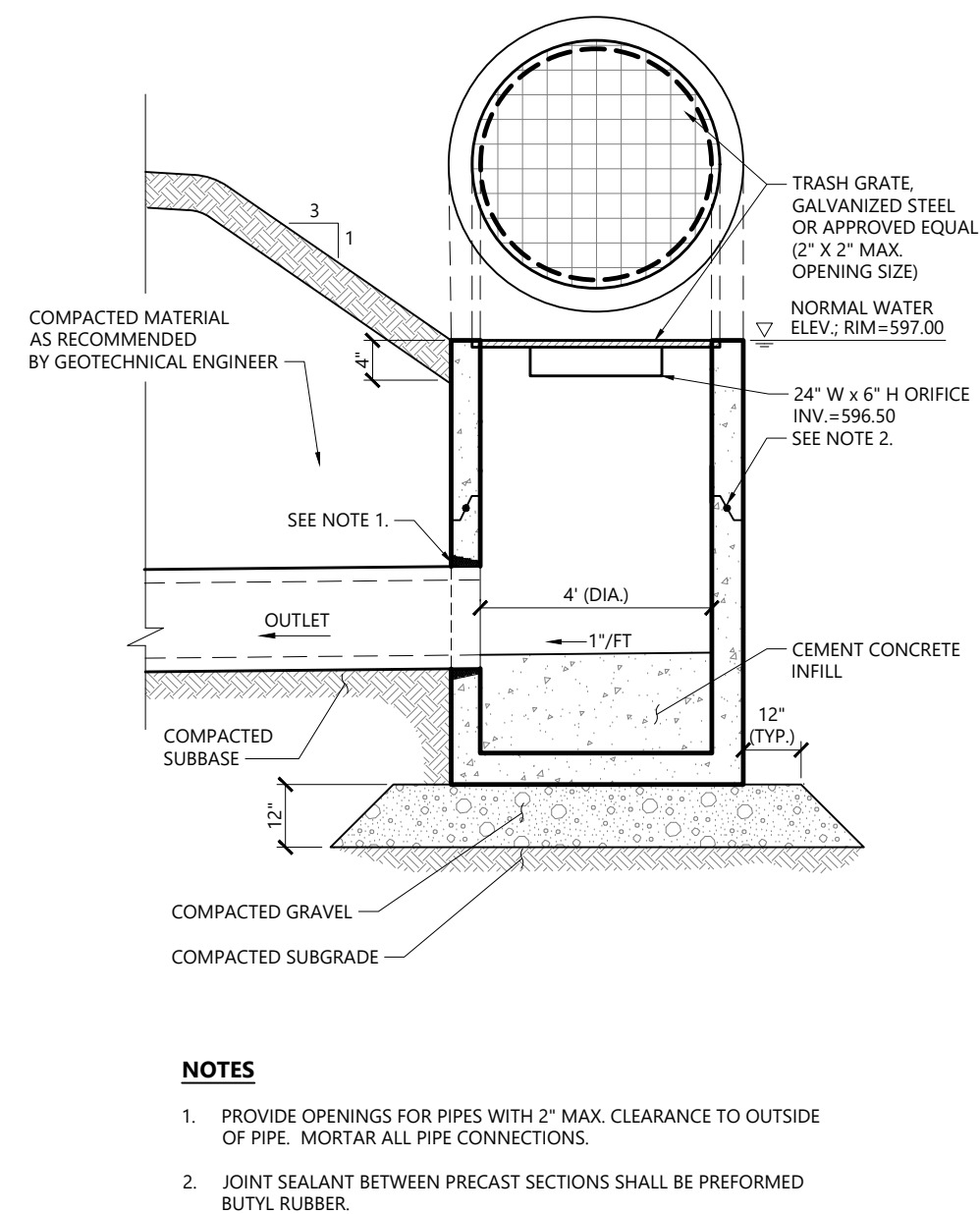
Detail Sheet 3

C7.3

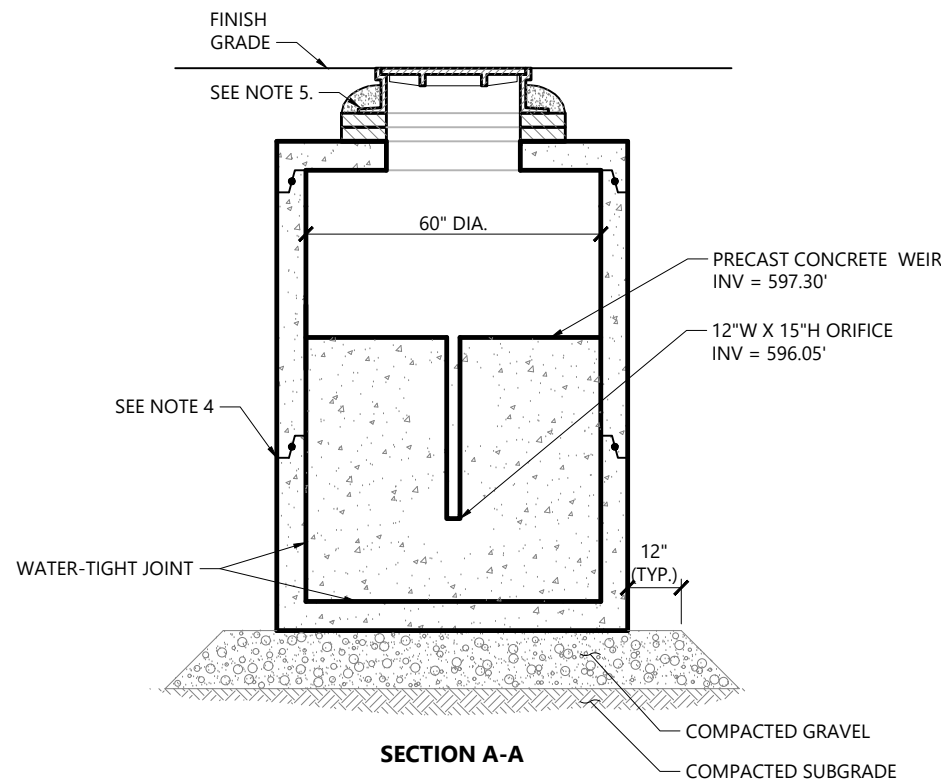
Sheet 28 of 53

Project Number **52933.00**

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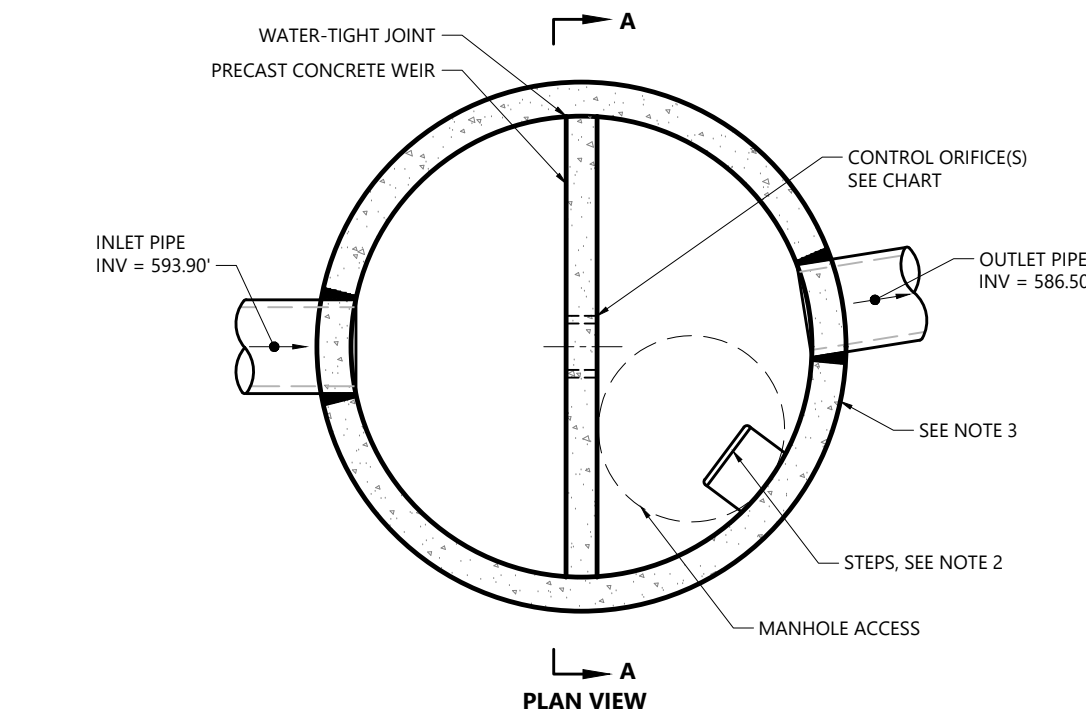


OUTLET STRUCTURE CHART						
DETENTION BASIN	STRUCTURE NUMBER	TOP OF WEIR ELEVATION	DIMENSIONS ORIFICE A	INVERT ORIFICE A	DIMENSIONS ORIFICE B	INVERT ORIFICE B
UIP#1	203	597.30	12" W x 15" H	596.05	N/A	N/A



Outlet Control Structure with Weir - OCS 203

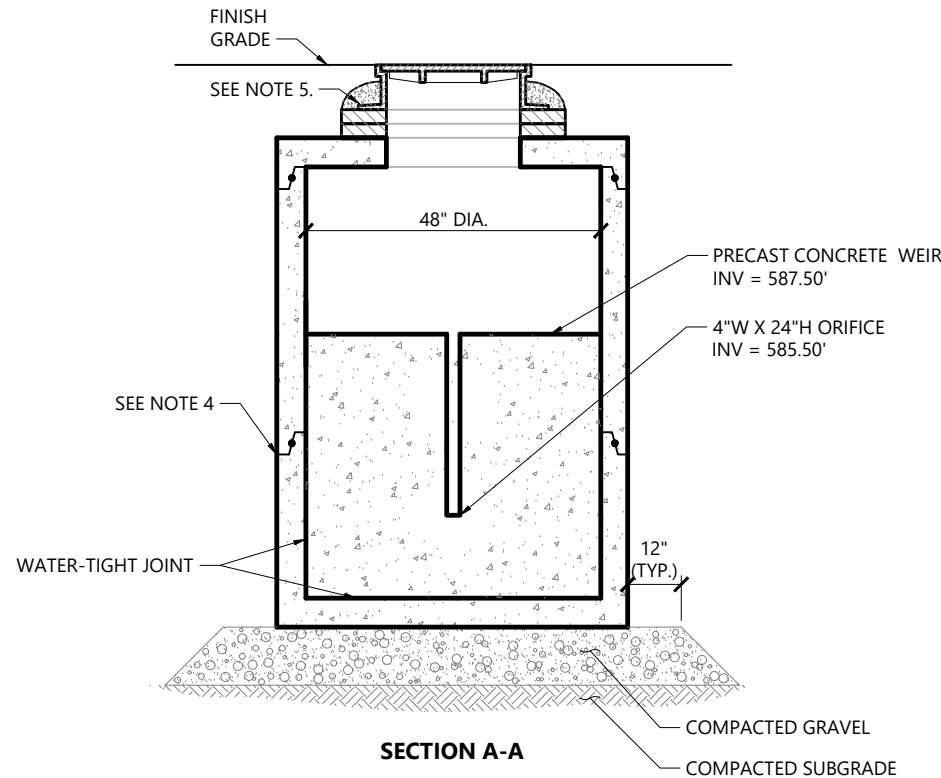
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NOTES

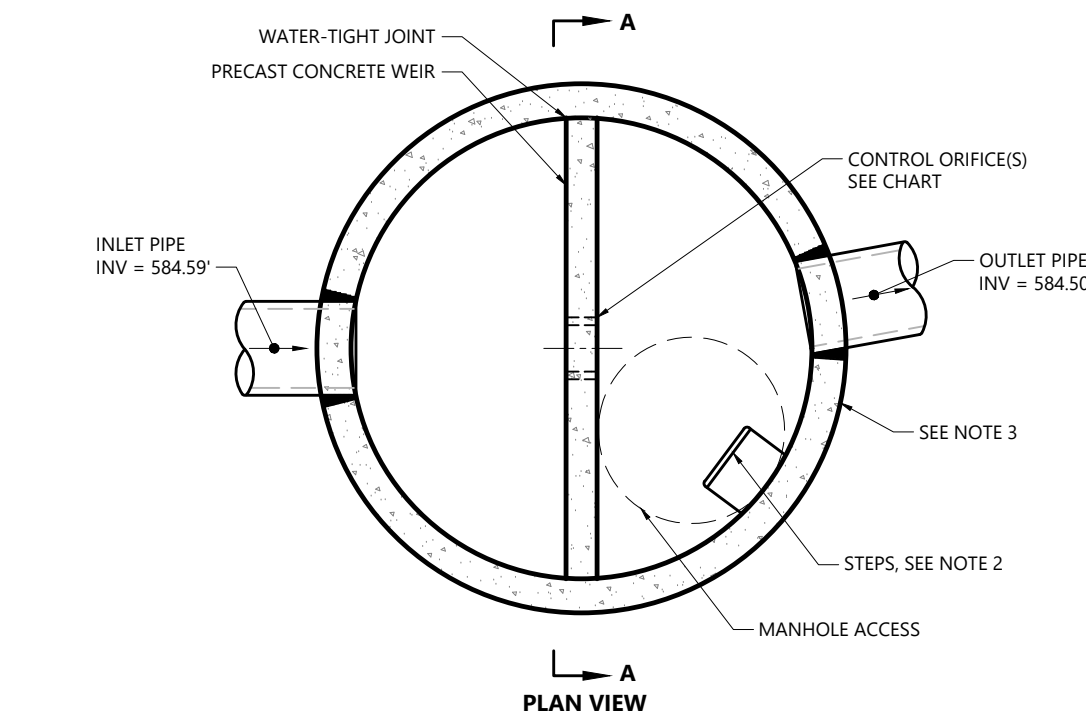
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING. DIAMETER OF STRUCTURES SHALL BE COORDINATED WITH PIPE CONFIGURATIONS.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

OUTLET STRUCTURE CHART						
DETENTION BASIN	STRUCTURE NUMBER	TOP OF WEIR ELEVATION	DIMENSIONS ORIFICE A	INVERT ORIFICE A	DIMENSIONS ORIFICE B	INVERT ORIFICE B
UIP#2	913	587.50	4" W x 24" H	585.50	N/A	N/A



Outlet Control Structure with Weir - OCS 913

N.T.S.



NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING. DIAMETER OF STRUCTURES SHALL BE COORDINATED WITH PIPE CONFIGURATIONS.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)



vhb.com

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Suite 200

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The Brickyard

Residential Development

174 Hanover Street Extension

Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
	Response to Comments Rev 2	12/04/24	DF

Designed by	Checked by
TMD	MJV
Issued for	Date
Permitting	May 10, 2024

Not Approved for Construction

Drawing Title

Detail Sheet 5

Drawing Number



C7.5

Sheet 30 of 53

Project Number

52933.00

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2 Bedford Farms Drive
Suite 200
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603.391.3900

Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR TO MANAGE PROJECT IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
3. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT (0.5" OF RAINFALL OR GREATER) AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
4. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
5. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
6. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.
7. AREAS REMAINING UNSTABILIZED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEED, MULCHED, HAY MULCH SHALL BE APPLIED AT A MINIMUM RATE OF 1-1/2 TONS/ACRE.
8. PERMANENT SEEDING SHALL OCCUR BETWEEN APRIL 1 AND JUNE 1, AND/OR BETWEEN AUGUST 15 AND OCTOBER 15. ALL SEEDING FROM SEPTEMBER 15 SHALL BE HAY MULCH.
9. DUST SHALL BE CONTROLLED THROUGH THE USE OF WATER.
10. SOILS TO BE STOCKPILED FOR A PERIOD OF MORE THAN 30 DAYS SHALL BE TEMPORARILY SEED, AND MULCHED. CONTRACTOR SHALL INSTALL SILT FENCING ALONG DOWNHILL SIDE OF STOCKPILES.
11. CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION BASINS TO CONTROL SEDIMENTATION AND STORMWATER RUNOFF DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT PROPOSED BASIN LOCATIONS, DESIGN, ETC. TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION. TEMPORARY SEDIMENTATION BASINS SHALL MEET NHDES REQUIREMENTS.
12. CONTRACTOR SHALL PROVIDE NECESSARY EROSION CONTROL MEASURES TO INSURE THAT SURFACE WATER RUN-OFF FROM UNSTABILIZED AREAS DOES NOT CARRY SILT, SEDIMENT, AND OTHER DEBRIS OUTSIDE OF THE LIMITS OF WORK.
13. 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-IN OF NON-EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED;
 - D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
14. AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA ON-SITE BE GREATER THAN (5) FIVE ACRES.
15. ALL DITCHES, SWALES, AND DRAINAGE BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
16. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
17. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEED, WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
18. ALL PERMANENT AND TEMPORARY SEEDING SHALL BE AS FOLLOWS (UNLESS OTHERWISE NOTED):

PERMANENT SEEDING	PROPORTION	GERMINATION MINIMUM	PURITY MINIMUM
LAWNS:			
CREeping RED FESCUE	50%	85%	95%
KENTUCKY BLUEGRASS	40%	85%	90%
MANHATTAN PERENNIAL RYE	10%	90%	95%
TEMPORARY SEEDING*	% WEIGHT	GERMINATION MINIMUM	
WINTER RYE	80% MIN.	85%	
RED FESCUE (CREeping)	4% MIN.	80%	
PERENNIAL RYE GRASS	3% MIN.	90%	
RED CLOVER	3% MIN.	90%	
OTHER CROP GRASS	0.5% MAX.		
NOODLES WEED SEED	0.5% MAX.		
INERT MATTER	1.0% MAX.		

* TEMPORARY SEED FOR LAWNS SHALL ONLY BE PLANTED WHEN PERMANENT GRASSES CANNOT BE PLANTED DUE TO THE GROWING SEASON.

18. NO-MOW PLANTING MIX (FOR AREAS INDICATED ON LANDSCAPE PLAN)

THE NO-MOW PLANTING MIX* SHALL BE THE "NEW ENGLAND CONSERVATION WILDLIFE MIX" AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC.

19. STORMWATER BASIN PLANTING MIX (FOR BOTTOM OF DETENTION BASIN)

THE STORMWATER BASIN PLANTING MIX SHALL BE THE "NEW ENGLAND EROSION-CONTROL / RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA. (413) 256-1752

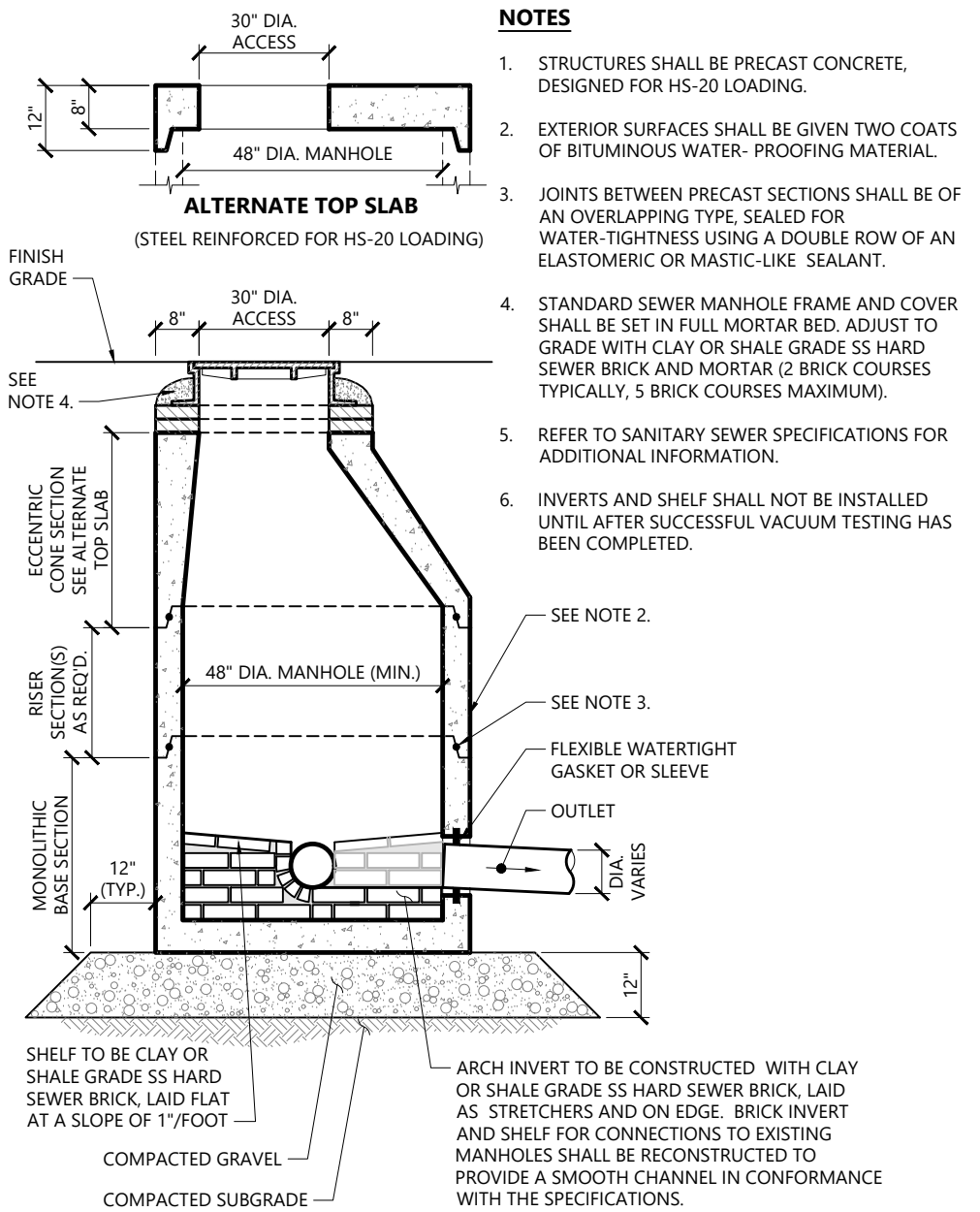
18. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3-FT HORIZONTAL AND 1-FT VERTICAL (3:1). EROSION CONTROL BLANKETS SHALL BE NORTH AMERICAN GREEN SC150BN, OR APPROVED EQUAL.

NHDES WINTER NOTES

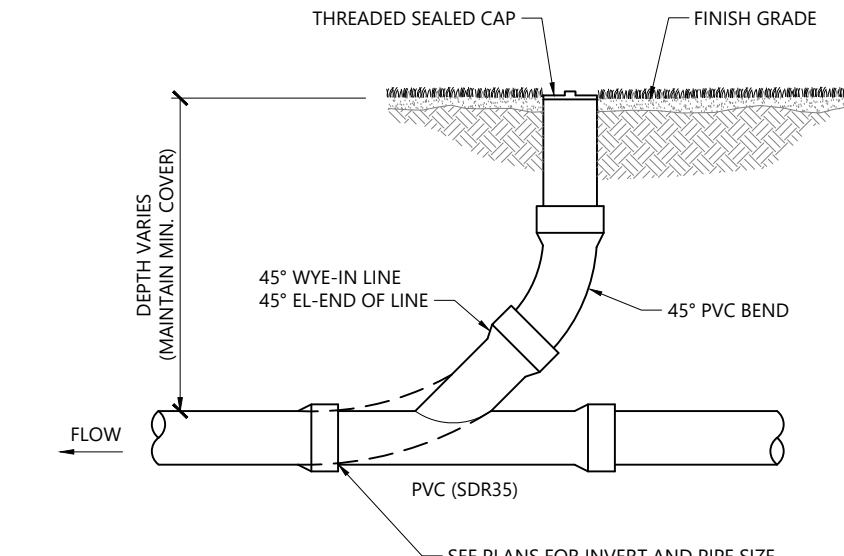
1. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
2. 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.
3. 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.

NHREG PERMIT CONDITIONS

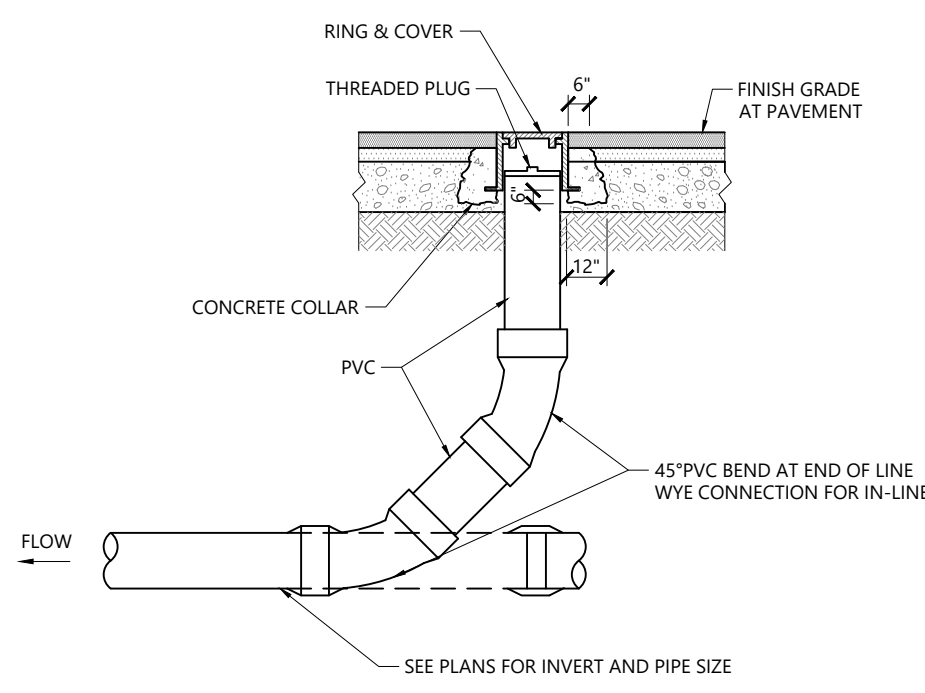
1. EROSION CONTROL MATERIALS SUCH AS WELDED PLASTIC OR "BIODEGRADABLE PLASTIC" NETTING OF THREAD (E.G. POLYPROPYLENE) SHALL NOT BE USED. THE USE OF EROSION CONTROL BERM, WHITE FILTREXX DEGRADABLE WOBEN SILT SOCK OR WOVEN ORGANIC MATERIALS (E.G. COCO OR JUTE MATTING SUCH AS NORTH AMERICAN GREEN SC150BN) SHALL BE USED.



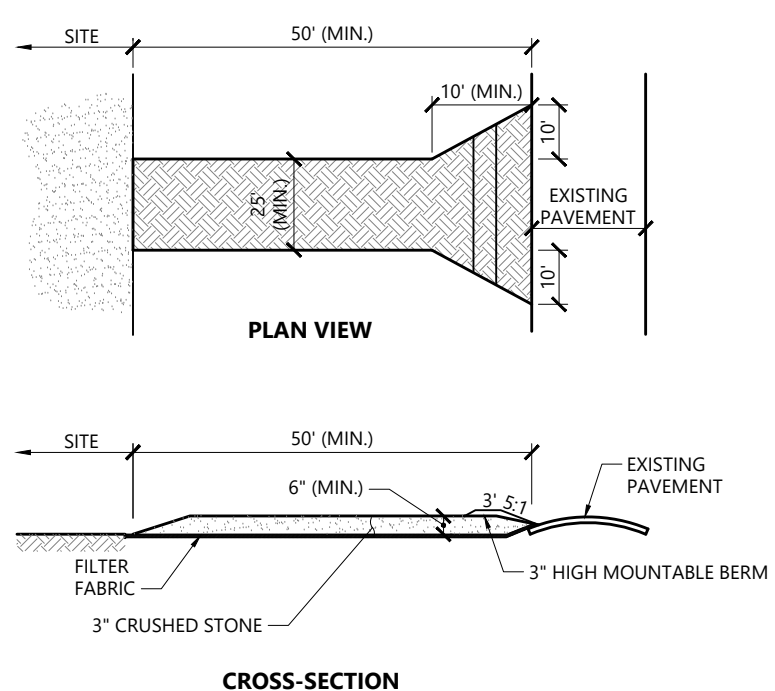
Sanitary Sewer Manhole (SMH) 1/16
N.T.S. Source: VHB REV LD_200 NH



Cleanout - Landscape Area 1/16
N.T.S. Source: VHB LD_302

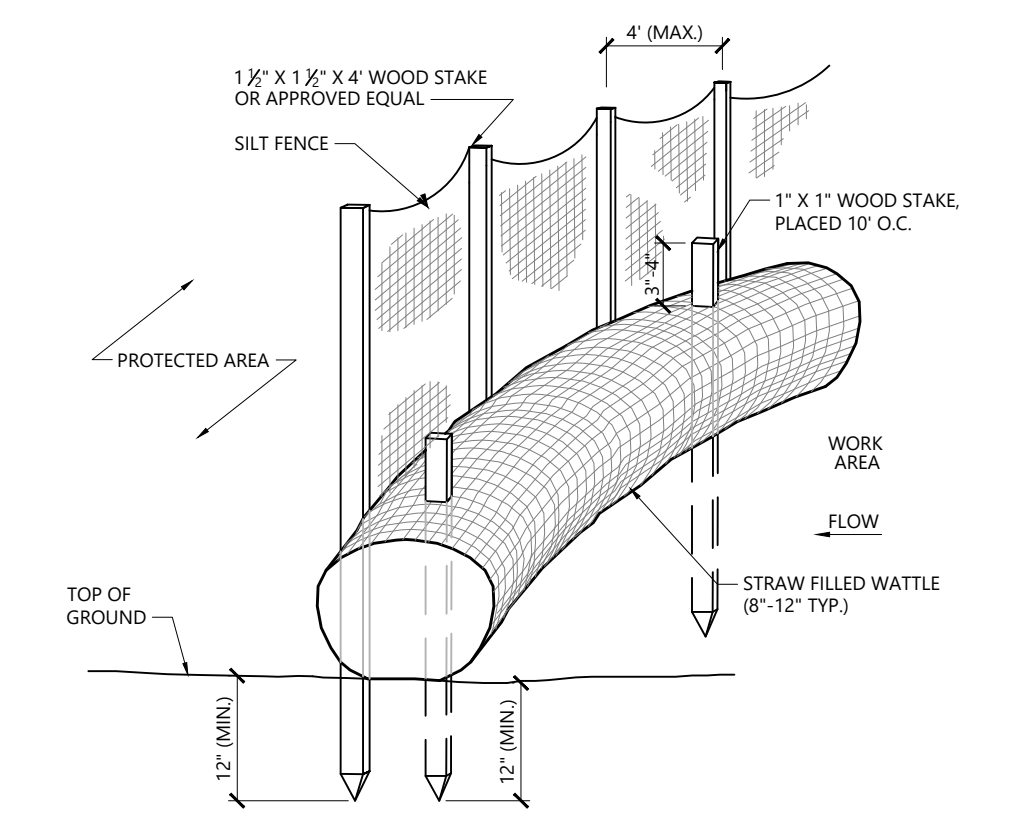


Cleanout - Paved Area 1/16
N.T.S. Source: VHB LD_303



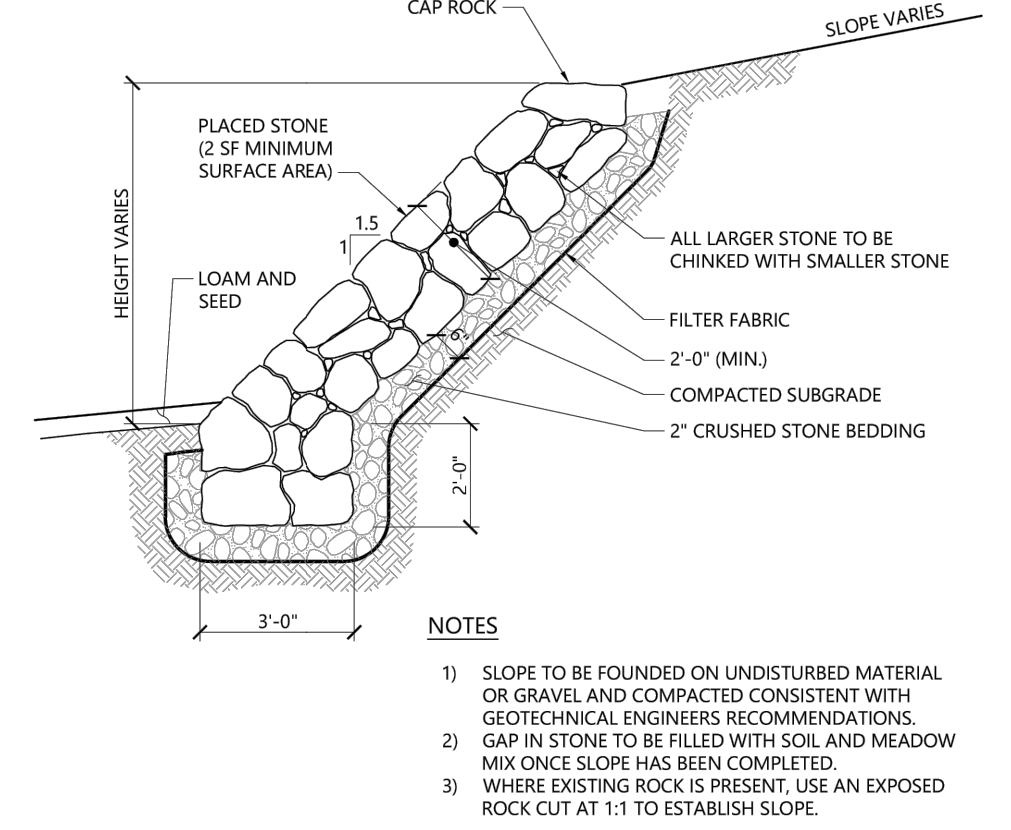
- NOTES**
1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
 2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
 3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

Stabilized Construction Exit 5/17
N.T.S. Source: VHB REV LD_682-NH

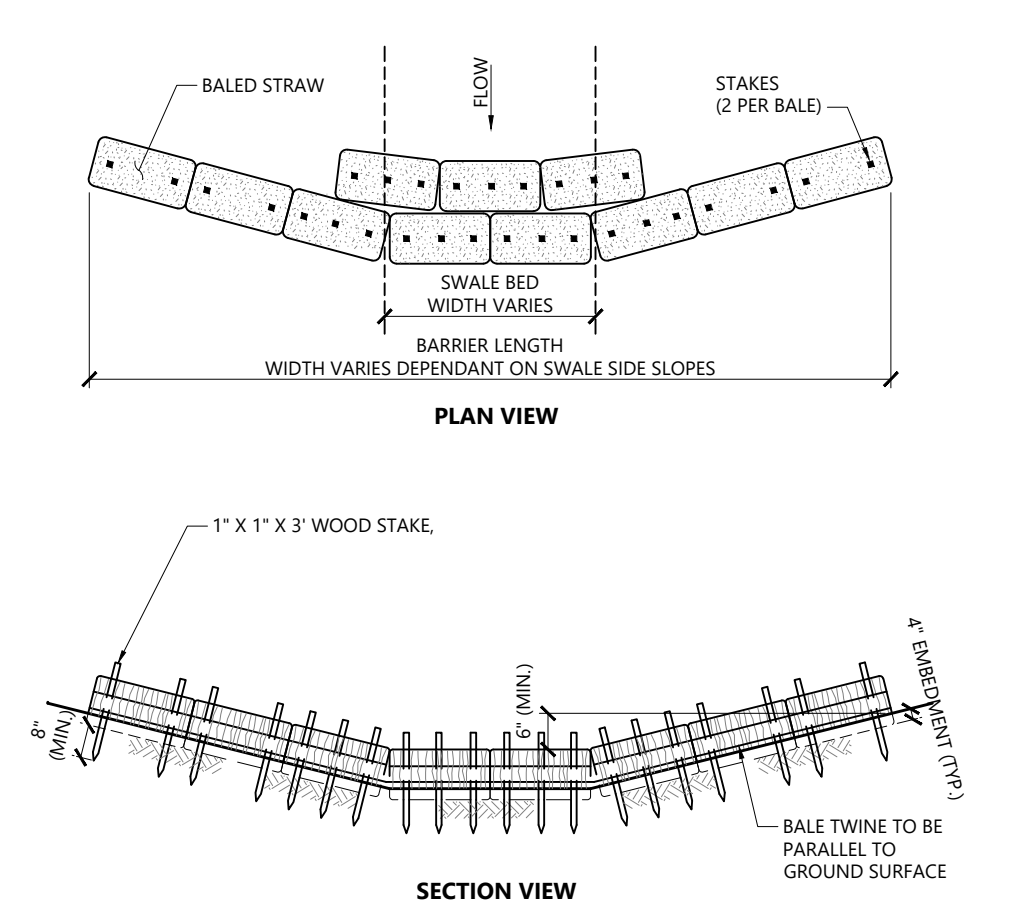


- NOTES**
1. STRAW WATTLE SHALL BE AS MANUFACTURED BY EARTHSAVER OR APPROVED EQUAL.
 2. STRAW WATTLES SHALL OVERLAP A MINIMUM OF 12 INCHES.
 3. STRAW WATTLE SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
 4. TEMPORARY STRAW WATTLES TO BE REMOVED BY CONTRACTOR. ALL OTHERS TO REMAIN IN PLACE UNLESS DIRECTED OTHERWISE BY ENGINEER.
 5. IF NON BIODEGRADABLE NETTING IS USED THE NETTING SHALL BE COLLECTED AND DISPOSED OF OFFSITE.

Straw Wattle - Erosion Control Barrier 10/21
N.T.S. Source: VHB REV LD_659-A



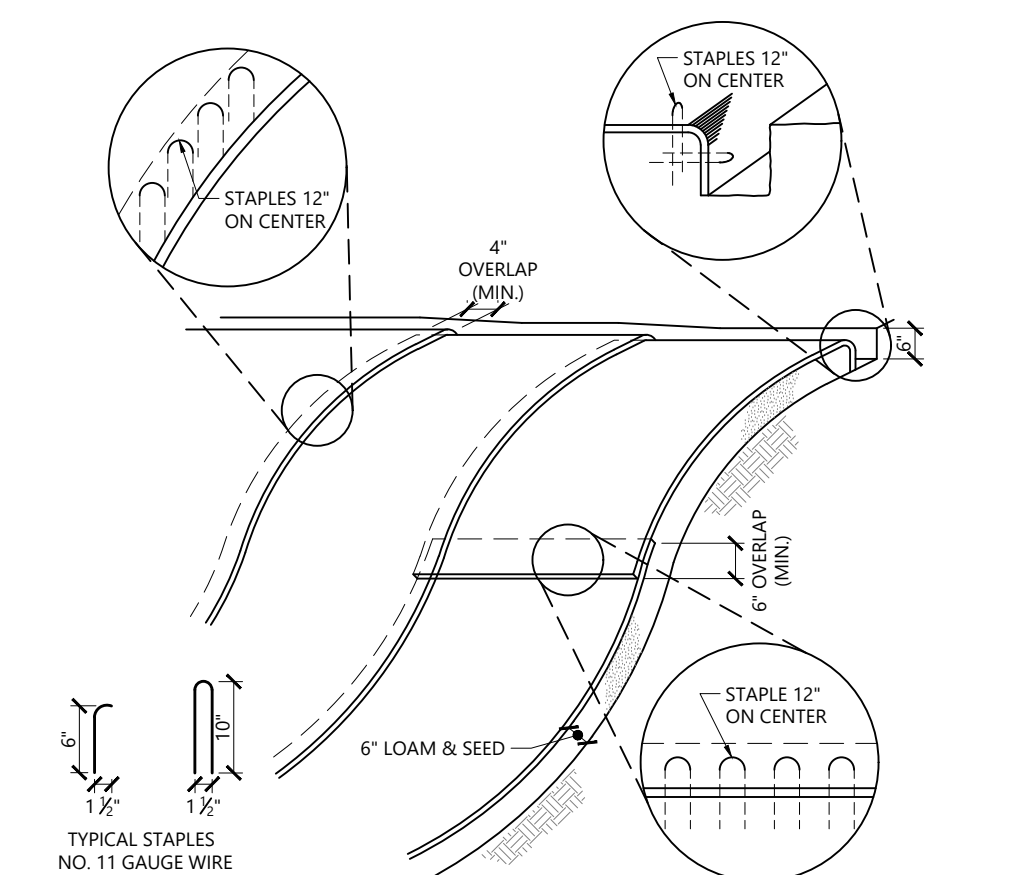
Placed Stone Slope 1/16
N.T.S. Source: VHB REV LD_760



- NOTES**
1. THIS CHECKDAM SHALL BE INSTALLED IN A DRAINAGE SWALE WITH BED WIDTHS OF 2 FT. OR MORE.
 2. THE DISTANCE BETWEEN BALE CHECKDAMS SHALL BE DETERMINED BY THE SLOPE OF THE SWALE. CHECKDAMS SHALL BE SET AT EVERY 2 FT. DROP IN SWALE ELEVATION.
 3. BALES SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
 4. INSTALL 3 STAPLES PER BALE WITHIN SWALE BED AREA.

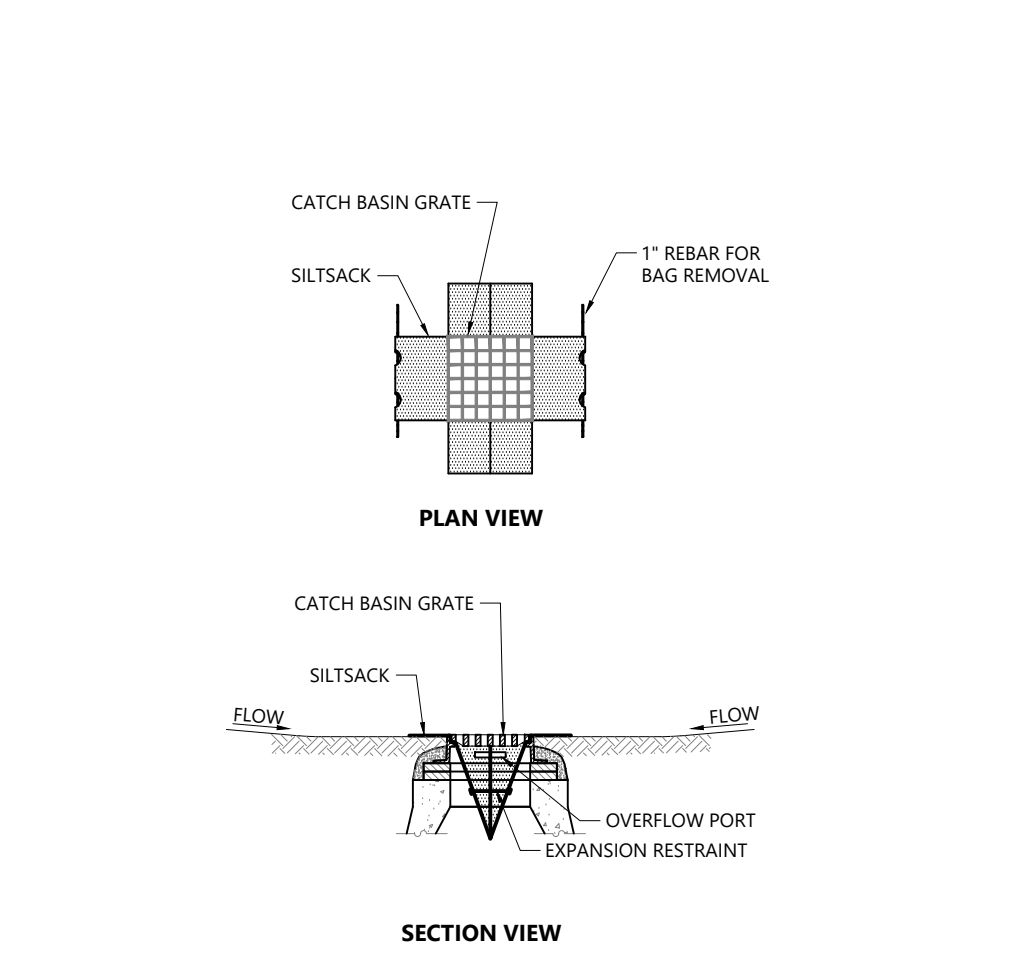
Straw Bale Checkdam (Wide Swale) 1/16
N.T.S. Source: VHB REV LD_670

Catch Basin Sediment Trap 1/16
N.T.S. Source: VHB REV LD_673



- NOTES**
1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
 2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
 3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE ELEVATION.
 4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN) OVERLAP AND STAPLE BOTH TOGETHER.
 5. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
 6. EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1.

Erosion Control Blanket Slope Installation 10/20
N.T.S. Source: VHB REV LD_680



- NOTES**
1. INSTALL SILTSACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK OR IN PAVED AREAS AFTER BINDER COURSE IS PLACED AND STRAW BALES HAVE BEEN REMOVED.
 2. GRATE TO BE PLACED OVER SILTSACK.
 3. SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED. MAINTAIN UNTIL UPSTREAM AREAS HAVE BEEN PERMANENTLY STABILIZED.

Siltsock Sediment Trap 1/20
N.T.S. Source: VHB REV LD_674

The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

Designed by TMD Checked by MJV

Issued for Permitting Date May 10, 2024

Not Approved for Construction



Drawing Number

C7.6

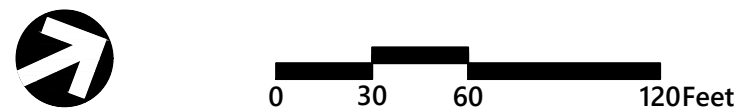
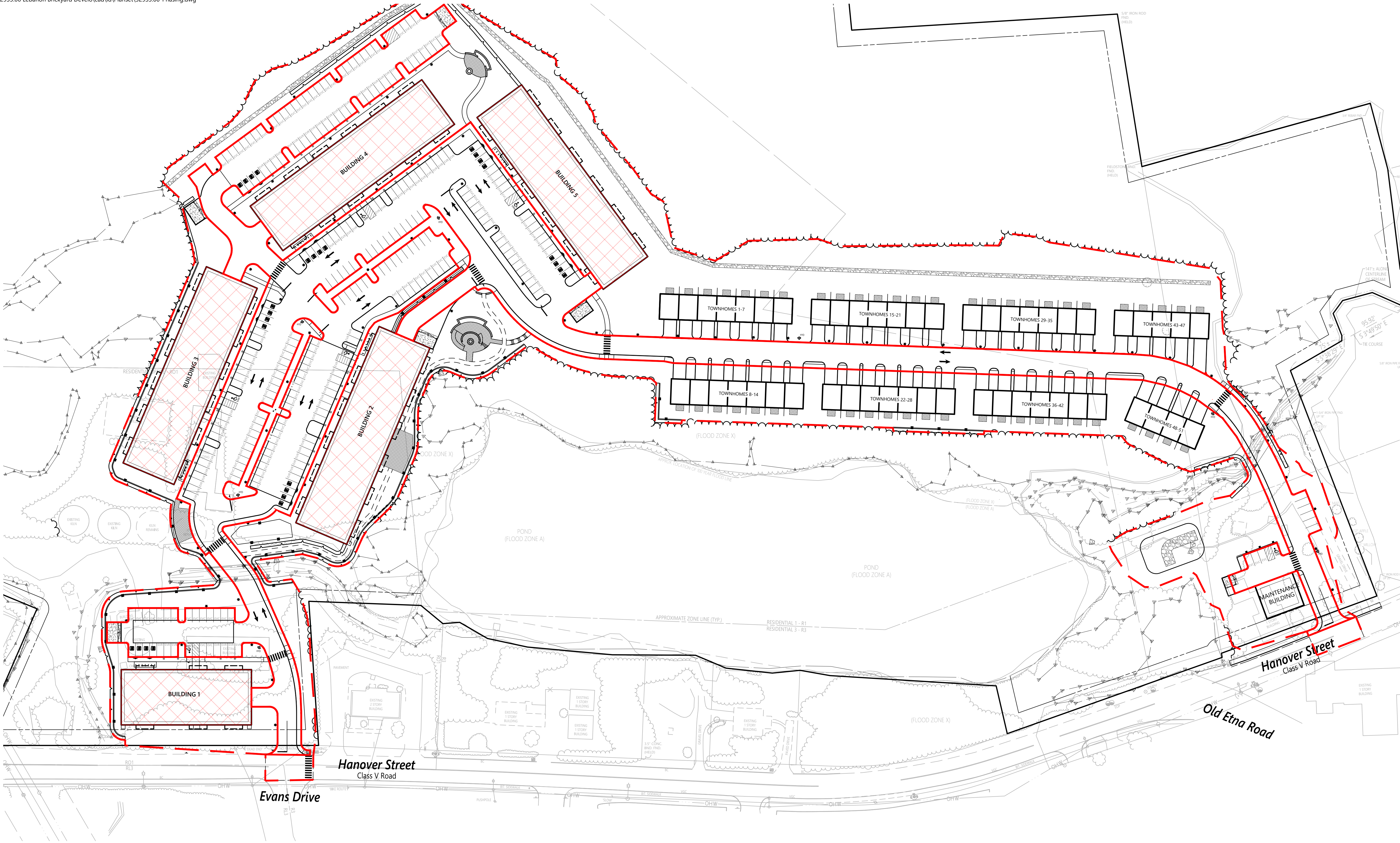
Sheet 31 of 53

Project Number 52933.00

Professional Engineer Seal: DAVID H. FENSTERMACHER, No. 13382, LICENSED PROFESSIONAL ENGINEER, STATE OF NEW HAMPSHIRE



2 Bedford Farms Drive
Suite 200
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The Brickyard Residential Development

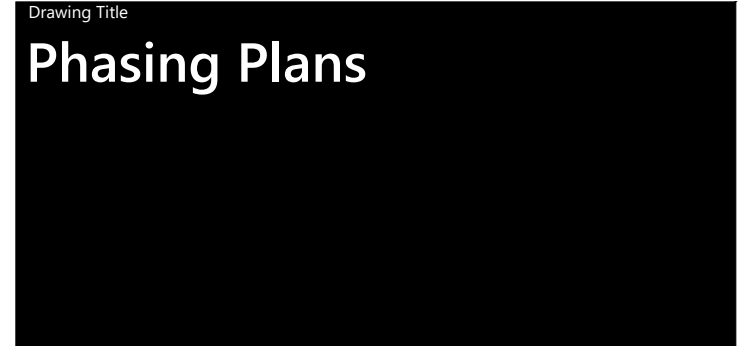
174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

Designed by	TMD	Checked by	MJV
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Issued for: Permitting Date: May 10, 2024

Not Approved for Construction



Drawing Number



C8.1

Sheet 32 of 53

Project Number
52933.00

Phasing Schedule

Phase	Summary Of Improvements	Estimated Start
Phase 1	Roadway, Utilities, Parking Lots, Building Foundations	Late 2024 - Early 2025
Phase 2	Maintenance Building, Building 1	Late 2025 - Early 2026 Anticipated
Phase 3 (A through D)	Buildings A-D as Occupied	Phase A Upon Completion of Phase 2 Phase B-D based on Occupancy and Market
Phase 4	Townhomes 1-51	Upon completion of Phase 3

Note

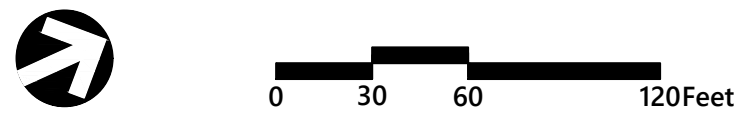
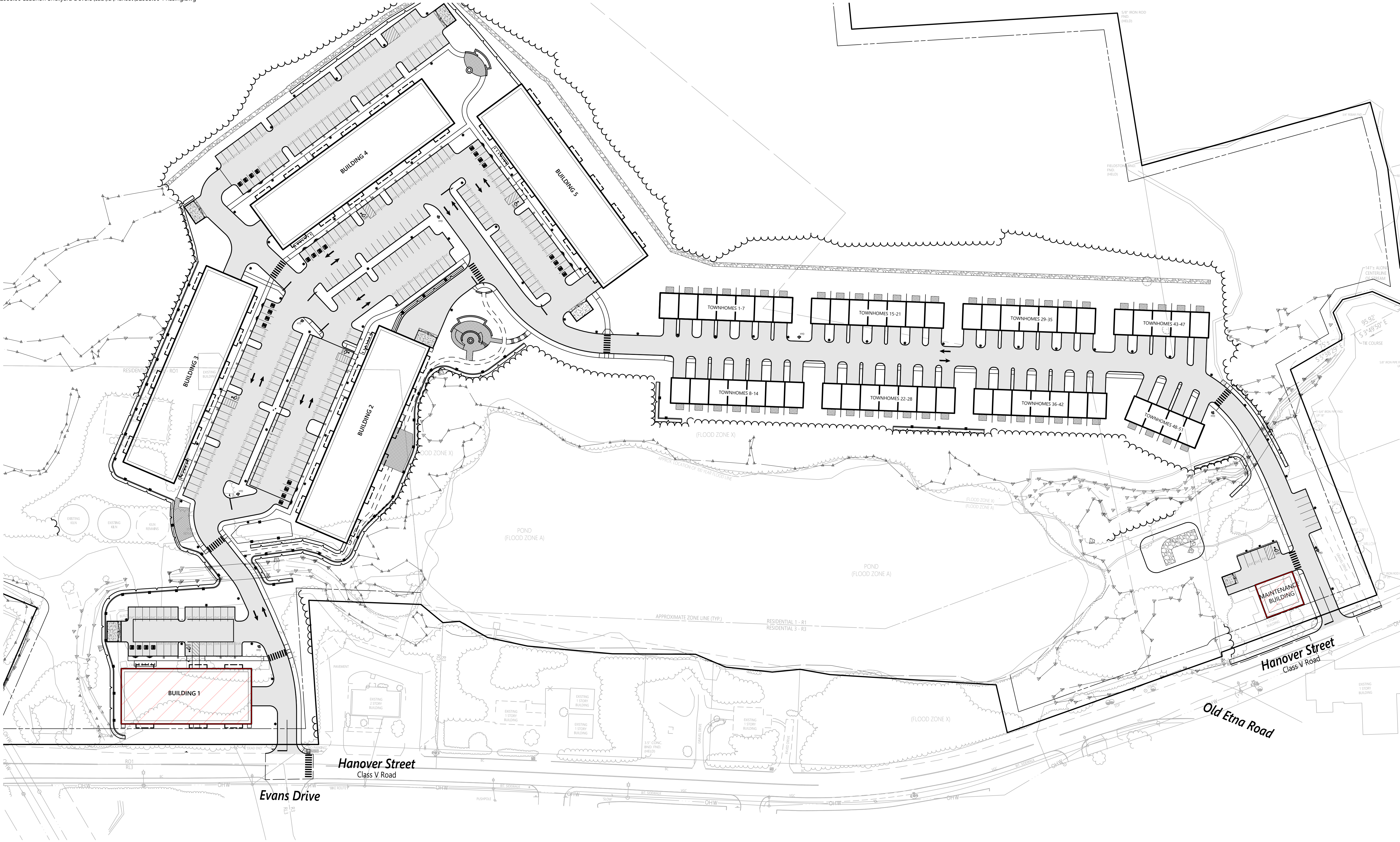
THE INTENT OF THE PHASING OF THE PROJECT IS TO INITIALLY CONSTRUCT THE NECESSARY ROADWAYS, UTILITY INFRASTRUCTURE AND BUILDING FOUNDATIONS. THE BUILDINGS WILL THEN BE CONSTRUCTED AND OCCUPIED SEQUENTIALLY. THE PRELIMINARY SCHEDULE PROVIDED REPRESENTS THE CURRENT UNDERSTANDING OF THE INTENDED PHASING.

LEGEND

- FOUNDATION TO BE CONSTRUCTED IN THIS PHASE
- LIMIT OF GRADING
- ROADWAY AND PARKING LOT INSTALLATION



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The Brickyard Residential Development

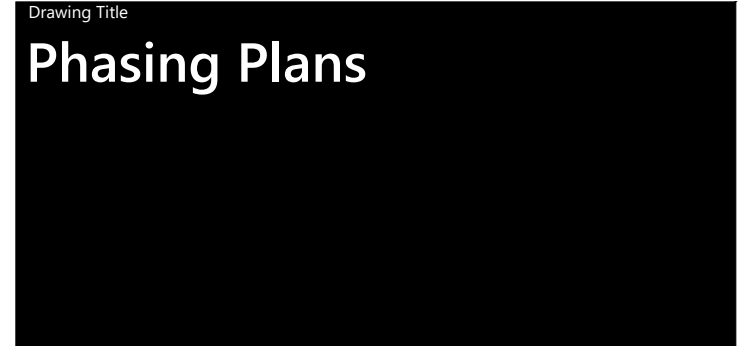
174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

Designed by	Checked by
TMD	MJV

Issued for: Permitting Date: May 10, 2024

Not Approved for Construction



C8.2

Sheet 33 of 53

Project Number: 52933.00

Phasing Schedule

Phase	Summary Of Improvements	Estimated Start
Phase 1	Roadway, Utilities, Parking Lots, Building Foundations	Late 2024 - Early 2025
Phase 2	Maintenance Building, Building 1	Late 2025 - Early 2026 Anticipated
Phase 3 (A through D)	Buildings A-D as Occupied	Phase A Upon Completion of Phase 2 Phase B-D based on Occupancy and Market
Phase 4	Townhomes 1-51	Upon completion of Phase 3

Note

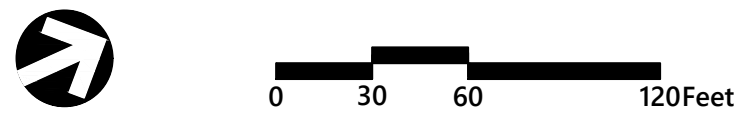
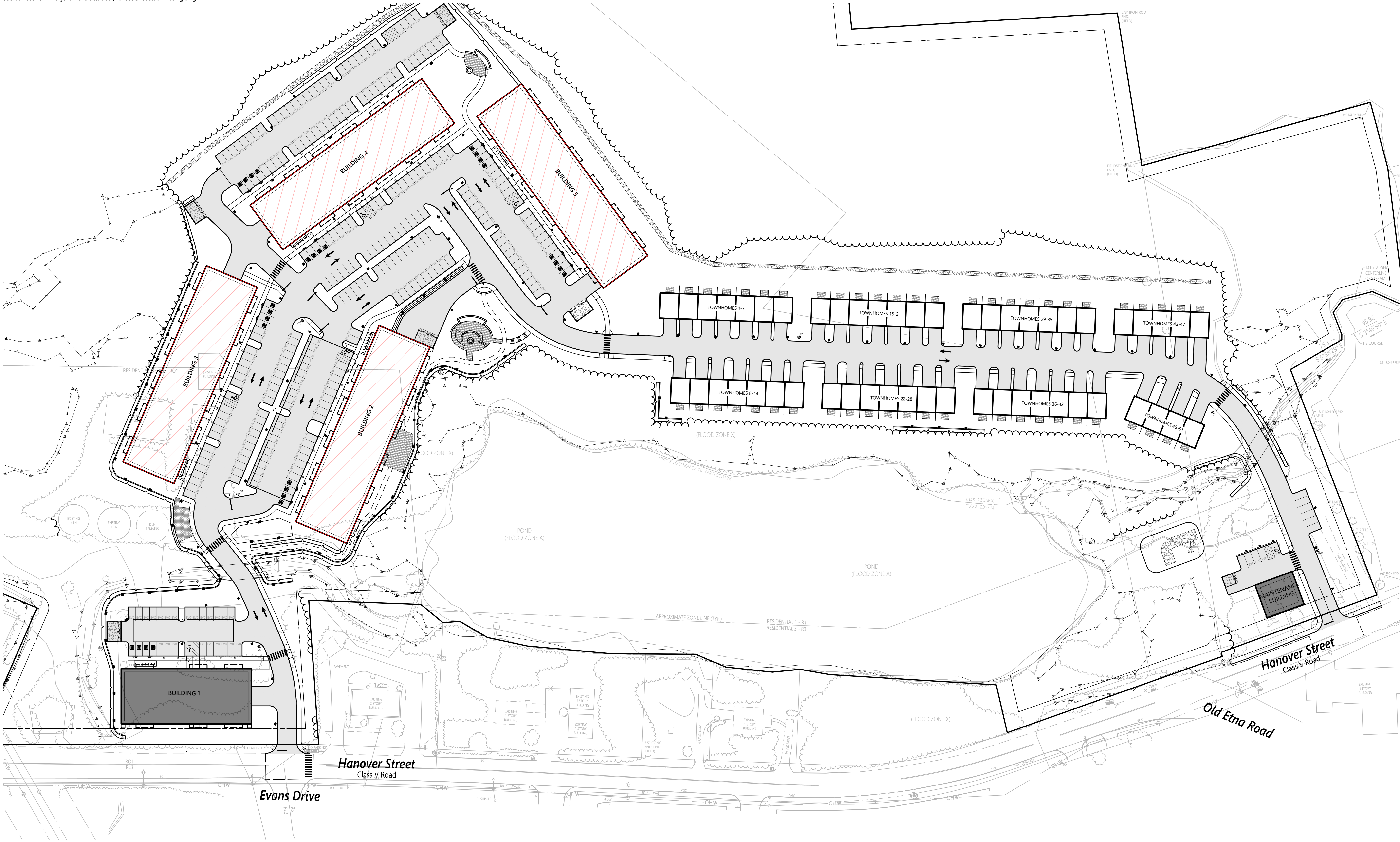
THE INTENT OF THE PHASING OF THE PROJECT IS TO INITIALLY CONSTRUCT THE NECESSARY ROADWAYS, UTILITY INFRASTRUCTURE AND BUILDING FOUNDATIONS. THE BUILDINGS WILL THEN BE CONSTRUCTED AND OCCUPIED SEQUENTIALLY. THE PRELIMINARY SCHEDULE PROVIDED REPRESENTS THE CURRENT UNDERSTANDING OF THE INTENDED PHASING.

LEGEND

- FOUNDATION TO BE CONSTRUCTED IN THIS PHASE
- BUILDING TO BE CONSTRUCTED IN THIS PHASE



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



The Brickyard Residential Development

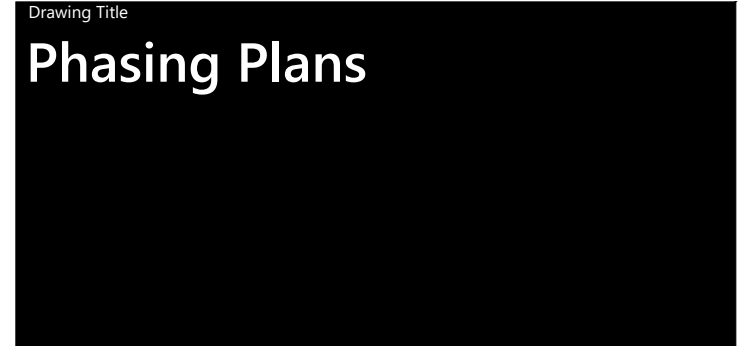
174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Apprvd.
1	Response to Comments Update	08/06/24	DF
2	Revised Layout Resubmission	10/24/24	DF

Designed by	Checked by
TMD	MJV

Issued for: Permitting Date: May 10, 2024

Not Approved for Construction



STATE OF NEW HAMPSHIRE

DAVID H. FENSTERMACHER

No. 13392

LICENSED PROFESSIONAL ENGINEER

C8.3

Sheet 34 of 53

Phasing Schedule

Phase	Summary Of Improvements	Estimated Start
Phase 1	Roadway, Utilities, Parking Lots, Building Foundations	Late 2024 - Early 2025
Phase 2	Maintenance Building, Building 1	Late 2025 - Early 2026 Anticipated
Phase 3 (A through D)	Buildings A-D as Occupied	Phase A Upon Completion of Phase 2 Phase B-D based on Occupancy and Market
Phase 4	Townhomes 1-51	Upon completion of Phase 3

Note

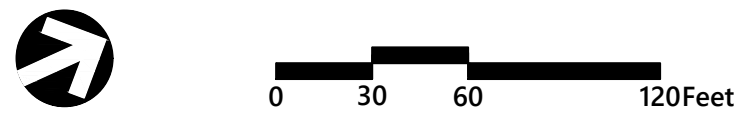
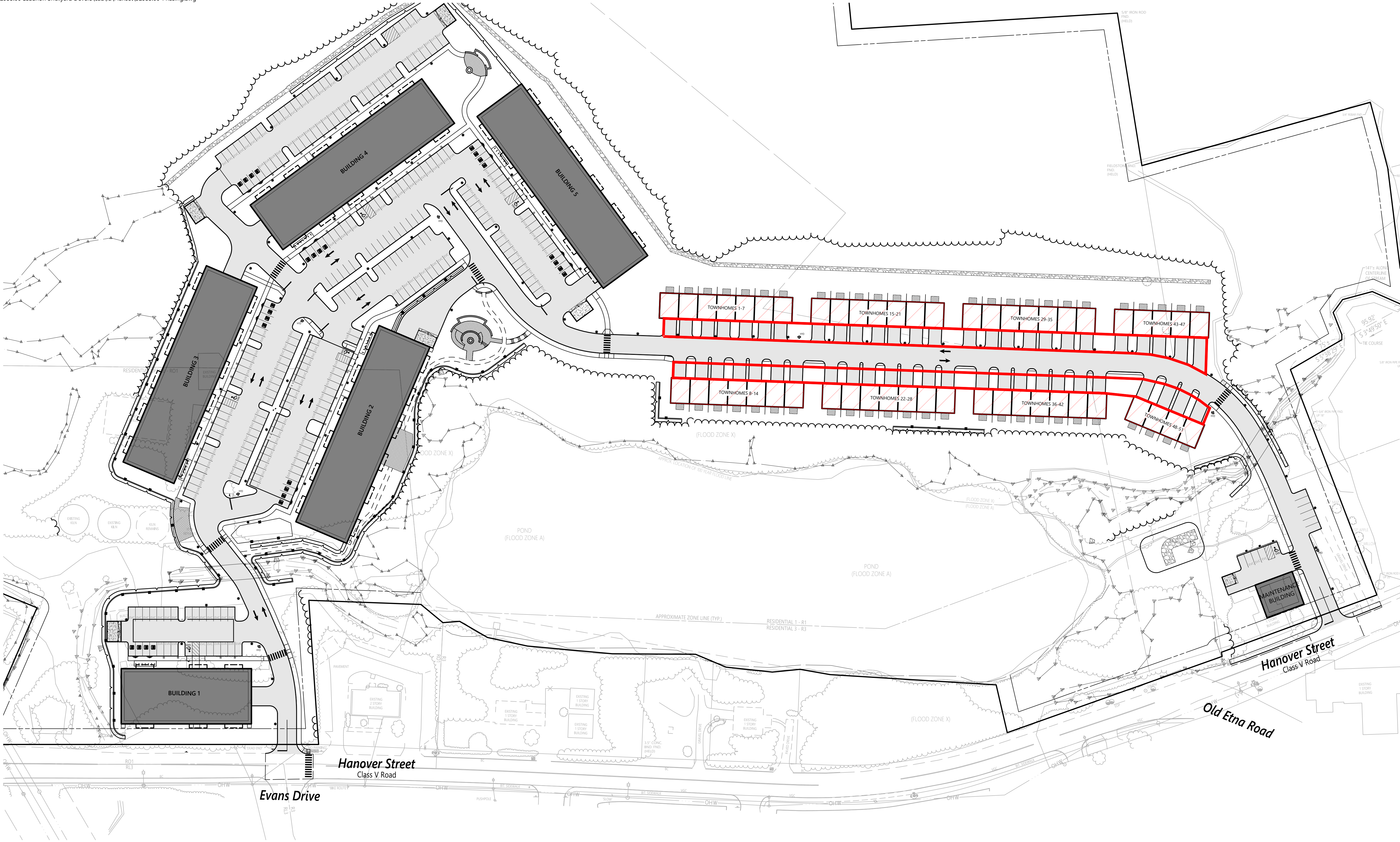
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LEGEND

- FOUNDATION TO BE CONSTRUCTED IN THIS PHASE
- BUILDING TO BE CONSTRUCTED IN THIS PHASE
- BUILDING ALREADY CONSTRUCTED IN THIS PHASE



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd.
1	Revised Layout Resubmission	10/24/24	DF

Designed by	Checked by
TMD	MJV

Issued for: Permitting Date: May 10, 2024

Not Approved for Construction



C8.4

Sheet 35 of 53

Phasing Schedule

Phase	Summary Of Improvements	Estimated Start
Phase 1	Roadway, Utilities, Parking Lots, Building Foundations	Late 2024 - Early 2025
Phase 2	Maintenance Building, Building 1	Late 2025 - Early 2026 Anticipated
Phase 3 (A through D)	Buildings A-D as Occupied	Phase A Upon Completion of Phase 2 Phase B-D based on Occupancy and Market
Phase 4	Townhomes 1-51	Upon completion of Phase 3

Note

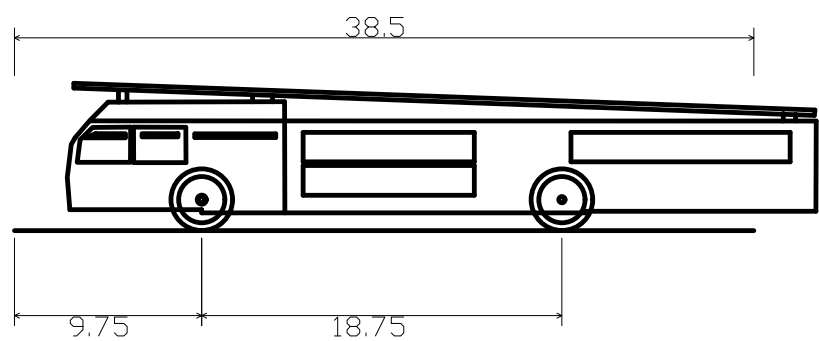
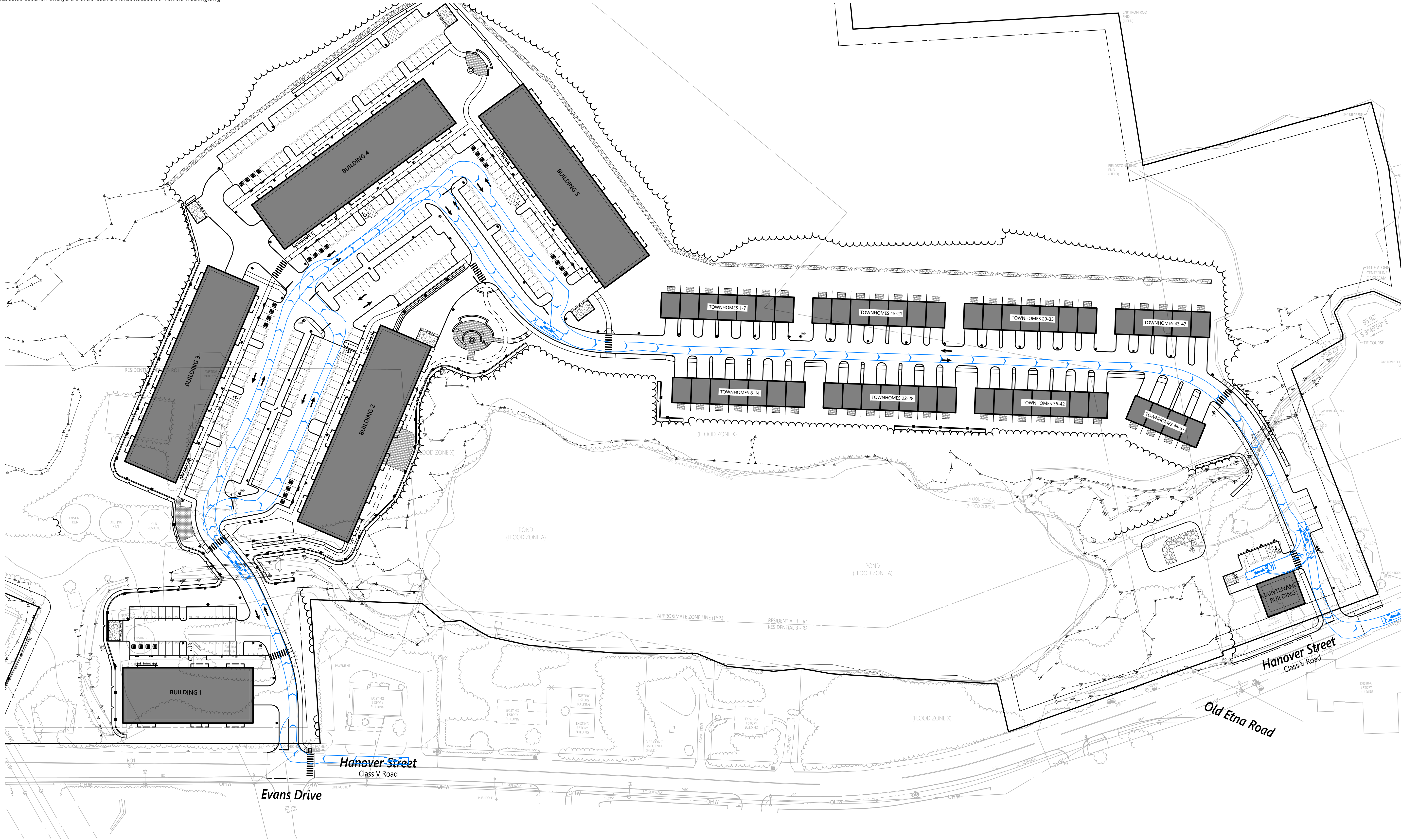
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LEGEND

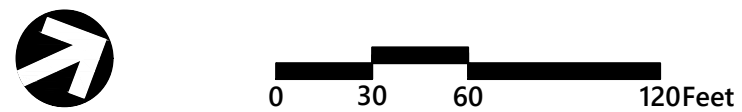
- FOUNDATION TO BE CONSTRUCTED IN THIS PHASE
- BUILDING TO BE CONSTRUCTED IN THIS PHASE
- BUILDING ALREADY CONSTRUCTED IN THIS PHASE
- DRIVEWAY INSTALLATION



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



Lebanon Ladder 1	
Overall Length	38.500ft
Overall Width	9.167ft
Overall Body Height	7.675ft
Min Body Ground Clearance	0.925ft
Track Width	9.167ft
Lock-to-lock time	5.00s
Curb to Curb Turning Radius	33.000ft



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Designed by	Checked by
TMD	MJV

Issued for
Permitting

Date
May 10, 2024

Not Approved for Construction

Vehicle Tracking
City of Lebanon Firetruck

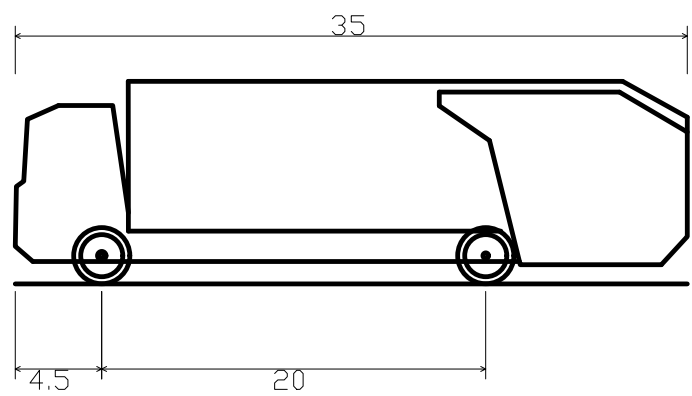
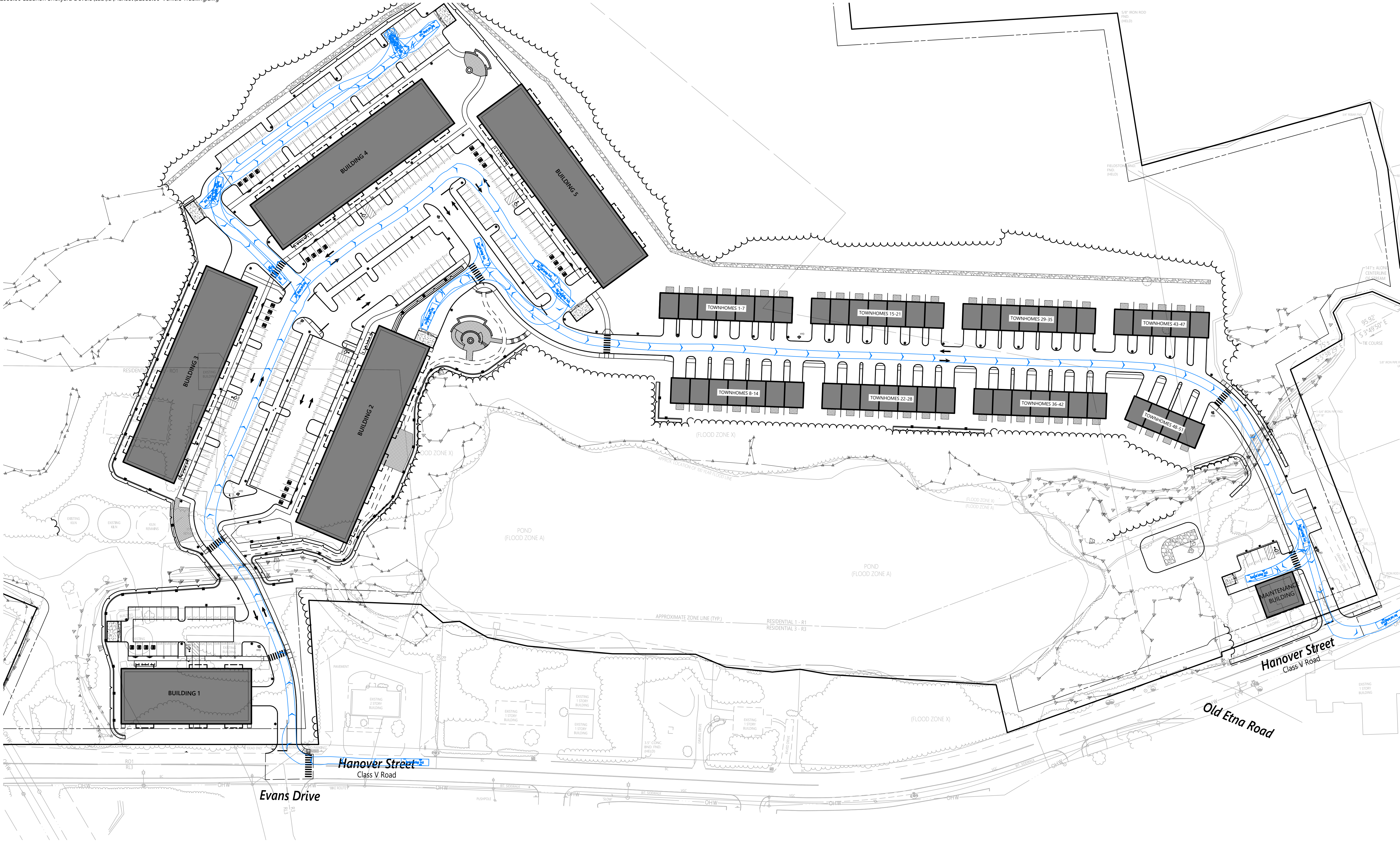


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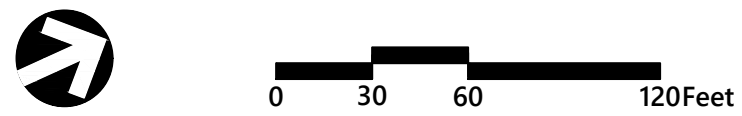
Sheet 36 of 53



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



Rear-Load Garbage Truck
Overall Length 35.000ft
Overall Width 8.375ft
Overall Body Height 10.546ft
Min Body Ground Clearance 1.000ft
Track Width 8.375ft
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 29.300ft



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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TMD	MJV

Issued for
Date
May 10, 2024

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Not Approved for Construction

Vehicle Tracking
Garbage Truck

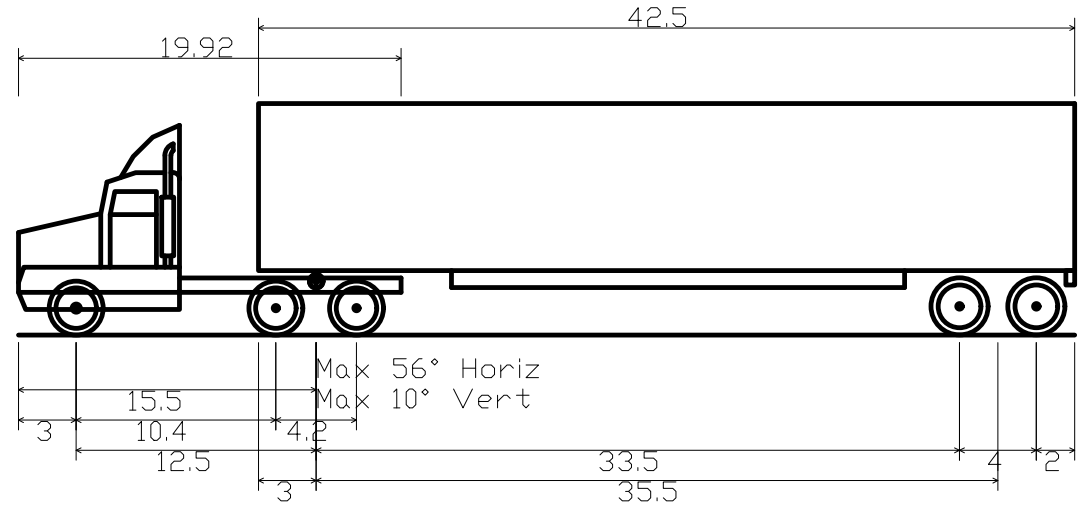
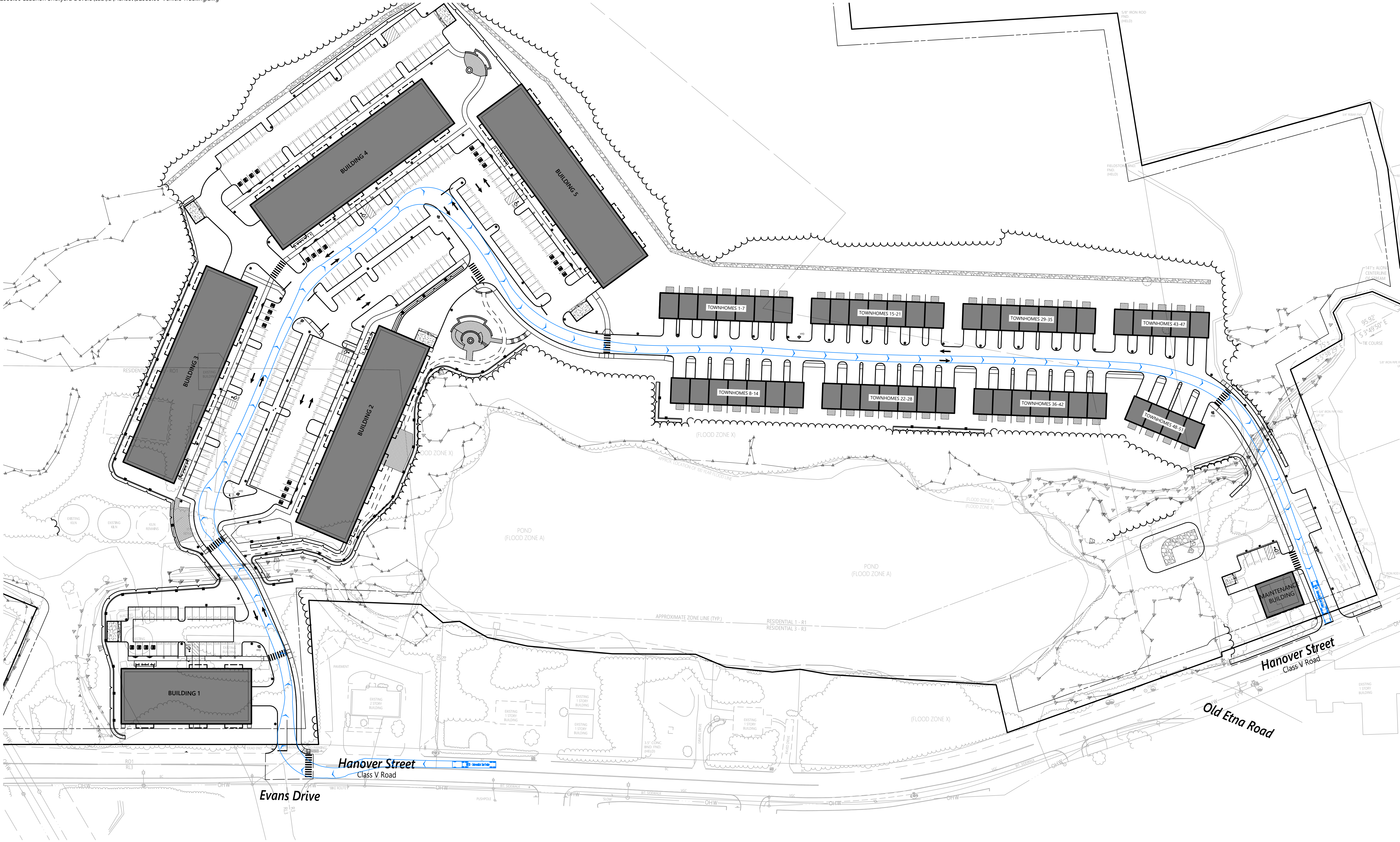


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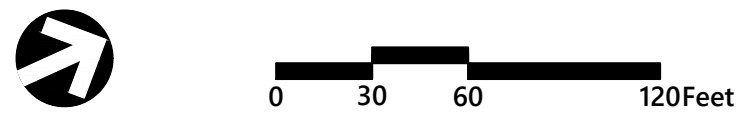
Sheet 37 of 53



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



WB-50 - Intermediate Semi-Trailer
Overall Length 55.00ft
Overall Width 8.50ft
Overall Body Height 12.05ft
Min Body Ground Clearance 1.33ft
Max Track Width 8.50ft
Lock-to-lock time 6.00s
Max Steering Angle (Virtual) 17.90°



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Designed by TMD
Checked by MJV

Issued for Permitting
Date May 10, 2024

Not Approved for Construction

Drawing Title
Vehicle Tracking
WB-50



C9.3

Sheet 38 of 53

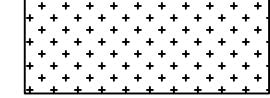
Project Number
52933.00

Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO IRRIGATION IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE ONE YEAR PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD OR DYING PLANTS AT THE END OF THE ONE YEAR GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.
6. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTAINING ALL LANDSCAPING, TO INCLUDE GRASS AND MULCH, IN GOOD HEALTHY CONDITION SO AS TO PRESENT A NEAT AND ORDERLY APPEARANCE. THE PROPERTY OWNER SHALL REPLACE ANY UNHEALTHY OR DEAD PLANT MATERIALS IN CONFORMANCE WITH THE LANDSCAPE PLAN APPROVED BY THE BOARD AS PART OF THE SITE PLAN.
7. THE PROPERTY OWNER SHALL PLANT MATERIALS APPROPRIATE TO THE SITES SOIL AND MOISTURE CONDITIONS, AS WELL AS ITS PROXIMITY TO SUBSTANTIAL OPEN SPACE AND WILDLANDS.

Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED AS "LAWN" OR "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
12. THESE PLANS ARE INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.

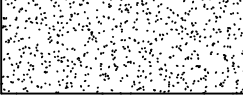


SHRUB LIST

CODE	BOTANICAL NAME	COMMON NAME
SHRUBS		
CAH	Clethra alnifolia 'Hummingbird'	'Hummingbird' Summersweet
CAE	Cornus alba 'Elegantissima'	Variegated RedTwig Dogwood
CR	Cornus racemosa	Gray Dogwood
CS	Cornus sericea	Red Twig Dogwood
CS1	Cornus stolonifera	Red Osier Dogwood
FG	Fothergilla gardenii	Dwarf Fothergilla
IG	Ilex glabra	Inkberry
IGS	Ilex glabra 'Shamrock'	Shamrock Inkberry
IVR	Ilex verticillata 'Red Sprite'	Red Sprite Winterberry
JBH	Juniperus horizontalis 'Bar Harbor'	Bar Harbor Creeping Juniper
RC	Rhododendron x 'Cunningham's Blush'	Cunningham's Blush Rhododendron
RA	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac
VN	Viburnum nudum 'Winterthur'	Smooth Witherod
GRASSES		
PVS	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass

SEEDING

1. AREAS INDICATED AS "RAIN GARDEN" ARE TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX FOR DETENTION PONDS AND MOIST AREAS, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. AREAS INDICATED AS "EROSION CONTROL SEED MIX" ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION EROSION CONTROL/RESTORATION MIX FOR DRY SITES, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.



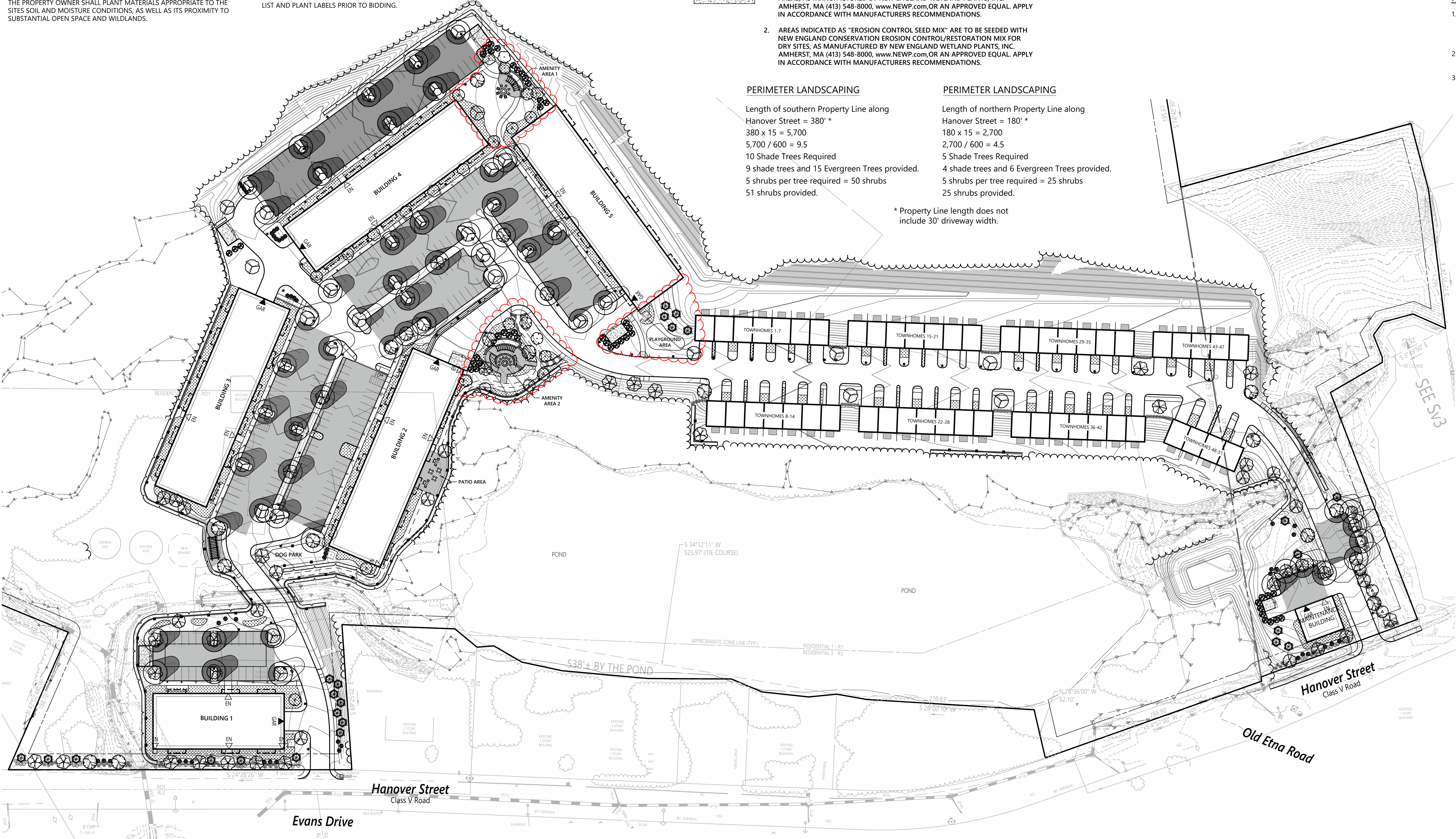
PERIMETER LANDSCAPING

Length of southern Property Line along Hanover Street = 380' *
380 x 15 = 5,700
5,700 / 600 = 9.5
10 Shade Trees Required
9 shade trees and 15 Evergreen Trees provided.
5 shrubs per tree required = 50 shrubs
51 shrubs provided.

PERIMETER LANDSCAPING

Length of northern Property Line along Hanover Street = 180' *
180 x 15 = 2,700
2,700 / 600 = 4.5
5 Shade Trees Required
4 shade trees and 6 Evergreen Trees provided.
5 shrubs per tree required = 25 shrubs
25 shrubs provided.

* Property Line length does not include 30' driveway width.



PLANT SCHEDULE - TREES

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
DECIDUOUS TREES				
AR	19	Acer rubrum	Red Maple	2 1/2 - 3" CAL.
BN	22	Betula nigra 'Heritage'	Heritage River Birch	10 - 12' HT./Multi-Stem
NS	18	Nyssa sylvatica	Black Tupelo	2 1/2 - 3" CAL.
PO	11	Platanus occidentalis	American Sycamore	2 1/2 - 3" CAL.
TA	16	Tilia americana	American Linden	2 1/2 - 3" CAL.
TC	23	Thuja cordata 'Greenspire'	Greenspire Littleleaf Linden	2 1/2 - 3" CAL.
EVERGREEN TREES				
JVB	19	Juniperus virginiana 'Blue Arrow'	Blue Arrow Juniper	6 - 7' HT.
JVC	27	Juniperus virginiana 'Corcorcor' TM	Emerald Sentinel Juniper	6 - 7' HT.
PG	24	Picea glauca	White Spruce	6 - 7' HT.
TO	45	Thuja occidentalis 'Nigra'	Dark American Arborvitae	6 - 7' HT.
FLOWERING TREES				
ACS	16	Amelanchier canadensis	Shadblow Serviceberry	8 - 10' HT./Multi-Stem
MS	8	Malus hybrid 'Spring Snow'	Spring Snow Crab Apple	2 1/2 - 3" CAL.
PF	6	Prunus sargentii 'Pink Flair'	Sargent Cherry	2 1/2 - 3" CAL.
SHRUBS				
IG	102	Ilex glabra	Inkberry	2 - 3' HT.
RC	55	Rhododendron x 'Cunningham's Blush'	Cunningham's Blush Rhododendron	24 - 30" HT.

Planting Requirements

1. AREAS CONTAINING ONE OR TWO ROWS OF PARKING SHALL BE PLANTED WITH DECIDUOUS TREES ALONG THE PERIMETER, SO PLACED TO SHADE 30% OF THE PARKING AREA.
2. DECIDUOUS TREES TO BE A MINIMUM 2.5 TO 3 INCHES IN CALIPER.
3. EVERGREEN TREES TO BE A MINIMUM OF 6 TO 7 FEET HEIGHT.

SHADE TREE CALCULATION BUILDING 1

8,690 sf parking area
x 30% = 2,607 sf
Shade area = 2,905 sf (33.8%)

SHADE TREE CALCULATION MAINT. BLDG.

4,536 sf parking area
x 30% = 1,361 sf
Shade area = 1,459 sf (32.1%)

SHADE TREE CALCULATION PARKING LOTS

69,245 sf parking area
x 30% = 20,774 sf
Shade area = 22,153 sf (31.9%)

The Brickyard
Residential Development
174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Apprv.
1	Completeness Review Comments	07/02/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF

Designed by	EJB	Checked by	
Issued for	Permitting	Date	May 10, 2024

Not Approved for Construction
Drawing Title
Overall Landscape and Tree Shading Plan

Drawing Number

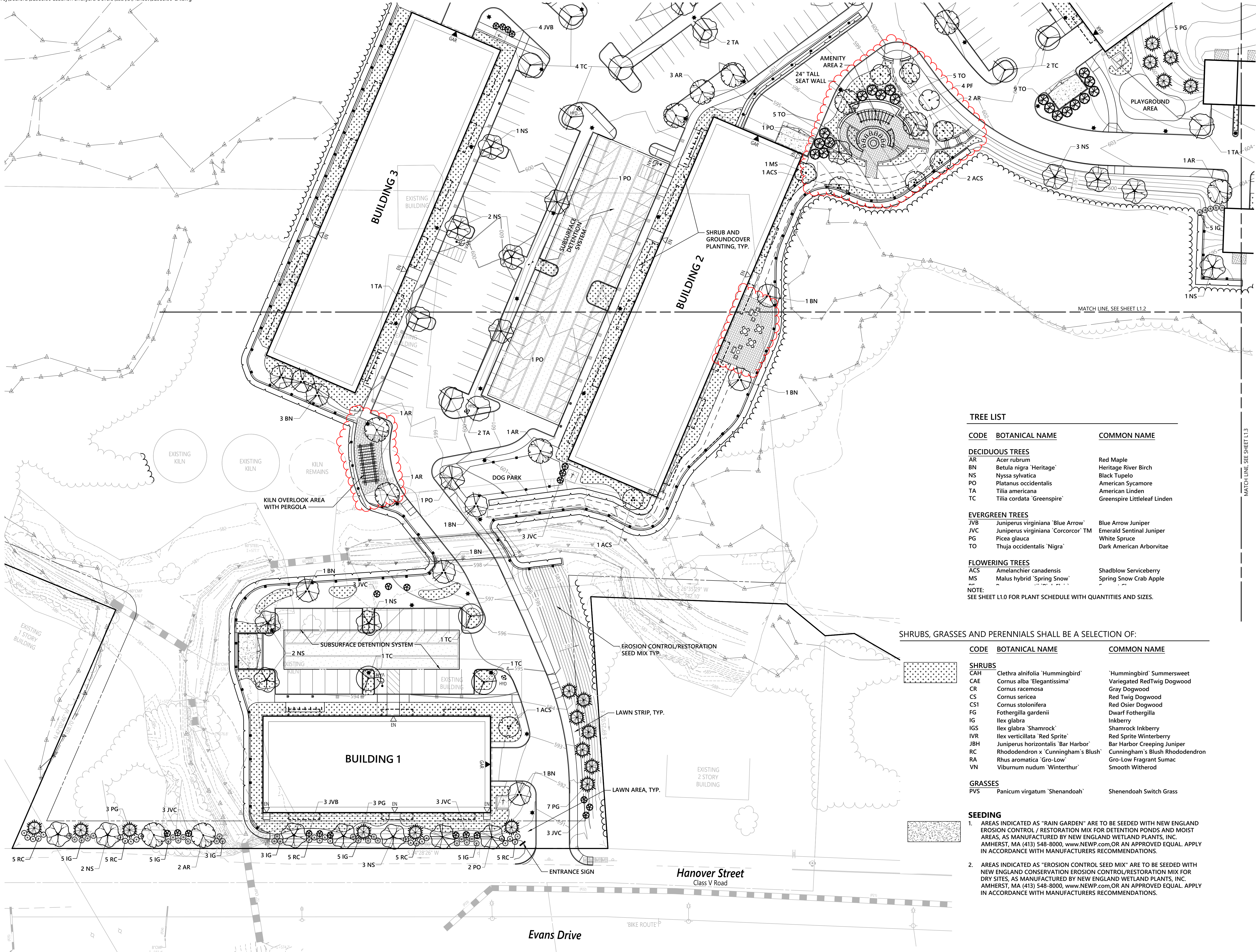
L1.0

Sheet 39 of 53

Project Number
52933.00



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



TREE LIST

CODE	BOTANICAL NAME	COMMON NAME
DECIDUOUS TREES		
AR	Acer rubrum	Red Maple
BN	Betula nigra 'Heritage'	Heritage River Birch
NS	Nyssa sylvatica	Black Tupelo
PO	Platanus occidentalis	American Sycamore
TA	Tilia americana	American Linden
TC	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden

EVERGREEN TREES		
JVB	Juniperus virginiana 'Blue Arrow'	Blue Arrow Juniper
JVC	Juniperus virginiana 'Corcorcor' TM	Emerald Sentinel Juniper
PG	Picea glauca	White Spruce
TO	Thuja occidentalis 'Nigra'	Dark American Arborvitae

FLOWERING TREES		
ACS	Amelanchier canadensis	Shadblow Serviceberry
MS	Malus hybrid 'Spring Snow'	Spring Snow Crab Apple

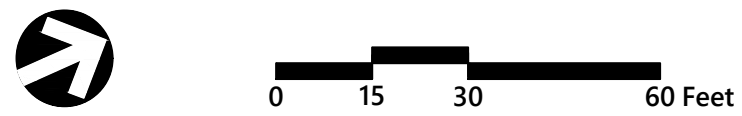
NOTE:
SEE SHEET L1.0 FOR PLANT SCHEDULE WITH QUANTITIES AND SIZES.

SHRUBS, GRASSES AND PERENNIALS SHALL BE A SELECTION OF:

CODE	BOTANICAL NAME	COMMON NAME
SHRUBS		
CAH	Clethra alnifolia 'Hummingbird'	'Hummingbird' Summersweet
CAE	Cornus alba 'Elegantissima'	Variegated Red Twig Dogwood
CR	Cornus racemosa	Gray Dogwood
CS	Cornus sericea	Red Twig Dogwood
CS1	Cornus stolonifera	Red Osier Dogwood
FG	Fothergilla gardenii	Dwarf Fothergilla
IG	Ilex glabra	Inkberry
IGS	Ilex glabra 'Shamrock'	Shamrock Inkberry
IVR	Ilex verticillata 'Red Sprite'	Red Sprite Winterberry
JBH	Juniperus horizontalis 'Bar Harbor'	Bar Harbor Creeping Juniper
RC	Rhododendron x 'Cunningham's Blush'	Cunningham's Blush Rhododendron
RA	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac
VN	Viburnum nudum 'Winterthur'	Smooth Witherod
GRASSES		
PVS	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass

SEEDING

- AREAS INDICATED AS "RAIN GARDEN" ARE TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX FOR DETENTION PONDS AND MOIST AREAS, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, www.NEWP.com, OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
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The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

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Designed by
EJB

Issued for
Permitting

Not Approved for Construction

Landscape
Plan 1

L1.1

Sheet
40 of
53

Project Number
52933.00

SHRUBS, GRASSES AND PERENNIALS SHALL BE A SELECTION OF:

CODE BOTANICAL NAME COMMON NAME

SHRUBS

CAH	Clethra alnifolia 'Hummingbird'	'Hummingbird' Summersweet
CAE	Cornus alba 'Elegantissima'	Variegated RedTwig Dogwood
CR	Cornus racemosa	Gray Dogwood
CS	Cornus sericea	Red Twig Dogwood
CS1	Cornus stolonifera	Red Osier Dogwood
FG	Fothergilla gardenii	Dwarf Fothergilla
IG	Ilex glabra	Inkberry
IGS	Ilex glabra 'Shamrock'	Shamrock Inkberry
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JBH	Juniperus horizontalis 'Bar Harbor'	Bar Harbor Creeping Juniper
RC	Rhododendron x 'Cunningham's Blush'	Cunningham's Blush Rhododendron
RA	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac
VN	Viburnum nudum 'Winterthur'	Smooth Witherod

GRASSES

PVS	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass
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SEEDING

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TREE LIST

CODE BOTANICAL NAME COMMON NAME

DECIDUOUS TREES

AR	Acer rubrum	Red Maple
BN	Betula nigra 'Heritage'	Heritage River Birch
NS	Nyssa sylvatica	Black Tupelo
PO	Platanus occidentalis	American Sycamore
TA	Tilia americana	American Linden
TC	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden

EVERGREEN TREES

JVB	Juniperus virginiana 'Blue Arrow'	Blue Arrow Juniper
JVC	Juniperus virginiana 'Corcorcor' TM	Emerald Sentinel Juniper
PG	Picea glauca	White Spruce
TO	Thuja occidentalis 'Nigra'	Dark American Arborvitae

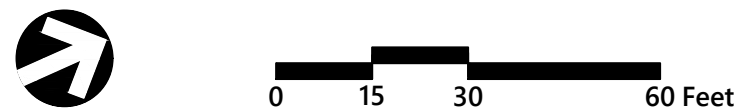
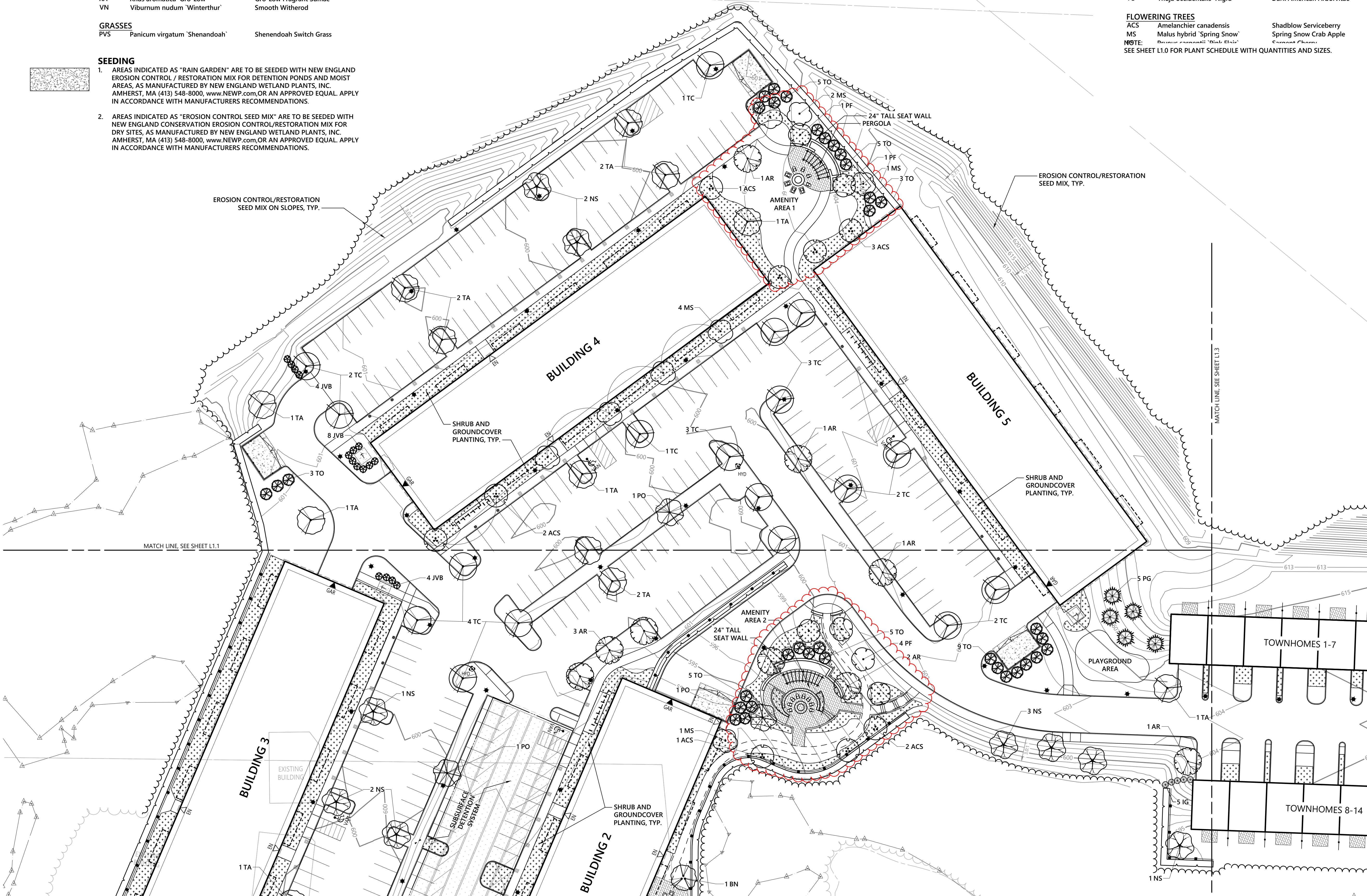
FLOWERING TREES

ACS	Amelanchier canadensis	Shadblow Serviceberry
MS	Malus hybrid 'Spring Snow'	Spring Snow Crab Apple
NOTE:	Prunus pennsylvanica 'Black Choke'	Smooth Cherry

SEE SHEET L1.0 FOR PLANT SCHEDULE WITH QUANTITIES AND SIZES.



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900



The Brickyard
Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd
1	Completeness Review Comments	07/02/24	DF
2	Revised Layout Resubmission	10/24/24	DF
3	Response to Comments Rev 2	12/04/24	DF

Designed by
EJB

Checked by
May 10, 2024

Not Approved for Construction

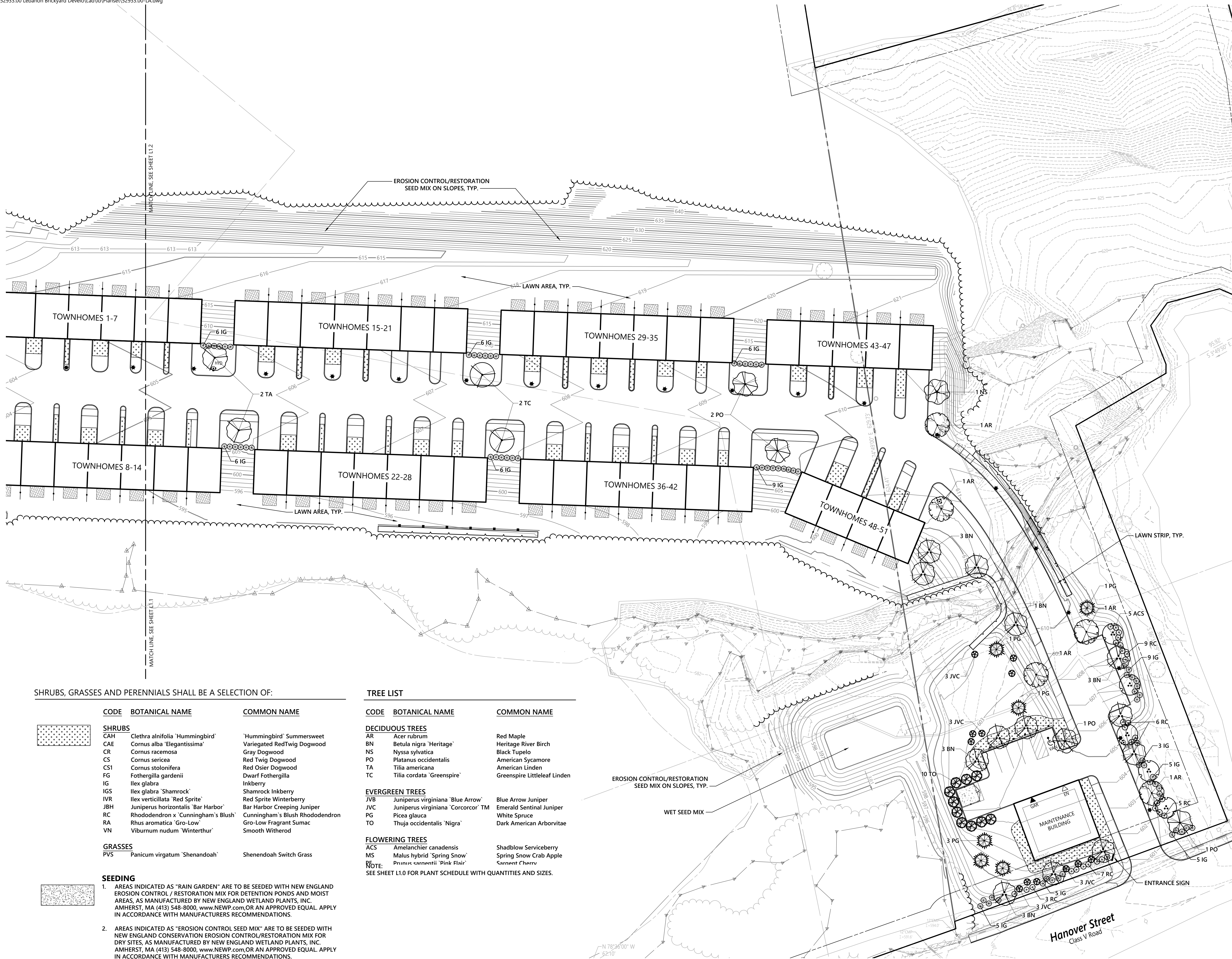
Drawing Title
Landscape
Plan 2

Drawing Number

L1.2

Sheet
41 of
53

Project Number
52933.00



SHRUBS, GRASSES AND PERENNIALS SHALL BE A SELECTION OF

<u>CODE</u>		<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
SHRUBS			
CAH		Clethra alnifolia 'Hummingbird'	'Hummingbird' Summersweet
CAE		Cornus alba 'Elegantissima'	Variegated RedTwig Dogwood
CR		Cornus racemosa	Gray Dogwood
CS		Cornus sericea	Red Twig Dogwood
CS1		Cornus stolonifera	Red Osier Dogwood
FG		Fothergilla gardenii	Dwarf Fothergilla
IG		Ilex glabra	Inkberry
IGS		Ilex glabra 'Shamrock'	Shamrock Inkberry
IVR		Ilex verticillata 'Red Sprite'	Red Sprite Winterberry
JBH		Juniperus horizontalis 'Bar Harbor'	Bar Harbor Creeping Juniper
RC		Rhododendron x 'Cunningham's Blush'	Cunningham's Blush Rhododendron
RA		Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac
VN		Viburnum nudum 'Winterthur'	Smooth Witherod
GRASSES			
PVS		Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass

SEEDING

1. AREAS INDICATED AS "RAIN GARDEN" ARE TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX FOR DETENTION PONDS AND MOST AREAS, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, WWW.NEWP.COM,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. AREAS INDICATED AS "EROSION CONTROL SEED MIX" ARE TO BE SEEDED WITH NEW ENGLAND CONSERVATION EROSION CONTROL/RESTORATION MIX FOR DRY SITES, AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. AMHERST, MA (413) 548-8000, WWW.NEWP.COM,OR AN APPROVED EQUAL. APPLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

TREE LIST

<u>CODE</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>
<u>DECIDUOUS TREES</u>		
AR	Acer rubrum	Red Maple
BN	Betula nigra 'Heritage'	Heritage River Birch
NS	Nyssa sylvatica	Black Tupelo
PO	Platanus occidentalis	American Sycamore
TA	Tilia americana	American Linden
TC	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden

EVERGREEN TREES

JVB	<i>Juniperus virginiana</i> 'Blue Arrow'	Blue Arrow Juniper
JVC	<i>Juniperus virginiana</i> 'Corcorcor'™	Emerald Sentinal Juniper
PG	<i>Picea glauca</i>	White Spruce
TO	<i>Thuja occidentalis</i> 'Nigra'	Dark American Arborvitae

FLOWERING TREES

ACS	Amelanchier canadensis	Shadblow Serviceberry
MS	Malus hybrid 'Spring Snow'	Spring Snow Crab Apple
PF	Prunus sargentii 'Pink Flair'	Sargent Cherry

NOTE:

SEE SHEET L1.0 FOR PLANT SCHEDULE WITH QUANTITIES AND SIZES.

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appvd
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Designed by	Checked by
EJB	

Permitting May 10, 2024

Not Approved for Construction

Drawing Title

Landscape

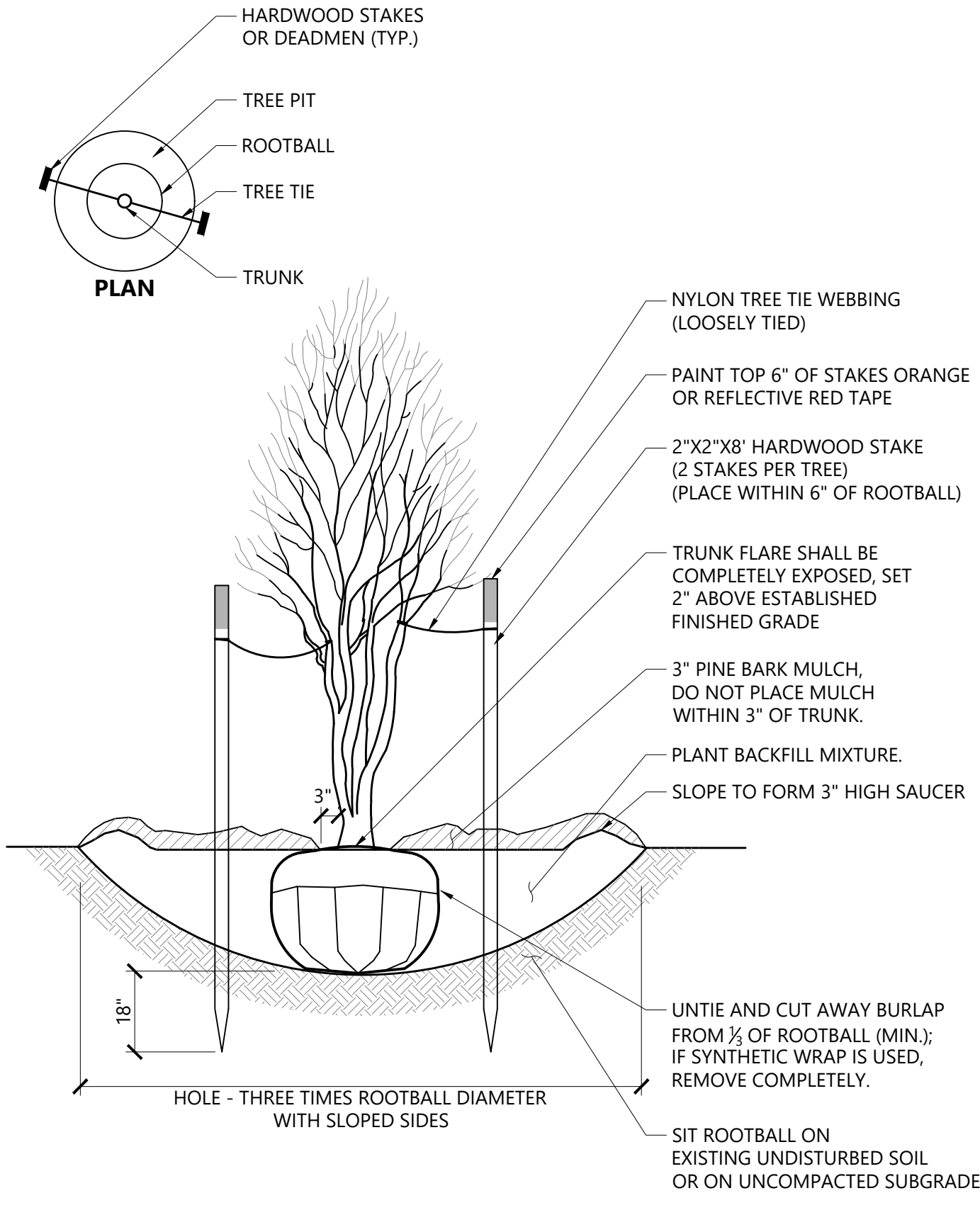
Plan 3

Drawing Number

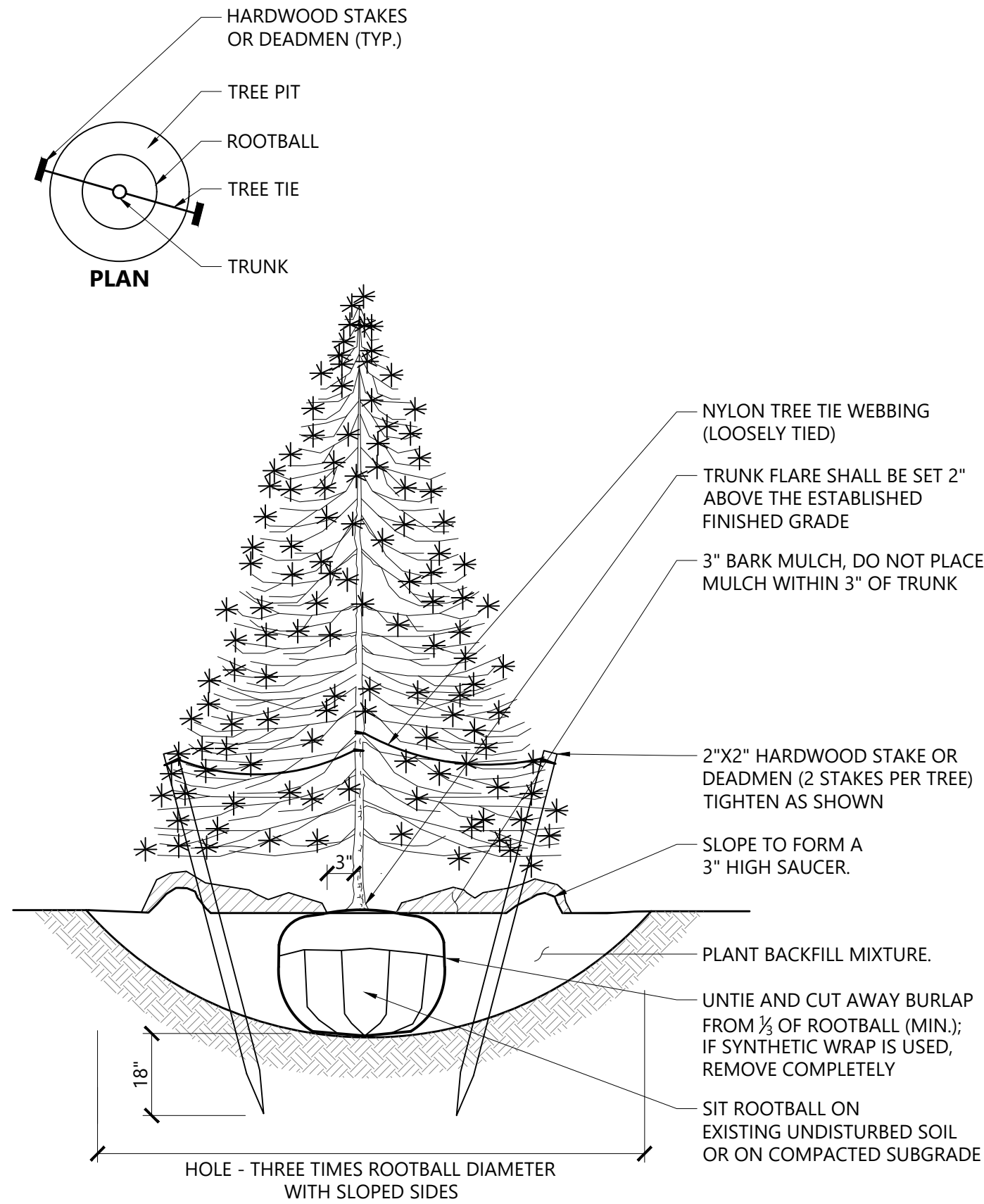
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Sheet 42 of 53

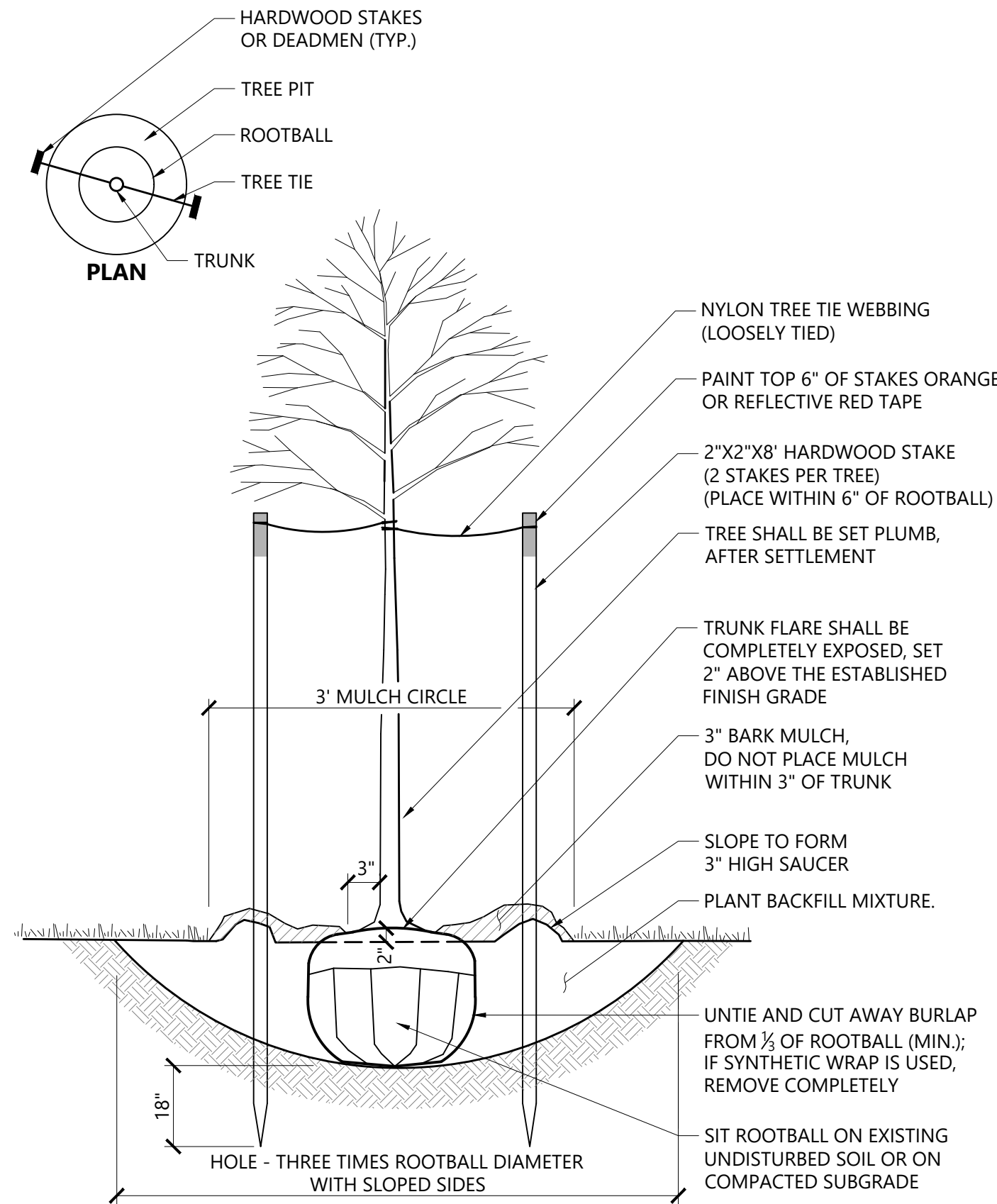
Project Number
52933.00



Multistem Tree Planting 9/21
N.T.S. Source: VHB LD_606



Evergreen Tree Planting 9/21
N.T.S. Source: VHB LD_604



Tree Planting (For Trees Under 4" Caliper) 9/21
N.T.S. Source: VHB LD_602

PLANT SPACING	
PLANT SPACING("A")	ROW SPACING ("B")
6 IN. O.C.	5 IN. O.C.
8 IN. O.C.	7 IN. O.C.
10 IN. O.C.	8 1/2 IN. O.C.
12 IN. O.C.	10 1/2 IN. O.C.
15 IN. O.C.	13 IN. O.C.
18 IN. O.C.	16 IN. O.C.
24 IN. O.C.	21 IN. O.C.
30 IN. O.C.	26 IN. O.C.
36 IN. O.C.	30 IN. O.C.
48 IN. O.C.	42 IN. O.C.
54 IN. O.C.	48 IN. O.C.
60 IN. O.C.	54 IN. O.C.

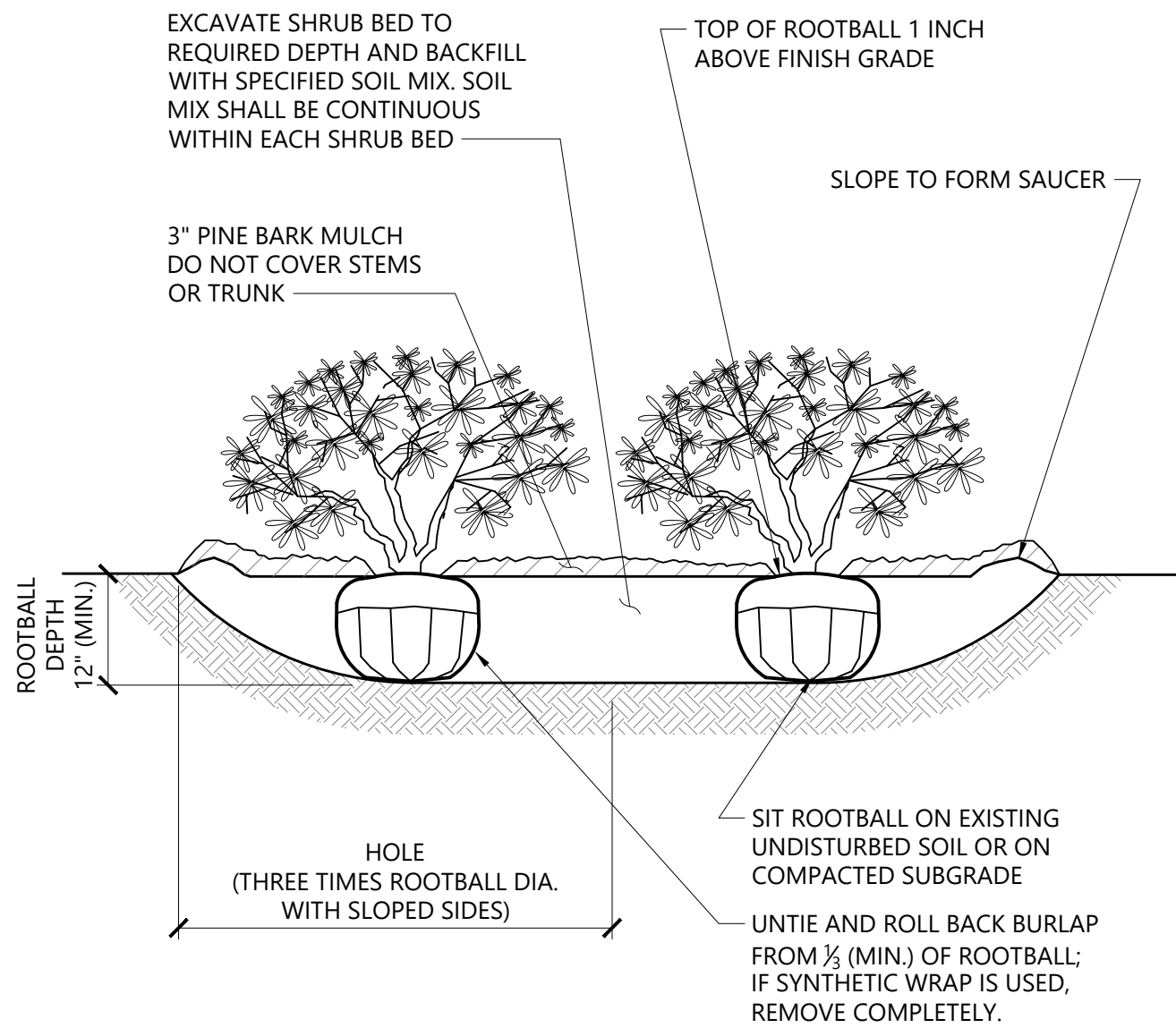
PLAN

- "A"
- "B"
- 60"
- 60"
- 45"
- 45"

ELEVATION

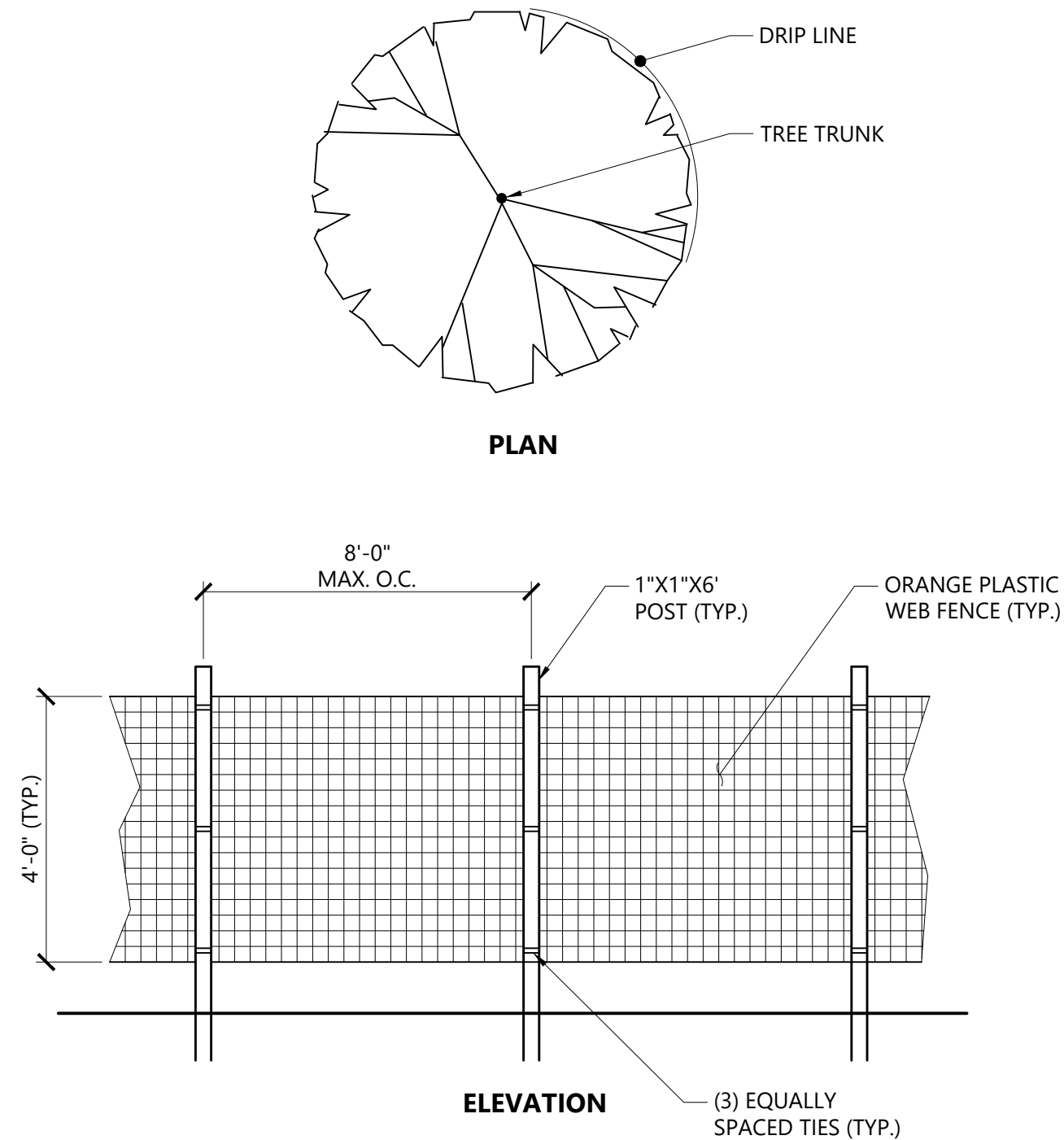
- 2" MULCH
- FINISH GRADE
- PLANTING SOIL CONTINUOUS IN BED
- UNDISTURBED OR COMPACTED SUBGRADE
- 12" (MIN.)

Perennial and Ornamental Grass Planting 1/16
N.T.S. Source: VHB LD_618



- NOTES**
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

Shrub Bed Planting 1/16
N.T.S. Source: VHB LD_601



- NOTES**
1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

Tree Protection Fence 1/16
N.T.S. Source: VHB LD_610

The Brickyard Residential Development

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Lebanon, New Hampshire 03766

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Issued for	Date
EJB	

Permitting May 10, 2024

Not Approved for Construction

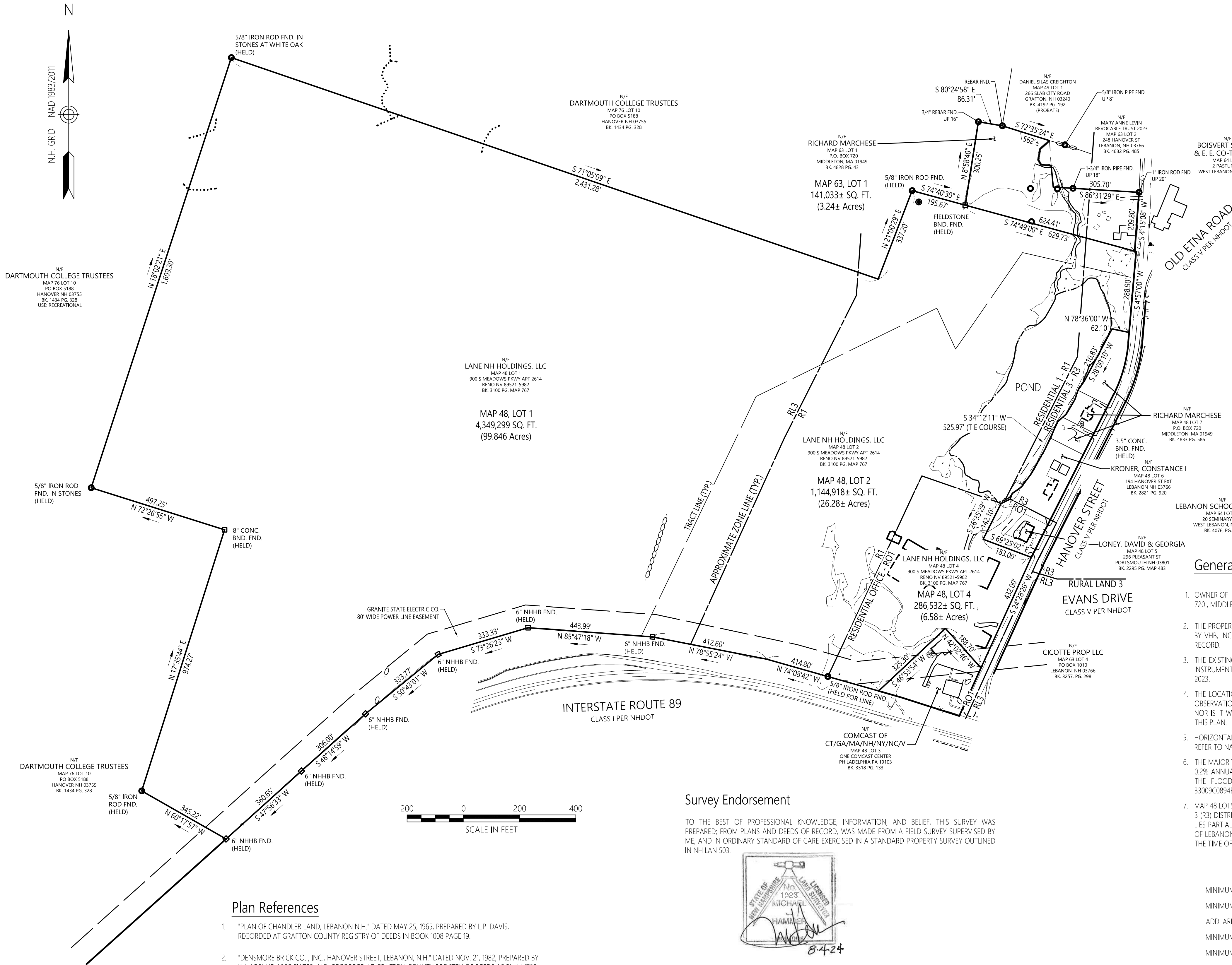
Landscape Details

Drawing Number

L2.1

Sheet of 43 53

Project Number
52933.00

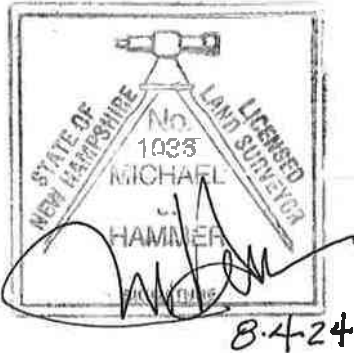


Plan References

- "PLAN OF CHANDLER LAND, LEBANON N.H." DATED MAY 25, 1965, PREPARED BY L.P. DAVIS, RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS IN BOOK 1008 PAGE 19.
- "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 1700.
- "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED OCT. 4, 1983, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2089.
- "DENSMORE BRICK CO., INC., HANOVER STREET, LEBANON, N.H." DATED NOV. 21, 1982, REVISED APRIL 24, 1984, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 2934.
- "HODGES DEVELOPMENT CORP., HANOVER STREET, GRAFTON COUNTY, LEBANON, N.H." DATED APRIL 4, 1986, REVISED THROUGH 5/4/89, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 5625.
- "ELBTHAL REALTY TRUST, LEBANON, N.H." DATED JULY 3, 1980, PREPARED BY K.A. LECLAIR ASSOCIATES, INC., RECORDED AT GRAFTON COUNTY REGISTRY OF DEEDS AS PLAN 6453.
- "STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS, PLANS OF PROPOSED FEDERAL AID PROJECT, I 89-(I45)53, N.H. PROJECT NO. P-3821-B" UNDATED, ON FILE WITH NHDOT AS PLAN P5821.B.

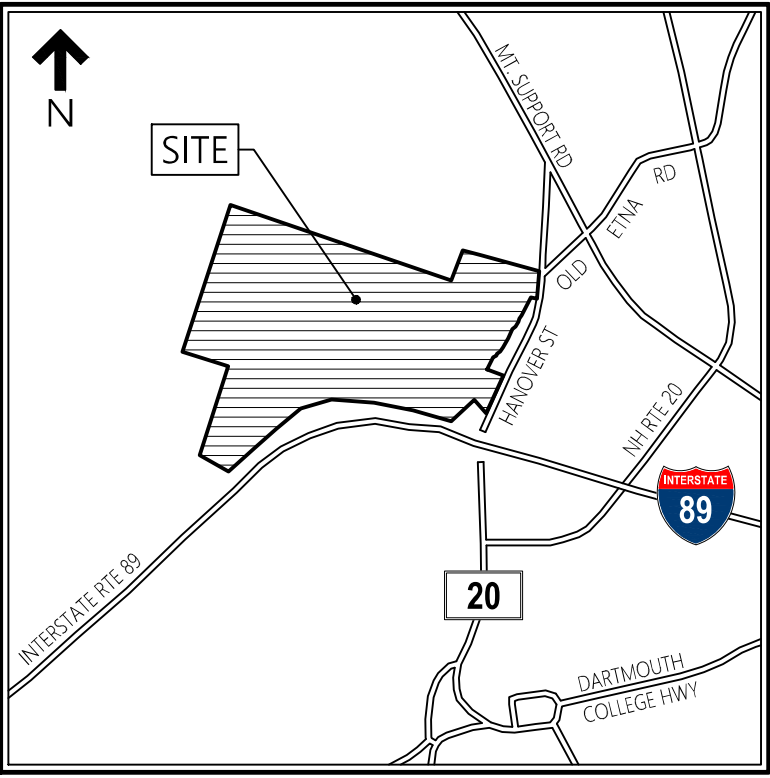
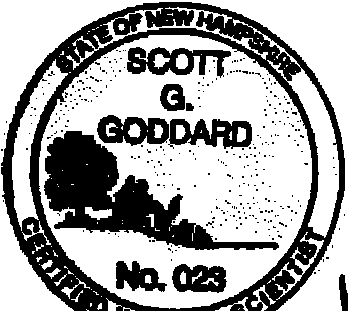
Survey Endorsement

TO THE BEST OF PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF, THIS SURVEY WAS PREPARED; FROM PLANS AND DEEDS OF RECORD, WAS MADE FROM A FIELD SURVEY SUPERVISED BY ME, AND IN ORDINARY STANDARD OF CARE EXERCISED IN A STANDARD PROPERTY SURVEY OUTLINED IN NH LAN 503.



Wetland Endorsement

THIS IS TO CERTIFY THAT THE WETLANDS HAVE BEEN DELINEATED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (TECHNICAL REPORT Y-87-1)



Locus Map

(NOT TO SCALE)

Legend

- ① DRAIN MANHOLE
- ② CATCH BASIN
- ③ SEWER MANHOLE
- ④ ELECTRIC MANHOLE
- ⑤ TELEPHONE MANHOLE
- ⑥ MANHOLE
- ⑦ HAND HOLE
- ⑧ WATER GATE
- ⑨ FIRE HYDRANT
- ⑩ GAS GATE
- ⑪ BOLLARD
- ⑫ STREET SIGN
- ⑬ LIGHT POLE
- ⑭ UTILITY POLE
- ⑮ GUY POLE
- ⑯ GUY WIRE
- ⑰ MONITORING WELL
- ⑱ FLOOD LIGHT
- ⑲ PEDESTRIAN SIGNAL
- ⑳ MAST ARM
- ㉑ FLASHING SIGNAL
- ㉒ WELL
- ㉓ MARSH
- ㉔ F.F.E. = 45.27'
- ㉕ FINISHED FLOOR ELEVATION
- ㉖ DASHED WHITE LINE
- ㉗ EDGE OF PAVEMENT
- ㉘ VERTICAL GRANITE CURB
- ㉙ SLOPED GRANITE EDGE
- ㉚ GUARD RAIL
- ㉛ CHAIN LINK FENCE
- ㉜ DRAINAGE LINE
- ㉝ SEWER LINE
- ㉞ OVERHEAD WIRE
- ㉟ UNDERGROUND ELECTRIC
- ㊱ TELEPHONE LINE
- ㊲ GAS LINE
- ㊳ WATER LINE
- ㊴ STONE WALL
- ㊵ TREE LINE
- ㊶ LIMIT OF BANK
- ㊷ VEGETATED WETLAND BOUNDARY

General Notes

- OWNER OF RECORD OF TAX MAP 48 LOTS 1, 2, AND 4 IS BRICKYARD ONE NOMINEE TRUST, P.O. BOX 720, MIDDLETON, MASSACHUSETTS 01949, GCRD BOOK 4865 PAGE 128.
- THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN SEPTEMBER AND OCTOBER OF 2022, APRIL 2023, AND FROM DEEDS AND PLANS OF RECORD.
- THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY VHB, INC. FROM SEPTEMBER THRU NOVEMBER, 2022, AND APRIL 2023.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY ARE NOT WARRANTED TO BE EXACTLY LOCATED NOR IS IT WARRANTED THAT ALL UNDERGROUND UTILITIES OR OTHER STRUCTURES ARE SHOWN ON THIS PLAN.
- HORIZONTAL DATUM IS BASED ON NH GRID SYSTEM, NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO NAVD OF 1988.
- THE MAJORITY OF MAP 48, LOTS 1, 2 & 4 LIES WITHIN ZONE X (UNSHADED) (AREAS TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) WITH THE EXCEPTION OF THE POND (ZONE A) AS SHOWN ON THE FLOOD INSURANCE RATE MAP FOR GRAFTON COUNTY, NEW HAMPSHIRE, MAP NUMBER 33009C0894E, EFFECTIVE DATE FEBRUARY 20, 2008.
- MAP 48 LOTS 1 & 2 LIE PARTIALLY WITHIN THE RURAL LAND 3 (RL3), RESIDENTIAL 1 (R1) AND RESIDENTIAL 3 (R3) DISTRICTS, MAP 48 LOT 4 LIES ENTIRELY WITHIN THE RESIDENTIAL OFFICE 1 (RO1), MAP 63 LOT 1 LIES PARTIALLY IN THE R1 AND R3 DISTRICTS AS SHOWN ON THE "OFFICIAL ZONING MAP OF THE CITY OF LEBANON, NH", DATED JUNE 1, 2020. DIMENSIONAL REQUIREMENTS FOR THE ZONING DISTRICTS AT THE TIME OF THIS SURVEY ARE:

	RL3	R1 & RO1	R1 & RO1	R1 & RO1
		(CLASS 1)	(CLASS 2)	(CLASS 3)
MINIMUM LOT AREA	10 AC.	10K SF	15K SF	40K SF
MINIMUM LOT WIDTH	N/A	75 FT	75 FT	100 FT
ADD. AREA PER D.U. AFTER TWO	N/A	3K SF	5K SF	15K SF
MINIMUM FRONT YARD SETBACK	50 FT	20 FT	20 FT	25 FT
MINIMUM SIDE YARD SETBACK	50 FT	15 FT	15 FT	25 FT
MINIMUM REAR YARD SETBACK	50 FT	20 FT	20 FT	30 FT
MAXIMUM BUILDING HEIGHT	35 FT	45 FT*	45 FT*	45 FT*
MAXIMUM BUILDING COVERAGE	1%	25%	20%	15%

* WITHIN THE R1 DISTRICT, THE BUILDING HEIGHT MAY BE INCREASED TO 55 FT TO ACCOMMODATE A PARKING STRUCTURE UNDERNEATH OR WITHIN THE PROPOSED BUILDING (SEE SECTION 308.4).

- THE WETLANDS SHOWN ON THIS PLAN WERE FLAGGED BY GODDARD CONSULTING, LLC AND LOCATED IN NOVEMBER 2022.
- THE TREE SYMBOL OUTLINE SHOWN ON THIS PLAN DOES NOT REPRESENT THE ACTUAL TREE CANOPY.
- FOOT TRAILS WERE OBSERVED CROSSING THE NORTH AND WEST LOT LINES AS SHOWN. NO DOCUMENTS WERE FOUND AT THE GCRD PROVIDING RIGHTS OF ACCESS OR USE.
- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND MAY BE SUBJECT TO ADDITIONAL INFORMATION DISCLOSED IN SUCH.

The Brickyard

Hanover Street Lebanon, Grafton County, N.H.

No.	Revision	Date	Apprvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH

Designed by	Checked by
Issued for	Date

April 1, 2024

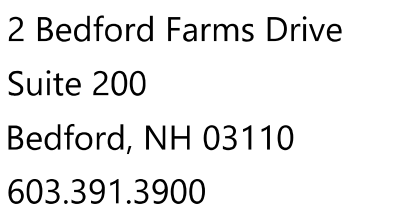
Boundary Plan of Land

Drawing Number

Sv-1

Sheet of
44 53

Project Number
52933.00



- ① DRAIN MANHOLE
- ② CATCH BASIN
- ③ SEWER MANHOLE
- ④ ELECTRIC MANHOLE
- ⑤ TELEPHONE MANHOLE
- ⑥ MANHOLE
- HH HAND HOLE
- WATER GATE
- FIRE HYDRANT
- GAS GATE
- BOLLARD
- STREET SIGN
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- GUY WIRE
- MONITORING WELL
- FLOOD LIGHT
- PEDESTRIAN SIGNAL
- MAST ARM
- FLASHING SIGNAL
- WELL
- MARSH

F.F.E. = 45.27'

EEP	DW1	DASHED WHITE LINE
VSC		EDGE OF PAVEMENT
SGE		VERTICAL GRANITE CURB
		SLOPED GRANITE EDGE
		GUARD RAIL
		CHAIN LINK FENCE
		DRAINAGE LINE
		SEWER LINE
-OHW		OVERHEAD WIRE
ε		UNDERGROUND ELECTRIC
	T	TELEPHONE LINE
G		GAS LINE
W		WATER LINE
		STONE WALL
		TREE LINE
		LIMIT OF BANK
WF100		VEGETATED WETLAND BOUNDARY

Designed by	Checked by
Issued for	Date

April 1, 2024

Drawing Number

Sv-2

Project Number
52933.00



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

- ① DRAIN MANHOLE
- ② CATCH BASIN
- ③ SEWER MANHOLE
- ④ ELECTRIC MANHOLE
- ⑤ TELEPHONE MANHOLE
- ⑥ MANHOLE
- ⑦ HAND HOLE
- ⑧ WATER GATE
- ⑨ FIRE HYDRANT
- ⑩ GAS GATE
- ⑪ BOLLARD
- ⑫ STREET SIGN
- ⑬ LIGHT POLE
- ⑭ UTILITY POLE
- ⑮ GUY POLE
- ⑯ GUY WIRE
- ⑰ MONITORING WELL
- ⑱ FLOOD LIGHT
- ⑲ PEDESTRIAN SIGNAL
- ⑳ MAST ARM
- ㉑ FLASHING SIGNAL
- ㉒ WELL
- ㉓ MARSH
- ㉔ F.F.E. = 45.27'
- ㉕ FINISHED FLOOR ELEVATION
- ㉖ DOUBLE YELLOW LINE
- ㉗ DASHED WHITE LINE
- ㉘ EDGE OF PAVEMENT
- ㉙ SLOPED GRANITE CURB
- ㉚ SLOPED GRANITE EDGE
- ㉛ GUARD RAIL
- ㉜ CHAIN LINK FENCE
- ㉝ DRAINAGE LINE
- ㉞ SEWER LINE
- ㉟ OVERHEAD WIRE
- ㊱ UNDERGROUND ELECTRIC
- ㊲ TELEPHONE LINE
- ㊳ GAS LINE
- ㊴ WATER LINE
- ㊵ STONE WALL
- ㊶ TREE LINE
- ㊷ LIMIT OF BANK
- ㊸ VEGETATED WETLAND BOUNDARY

The Brickyard

Hanover Street
Lebanon, Grafton County, N.H.

No.	Revision	Date	Appvd.
1	RESPONSE TO COMMENTS UPDATE	8/06/2024	MJH

Designed by	Checked by
Issued for	Date
	April 1, 2024

Drawing Title
**Existing Conditions
Plan of Land**

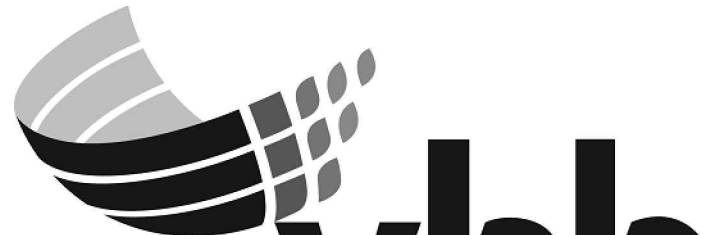
Drawing Number

Sv-3

Sheet 46 of 53

Project Number
52933.00





2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

FIRE PROTECTION DURING CONSTRUCTION

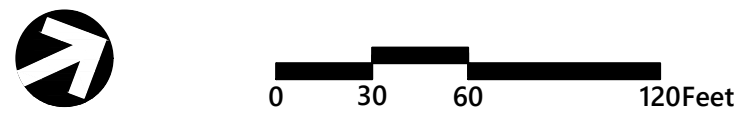
- FIRE PROTECTION DURING CONSTRUCTION SHALL MEET THE REQUIREMENTS OF NFPA 1141, SECTION 9 AND THE PROVISIONS OF NFPA 241, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION, AND DEMOLITION OPERATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- BEFORE THE INFRASTRUCTURE IS INSTALLED, AND PRIOR TO THE LOCATION AND CONSTRUCTION OF BUILDINGS OR PORTIONS THEREOF, FIRE PROTECTION PLANS SHALL BE SUBMITTED TO AND APPROVED BY THE LEBANON FIRE DEPARTMENT.
 - PRIOR TO THE DELIVERY OF COMBUSTIBLE MATERIALS AND THE START OF ANY BUILDING CONSTRUCTION, THE WATER SUPPLY FOR FIRE PROTECTION, WHETHER TEMPORARY OR PERMANENT, SHALL BE ACCEPTABLE TO THE LEBANON FIRE DEPARTMENT AND SHALL BE INSTALLED AND AVAILABLE FOR USE.
 - PRIOR TO THE FINAL OCCUPANCY OF BUILDING, THE PERMANENT WATER SUPPLY FOR FIRE PROTECTION, INCLUDING FIRE HYDRANT AND FIRE SUPPRESSION SYSTEMS, SHALL BE INSTALLED, TESTED, AND ACCEPTABLE TO THE LEBANON FIRE DEPARTMENT.
 - FIRE DEPARTMENT VEHICULAR ACCESS TO ALL BUILDINGS UNDER CONSTRUCTION SHALL BE PROVIDED AT ALL TIMES. IN AREAS WHERE GROUND SURFACES ARE SOFT OR LIKELY TO BECOME SOFT, HARD ALL-WEATHER SURFACE ACCESS ROADS SHALL BE PROVIDED.
 - COMBUSTIBLE TRASH AND DEBRIS SHALL BE PLACED COMPLETELY WITHIN AN APPROVED CONTAINER OR REMOVED FROM THE SITE AT THE CLOSE OF EACH WORKING DAY.
 - FLAMMABLE OR COMBUSTIBLE LIQUIDS OR GASES SHALL BE STORED, HANDLED, AND USED ON THE CONSTRUCTION SITE IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF NFPA 30, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE; NFPA 54, NATIONAL FUEL GAS CODE; AND NFPA 58, LIQUEFIED PETROLEUM GAS CODE.
 - TEMPORARY HEATING DEVICES SHALL BE OF AN APPROVED TYPE, LOCATED AWAY FROM COMBUSTIBLE MATERIALS, AND ATTENDED AND MAINTAINED BY COMPETENT PERSONNEL.
 - SMOKING SHALL BE PROHIBITED, EXCEPT IN THOSE AREAS WHERE APPROVED. WHERE REQUIRED BY THE LEBANON FIRE DEPARTMENT, "NO SMOKING" SIGNS SHALL BE POSTED.
 - CUTTING AND WELDING OPERATIONS SHALL BE IN ACCORDANCE WITH NFPA 51B, STANDARD FOR FIRE PREVENTION DURING WELDING, CUTTING, AND OTHER HOT WORK.
 - EXTINGUISHING EQUIPMENT - AT LEAST ONE PORTABLE FIRE EXTINGUISHER HAVING A RATING OF AT LEAST 10-A-120-B-C SHALL BE WITHIN A TRAVEL DISTANCE OF 75 FT OR LESS TO ANY POINT OF A BUILDING UNDER CONSTRUCTION. PERSONNEL NORMALLY ON THE CONSTRUCTION SITE SHALL BE INSTRUCTED IN THE USE OF THE FIRE EXTINGUISHERS PROVIDED.

FIRE PROTECTION SCHEDULE

- F1 8" DI WATER MAIN
- F2 FIRE HYDRANT
- F3 8" DI WATER SERVICE LINE
- F4 26' WIDE PARKING LOT AISLE
- F5 EXISTING VEGETATION IN THIS AREA SHALL BE THINNED AND PRUNED REGULARLY AND ALL DEAD MATERIALS SHALL BE REMOVED REGULARLY
- F6 BUILDING FACE EXPOSED TO WILDLAND, TYP

LEGEND

- 30 FOOT DEFENSIBLE ZONE
- SHARED PARKING AISLE AND FIRE LANE
- EXISTING VEGETATION IN THIS AREA SHALL BE THINNED AND PRUNED REGULARLY AND ALL DEAD MATERIALS SHALL BE REMOVED REGULARLY



The Brickyard Residential Development

174 Hanover Street Extension
Lebanon, New Hampshire 03766

No.	Revision	Date	Appr'd

Designed by	TMD	Checked by	MJV
Issued for		Date	

Permitting November 22, 2024

Not Approved for Construction

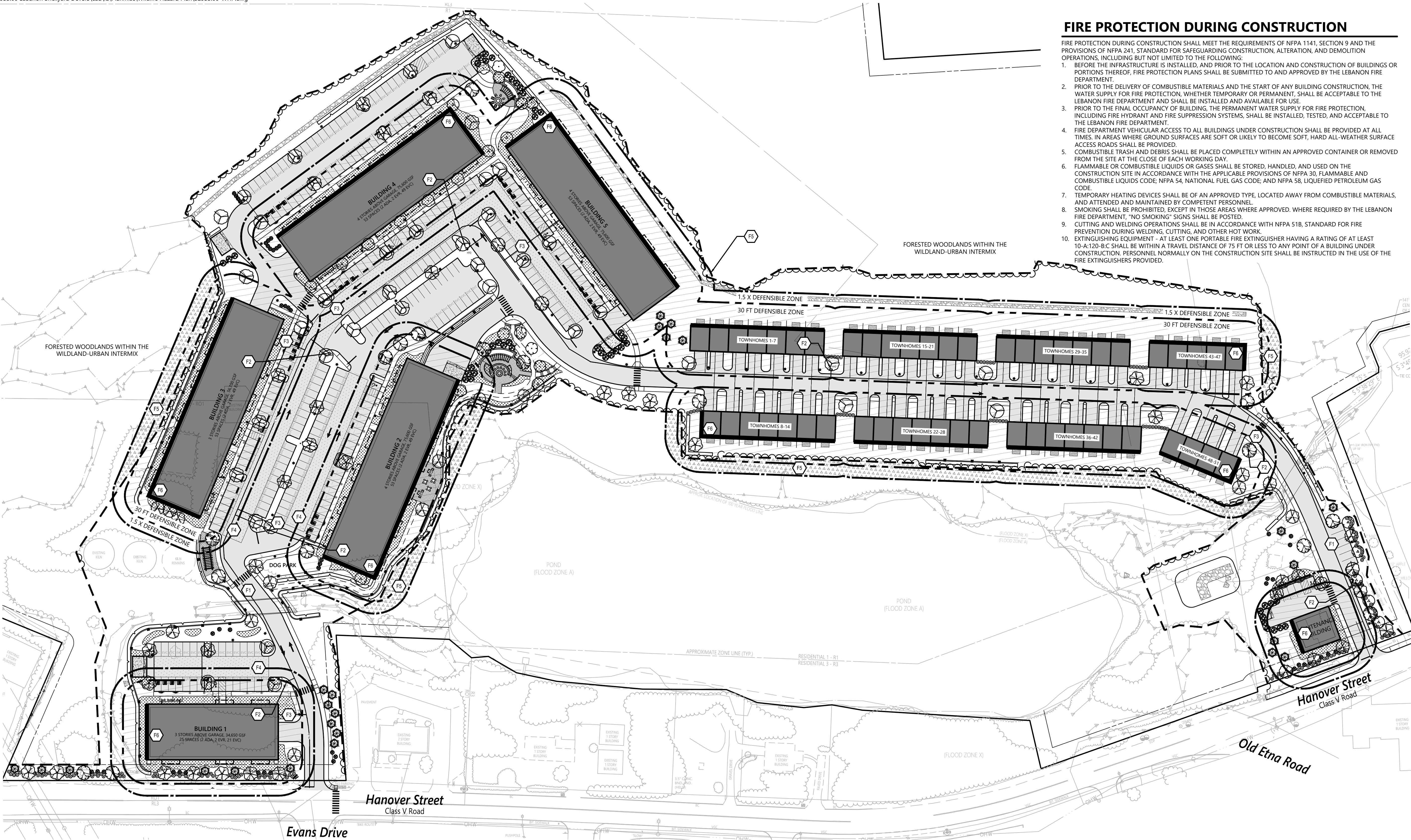
Drawing Title
**Wildland-Urban
Interface Plan**

Drawing Number

WU-1

Sheet 47 of 53

Project Number
52933.00



CONSTRUCTION REQUIREMENTS:

- ALL NEW CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 1141; NFPA 1144; AND ALL APPLICABLE LOCAL BUILDING CODES. ALL CONSTRUCTION MATERIALS SHALL MEET THE REQUIREMENTS OF NFPA 1144, SECTION 5, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- ROOF MATERIALS
 - ROOF COVERING ASSEMBLIES SHALL BE ONLY LISTED ROOF COVERING, TESTED AND RATED IN ACCORDANCE WITH ASTM E 108, STANDARD TEST METHODS FOR FIRE TESTS OF ROOF COVERINGS, OR EQUIVALENT AND THE SPECIFIC CLASS SHALL BE CONSISTENT WITH THE WILDLAND FIRE HAZARD ASSESSMENT.
 - WHERE THE ROOF PROFILE ALLOWS SPACE BETWEEN THE ROOF COVERING, AND THE ROOF DECKING, THE SPACES SHALL BE CONSTRUCTED TO PREVENT THE INTRUSION OF FLAMES AND EMBERS, BE FIRE STOPPED WITH APPROVED MATERIALS, OR HAVE ADDITIONAL ASSEMBLY COMPONENTS OF NONCOMBUSTIBLE MATERIALS TO PREVENT IGNITION.
 - ROOF GUTTERS, DOWNSPOUTS, AND CONNECTORS SHALL BE NONCOMBUSTIBLE AND COVERED TO PREVENT THE ACCUMULATION OF DEBRIS. EAVES SHALL BE BOXED IN WITH $\frac{1}{8}$ " NOMINAL SHEATHING OR NONCOMBUSTIBLE MATERIALS.
 - VENTS SHALL BE SCREENED WITH A CORROSION-RESISTANT, NONCOMBUSTIBLE WIRE MESH WITH OPENINGS NOT TO EXCEED NOMINAL $\frac{1}{4}$ " IN SIZE.
 - VENTILATION OPENINGS IN VERTICAL WALLS SHALL BE COVERED WITH NOMINAL $\frac{1}{4}$ " CORROSION-RESISTANT METAL MESH SCREEN OR OTHER NONCOMBUSTIBLE MATERIAL OFFERING EQUIVALENT PROTECTION. NO ATTIC VENTILATION OPENINGS SHALL BE PERMITTED IN SOFFITS, IN EAVE OVERHANGS, BETWEEN RAFTERS AT EAVES, OR IN OTHER OVERHANGING AREAS ON THOSE EXPOSURES FACING HAZARDOUS VEGETATION.
 - OVERHANGING PROJECTIONS - ALL PROJECTIONS (EXTERIOR BALCONIES, CARPORTS, DECKS, PATIO COVERS, UNENCLOSED ROOFS AND FLOORS, ETC) SHALL BE OF HEAVY TIMBER CONSTRUCTION; BE CONSTRUCTED OF NONCOMBUSTIBLE MATERIAL, FIRE-RETARDANT-TREATED WOOD, OR OTHER IGNITION-RESISTANT MATERIALS; OR BE A 1-HOUR FIRE-RATED ASSEMBLY.
 - OVERHANGING BUILDINGS - THE UNDERSIDE OF OVERHANGING BUILDINGS AND SUPPORTING STRUCTURAL ELEMENTS SHALL BE OF HEAVY TIMBER CONSTRUCTION; BE CONSTRUCTED OF NONCOMBUSTIBLE MATERIAL, FIRE-RETARDANT-TREATED WOOD, OR OTHER IGNITION-RESISTANT MATERIALS; OR BE A 1-HOUR FIRE RATED ASSEMBLY.
 - EXTERIOR VERTICAL WALLS:
 - EXTERIOR VERTICAL WALLS SHALL MEET THE REQUIREMENTS FOR HEAVY TIMBER CONSTRUCTION, IGNITION-RESISTIVE MATERIAL, FIRE RETARDANT TREATED WOOD, OR BE A MINIMUM 20-MINUTE FIRE-RATED ASSEMBLY WHERE WALLS ARE POTENTIALLY EXPOSED TO A WILDLAND FIRE;

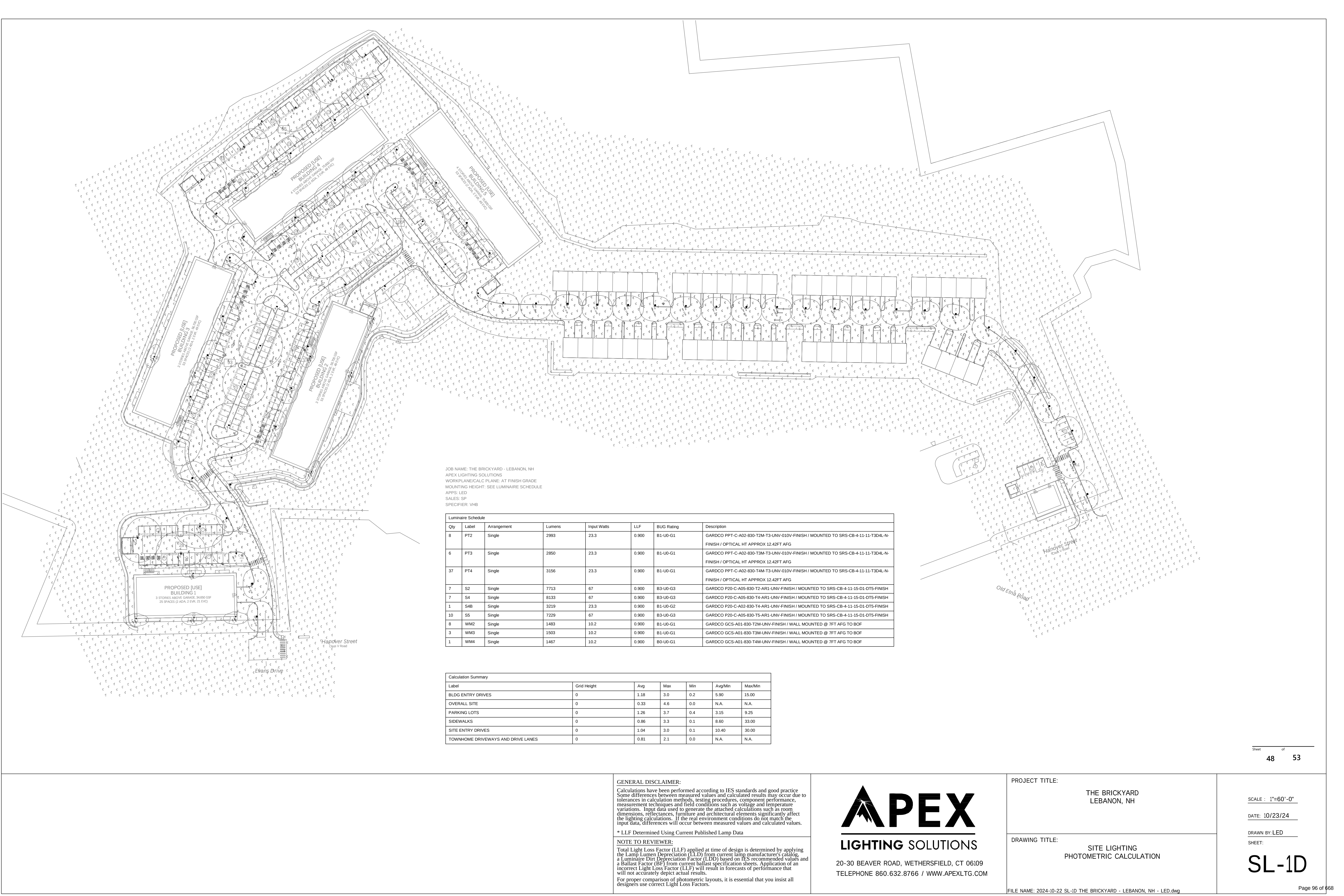
- ALL EXTERIOR WALLS SHALL BE PROTECTED WITH 2 IN. NOMINAL SOLID BLOCKING BETWEEN EXPOSED RAFTERS AT ALL ROOF OVERHANGS, UNDER THE EXTERIOR WALL COVERING ON ALL SIDES EXPOSED TO NATIVE VEGETATION.
- WHEN APPENDAGES AND PROJECTIONS ARE ATTACHED TO EXTERIOR FIRE-RESISTIVE WALLS, THEY SHALL BE CONSTRUCTED TO MAINTAIN THE FIRE-RESISTIVE INTEGRITY OF THE WALL.
- STRUCTURAL ELEMENTS THAT RESULT IN OR COULD RESULT IN THE COLLECTION OF COMBUSTIBLE MATERIALS PROXIMAL TO THE STRUCTURE SHALL BE PROTECTED.
- EXTERIOR OPENINGS:
 - EXTERIOR WINDOWS, WINDOWS WITHIN EXTERIOR DOORS, AND SKYLIGHTS SHALL BE TEMPERED GLASS, MULTI-LAYERED GLAZED PANELS, GLASS BLOCK, OR HAVE A FIRE RESISTANCE RATING OF NO LESS THAN 20 MINUTES. WINDOW SCREENING SHALL BE NONCOMBUSTIBLE MESH AND INSTALLED TO PREVENT THE COLLECTION OF FIREBRANDS AND EMBERS OR THEIR ENTRY INTO OPEN WINDOWS.
 - EXTERIOR DOORS SHALL BE SOLID-CORE WOOD NO LESS THAN 1-3/4" THICK, APPROVED NONCOMBUSTIBLE CONSTRUCTION, OR HAVE A FIRE PROTECTION RATING OF NO LESS THAN 20 MINUTES.
 - VENTS FOR ATTIC AND SUB-FLOOR VENTILATION SHALL BE SCREENED WITH A CORROSION-RESISTANT WIRE MESH, WITH THE MESH OPENING NOT EXCEEDING NOMINAL $\frac{1}{4}$ " IN SIZE OR INHIBIT EMBER INTRUSION IN AN APPROVED MANNER.
- CHIMNEYS AND FLUES - EVERY FIREPLACE AND WOOD STOVE CHIMNEY (IF APPLICABLE) AND FLUE SHALL BE PROVIDED WITH AN APPROVED SPARK ARRESTER CONSTRUCTED OF A MINIMUM 12-GAUGE WELDED WIRE OR WOVEN WIRE MESH, WITH OPENINGS NOT EXCEEDING $\frac{1}{4}$ ". VEGETATION SHALL NOT BE ALLOWED WITHIN 10 FT OF A CHIMNEY OUTLET.
- ACCESSORY STRUCTURES - SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF THIS CHAPTER OR SHALL BE SEPARATED FROM THE MAIN STRUCTURE BY A MINIMUM OF 30 FT.
- VEHICLE PARKING AREAS - PARKING WITHIN THE IMMEDIATE LANDSCAPED ZONE SHALL BE MAINTAINED FREE OF DRY GRASSES AND FINE FUELS THAT COULD BE IGNITED BY HOT EXHAUST SYSTEMS OR FIREBRANDS.
- EXTERIOR EXPOSURE HAZARDS:
 - HEAT AND FLAME SOURCES THAT ARE UNPROTECTED OR UNSUPERVISED SHALL NOT BE PERMITTED WITHIN 30 FT OF THE PRIMARY STRUCTURE. INCINERATORS, OUTDOOR FIREPLACES, PERMANENT BARBECUES, AND GRILLS SHALL NOT BE BUILT, INSTALLED, OR MAINTAINED IN HAZARDOUS FIRE AREAS. OPENINGS IN INCINERATORS, OUTDOOR FIREPLACES, PERMANENT BARBECUES, AND GRILLS SHALL BE PROVIDED WITH AN APPROVED SPARK ARRESTER, SCREEN OR DOOR.
 - PROPANE TANKS AND OTHER FLAMMABLE OR COMBUSTIBLE LIQUIDS STORAGE SHALL CONFORM TO NFPA 58, LIQUEFIED PETROLEUM GAS CODE. OTHER COMBUSTIBLE MATERIALS WITHIN 30 FT OF ANY STRUCTURE SHALL BE REMOVED.

LANDSCAPE AND MAINT. REQUIRMENTS

- ROUTINE MAINTENANCE OF THE LANDSCAPING WITHIN THE DEFENSIBLE ZONE AND LANDSCAPED AREA IS MEANT TO REDUCE THE FUEL LOAD AND RADIANT HEAT GENERATED NEAR THE BUILDING IN THE EVENT OF A WILDFIRE. MAINTENANCE MEANS/MEASURES SHALL MEET THE REQUIREMENTS OF NFPA 1144, SECTION 6, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- GROUND FUELS, INCLUDING NATIVE VEGETATION AND PLANTS USED FOR LANDSCAPING SHALL BE TREATED OR REMOVED. ACCEPTABLE METHODS OF FUEL TREATMENT INCLUDE, BUT ARE NOT LIMITED TO, PRESCRIBED BURNING BY QUALIFIED PERSONNEL, MOWING, PRUNING, REMOVING, SUBSTITUTION, MULCHING, CONVERTING TO COMPOST, AND GRAZING.
 - LANDSCAPED PLANTINGS SHALL POSSESS CHARACTERISTICS TO REDUCE MAINTENANCE SUCH AS DROUGHT RESISTANCE, PEST RESISTANCE, NON INVASIVE, SLOW GROWING, WIND-RESISTANT SPECIES WITH TYPICAL FIRE-RESISTANT CHARACTERISTICS SUCH AS HIGH MOISTURE CONTENT IN LEAVES, LOW OIL OR RESIN CONTENT (NOT AROMATIC), DROUGHT TOLERANCE OR RESISTANCE, MINIMAL SEASONAL ACCUMULATION OF DEAD VEGETATION OR ACCUMULATION OF DEAD LEAVES, LIMITED FOLIAGE AND FEW DEAD BRANCHES, OPEN OR LOOSE BRANCHING HABIT AND EASY MAINTENANCE/PRUNING.
 - LIVE VEGETATION WITHIN THE DEFENSIBLE ZONE AND LANDSCAPED AREA SHALL HAVE DEAD MATERIAL REMOVED AND SHALL BE THINNED AND PRUNED REGULARLY. ANY DEAD AND DOWNED FUELS WITHIN 30 FT OF ALL BUILDINGS SHALL BE REMOVED.
 - VEGETATION UNDER TREES WITHIN THE DEFENSIBLE ZONE AND LANDSCAPED AREA SHALL BE MAINTAINED AT A HEIGHT THAT WILL PRECLUDE GROUND FIRE FROM SPREADING IN THE TREE CROWN.
 - TREE CROWNS WITHIN THE DEFENSIBLE ZONE AND LANDSCAPED AREA SHALL BE SPACED TO PREVENT STRUCTURE IGNITION FROM RADIANT HEAT. RECOMMENDED MINIMUM TREE CROWN SPACING OF 18 FT.
 - THE FACILITIES OWNER AND/OR FACILITY MAINTENANCE STAFF SHALL BE RESPONSIBLE IN INSPECTING THE CONDITION OF VEGETATION, WITHIN THE DEFENSIBLE ZONE AND LANDSCAPED AREA, TWICE YEARLY (AS A MINIMUM) TO IDENTIFY DEAD AND DOWNED MATERIALS AS WELL AS ANY PRUNING/THINNING THAT MAY BE REQUIRED TO MAINTAIN THE AREA AS OUTLINED ABOVE. LAWN AND MULCHED AREAS SHALL BE MOWED AND MAINTAINED ON A REGULAR BASIS.

GENERAL NOTES/REQUIREMENTS

- THIS DRAWING IS INTENDED TO PROVIDE BASIC GUIDANCE RELATED TO WILDLAND-URBAN INTERFACE REQUIRED BY THE LEBANON FIRE DEPARTMENT. THE BUILDING AND BUILDING SYSTEM DESIGNS SHALL BE PREPARED BY THE ARCHITECT AND MEP ENGINEER TO INCORPORATE THE NECESSARY BUILDING DESIGN REQUIREMENTS.
- ALL DEVELOPMENT SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 1141 AND NFPA 1144 AS WELL AS ANY OTHER APPLICABLE NFPA OR LOCAL CODES.
- PRELIMINARY, WORKING AND AS-BUILT PLANS SHALL BE SUBMITTED TO THE LEBANON FIRE DEPARTMENT IN A TIMELY MANNER.
- ALL BUILDINGS SHALL BE PROTECTED BY AN AUTOMATED SPRINKLER SYSTEM INSTALLED AND MAINTAINED IN ACCORDANCE WITH NFPA 13 AND/OR NFPA 13R AND BUILDINGS SHALL HAVE AN APPROVED FIRE WARNING OR ALARM SYSTEM, DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 72, CAPABLE OF RE-TRANSMITTING AN ALARM TO AN APPROVED CENTRAL STATION.
- WATER MAINS AND FIRE HYDRANTS TO BE INSTALLED IN ACCORDANCE WITH AWWA MANUAL 31 AND NFPA 24.
- ALL FIRE HYDRANT LOCATIONS ARE SUBJECT TO LEBANON FIRE DEPARTMENT APPROVAL.
- FIRE HYDRANTS SHALL BE MARKED IN ACCORDANCE WITH NFPA 291.
- THE CONTRACTOR OR INSTALLER OF NEW WATER SUPPLY SYSTEMS OR EXTENSIONS TO EXISTING SYSTEMS SHALL DEMONSTRATE BY ACTUAL TEST THAT THE CAPACITY OF THE WATER SUPPLY SYSTEM WILL MEET THE FIRE PROTECTION DESIGN REQUIREMENTS. LEBANON FIRE DEPARTMENT SHALL BE ON SITE TO WITNESS AND APPROVE THE RESULTS.



JOB NAME: THE BRICKYARD - LEBANON, NH
APEX LIGHTING SOLUTIONS
WORKPLANE/CALC PLANE: AT FINISH GRADE
MOUNTING HEIGHT: SEE LUMINAIRE SCHEDULE
APPS: LED
SALES: SP
SPECIFIER: VMB

Luminaire Schedule						
Qty	Label	Arrangement	Lumens	Input Watts	LLF	BUG Rating
8	PT2	Single	2993	23.3	0.900	B1-U0-G1
GARDCO PPT-C-A02-830-T2M-T3-UNV-010V-FINISH / MOUNTED TO SRS-CB-4-11-11-T3D4L-N-FINISH / OPTICAL HT APPROX 12.42FT AFG						
6	PT3	Single	2850	23.3	0.900	B1-U0-G1
GARDCO PPT-C-A02-830-T3M-T3-UNV-010V-FINISH / MOUNTED TO SRS-CB-4-11-11-T3D4L-N-FINISH / OPTICAL HT APPROX 12.42FT AFG						
37	PT4	Single	3156	23.3	0.900	B1-U0-G1
GARDCO PPT-C-A02-830-T4M-T3-UNV-010V-FINISH / MOUNTED TO SRS-CB-4-11-11-T3D4L-N-FINISH / OPTICAL HT APPROX 12.42FT AFG						
7	S2	Single	7713	67	0.900	B3-U0-G3
GARDCO P20-C-A05-830-T2-AR1-UNV-FINISH / MOUNTED TO SRS-CB-4-11-15-D1-DT5-FINISH						
7	S4	Single	8133	67	0.900	B3-U0-G3
GARDCO P20-C-A05-830-T4-AR1-UNV-FINISH / MOUNTED TO SRS-CB-4-11-15-D1-DT5-FINISH						
1	S4B	Single	3219	23.3	0.900	B1-U0-G2
GARDCO P20-C-A02-830-T4-AR1-UNV-FINISH / MOUNTED TO SRS-CB-4-11-15-D1-DT5-FINISH						
10	S5	Single	7229	67	0.900	B3-U0-G3
GARDCO P20-C-A05-830-T5-AR1-UNV-FINISH / MOUNTED TO SRS-CB-4-11-15-D1-DT5-FINISH						
8	WM2	Single	1483	10.2	0.900	B1-U0-G1
GARDCO GCS-A01-830-T2M-UNV-FINISH / WALL MOUNTED @ 7FT AFG TO BOF						
3	WM3	Single	1503	10.2	0.900	B1-U0-G1
GARDCO GCS-A01-830-T3M-UNV-FINISH / WALL MOUNTED @ 7FT AFG TO BOF						
1	WM4	Single	1467	10.2	0.900	B0-U0-G1
GARDCO GCS-A01-830-T4M-UNV-FINISH / WALL MOUNTED @ 7FT AFG TO BOF						

Calculation Summary						
Label	Grid Height	Avg	Max	Min	Avg/Min	Max/Min
BLDG ENTRY DRIVES	0	1.18	3.0	0.2	5.90	15.00
OVERALL SITE	0	0.33	4.6	0.0	N.A.	N.A.
PARKING LOTS	0	1.26	3.7	0.4	3.15	9.25
SIDEWALKS	0	0.86	3.3	0.1	8.60	33.00
SITE ENTRY DRIVES	0	1.04	3.0	0.1	10.40	30.00
TOWNHOME DRIVEWAYS AND DRIVE LANES	0	0.81	2.1	0.0	N.A.	N.A.

GENERAL DISCLAIMER:

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

* LLF Determined Using Current Published Lamp Data

NOTE TO REVIEWER:

Total Light Loss Factor (LLF) applied at time of design is determined by applying the Lamp Lumen Depreciation (LLD) from current lamp manufacturer's catalog, a Luminaire Dirt Depreciation Factor (LDD) based on IES recommended values and a Ballast Factor (BF) from current ballast specification sheets. Application of an incorrect Light Loss Factor (LLF) will result in forecasts of performance that will not accurately depict actual results. For proper comparison of photometric layouts, it is essential that you insist all designers use correct Light Loss Factors.



20-30 BEAVER ROAD, WETHERSFIELD, CT 06109
TELEPHONE 860.632.8766 / WWW.APEXLTG.COM

PROJECT TITLE:

THE BRICKYARD
LEBANON, NH

DRAWING TITLE:

SITE LIGHTING
PHOTOMETRIC CALCULATION

Sheet 48 of 53

SCALE : 1"=60'-0"

DATE: 10/23/24

DRAWN BY: LED

SHEET:

SL-1D

Drawing Number

SL-2D

WM4		07/31
N.T.S.	Source: VHB	LD

WM3 07/31
 N.T.S. Source: VHB LD

WM2 07/31
N.T.S. Source: VHB LD

**174 Hanover Street Extension
Lebanon, New Hampshire 03766**

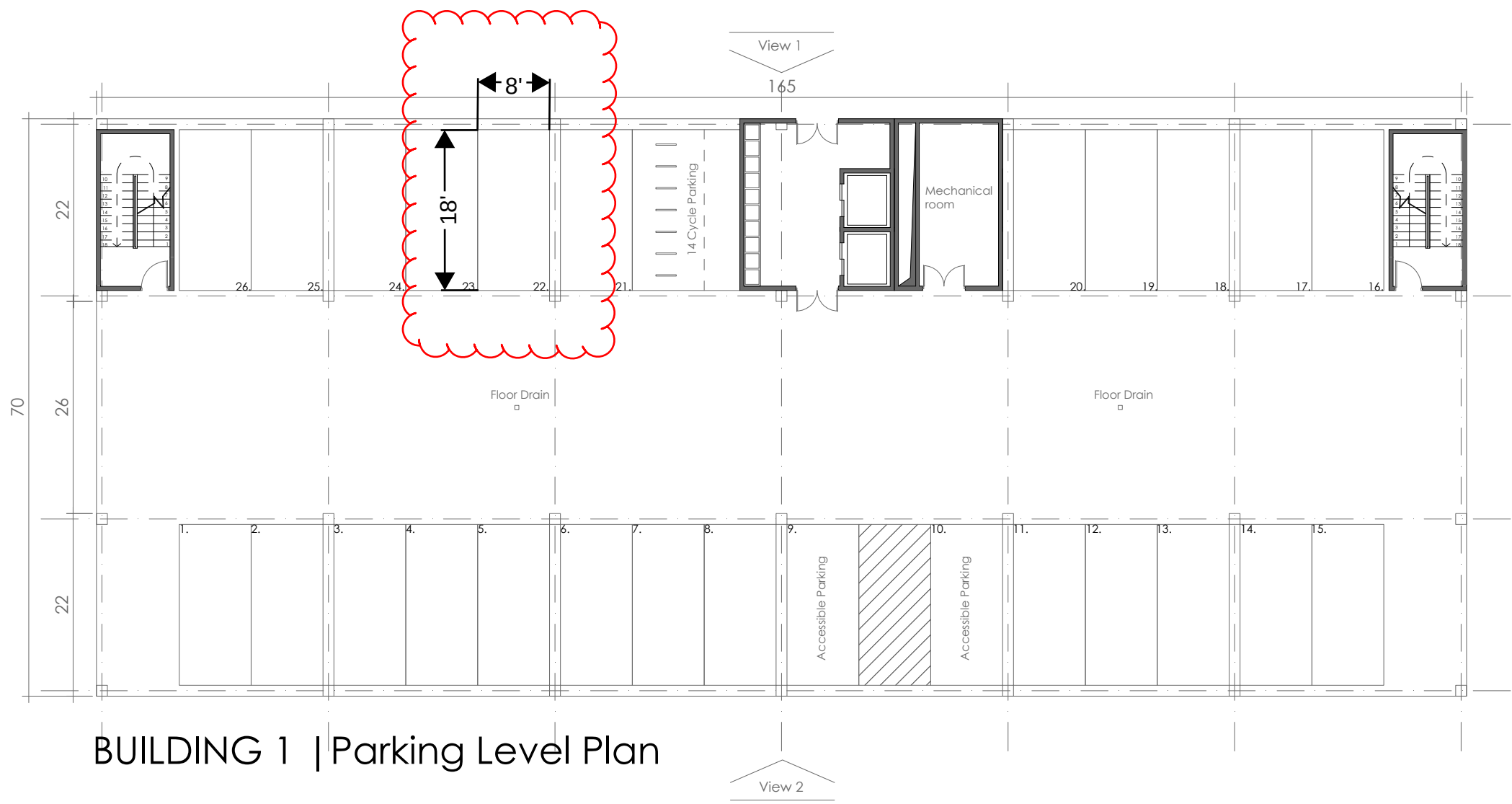
Designed by TMD	Checked by MJV
Issued for Permitting	Date May 10, 2024

Drawing Number

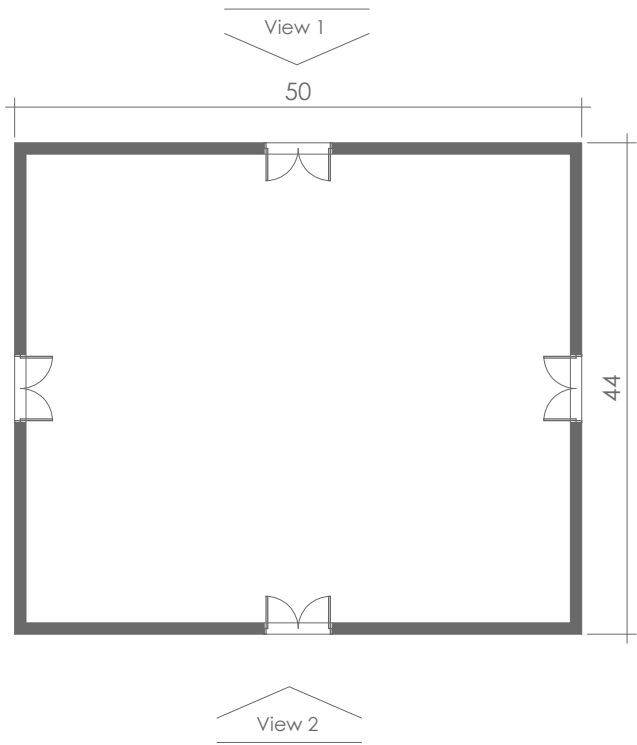
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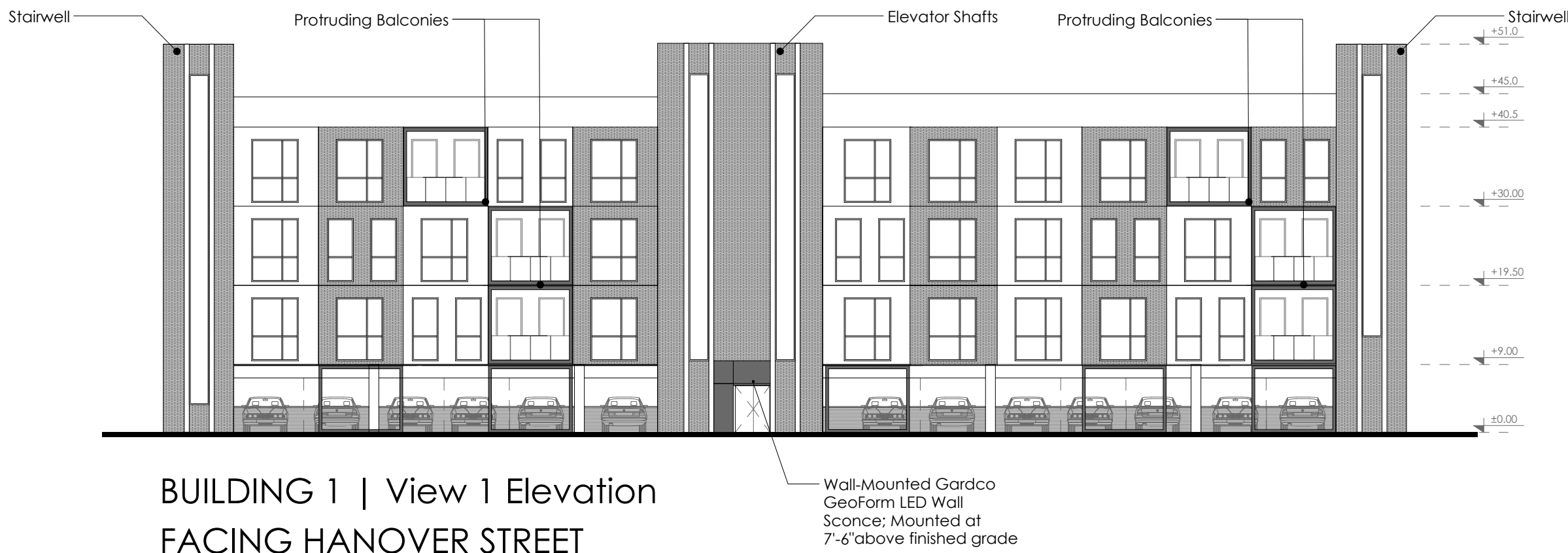
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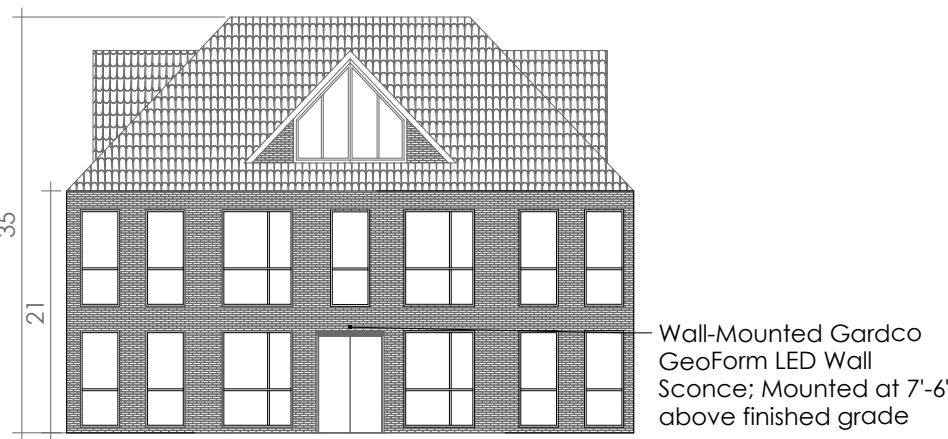
BUILDING 1 | Parking Level Plan



MAINTENANCE BUILDING | GROUND FLOOR PLAN



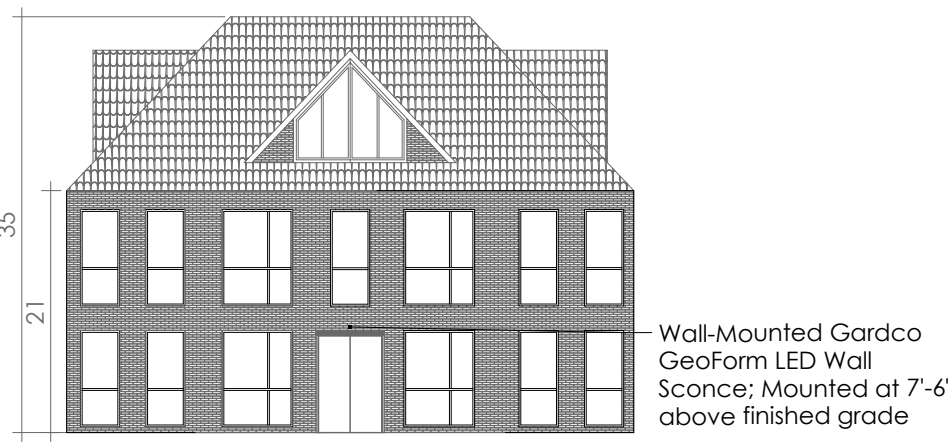
BUILDING 1 | View 1 Elevation
FACING HANOVER STREET



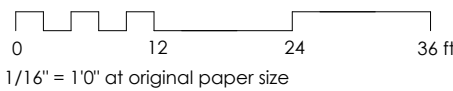
MAINTENANCE BUILDING | View 1 Elevation



BUILDING 1 | View 2 Elevation
SURFACE PARKING AREA



MAINTENANCE BUILDING | View 2 Elevation



Sheet 50 of 53

P3	Submission	VT	24/08/02
P2	Submission	SS	24/08/02
P1	Submission	SS	24/05/07



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PROJECT
Lebanon NH

DRAWING STATUS
PLANNING

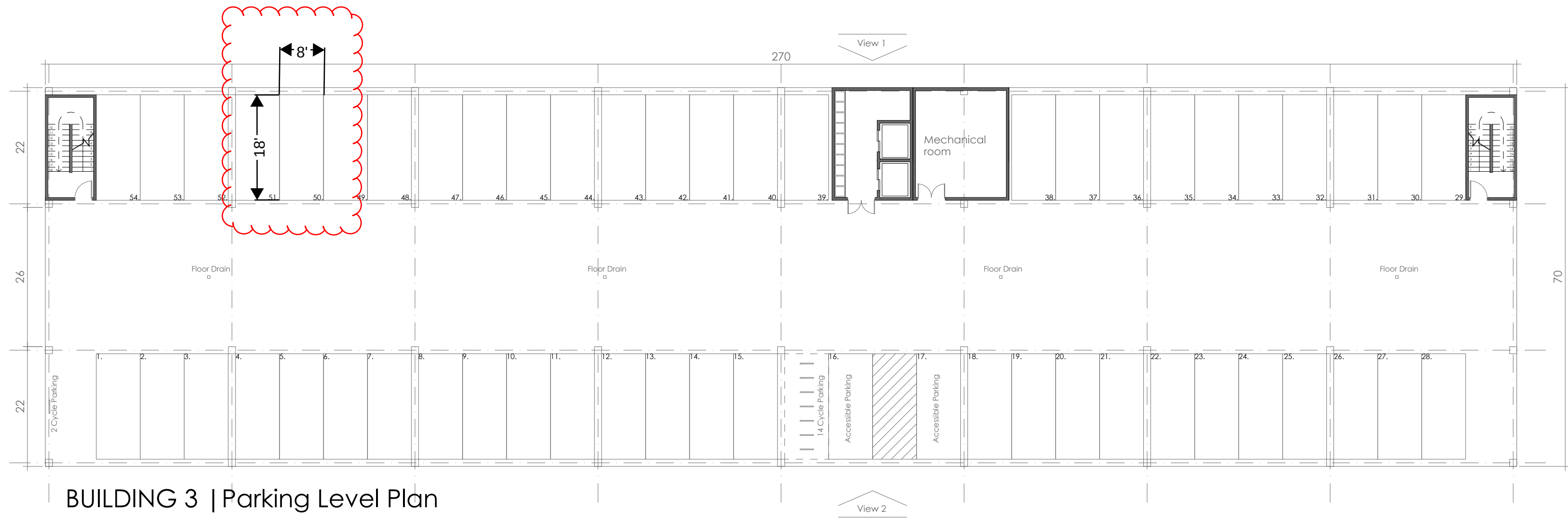
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BUILDING 1 & MAINTENANCE BUILDING
PROPOSED PLAN & ELEVATIONS
DRAWING NO.
0089-1201-P3
REV
P3

DATE
24/08/02
SS
SCALE
1/16" = 1'0" @A1
DRAWN
SS
CHECKED
VT

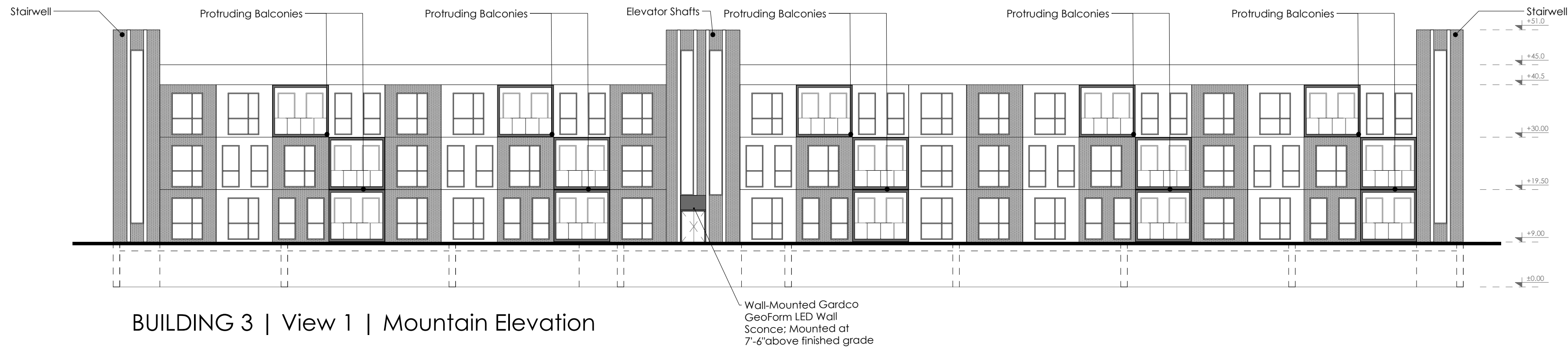
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BUILDING 3 | Parking Level Plan



BUILDING 3 | View 1 | Mountain Elevation



BUILDING 3 | View 2 | Lake Elevation

Sheet 51 of 53

P3	Submission	VT	24/08/02
P2	Submission	SS	24/08/02
P1	Submission	SS	24/05/07

REV	DESCRIPTION	DRN	DATE

CLIENT
Lebanon NH

PROJECT
Lebanon NH

DRAWING STATUS
PLANNING

DRAWING NAME
BUILDING 2 | PROPOSED PLAN & ELEVATIONS

DRAWING NO. 0089-1202-F3

REV F3

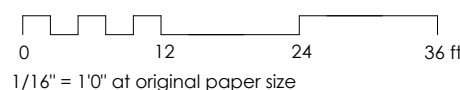
DATE 24/08/02

DRAWN SS

SCALE 1/16" = 1'0" @A1

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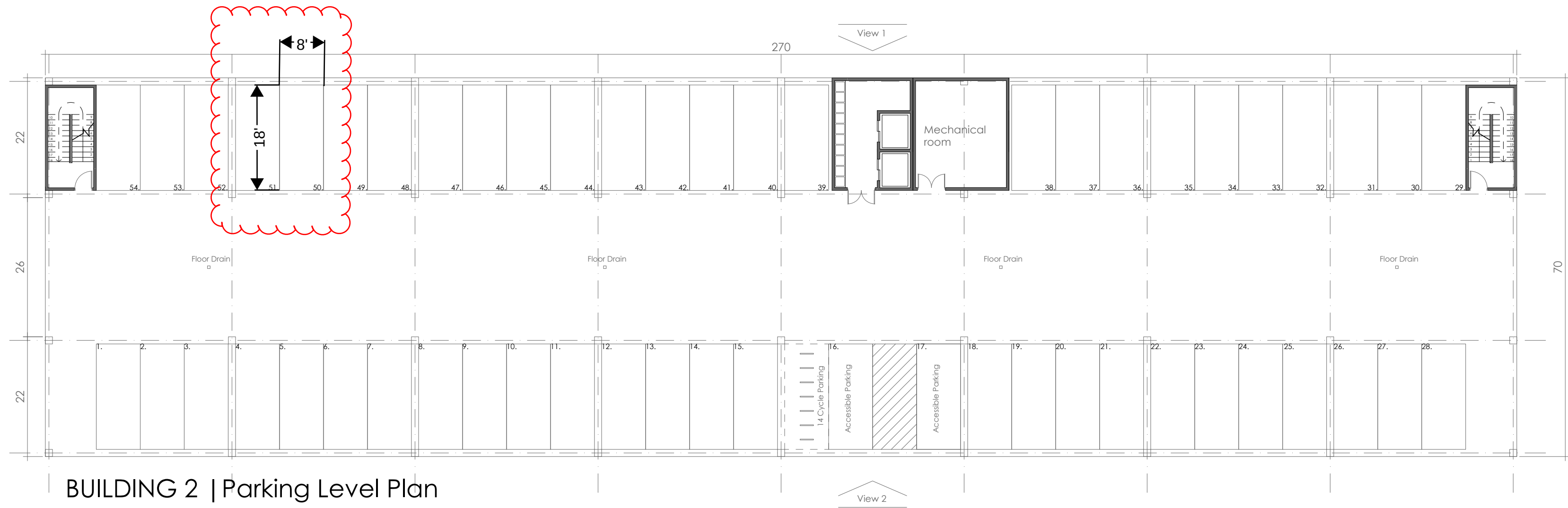


1/16" = 1'0" at original paper size

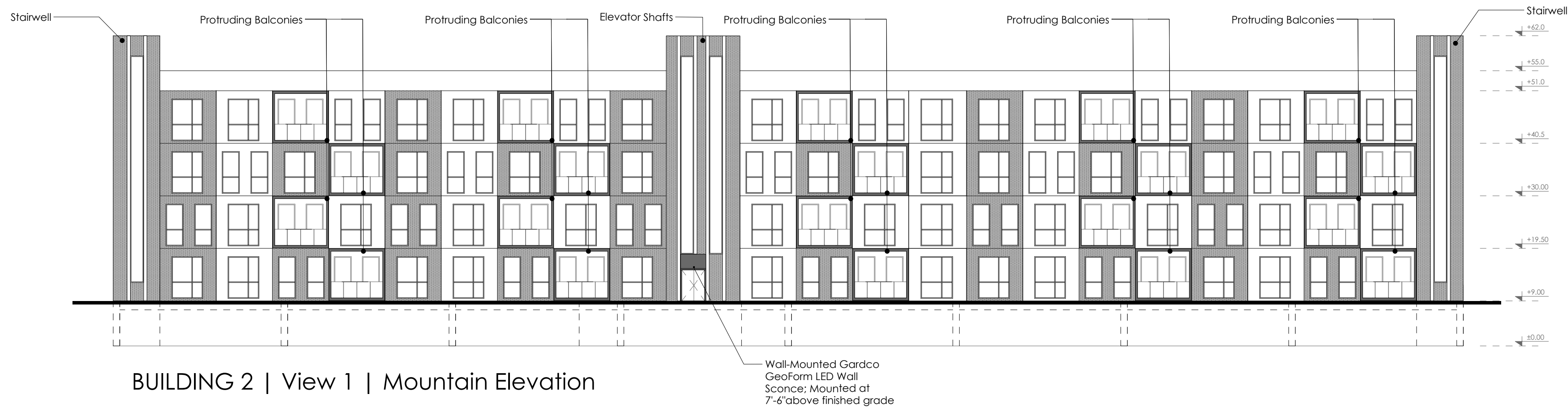
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BUILDING 2 | Parking Level Plan



BUILDING 2 | View 1 | Mountain Elevation



BUILDING 2 | View 2 | Lake Elevation

Sheet 52 of 53

P3	Submission	VT	24/08/02
P2	Submission	SS	24/08/02
P1	Submission	SS	24/05/07



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PROJECT
Lebanon NH

DRAWING STATUS
PLANNING

DRAWING NAME
BUILDING 3-5 | PROPOSED PLAN & ELEVATIONS

DRAWING NO. 0089-1203-P3 REV P3

DATE 24/08/02 DRAWN SS

SCALE 1/16" = 1'0" @A1 CHECKED VT

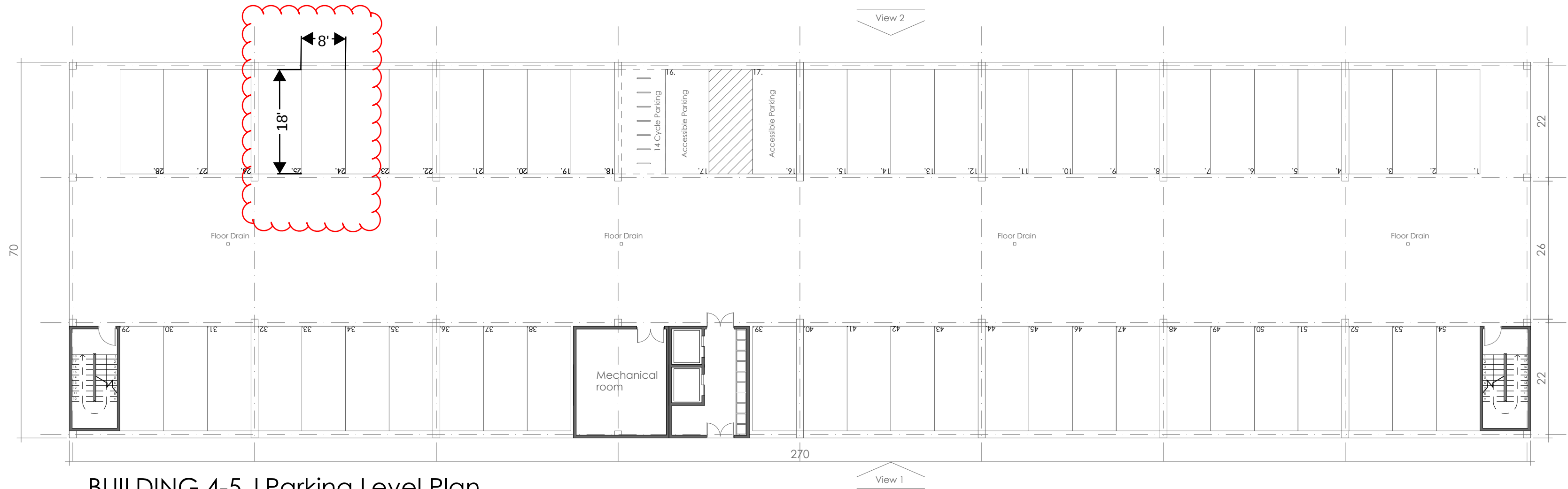
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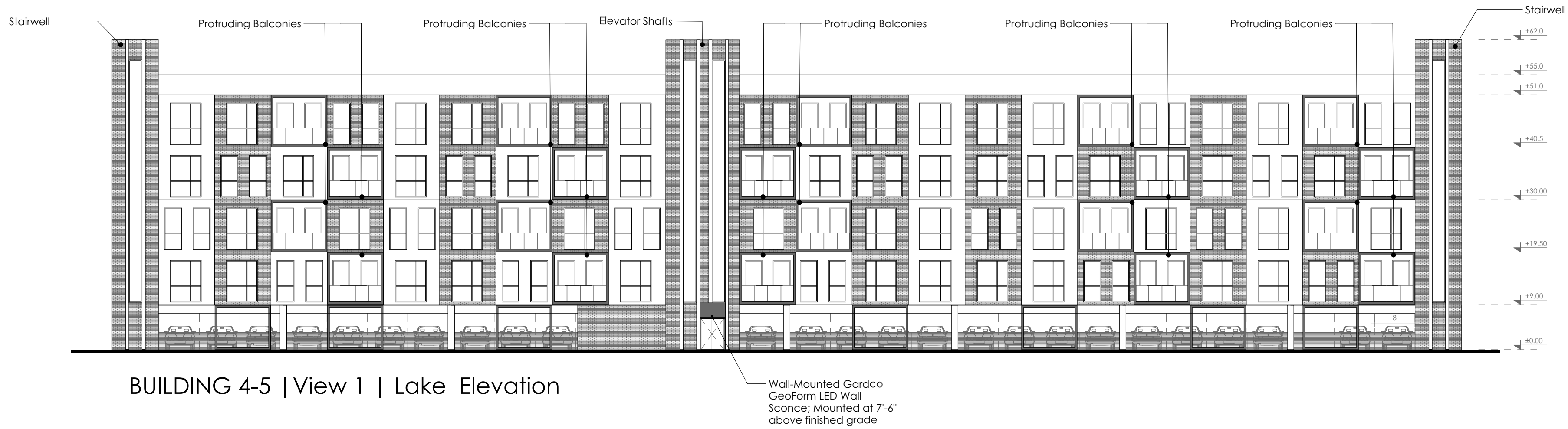
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BUILDING 4-5 | Parking Level Plan



BUILDING 4-5 | View 1 | Lake Elevation



BUILDING 4-5 | View 2 | Mountain Elevation

Sheet 53 of 53

P3	Submission	VT	24/08/02
P2	Submission	SS	24/08/02
P1	Submission	SS	24/05/07
REV	DESCRIPTION	DRN	DATE



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PROJECT
Lebanon NH

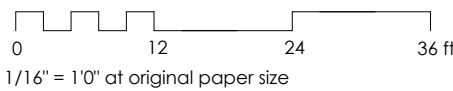
DRAWING STATUS
PLANNING

DRAWING NAME
BUILDING 7-10 | PROPOSED PLAN & ELEVATIONS

DRAWING NO. 0089-1205-P3 REV P3

DATE 24/08/02 DRAWN SS
SCALE 1/16" = 1'0" @A1 CHECKED VT

1b, Russel Road, London, W14 8JA,
+44 7473607166, www.studiointegrate.co.uk



The Brickyard Residential Development

Lebanon, New Hampshire

PREPARED FOR

Brickyard One Nominee Trust
P.O. Box 720
Middleton, MA 01949

PREPARED BY



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

05/10/2024

Revised: 12/3/2024

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1

Introduction

This report has been prepared by VHB to provide a brief description of existing and proposed drainage areas, design methodology, soil characteristics, and a summary of peak discharge rates for the project area.

Four parcels, a total of 133.5-acres are located on Hanover Street in Lebanon, NH (see Figure 1: Site Location Map). The Project Site consists of approximately 13.5 acres that will be disturbed during the construction of the development. The site is bounded by Hanover Street to the east, woodlands to the west, Dartmouth Ave to the north, and Route 89 to the south.

The Site is predominantly undeveloped, which is presently comprised of primarily woodland areas. There are portions of the existing site that were previously developed as part of the Densmore Brickyard on the southeastern portion of the parcel. Multiple existing buildings on site that will be razed and demolished as part of the project. Under existing conditions, untreated stormwater runoff currently flows overland towards the east to Hanover Street. There is a large pond toward the east of the site and wetlands on the south of the site which both eventually direct runoff east toward Hanover Street.

The proposed development of the site includes the construction of 5 apartment buildings that total 422 residential units, 51 townhome units and a single-family property caretaker home. The site also includes the required parking and two access drives connecting to Hanover Street. The associated utilities and drainage, and landscape improvements to support the development are included in the development. The development is proposing the construction of one surface basin and three subsurface chamber systems to provide stormwater treatment and peak rate mitigation. Infiltration will be utilized where possible, pending subsurface soil investigations. As part of the design, a diversionary channel has been proposed to direct upstream runoff to the adjacent wetlands.

A hydrologic model was developed to evaluate the existing and proposed drainage conditions on the Site. The results of the analyses indicate that there is no increase in peak discharge rates between the pre- and post-development conditions for the 2-, 10-, 25-, 50- and 100-year storm events. The pre- and post-development peak discharge rates are presented in the Stormwater Management Impacts Section of this report.

The Site will also be subject to an NHDES Alteration of Terrain permit due to land disturbance in excess of 100,000 SF. As part of that permit process, NHDES will review the stormwater design to confirm compliance with their regulations and review the proposed grading designs. A copy of

the AOT application, including the Inspection & Maintenance Manual, will be provided to the City upon submission of the application.



2

Existing Conditions

2.1 Description of Contributing Areas

The study area for the development is primarily comprised of undeveloped land, but is the site of the former Densmore Brickyard, so is previously developed in some areas towards the southeastern portion of the Site (see Figure 4, Existing Conditions: Drainage Area Plan). There are multiple streams and wetland areas on site, and the existing Densmore Pond has disturbance around the perimeter. The drainage area that was studied was approximately 108.1 acres and overland flows generally move to the east towards Hanover Street from the ridge on the western side of the site. The project site is southeast of the Landmark Tract/Boston Lot, and sees flows coming off of the elevated areas of the lot. The majority of the tributary area is wooded but does have areas of forested wetlands. Slopes are generally in excess of 3:1 once west of Densmore Pond on the site.

The study area is being considered one large subcatchment in the existing condition as all flow discharges from the site via the existing culvert beneath Hanover Street, near the southeastern edge of the study area. The flow paths are complex and involve flows going to and from the pond at different times, depending on the water elevation of the pond at the time of a storm. For this reason, after discussion with the City of Lebanon and its peer reviewing engineer, the single discharge point was used for the Project. The limits of the subcatchment include all upstream flows that reach the proposed swales (discussed in later sections) and the remainder of the subject property south of that drainage area.

Table 1 summarizes the study area and its characteristics.

Table 1 Drainage Area Characteristics Summary (Existing Conditions)

Discharge Point		Sub-Area(s)		Area (Acres)	Tc (Min.)	CN
DP-1	Densmore Pond/Wetlands	EX-1	Central/Northern Majority of Site	108.1	32.8	71
Total				108.1	n/a	71*

* Weighted CN Value

2.2 Soil Conditions

The study area is comprised of several different soil types as defined by the Natural Resources Conservation Service (NRCS), Web Soil Survey, <http://websoilsurvey.sc.egov.usda.gov>. Table 2, Soil Types, lists the designations, names, and groups of the soils located within the study area per the NRCS. A site-specific soil survey report has been completed and is appended to this stormwater management report.

Table 2 NRCS Soil Types

Soil Designation	Soil Name	Hydrologic Soil Group
26A	Windsor loamy sand, 0-3% slopes	A
26E	Windsor loamy sand, 15-60% slopes	A
63C	Charlton fine sandy loam, 8-15% slopes, very stony	B
341B	Stissing silt loam, 3-8% slopes, very stony	C/D
361D	Cardigan-Kearsarge-Rock outcrop complex, 15-25% slopes	C
361E	Cardigan-Kearsarge-Rock outcrop complex, 25-60% slopes	C
534	Binghamville silt loam	C/D

2.3 Existing Hydrologic Flow Patterns

Stormwater Runoff from the existing study area flows generally from west to east toward Hanover Street and Densmore Pond.

The following describes the existing stormwater flow patterns of each of the sub areas.

- › Sub Area EX-1 consists primarily of woodland area around the site, with some patches of grasses near the previously developed areas of the Site. Runoff flows overland directly to the east towards Densmore Pond and outlets at the existing culvert under Hanover Street (DP-1).



3

Proposed Conditions

3.1 Description of Contributing Areas

The proposed development of the site includes the construction of 5 apartment buildings that total 422 residential units, 51 townhomes and a single-family property caretaker home. The site also includes the required parking and two access drives connecting to Hanover Street. Landscaping, utilities and pedestrian circulation are also proposed as part of the Project (See Figure 5, Proposed Conditions Drainage Plan).

The proposed conditions sub-areas are comprised of the same 108.1-acre study area represented in the existing conditions drainage analysis. Table 3 summarizes the proposed sub areas and their characteristics.

Table 3 Drainage Area Characteristics Summary (Proposed Conditions)

Discharge Point		Sub-Area(s)		Area (Acres)	Tc (Min.)	CN
DP-1	Densmore Pond/Wetlands	PR-1	Flows from Townhomes and roadway, Parking, driveway, Buildings 2, 4 and 5.	6.76	5.0	93
		PR-2	Building 3, parking and driveway area	2.21	5.0	91
		PR-4	Northeastern edge of site around Maintenance Building	0.58	5.0	82
		PR-5	Densmore Pond and direct runoff	9.65	5.0	84
		PR-6	Undeveloped western portion of study area	63.07	32.8	70
		PR-7	Undeveloped northwestern portion of study area directed through project	24.25	23.6	70
		PR-8	North of development area	1.59	11.6	72
		Total		±108.1	n/a	73*

* Weighted CN Value

3.2 Proposed Hydrologic Flow Patterns

The proposed development has been designed to direct the stormwater runoff from most of the site's impervious areas to provide stormwater treatment and peak rate attenuation. Runoff around the site is directed to catch basins and enters underground infiltration systems or bioretention area for the proper treatment. Runoff from the remaining areas within the study area will generally maintain their existing flow patterns to Densmore Pond and the outlet at the culvert under Hanover Street (DP-1).

Stormwater flow paths are represented on the Time of Concentration (TC) lines on Figure 3, Proposed Conditions Drainage Plan.



4

Methodology and Design Criteria

VHB evaluated the hydrologic and hydraulic impacts for proposed development's stormwater runoff. VHB analyzed the proposed development's hydrologic impacts using the Soil Conservation Service (SCS) Technical Release 20 (TR-20) methodology. The following section summarizes the design parameters/constraints that were used during the drainage design for this development under the SCS and Rational Methodologies. Additionally, this section summarizes the methodology used for the development's proposed erosion control and stormwater treatment methods.

4.1 Hydrologic Model Description

VHB analyzed the proposed developments stormwater runoff impacts using the SCS TR-20 methodology. The hydrologic program HydroCAD, as developed by HydroCAD Software Solutions, LLC., was utilized to compute and develop the stormwater runoff model. HydroCAD's SCS TR-20 program is designed to model complex watersheds, such as the watershed analyzed in this report. The complexity of the watershed has been based on multiple land uses (surface conditions) with varying soil conditions and inter-connected sub-watersheds reflecting complex hydrologic flow patterns.

4.1.1 Design Storms

VHB analyzed the proposed stormwater impacts for 1-inch, 2-, 10-, 25-, 50- and 100-year design storms. These rainfall events are based on a 24-hour storm duration using a Type II distribution curve, storm volumes derived from the Cornell Northeast Regional Climate Center. The appendices contain copies of the rainfall data charts used in the calculations.

4.1.2 Curve Number

VHB developed weighted curve numbers for each sub-area based on the different ground covers and hydrologic soil group types found within each area. The curve numbers were based on the SCS TR-55 methodology and are included in hydrologic calculations.

4.1.3 Travel Times and Time of Concentration

VHB calculated the Travel Times (Tt) and the Time of Concentrations (Tc) for each of the individual sub-areas using the hydraulically most distant point within each area. A minimum time of 5 minutes was used in the calculations. The Tt's and Tc's were based on SCS TR-55 methodology and are included in hydrologic calculations.

4.2 Hydraulic Calculations (Storm Drain Piping)

VHB used the rational method to develop the flows used in the design the development's subsurface storm drain piping system. The drainage system was sized based on a 25 year design storm under pressurized flow conditions. VHB used the following design parameters and criteria to design the system:

- Minimum Pipe Size: 12 inches
- RCP Pipe Coefficient of Friction: 0.013
- Minimum Time of Concentration (Tc): 5 minutes
- Runoff Coefficient: 0.2 open space
- Runoff Coefficient: 0.9 pavement and roofs
- Design Software: StormCAD (Bentley)

The storm drain piping calculations are included in the appendices.

4.3 Stormwater Detention and Treatment

The proposed development increases the amount of impervious area from that of the existing conditions; as a result, the runoff curve numbers will increase for the proposed conditions. The higher curve numbers will increase the calculated stormwater runoff rate from that of the existing site, therefore, stormwater detention chambers and basins have been proposed for this project. This detention volume will mitigate the increased stormwater runoff rates by using outlet control structures to reduce the proposed stormwater discharge rates from the site. Additionally, the detention chambers have been designed to permit infiltration, that will provide stormwater treatment for the majority of the proposed development's stormwater runoff by percolating runoff through soils, removing pollutants and sediment.

VHB used the following design parameter and criteria to design the detention areas:

- › Side Slopes (surface): 3:1 (max)
- › Design Storms: 2, 10, 25, 50, 100-year

Refer to the appendices for further information and design calculations.

4.4 Riprap Outlet Protection

VHB sized the riprap outlet protection using Chapter 4, Section 4-6.6, Outlet Protection of the New Hampshire Stormwater Manual, Volume 2, Post-Construction Best Management Practices

Selection& Design, December 2008, NHDES. The following design parameters represent the minimum acceptable riprap apron dimensions used for design (refer to the appendices for design computations):

- › Apron Width: ≥ 10 feet
- › Apron Length: ≥ 10 feet
- › Median Stone Diameter: 0.5 feet
- › Depth of Stone: 12 inches (minimum)

4.5 Base Calculations (GRV & WQV)

The stormwater best management practices are designed to treat the Water Quality Volume (WQV) and Groundwater Recharge Volume (GRV) based on the criteria outlined in NHDES Env-Wq 1500 Alteration of Terrain and City of Lebanon Stormwater Regulations. Refer to attached calculations in Appendix A.

4.6 Municipal Requirements

Per Section 6.6.F of the City of Lebanon Site Plan Regulations, additional stormwater calculations required are as follows:

- › Maximum effective impervious cover of 10%.
- › Pre-development peak rate of runoff shall not exceed post in the: 2-, 25-, 50- and 100-year storms
- › WQV per HSG Group at the same ratio for infiltration
- › Removal of 80% TSS and 40% TP based on the NH Stormwater Manual.



5

Stormwater Management Impacts/ Conclusion

5.1 Stormwater Quantity Mitigation

Under the proposed conditions, the peak flow rates were calculated for the 2-, 10-, 25-, 50- and 100-year storm events. The peak runoff rates for the proposed conditions, in the absence of mitigation, are anticipated to increase over the existing condition rates. These peak flow increases are to be reduced to near or less than current peak runoff rates at the Design Point by routing the runoff through the proposed infiltration basin systems, bioretention basins, or filtration system. The proposed development will incorporate a stormwater collection system that will capture runoff from the proposed areas by means of surface flow directing runoff to the proposed detention systems.

The various treatment basins are designed to attenuate site runoff by temporarily detaining runoff in order for the outflow from the site to be approximately equal to or less than the existing flow rate. Infiltration practices also contribute to reducing peak rates by directing stormwater runoff directly to groundwater instead of redirecting as runoff.

Table 4 Peak Stormwater Runoff Rate Summary

Discharge Point	Condition	Peak Flow for Given Storm (cfs)				
		2-yr	10-yr	25-yr	50-yr	100-yr
DP-1 Densmore Pond/Wetlands	Existing	33.6	90.4	141.8	192.7	255.8
	Proposed	27.7	80.7	130.2	175.1	230.8
	Net Reduction	5.9	9.7	11.6	17.6	25.0

Table 5 Stormwater Runoff Volume Summary

Discharge Point	Condition	Runoff Volume for Given Storm (acre-feet)	
		2-yr	10-yr
DP-1	Existing	4.4	11.6

5.2 Stormwater Quality Mitigation – Best Management Practices (BMPs)

The proposed Stormwater Management System contains several Best Management Practices (BMPs) that will provide treatment of site generated stormwater runoff. The proposed BMP's are described below:

- › Sediment Forebay
- › Infiltration Basin
- › Subsurface Detention Chambers
- › Bioretention Basins

5.2.1 Sediment Forebay

A sediment forebay is an impoundment, basin, or other storage structure designed to dissipate the energy of incoming runoff and allow for initial settling of coarse sediments. Forebays are used for pretreatment of runoff prior to discharge into the primary water quality treatment BMP.

5.2.2 Infiltration Basin

Infiltration basins are impoundments designed to temporarily store runoff, allowing all or a portion of the water to infiltrate into the ground. An infiltration basin is designed to completely drain between storm events. In a properly sited and designed infiltration basin, water quality treatment is provided by runoff pollutants binding to soil particles beneath the basin as water percolates into the subsurface. Biological and chemical processes occurring in the soil also contribute to the breakdown of pollutants. Infiltrated water is used by plants to support growth or it is recharged to the underlying groundwater.

This project utilizes Subsurface Detention Chambers with crushed stone bottoms open to native material to permit infiltration. Approximate infiltration rates were obtained from the SSSNNE Special Publication No. 5 document with the corresponding soils found in the Site Specific Soil Survey. 0.5 in/hr was the rate used conservatively at the time of the submission, and rates will be obtained through on-site testing in the upcoming months. Test pits will be conducted to determine actual groundwater elevations and infiltration rate tests will be done within the test pits, close to the estimated elevation for infiltration.

5.2.3 Subsurface Detention Chambers

The proposed detention chamber system has been designed to handle the 50-yr storm event and will function as part of a water quality sedimentation basin. The system will include an internal outlet control structure at the terminus of the chambers to control the flow out of the system in different storms. The chambers include a sedimentation pool that provides

pretreatment and eliminates the likelihood that fine sediments enter the treatment portion of the system. The basin is intended to remain dry except during and following significant storm events. Additionally, an overflow pipe has been added to control the flow from large infrequent storm events and prevent extreme surcharges.

5.2.4 Bioretention Basins

Bioretention basins utilize a filter media section to treat runoff. Pretreated stormwater enters through the exposed surface and percolates through the media, and from there can either flow to the native soil and infiltrate or can be directed to a proposed underdrain. The underdrain system is in place for basins that do not infiltrate to ensure that stored stormwater does not remain in the basin for more than 72 hours. Profile views of the proposed filter section can be found on the Site Plans.

5.3 Erosion Control Measures

5.3.1 Temporary Erosion Control

During construction of the proposed development, the contractor shall be responsible for installation and maintenance of temporary sedimentation and erosion control measures to prevent off-site tracking and waterborne loss of earth sediment and debris. The specific measures proposed as a part of the project plan are shown in the Site Plan Package on the Sedimentation and Erosion Control Plan and the Erosion Control Details.

Removal of temporary erosion control measures will be prohibited until paving has been installed and vegetation (grass) is well established.

5.3.2 Permanent Erosion Control

At the completion of construction, all soils will be permanently stabilized by one or more of the following measures:

- › Access: Driveways and access roads will be stabilized with bituminous concrete pavement or the applicable surface cover.
- › Landscaped Areas: All disturbed areas, not permanently stabilized by pavement or buildings, will be covered with bark mulch, stone, sod or a minimum of six (6) inches of topsoil and seeded.
- › Pipe Outlets: Scour protection (riprap) shall be constructed at the headwall outlet to prevent scouring.

5.4 Conclusion

By implementing standard stormwater management techniques, the proposed development can successfully mitigate its impacts on peak stormwater runoff rates. Furthermore, stormwater quality issues can be addressed through the proposed implementation of standard practices (infiltration basins, etc.) that are accepted by both the City of Lebanon and the NH Department of Environmental Services Alteration of Terrain Bureau. The Project complies with

the minimum groundwater recharge requirement, water quality volume requirements, and treatment rates via the utilization of bioretention basins and the subsurface infiltration basins.

- › Minimum groundwater recharge required (NHDES AOT): 3,770 CF
 - Minimum groundwater recharge provided: **39,202 CF**
- › Minimum water quality volume required (City of Lebanon): 3,770 CF
 - Water quality volume provided: **38,227 CF**
- › Minimum water quality volume required (NHDES AOT): 26,194 CF
 - Water quality volume provided: **38,227 CF**
- › TSS and TP Treatment Percentages required: 80% and 40% respectively (City of Lebanon)
 - TSS Treatment Percentages:
 - Infiltration Practices: **90% and 65%**
 - Bioretention Systems: **90% and 65%**
- › Pre-development vs post-development peak runoff rates: **refer to Table 4.**
- › 2-Year Pre-development vs post-development runoff volume: **refer to Table 5.**
- › Maximum 10% Effective Impervious Cover (EIC): **All impervious areas are connected to infiltration systems or are disconnected impervious.**

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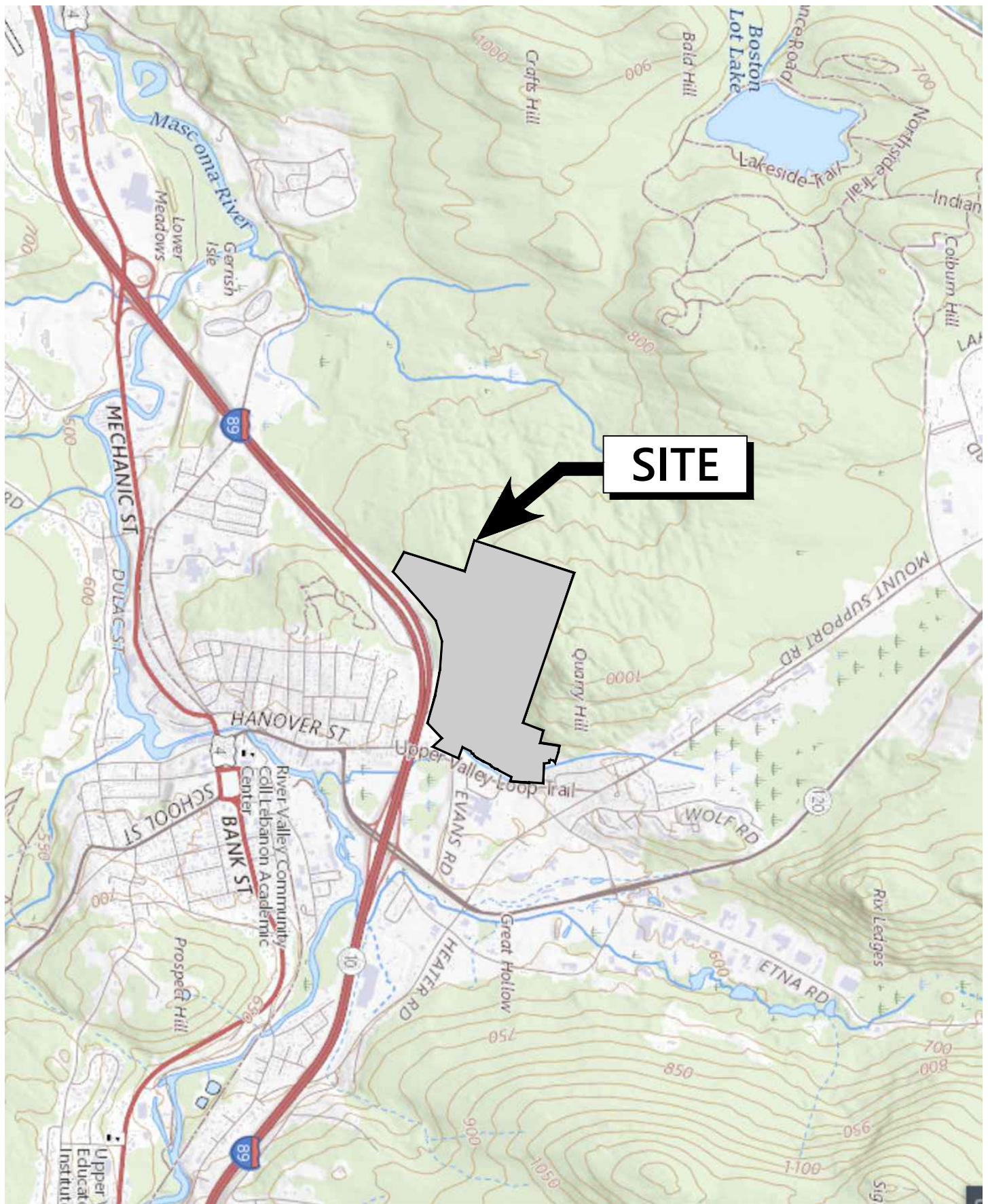


6

Figures

- › Figure 1: Site Location Map
- › Figure 2: Existing Conditions Drainage Area Plan
- › Figure 3: Proposed Conditions Drainage Area Plan
- › Figure 4: Existing Conditions Color Coded Soils Plan
- › Figure 5: Proposed Conditions Color Coded Soils Plan

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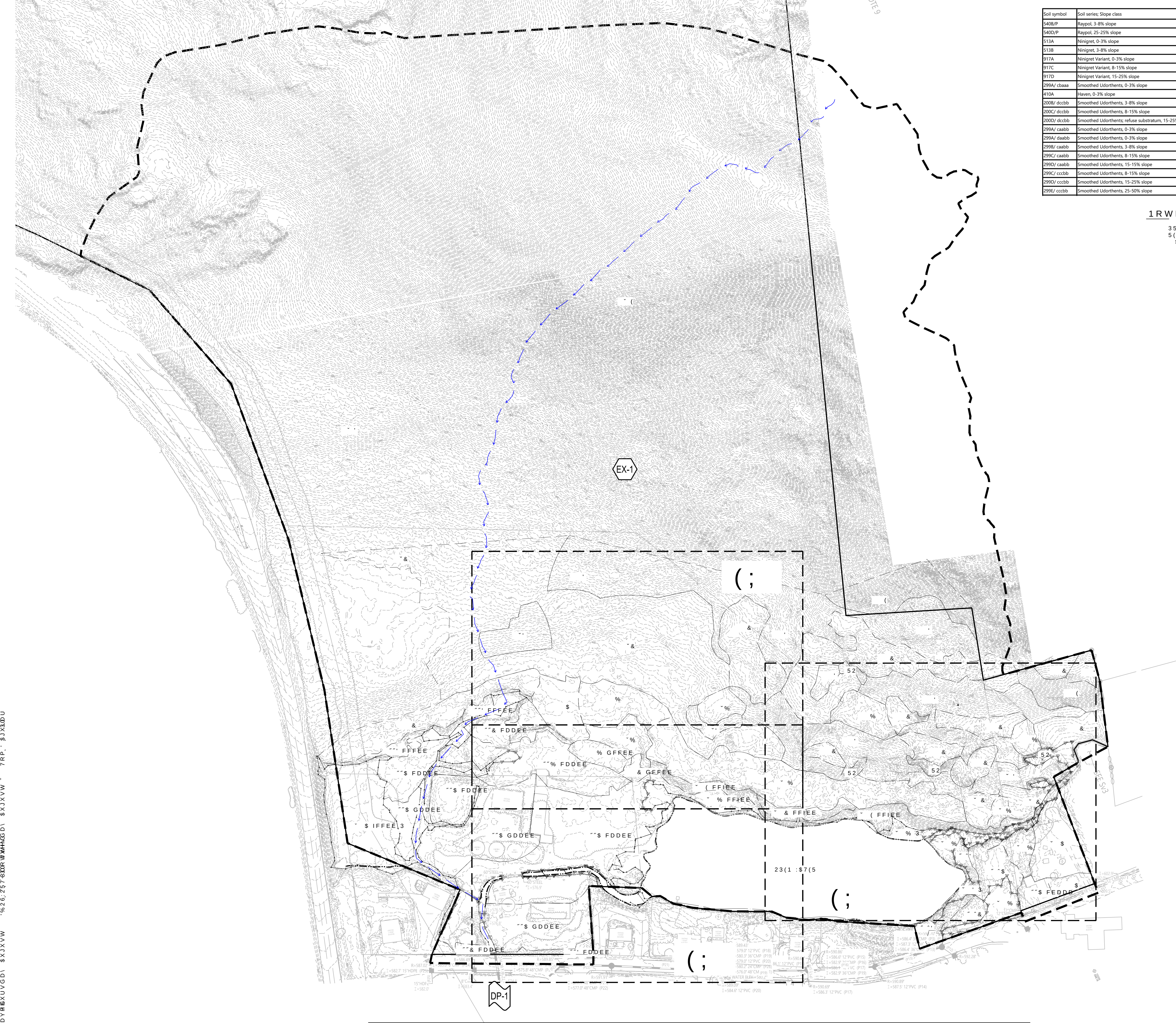


Site USGS Map
Lebanon Brickyard Development
Lebanon, NH 03766

Figure 1

November 2023

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Soil symbol	Soil series: Slope class	600C/ fccb/P	Endoaquents, 8-15% slope	+ 6" %
540B/P	Raypol, 3-8% slope	+ 6" %	600A/fccb/P	Endoaquents, 0-3% slope
540D/P	Raypol, 25-25% slope	+ 6" %	600A/fcdc/P	Endoaquents, 0-3% slope
513A	Ninigret, 0-3% slope	+ 6" %	336B	Pittstown, very stony, 3-8% slope
513B	Ninigret, 3-8% slope	+ 6" %	331A	Barnardston, very stony, 0-3% slope
917A	Ninigret Variant, 0-3% slope	+ 6" %	331B	Barnardston, very stony, 3-8% slope
917C	Ninigret Variant, 8-15% slope	+ 6" %	331C	Barnardston, very stony, 8-15% slope
917D	Ninigret Variant, 15-25% slope	+ 6" %	45B	Montauk, very stony, 3-8% slope
299A/ cbaaa	Smoothed Udorthents, 0-3% slope	+ 6" %	45C	Montauk, very stony, 8-15% slope
410A	Haven, 0-3% slope	+ 6" %	45D	Montauk, very stony, 15-25% slope
200B/ dcbbb	Smoothed Udorthents, 3-8% slope	+ 6" %	141B	Hollis-rock outcrop - Chatfield complex, 3-8% slope
200C/ dcbbb	Smoothed Udorthents, 8-15% slope	+ 6" %	141C	Hollis-rock outcrop - Chatfield complex, 8-15% slope
200D/ dcbbb	Smoothed Udorthents; refuse substratum, 15-25% slope	+ 6" %	441D	Hollis-rock outcrop - Chatfield complex, 15-25% slope
299A/ caabb	Smoothed Udorthents, 0-3% slope	+ 6" %	141E	Hollis-rock outcrop - Chatfield complex, 25-50% slope
299A/ daabb	Smoothed Udorthents, 0-3% slope	+ 6" %	250B	Chatfield - Hollis - Montauk complex, very stony, 8-15% slope
299B/ caabb	Smoothed Udorthents, 3-8% slope	+ 6" %	250C	Chatfield - Hollis - Montauk complex, very stony, 8-15% slope
299C/ caabb	Smoothed Udorthents, 8-15% slope	+ 6" %	250D	Chatfield - Hollis - Montauk complex, very stony, 15-25% slope
299D/ caabb	Smoothed Udorthents, 15-15% slope	+ 6" %	500B/cfbb	Udorthents, loamy, 3-8% slope
299C/ ccbbb	Smoothed Udorthents, 8-15% slope	+ 6" %	500C/cfbb	Udorthents, loamy, 8-15% slope
299D/ ccbbb	Smoothed Udorthents, 15-25% slope	+ 6" %	500E/cfbb	Udorthents, loamy, 25-50% slope
299E/ ccbbb	Smoothed Udorthents, 25-50% slope	+ 6" %	RO	Rock outcrop

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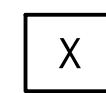
DESIGN POINT



DRAINAGE AREA DESIGNATION



POND



REACH

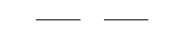
LINETYPES



DRAINAGE AREA BOUNDARY



TIME OF CONCENTRATION FLOW LINE



LIMITS OF SITE SPECIFIC SOIL SURVEY

15&6 62,/ &/(\$66.)&\$7.216

26A

1' 6'25 /2\$0< 6\$1' 6/23(6 +6" %

26B

1' 6'25 /2\$0< 6\$1' 6/23(6 +6" %

26C

1' 6'25 /2\$0< 6\$1' 6/23(6 +6" %

63C

&+\$5/721),1(6\$1'< /2\$0 6/23(6 9(5< 6721< +6" %

331C

%(51\$5'6721 6,/7 /2\$0 6/23(6 9(5< 6721< +6" %

331D

%(51\$5'6721 6,/7 /2\$0 6/23(6 9(5< 6721< +6" %

341B

67.66,1' 6,/7 /2\$0 6/23(6 9(57 6721< +6" %

361D

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361E

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EX-1

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SURMFW IXPEHU



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

SYMBOLS



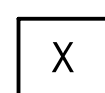
DESIGN POINT



DRAINAGE AREA
DESIGNATION



POND



REACH

LINE TYPES



DRAINAGE AREA
BOUNDARY



TIME OF CONCENTRATION
FLOW LINE



NRCS SOIL TYPE
BOUNDARY



LIMITS OF SITE
SPECIFIC SOIL SURVEY

NRCS SOIL CLASSIFICATIONS



WINDSOR LOAMY SAND,
0-3% SLOPES, HSG A



WINDSOR LOAMY SAND,
3-8% SLOPES, HSG A



WINDSOR LOAMY SAND,
15-60% SLOPES, HSG A



CHARLTON FINE SANDY
LOAM, 8-15% SLOPES, VERY
STONY, HSG B



BERNARDSTON SILT LOAM, 8-15%
SLOPES, VERY STONY, HSG D



BERNARDSTON SILT LOAM, 15-25%
SLOPES, VERY STONY, HSG D



STISSING SILT LOAM, 3-8%
SLOPES, VERT STONY, HSG C/D



CARDIGAN-KEARSARGE-ROCK
OUTCROP, 15-25% SLOPES, HSG C



CARDIGAN-KEARSARGE-ROCK
OUTCROP, 25-60% SLOPES, HSG C



BINGHAMVILLE SILT LOAM, HSG
C/D



WATER



The Brickyard
Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No. Revision Date Apprd.

Designed by TMD Checked by

Issued for Date

Permitting July 6, 2024

Not Approved for Construction

Drawing Title

Existing Conditions
Stormwater Management
Plan

Drawing Number

EX-2

Sheet

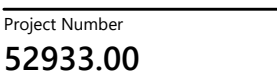
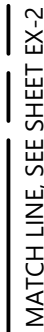
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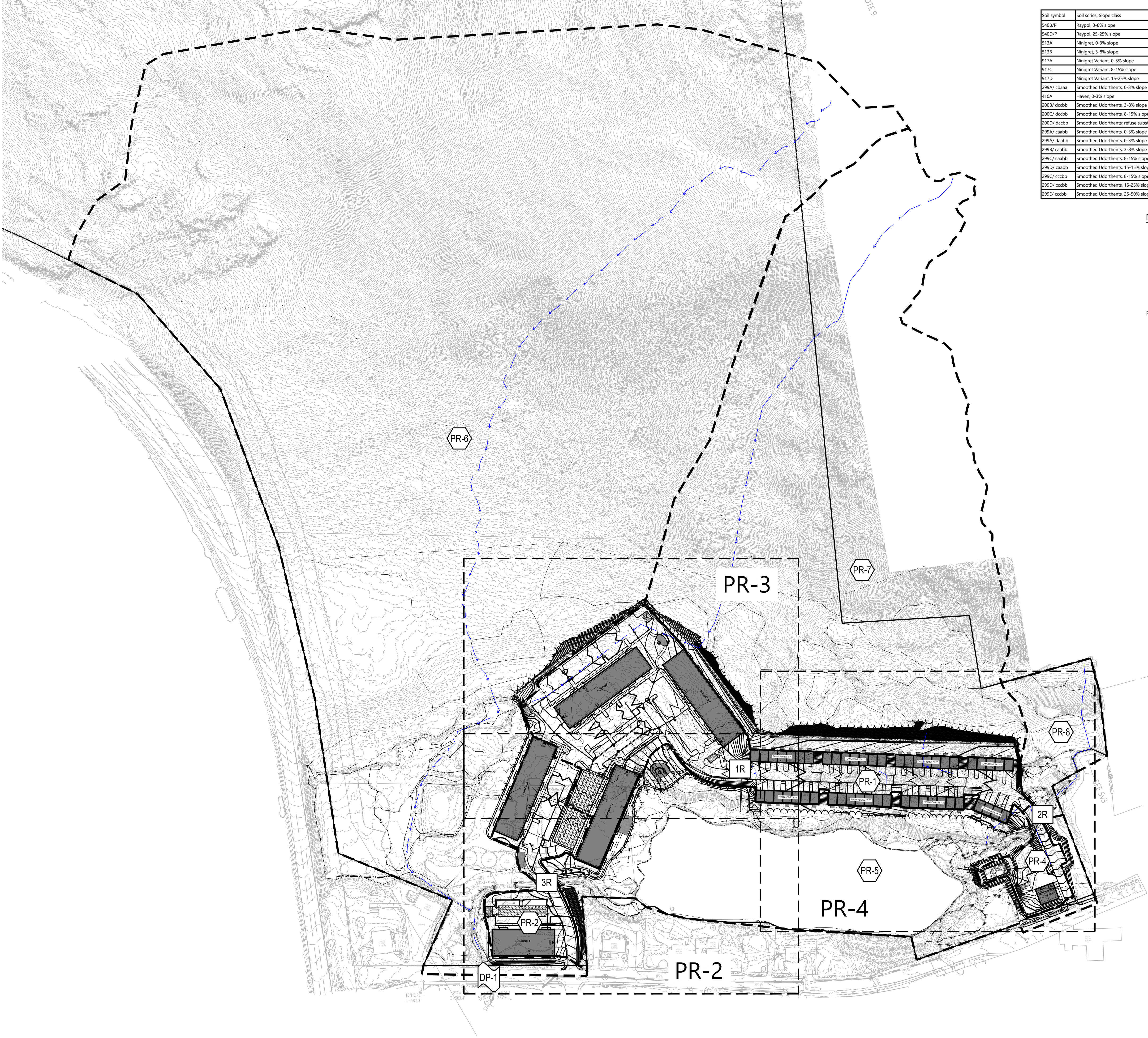
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4

Project Number

52933.00





Soil symbol	Soil series: Slope class	600C/ fcbb/P	Endoaquents, 8-15% slope	HSG B
540B/P	Raypol, 3-8% slope	HSG D	600A/fccb/P	Endoaquents, 0-3% slope
540D/P	Raypol, 25-25% slope	HSG D	600A/fccd/P	Endoaquents, 0-3% slope
513A	Ninigret, 0-3% slope	HSG B	336B	Pittstown, very stony, 3-8% slope
513B	Ninigret, 3-8% slope	HSG B	331A	Bernardston, very stony, 0-3% slope
917A	Ninigret Variant, 0-3% slope	HSG C	331B	Bernardston, very stony, 3-8% slope
917C	Ninigret Variant, 8-15% slope	HSG C	331C	Bernardston, very stony, 8-15% slope
917D	Ninigret Variant, 15-25% slope	HSG C	45B	Montauk, very stony, 3-8% slope
299A/ cbaaa	Smoothed Udorthents, 0-3% slope	HSG A	45C	Montauk, very stony, 8-15% slope
410A	Haven, 0-3% slope	HSG B	45D	Montauk, very stony, 15-25% slope
200B/ dcbbb	Smoothed Udorthents, 3-8% slope	HSG B	141B	Hollis-rock outcrop - Chatfield complex, 3-8% slope
200C/ dcbbb	Smoothed Udorthents, 8-15% slope	HSG B	141C	Hollis-rock outcrop - Chatfield complex, 8-15% slope
200D/ dcbbb	Smoothed Udorthents; refuse substratum, 15-25% slope	HSG B	141D	Hollis-rock outcrop - Chatfield complex, 15-25% slope
299A/ caabb	Smoothed Udorthents, 0-3% slope	HSG B	141E	Hollis-rock outcrop - Chatfield complex, 25-50% slope
299B/ daabb	Smoothed Udorthents, 0-3% slope	HSG B	250B	Chatfield - Hollis - Montauk complex, very stony, 3-8% slope
299B/ caabb	Smoothed Udorthents, 3-8% slope	HSG B	250C	Chatfield - Hollis - Montauk complex, very stony, 8-15% slope
299C/ caabb	Smoothed Udorthents, 8-15% slope	HSG B		
299D/ caabb	Smoothed Udorthents, 15-15% slope	HSG B	250D	Chatfield - Hollis - Montauk complex, very stony, 15-25% slope
299C/ cccbb	Smoothed Udorthents, 8-15% slope	HSG B	500B/cfbb	Udorthents, loamy, 3-8% slope
299D/ cccbb	Smoothed Udorthents, 15-25% slope	HSG B	500C/cfbb	Udorthents, loamy, 8-15% slope
299E/ cccbb	Smoothed Udorthents, 25-50% slope	HSG B	500E/cfbb	Udorthents, loamy, 25-50% slope
		RO		Rock outcrop

Notes

- 1) PREPARED FOR BRICKYARD ONE NOMINEE TRUST FOR THE BRICKYARD RESIDENTIAL DEVELOPMENT, LOCATED ON HANOVER STREET, TAX MAPS 48-1, 2, 4 AND 63-1.
- 2) IMPERVIOUS COVER CALCULATIONS
 - EXISTING IMPERVIOUS: 0.75 AC
 - NEW IMPERVIOUS: 7.57 AC
 - NET NEW IMPERVIOUS: 6.82 AC
 - GROUNDWATER RECHARGE REQUIRED PER ENV-WQ 1500: 3,770 CF (SEE WORKSHEET)
 - GROUNDWATER RECHARGE PROVIDED: 39,202 CF
- 3) APPROXIMATE DISTURBED AREA IS ±13.5 AC
- 4) CONSTRUCTION SEQUENCE: REFER TO PHASING PLAN FOR DETAILS. ROADWAY, PARKING, UTILITIES AND BUILDINGS 1 AND MAINTENANCE BUILDING CONSTRUCTED FIRST.



2 Bedford Farms Drive
Suite 200
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Legend

SYMBOLS

X

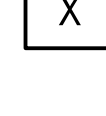
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X

DRAINAGE AREA DESIGNATION

X

POND

X

REACH

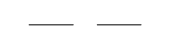
LINETYPES



DRAINAGE AREA BOUNDARY



TIME OF CONCENTRATION FLOW LINE



LIMITS OF SITE SPECIFIC SOIL SURVEY

NRCS SOIL CLASSIFICATIONS	
26A	WINDSOR LOAMY SAND, 0-3% SLOPES, HSG A
26B	WINDSOR LOAMY SAND, 3-8% SLOPES, HSG A
26E	WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A
63C	CHARLTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY, HSG B
331C	BERNARDSTON SILT LOAM, 8-15% SLOPES, VERY STONY, HSG D
331D	BERNARDSTON SILT LOAM, 15-25% SLOPES, VERY STONY, HSG D
341B	STISSING SILT LOAM, 3-8% SLOPES, VERT STONY, HSG C/D
361D	CARDIGAN-KEARSARGE-ROCK OUTCROP, 15-25% SLOPES, HSG C
361E	CARDIGAN-KEARSARGE-ROCK OUTCROP, 25-60% SLOPES, HSG C
53A	BINGHAMVILLE SILT LOAM, HSG C/D
W	WATER



060120240Feet

The Brickyard
Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Appr.

Designed by	TMD	Checked by	MJV
Issued for		Date	December 4, 2024

Permitting

Not Approved for Construction

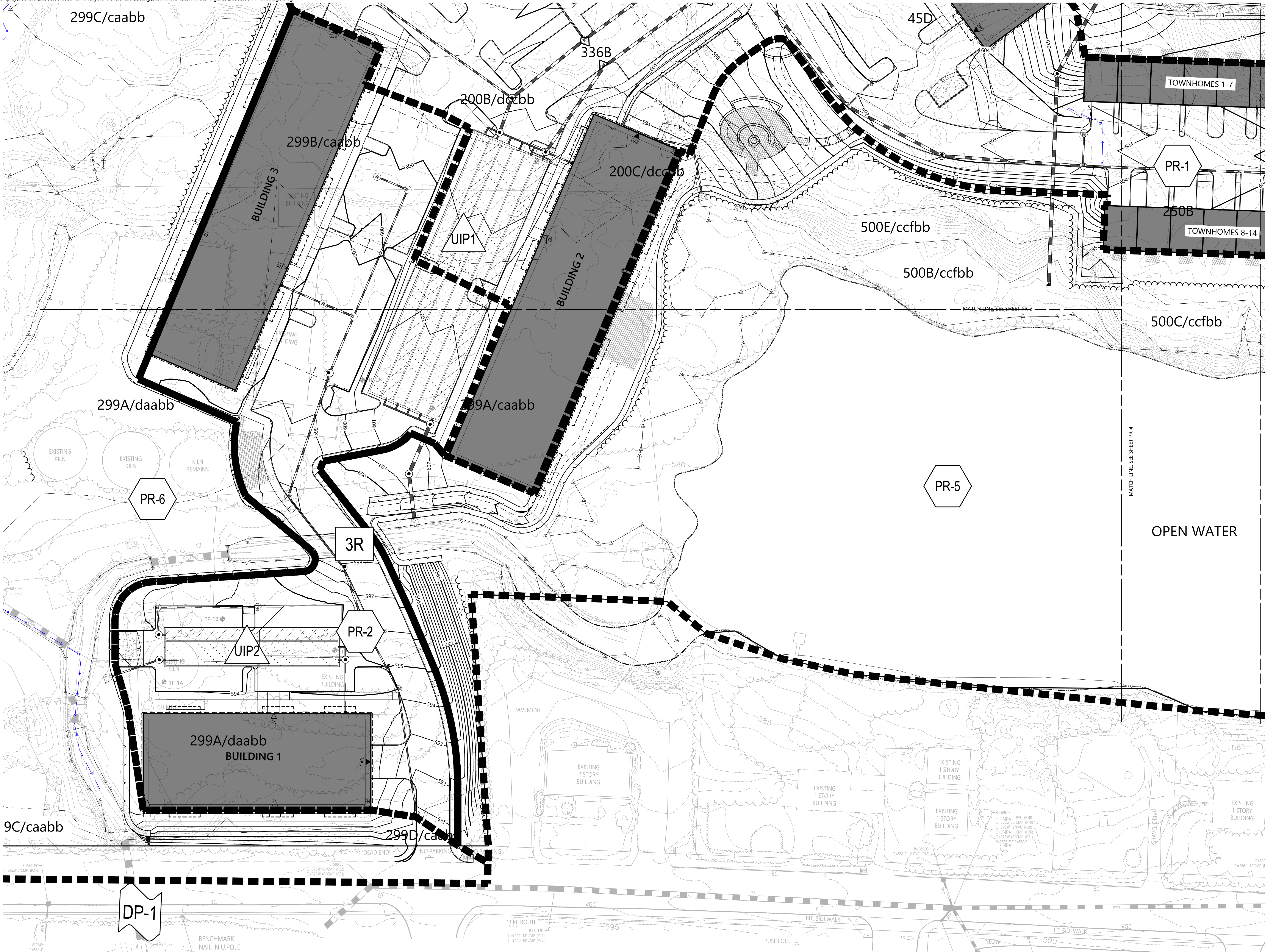
Proposed Conditions
Stormwater Management
Plan

Drawing Number

PR-1

Sheet 1 of 4

Project Number
52933.00



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Bedford, NH 03110
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Legend

SYMBOLS

DESIGN POINT

DRAINAGE AREA DESIGNATION

POND

LINETYPES

DRAINAGE AREA BOUNDARY

NRCS SOIL CLASSIFICATIONS

26A

WINDSOR LOAMY SAND, 0-3% SLOPES, HSG A

26B

WINDSOR LOAMY SAND, 3-8% SLOPES, HSG A

26E

WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A

63C

CHARLTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY, HSG B

331C

BERNARDSTON SILT LOAM, 8-15% SLOPES, VERY STONY, HSG D

331D

BERNARDSTON SILT LOAM, 15-25% SLOPES, VERY STONY, HSG D

341B

STISSING SILT LOAM, 3-8% SLOPES, VERT STONY, HSG C/D

361D

CARDIGAN-KEARSARGE-ROCK OUTCROP, 15-25% SLOPES, HSG C

361E

CARDIGAN-KEARSARGE-ROCK OUTCROP, 25-60% SLOPES, HSG C

53A

BINGHAMVILLE SILT LOAM, HSG C/D

W

WATER

0153060

0153060

0153060

0153060

Feet

The Brickyard Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

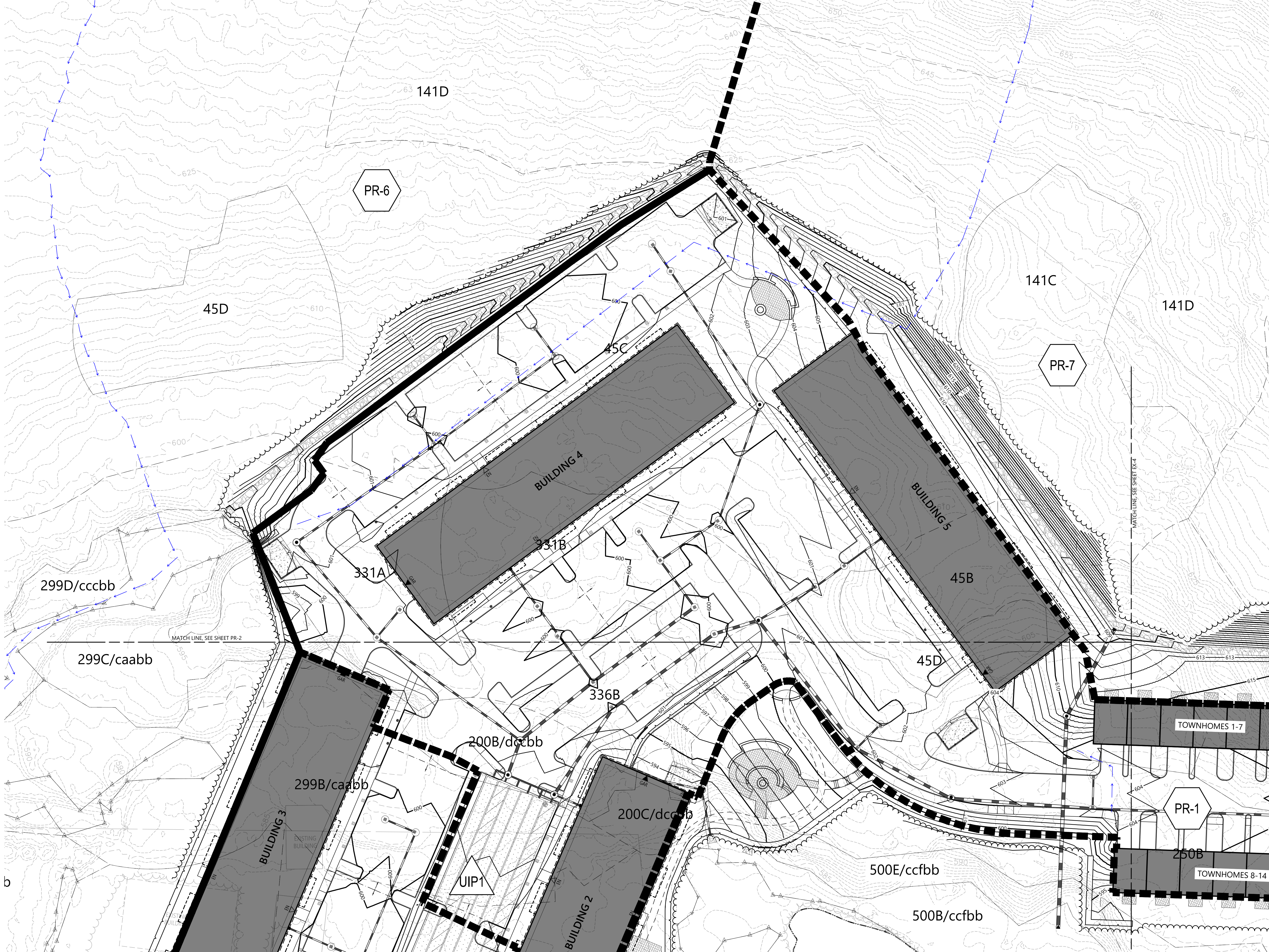
No.	Revision	Date	Appr'd.

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Issued for	Date
Permitting	December 4, 2024

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Drawing Title

**Proposed Conditions
Stormwater Management
Plan**





2 Bedford Farms Drive
Suite 200
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Legend

SYMBOLS



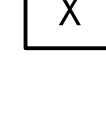
DESIGN POINT



DRAINAGE AREA DESIGNATION



POND



REACH

LINETYPES



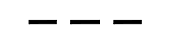
DRAINAGE AREA BOUNDARY



TIME OF CONCENTRATION FLOW LINE

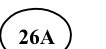


NRCS SOIL TYPE BOUNDARY



LIMITS OF SITE SPECIFIC SOIL SURVEY

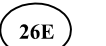
NRCS SOIL CLASSIFICATIONS



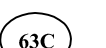
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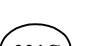
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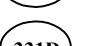
WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A



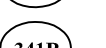
CHARLTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY, HSG B



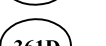
BERNARDSTON SILT LOAM, 8-15% SLOPES, VERY STONY, HSG D



BERNARDSTON SILT LOAM, 15-25% SLOPES, VERY STONY, HSG D



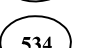
STISSING SILT LOAM, 3-8% SLOPES, VERT STONY, HSG C/D



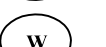
CARDIGAN-KEARSARGE-ROCK OUTCROP, 15-25% SLOPES, HSG C



CARDIGAN-KEARSARGE-ROCK OUTCROP, 25-60% SLOPES, HSG C



BINGHAMVILLE SILT LOAM, HSG C/D



WATER



0 15 30 60 Feet

The Brickyard Residential Development
174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Appr'd.

Designed by	Checked by
TMD	
Issued for	Date
Permitting	December 4, 2024

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Drawing Title

Proposed Conditions Stormwater Management Plan

Drawing Number

PR-3

Sheet 3 of 4

Project Number 52933.00



2 Bedford Farms Drive
Suite 200
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Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- NRCS SOIL TYPE BOUNDARY
- LIMITS OF SITE SPECIFIC SOIL SURVEY

NRCS SOIL CLASSIFICATIONS

- WINDSOR LOAMY SAND, 0-3% SLOPES, HSG A
- WINDSOR LOAMY SAND, 3-8% SLOPES, HSG A
- WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A
- CHARLTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY, HSG B
- BERNARDSTON SILT LOAM, 8-15% SLOPES, VERY STONY, HSG D
- BERNARDSTON SILT LOAM, 15-25% SLOPES, VERY STONY, HSG D
- STISSING SILT LOAM, 3-8% SLOPES, VERT STONY, HSG C/D
- CARDIGAN-KEARSARGE-ROCK OUTCROP, 15-25% SLOPES, HSG C
- CARDIGAN-KEARSARGE-ROCK OUTCROP, 25-60% SLOPES, HSG C
- BINGHAMVILLE SILT LOAM, HSG C/D
- WATER



0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No. Revision Date Appr.

Designed by TMD Checked by

Issued for Date

Permitting December 4, 2024

Not Approved for Construction

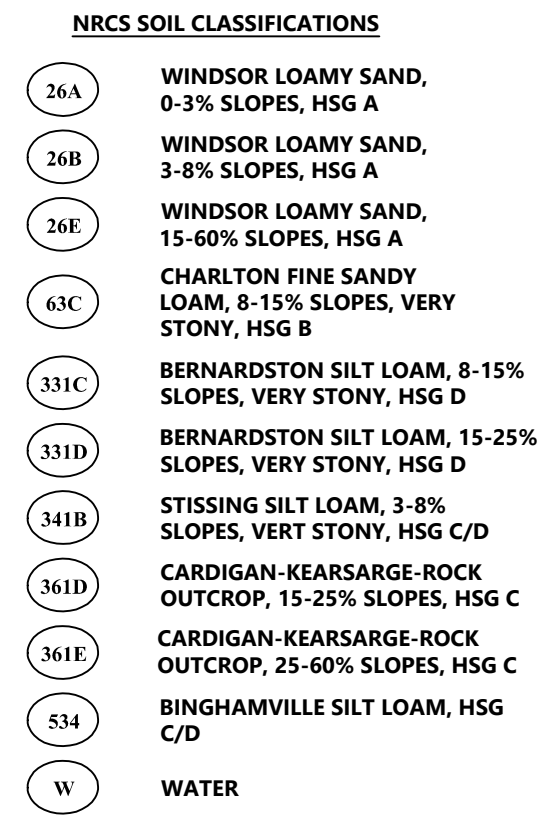
Drawing Title
**Proposed Conditions
Stormwater Management
Plan**

Drawing Number

PR-4

Sheet of
4 4

Project Number
52933.00



Soil symbol	Soil series: Slope class			
		600C/ fccbp/	Endoquents, 8-15% slope	HSG B
540B/P	Raypol, 3-8% slope	HSG D	600A/fccbp/	Endoquents, 0-3% slope
540D/P	Raypol, 25-25% slope	HSG D	600A/fccdp/	Endoquents, 0-3% slope
513A	Ningring, 0-3% slope	HSG B	336B	Pittstown, very stony, 3-8% slope
513B	Ningring, 3-8% slope	HSG B	331A	Bernardston, very stony, 3-3% slope
517A	Ningring Variant, 0-3% slope	HSG C	331B	Bernardston, very stony, 0-8% slope
517C	Ningring Variant, 8-15% slope	HSG C		Bernardston, very stony, 8-15% slope
517D	Ningring Variant, 15-25% slope	HSG C	45B	Montauk, very stony, 3-8% slope
59A/ cbaaa	Smoothed Udothents, 0-3% slope	HSG A	45C	Montauk, very stony, 8-15% slope
410A	Haven, 0-3% slope	HSG B	45D	Montauk, very stony, 15-25% slope
200B/ dcdbb	Smoothed Udothents, 3-8% slope	HSG B	141B	Hollis-rock outcrop - Chaffield complex, 3-8% slope
200C/ dcdbb	Smoothed Udothents, 8-15% slope	HSG B	141C	Hollis-rock outcrop - Chaffield complex, 8-15% slope
200D/ dcdbb	Smoothed Udothents, refuse substratum, 15-25% slope	HSG B	141D	Hollis-rock outcrop - Chaffield complex, 15-25% slope
299A/ caabb	Smoothed Udothents, 0-3% slope	HSG B	141E	Hollis-rock outcrop - Chaffield complex, 25-50% slope
299A/ daabb	Smoothed Udothents, 0-3% slope	HSG B	250B	Chaffield - Hollis - Montauk complex, very stony, 3-8% slope
299B/ caabb	Smoothed Udothents, 3-8% slope	HSG B	250C	Chaffield - Hollis - Montauk complex, very stony, 8-15% slope
299C/ caabb	Smoothed Udothents, 8-15% slope	HSG B	250D	Chaffield - Hollis - Montauk complex, very stony, 15-25% slope
299D/ caabb	Smoothed Udothents, 15-15% slope	HSG B		
500B/ cccbb	Smoothed Udothents, 8-15% slope	HSG B	500B/cccbb	Udothents, loamy, 3-8% slope
500C/ cccbb	Smoothed Udothents, loamy, 8-15% slope	HSG B	500C/cccbb	Udothents, loamy, 8-15% slope
500D/ cccbb	Smoothed Udothents, 15-25% slope	HSG B	500E/cccbb	Udothents, loamy, 25-50% slope
299E/ cccbb	Smoothed Udothents, 25-50% slope	HSG B		
		RO		Rock outcrop

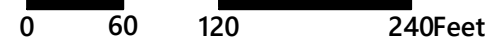
1) PREPARED FOR BRICKYARD ONE NOMINEE TRUST FOR THE BRICKYARD RESIDENTIAL DEVELOPMENT, LOCATED ON HANVOER STREET, TAX MAPS 48-1, 2, 4 AND 63-1.

26A	WINDSOR LOAMY SAND, 0-3% SLOPES, HSG A
26B	WINDSOR LOAMY SAND, 3-15% SLOPES, HSG A
26F	WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A
63C	CHARLTON FINE SANDY LOAM, 8-15% SLOPES, VERY STONY, HSG B
331C	BERNARDSTON SILT LOAM, 8-15% SLOPES, VERY STONY, HSG D
331D	BERNARDSTON SILT LOAM, 15-25% SLOPES, VERY STONY, HSG D
341B	STISSING SILT LOAM, 3-8% SLOPES, VERY STONY, HSG C/D
361D	CARDIGAN-KEARSARGE-ROCK OUTCROP, 15-25% SLOPES, HSG C
361E	CARDIGAN-KEARSARGE-ROCK OUTCROP, 25-60% SLOPES, HSG C
53A	BINGHAMVILLE SILT LOAM, HSG C/D
W	WATER

SYMBOLS



	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION FLOW LINE
	LIMITS OF SITE SPECIFIC SOIL SURVEY
	NRCS SOIL BOUNDARY
	HYDROLOGIC SOIL GROUP A
	HYDROLOGIC SOIL GROUP B
	HYDROLOGIC SOIL GROUP C
	HYDROLOGIC SOIL GROUP D
	WATER SURFACE
	IMPERVIOUS AREA



174 Hanover Street
Lebanon, New Hampshire 03677

[illegible]

Designed by	TMD	Checked by	MJV
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Permitting July 6, 2024

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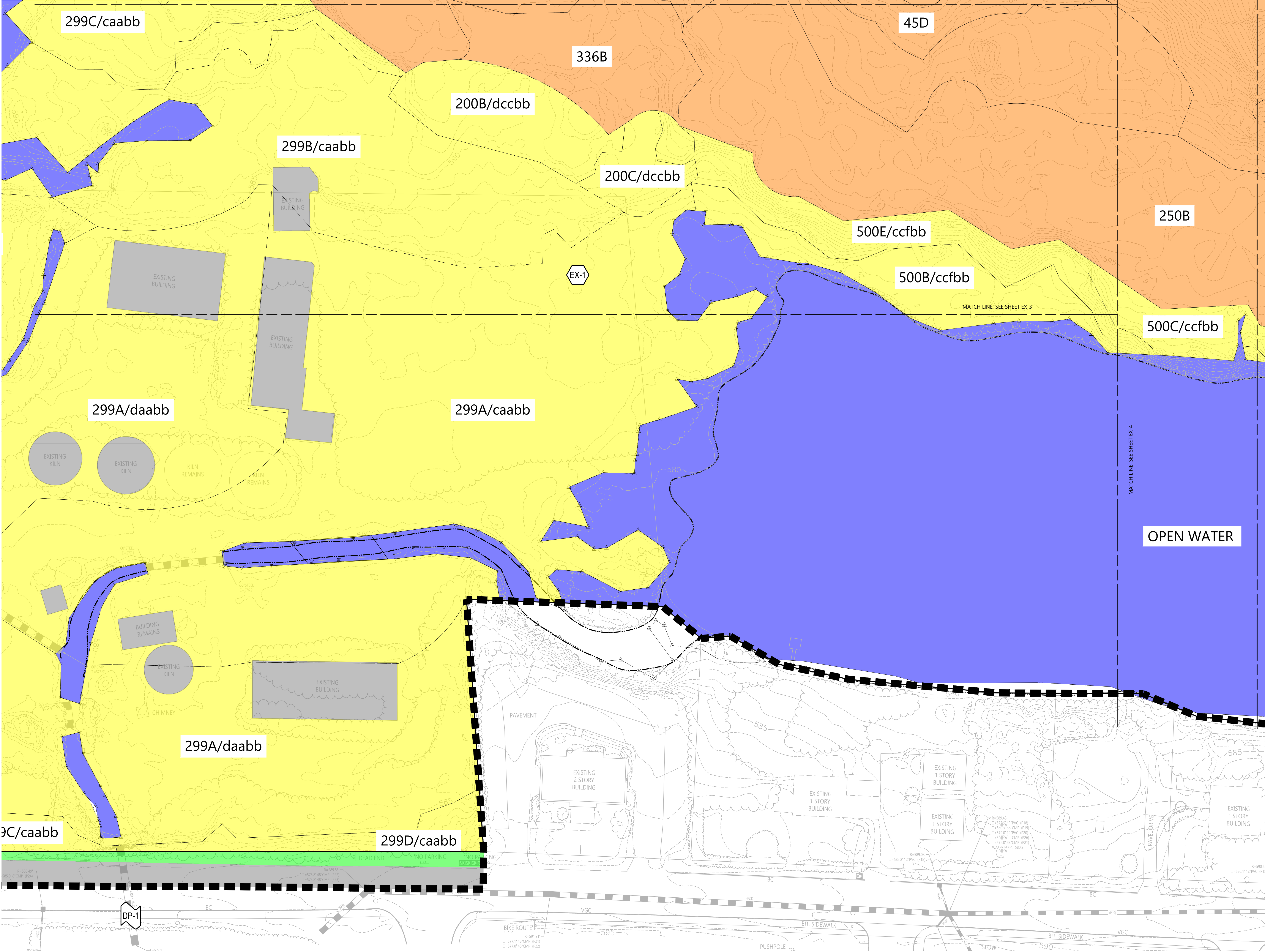
Existing Conditions

Color Coded Soils

Plan

Drawing Number

Sheet 1 of 4



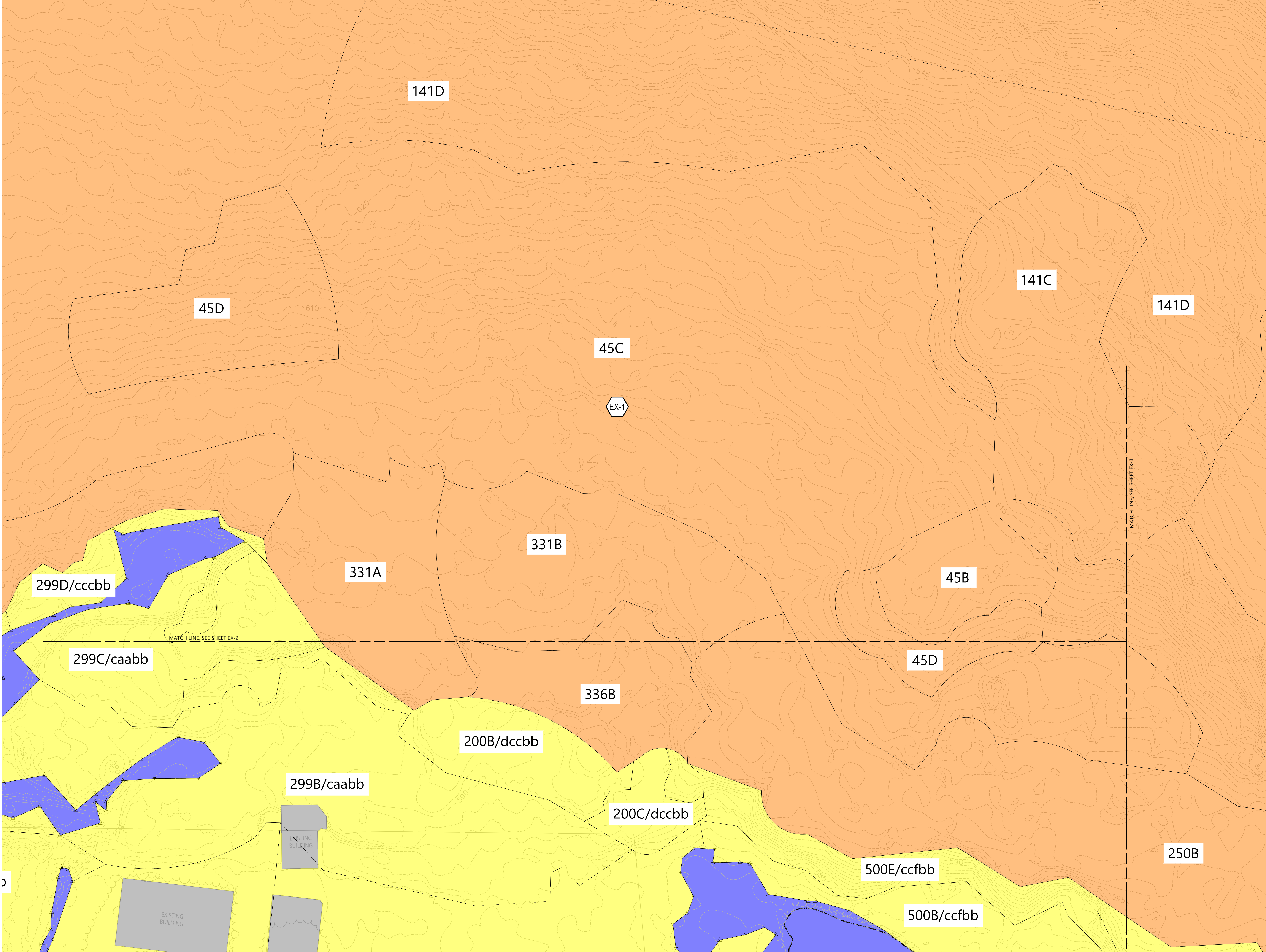
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	DESIGN POINT
	DRAINAGE AREA DESIGNATION
	POND
	REACH
LINETYPES	
	DRAINAGE AREA BOUNDARY
	TIME OF CONCENTRATION FLOW LINE
	LIMITS OF SITE SPECIFIC SOIL SURVEY
	NRCS SOIL BOUNDARY
	HYDROLOGIC SOIL GROUP A
	HYDROLOGIC SOIL GROUP B
	HYDROLOGIC SOIL GROUP C
	HYDROLOGIC SOIL GROUP D
	WATER SURFACE
	IMPERVIOUS AREA

The Brickyard Residential Development
174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Appr'd.

Designed by **TMD** Checked by **TMD**
Issued for **Permitting** Date **July 6, 2024**

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Drawing Title
**Existing Conditions
Color Coded Soils
Plan**





vhb.com

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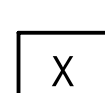
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SYMBOLS

DESIGN POINT

DRAINAGE AREA DESIGNATION

POND

REACH

LINETYPES

DRAINAGE AREA BOUNDARY

TIME OF CONCENTRATION FLOW LINE

LIMITS OF SITE SPECIFIC SOIL SURVEY

NRCS SOIL BOUNDARY

HYDROLOGIC SOIL GROUP A

HYDROLOGIC SOIL GROUP B

HYDROLOGIC SOIL GROUP C

HYDROLOGIC SOIL GROUP D

WATER SURFACE

IMPERVIOUS AREA



The Brickyard
Residential Development
174 Hanover Street
Lebanon, New Hampshire 03677

0153060

0153060

0153060

0153060

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Revision

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Apprd.

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Date

July 6, 2024

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Drawing Title

Existing Conditions

Color Coded Soils

Plan

Drawing Number

EX-3

Sheet

3

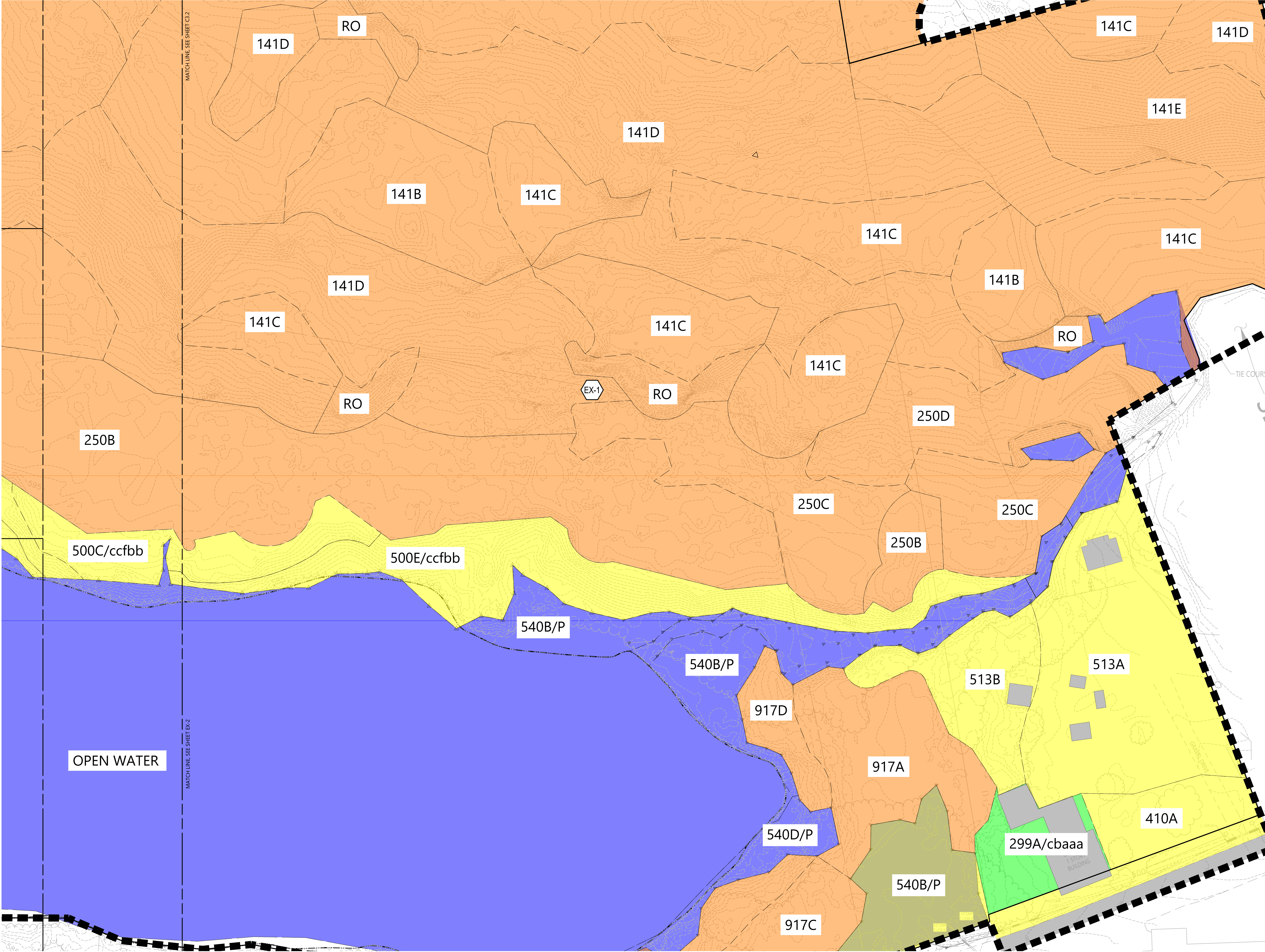
of

4

Project Number

52933.00

Page 136 of 668



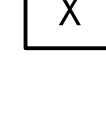


vhb.com

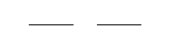
2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

SYMBOLS

-  DESIGN POINT
-  DRAINAGE AREA DESIGNATION
-  POND
-  REACH

LINETYPES

-  DRAINAGE AREA BOUNDARY
-  TIME OF CONCENTRATION FLOW LINE
-  LIMITS OF SITE SPECIFIC SOIL SURVEY
-  NRCS SOIL BOUNDARY
-  HYDROLOGIC SOIL GROUP A
-  HYDROLOGIC SOIL GROUP B
-  HYDROLOGIC SOIL GROUP C
-  HYDROLOGIC SOIL GROUP D
-  WATER SURFACE
-  IMPERVIOUS AREA



0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Appr.

Designed by	Checked by
TMD	

Issued for	Date
Permitting	July 6, 2024

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Drawing Title

Existing Conditions Color Coded Soils Plan

Drawing Number

EX-4

Sheet 4 of 4

Project Number 52933.00



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
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Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINE TYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- LIMITS OF SITE SPECIFIC SOIL SURVEY
- NRCS SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- WATER SURFACE
- IMPERVIOUS AREA



0 15 30 60 Feet

The Brickyard Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Appr'd.

Designed by	Checked by
TMD	

Issued for	Date
Permitting	December 4, 2024

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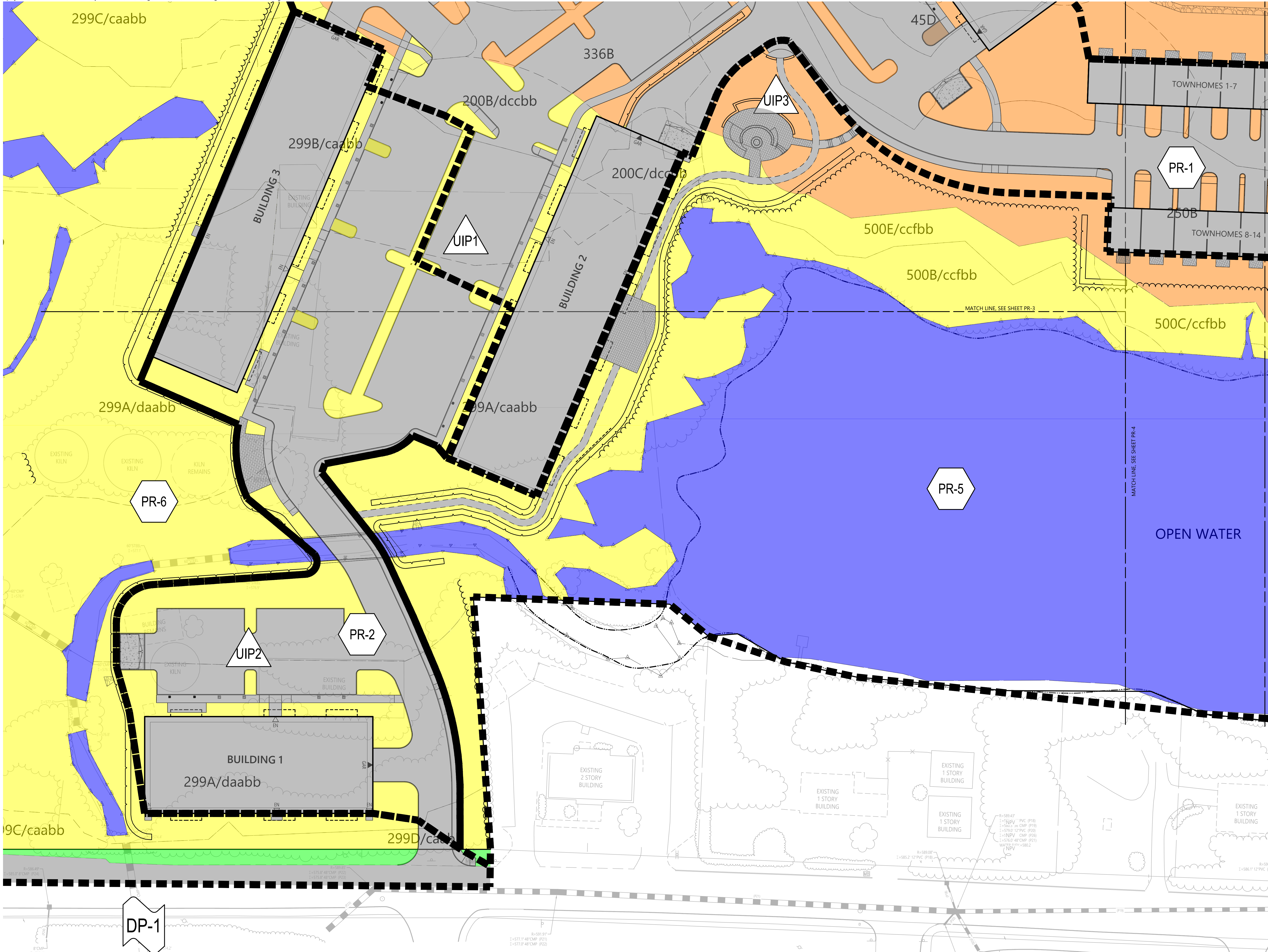
Proposed Conditions
Stormwater Management
Plan

Drawing Number

PR-2

Sheet 2 of 4

Project Number
52933.00

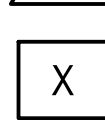




2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- LIMITS OF SITE
- SPECIFIC SOIL SURVEY
- NRCS SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- WATER SURFACE
- IMPERVIOUS AREA



0 15 30 60 Feet

The Brickyard
Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No.	Revision	Date	Apprd.

Designed by	Checked by
TMD	

Issued for	Date
Permitting	December 4, 2024

Not Approved for Construction

Drawing Title

Proposed Conditions
Stormwater Management
Plan

Drawing Number

PR-3

Sheet 3 of 4

Project Number
52933.00



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND
- REACH

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- LIMITS OF SITE SPECIFIC SOIL SURVEY
- NRCS SOIL BOUNDARY
- HYDROLOGIC SOIL GROUP A
- HYDROLOGIC SOIL GROUP B
- HYDROLOGIC SOIL GROUP C
- HYDROLOGIC SOIL GROUP D
- WATER SURFACE
- IMPERVIOUS AREA



0 15 30 60 Feet

The Brickyard
Residential Development

174 Hanover Street
Lebanon, New Hampshire 03677

No. Revision Date Appr.

Designed by TMD Checked by

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Proposed Conditions
Stormwater Management
Plan

Drawing Number

PR-4

Sheet 4 of 4

Project Number
52933.00

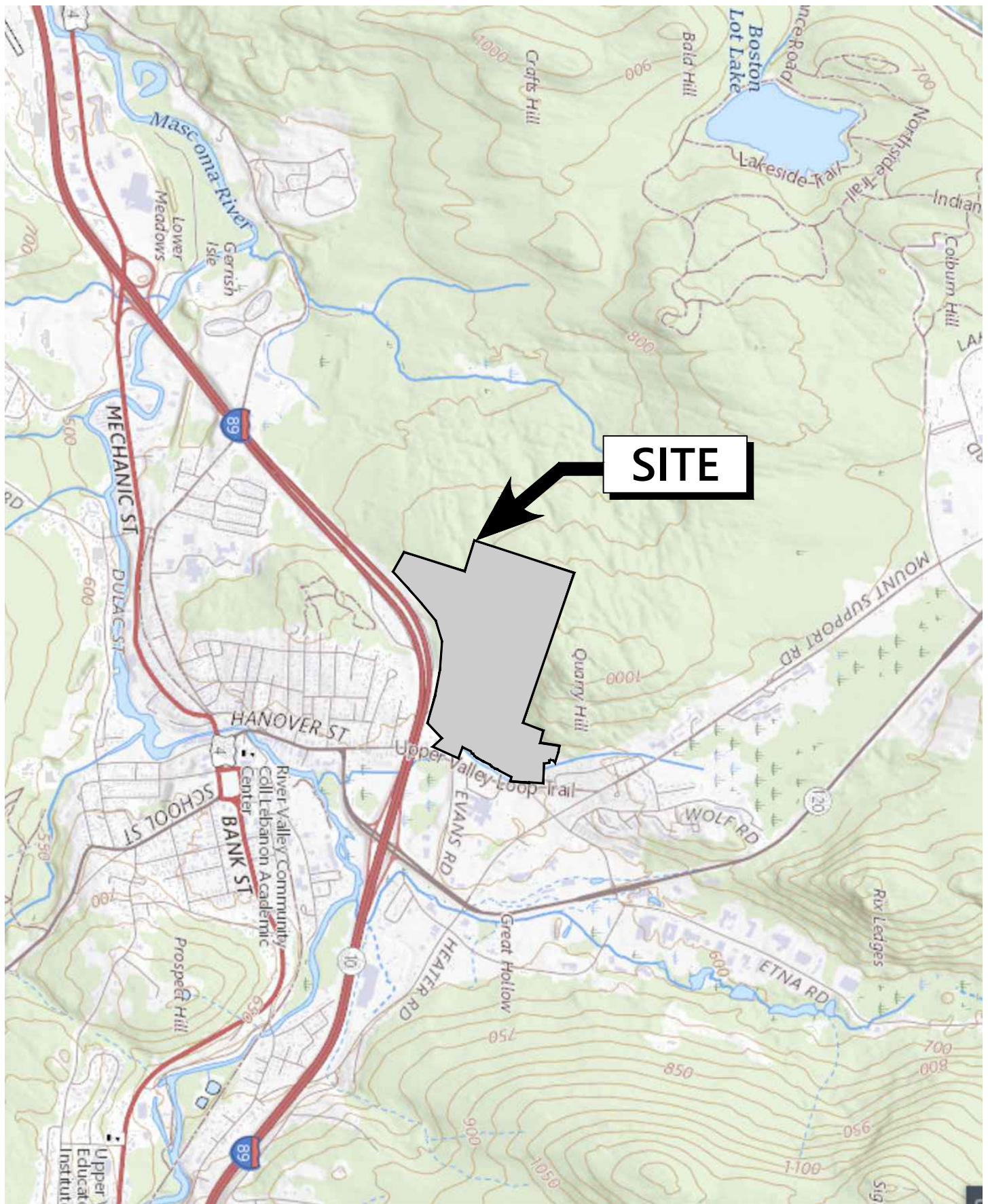
Appendix A: Supporting Data

- › Web GIS Printouts (USGS, Screening Layers, Surface Water Impairments)
- › NHB Letter/Wildlife Coordination
- › NRCS Soils Data
- › Aerial Photograph of the Site
- › BMP Worksheets
- › NRCC Rainfall Data

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Web GIS Printouts

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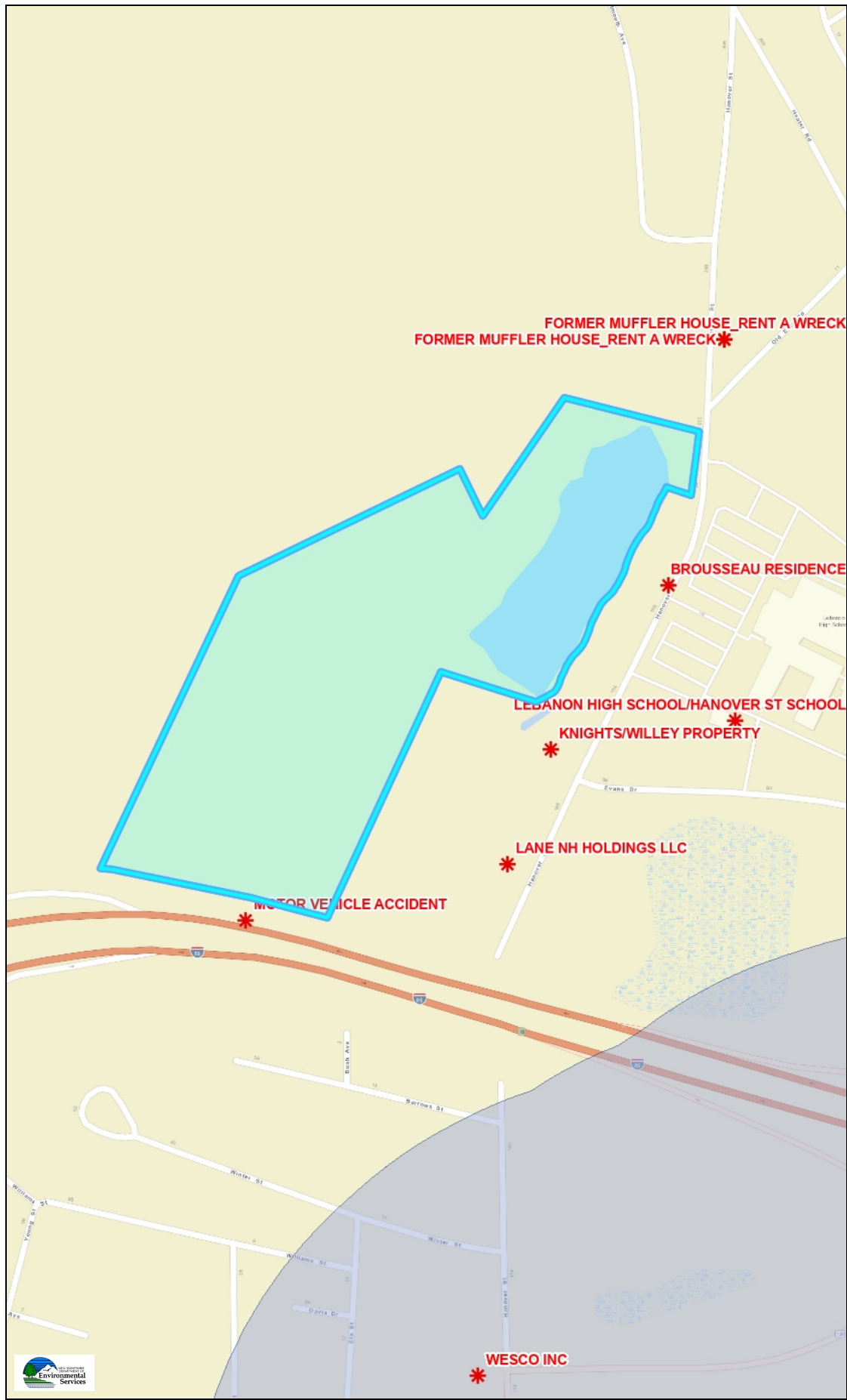


Site USGS Map
Lebanon Brickyard Development
Lebanon, NH 03766

Figure 1

November 2023

AoT Screening Layers



Legend

- * Remediation Sites
- Coastal and Great Bay Regional Communities
- Designated Rivers Quarter Buffer
- Public Water Supply Wells
- Groundwater Classification / GA1
- Groundwater Classification / GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarter Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Water Watersheds
- Surface Waters with Impairment with Quarter Mile Buffer
- Watersheds with Chloride Impairments

Map Scale

1: 5,000

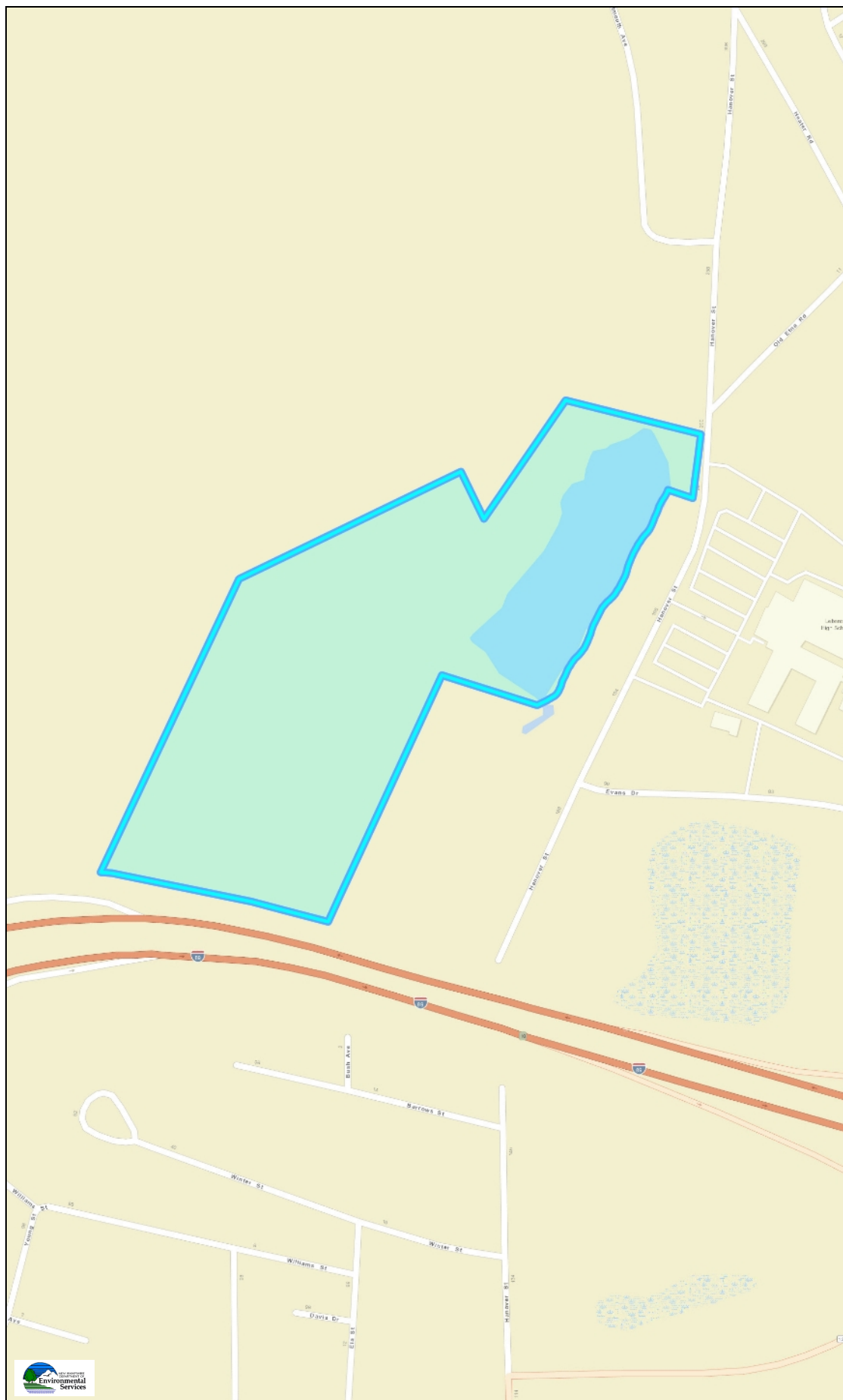
© NH DES, <http://des.nh.gov>

Map Generated: 10/6/2023



Notes

Surface Water Impairments Screening Layers



Legend

-  Surface Waters with Impairment with Quarter Mile Buffer

Map Scale

1: 5,000

© NH DES, <http://des.nh.gov>

Map Generated: 10/6/2023



Notes

NHB Letter

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NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

To: Derek Bosworth
2 Bedford Farms Drive
Salem, NH 03079
dbosworth@vhb.com

From: NHB Review
NH Natural Heritage Bureau
Main Contact: Ashley Litwinenko - nhbreview@dncr.nh.gov

cc:

Date: 10/13/2023 (valid until 10/13/2024)
Re: DataCheck Review by NH Natural Heritage Bureau and NH Fish & Game
Permits: NHDES - Alteration of Terrain Permit

NHB ID: NHB23-2953

Town: Lebanon
Location: 174 Hanover Street EXT

Project Description: Six residential apartment buildings and the required parking +/-700 parking spots are being proposed in the lot.

Next Steps for Applicant:

NHB's database has been searched for records of rare species and exemplary natural communities. Please carefully read the comments and consultation requirements below.

NHB Comments: I was unable to find a record of prior coordination for NHB22-3529. If coordination has occurred please send NHB record of this so we can ensure we stay consistent with past recommendations. If coordination has not occurred, please send NHB proposed plans and representative photos during the growing season of all proposed impact areas.

NHFG Comments: No comments at this time.

NHB Consultation

If this NHB DataCheck letter includes records of rare plants and/or natural communities/systems, please contact NHB and provide any requested supplementary materials by emailing nhbreview@dncr.nh.gov.

If this NHB DataCheck letter DOES NOT include any records of rare plants and/or natural communities/systems, no further consultation with NHB is required.



NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NH Fish and Game Department Consultation

If this NHB DataCheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB DataCheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to <https://www.wildlife.nh.gov/wildlife-and-habitat/nongame-and-endangered-species/environmental-review>. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB DataCheck results letter number and "Fis 1004 consultation request" in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification*, *permit by rule*, *permit by notification*, *routine roadway registration*, *docking structure registration*, or *conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email NHFGreview@wildlife.nh.gov, and include the NHB DataCheck results letter number and "review request" in the email subject line.

Contact NH Fish & Game at (603) 271-0467 with questions.



NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB Database Records:

The following record(s) have been documented in the vicinity of the proposed project.

Please see the map and detailed information about the record(s) on the following pages.

Natural Community	State ¹	Federal	Notes
Rich red oak rocky woods*	--	--	The primary threat to this natural community is logging and development.
Plant species	State ¹	Federal	Notes
crested sedge (<i>Carex cristatella</i>)*	E	--	This wetland species, which occurs in bogs, fens, seeps, and wet meadows, would be threatened by changes to local hydrology, including increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list.

An asterisk (*) indicates that the most recent report for that occurrence was 20 or more years ago.

Disclaimer: NHB's database can only tell you of known occurrences that have been reported to NHFG/NHB. Known occurrences are based on information gathered by qualified biologists or members of the public, reported to our offices, and verified by NHB/NHFG.

However, many areas have never been surveyed, or have only been surveyed for certain species.

NHB recommends surveys to determine what species/natural communities are present onsite.

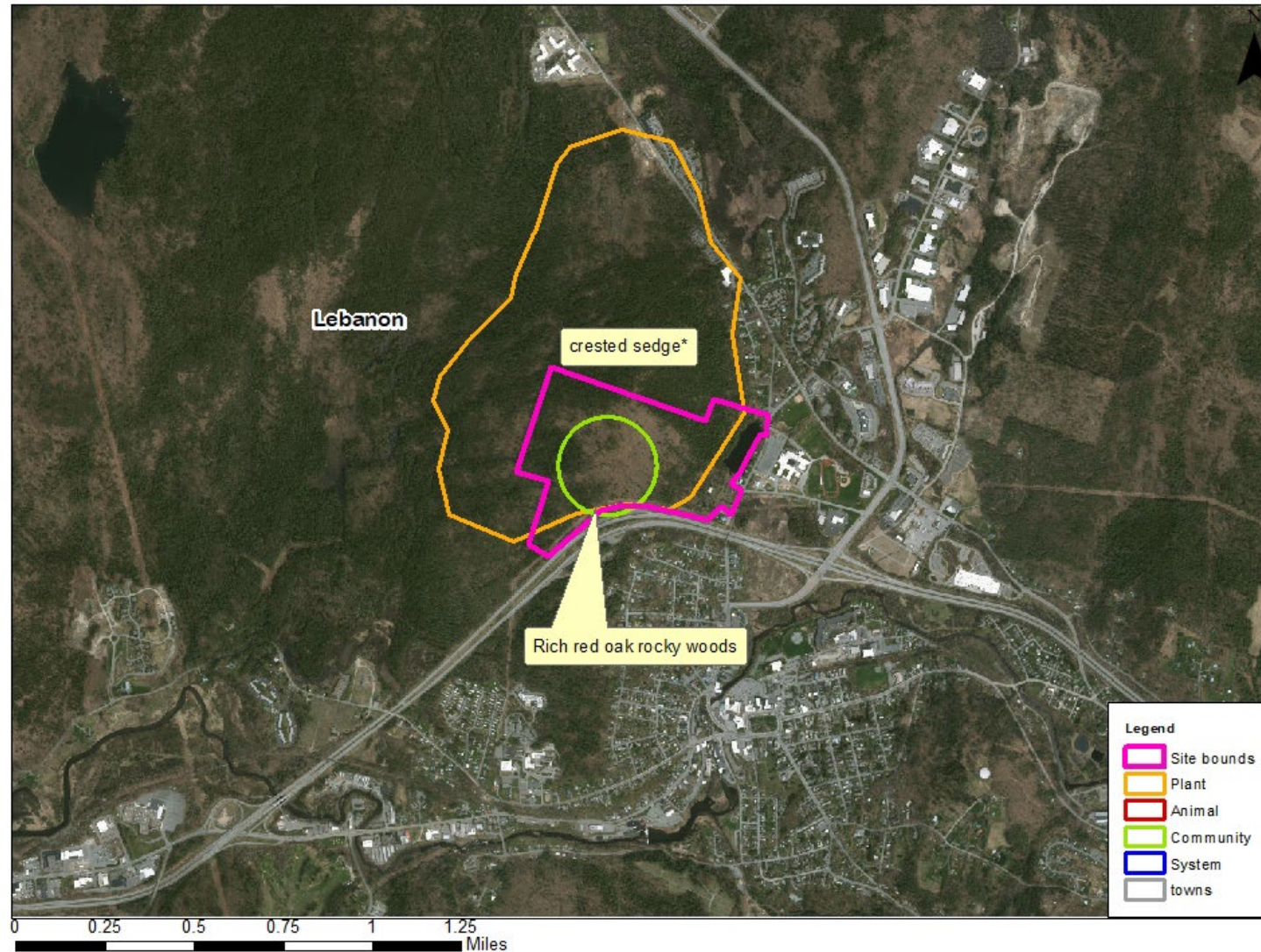


NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB23-2953



NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB23-2953

EOCODE:

CT00000203*005*NH

New Hampshire Natural Heritage Bureau - Community Record

Rich red oak rocky woods

Legal Status

Federal: Not listed

State: Not listed

Conservation Status

Global: Not ranked (need more information)

State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: Not old-growth.

Detailed Description: 1984: A relatively young forest dominated by *Quercus rubra* (red oak), *Ostrya virginiana* (ironwood), and *Acer saccharum* (sugar maple). Characteristic species include: *Platanthera hookeri* (Hooker's orchid), *Adiantum pedatum* (northern maidenhair fern), *Botrychium virginianum* (rattlesnake fern), and *Viola pubescens* (downy yellow violet).

General Area: 1984: To the east a contact with granite is encountered and the soils are extremely acidic by comparison. A mixed hardwood/conifer forest occurs on the eastern granite slope, while a pure hardwood forest occurs on the more western slope, presumably reflecting more fertile soils.

General Comments: 1984: Only known New Hampshire station for *Collinsonia canadensis* (Canada horsebalm). Return visit in summer is needed.

Management: --

Comments:

Location

Survey Site Name: Quarry Hill

Managed By:

County: Grafton

Town(s): Lebanon

Size: 38.0 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Quarry Hill, southwest slope, north of rest area.

Dates documented

First reported: 1984-05-22

Last reported: 1984-05-22

NHB DataCheck Results Letter

NH Natural Heritage Bureau

Please note: maps and NHB record pages are **confidential** and shall be redacted from public documents.

NHB23-2953

EOCODE:

PMCP033A0*007*NH

New Hampshire Natural Heritage Bureau - Plant Record

crested sedge (*Carex cristatella*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 1962: Specimen collected.
General Area: 1962: Run of rich woods.
General Comments: --
Management: --
Comments:

Location

Survey Site Name: Chapmans Farm
Managed By: Timberwood OS

County: Grafton
Town(s): Lebanon
Size: 436.1 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: Chapman's Farm.

Dates documented

First reported: 1962-06-29 Last reported: 1962-06-29

Web Soil Survey Data

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[illegible]

MAP LEGEND**Area of Interest (AOI)**
 Area of Interest (AOI)
Soils**Soil Rating Polygons**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

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.

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: Grafton County, New Hampshire

Survey Area Data: Version 27, 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: May 27, 2020—Sep 16, 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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Occum fine sandy loam, frequently flooded	B	6.8	0.6%
2	Suncook loamy fine sand	A	6.8	0.6%
4	Pootatuck very fine sandy loam	B	17.2	1.6%
5	Rippowam fine sandy loam	A/D	114.0	10.7%
9	Winooski silt loam	B	5.3	0.5%
26A	Windsor loamy sand, 0 to 3 percent slopes	A	15.3	1.4%
26B	Windsor loamy sand, 3 to 8 percent slopes	A	9.2	0.9%
26E	Windsor loamy sand, 15 to 60 percent slopes	A	12.7	1.2%
63B	Charlton fine sandy loam, 3 to 8 percent slopes, very stony	B	44.4	4.2%
63C	Charlton fine sandy loam, 8 to 15 percent slopes, very stony	B	25.5	2.4%
63D	Charlton fine sandy loam, 15 to 25 percent slopes, very stony	A	31.8	3.0%
63E	Charlton fine sandy loam, 25 to 35 percent slopes, very stony	A	0.1	0.0%
114	Walpole-Binghamville complex	A/D	13.2	1.2%
132A	Dartmouth silt loam, 0 to 3 percent slopes	C	14.4	1.4%
132B	Dartmouth silt loam, 3 to 8 percent slopes	C	29.5	2.8%
299	Udorthents, smoothed		15.0	1.4%
310A	Quonset loamy sand, 0 to 3 percent slopes	A	6.7	0.6%
310B	Quonset loamy sand, 3 to 8 percent slopes	A	10.7	1.0%
313	Deerfield loamy fine sand, 0 to 3 percent slopes	A	34.6	3.2%
330B	Bernardston silt loam, 3 to 8 percent slopes	D	0.0	0.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
330C	Bernardston silt loam, 8 to 15 percent slopes	D	47.2	4.4%
330D	Bernardston silt loam, 15 to 25 percent slopes	D	7.3	0.7%
331C	Bernardston silt loam, 8 to 15 percent slopes, very stony	D	16.4	1.5%
331D	Bernardston silt loam, 15 to 25 percent slopes, very stony	D	16.4	1.5%
334B	Pittstown loam, 3 to 8 percent slopes	C	7.8	0.7%
336B	Pittstown loam, 3 to 8 percent slopes, very stony	C	16.1	1.5%
341B	Stissing silt loam, 3 to 8 percent slopes, very stony	C/D	3.3	0.3%
361B	Cardigan-Kearsarge-Rock outcrop complex, 3 to 8 percent slopes	C	5.0	0.5%
361C	Cardigan-Kearsarge-Rock outcrop complex, 8 to 15 percent slopes	C	44.4	4.2%
361D	Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes	C	242.7	22.8%
361E	Cardigan-Kearsarge-Rock outcrop complex, 25 to 60 percent slopes	C	190.4	17.9%
401	Occum fine sandy loam, occasionally flooded	B	3.0	0.3%
534	Binghamville silt loam	C/D	42.4	4.0%
W	Water		9.2	0.9%
Totals for Area of Interest			1,065.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

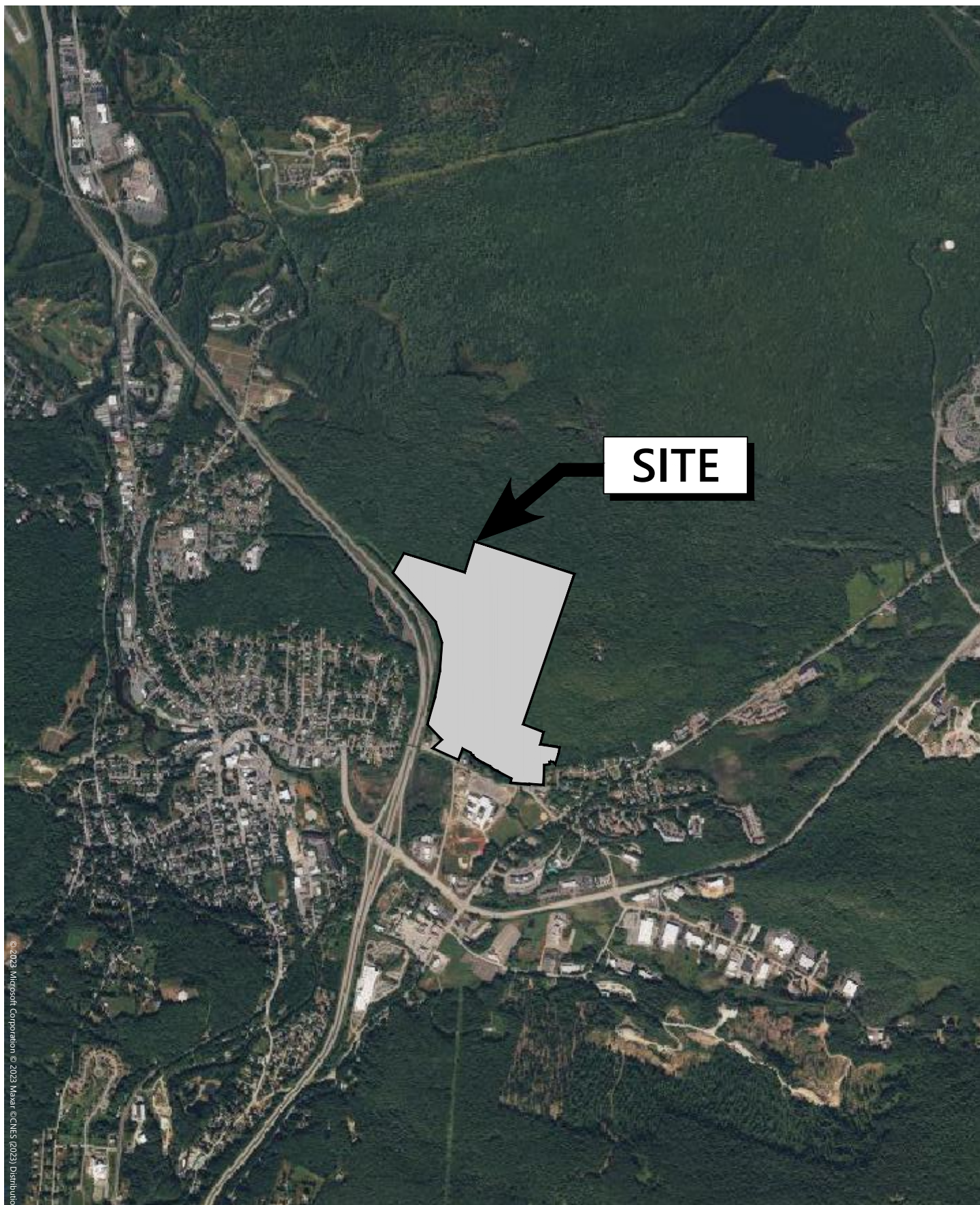
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Aerial Photograph of the Site

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0 1000 2000 Feet



Site Aerial Map
Lebanon Brickyard Development
Lebanon, NH 03766

Figure 1

November 2023

Groundwater Recharge Volume (GRV) Calculation

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Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

BMP Worksheets

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INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

UIP#1

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
6.76	ac	A = Area draining to the practice	
5.30	ac	A _I = Impervious area draining to the practice	
0.78	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.76	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
5.11	ac-in	WQV = 1" x R _v x A	
18,553	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
4,638	cf	25% x WQV (check calc for sediment forebay volume)	
Isolator Row		Method of pretreatment? (not required for clean or roof runoff)	
10,620	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
31,861	cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
11,441	sf	A _{SA} = Surface area of the bottom of the pond	
0.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ²	
38.9	hours	I _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
592.30	feet	E _{BTM} = Elevation of the bottom of the basin	
589.30	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
589.30	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.00	feet	D _{SHWT} = Separation from SHWT	≥ *³
3.0	feet	D _{ROCK} = Separation from bedrock	≥ *³
-	ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
-	ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
No	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←yes
N/A		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
Yes	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
-	:1	If a basin is proposed, pond side slopes.	≥3:1
596.11	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
598.24	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
599.05	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{sat}_{DESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes: StormTech MC-7200 System with infiltration below



INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

UIP#2

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
2.21	ac	A = Area draining to the practice	
1.76	ac	A _I = Impervious area draining to the practice	
0.80	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.77	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
1.70	ac-in	WQV = 1" x R _v x A	
6,159	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,540	cf	25% x WQV (check calc for sediment forebay volume)	
Isolator Row		Method of pretreatment? (not required for clean or roof runoff)	
2,122	cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
6,366	cf	V = Volume ¹ (attach a stage-storage table)	≥ WQV
3,594	sf	A _{SA} = Surface area of the bottom of the pond	
0.50	iph	K _{sat} _{DESIGN} = Design infiltration rate ²	
41.1	hours	I _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
583.00	feet	E _{BTM} = Elevation of the bottom of the basin	
580.00	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
580.00	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.00	feet	D _{SHWT} = Separation from SHWT	≥ *³
3.0	feet	D _{ROCK} = Separation from bedrock	≥ *³
	ft	D _{amend} = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
	ft	D _T = Depth of trench, if trench proposed	4 - 10 ft
No	Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
N/A		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. ⁴	← yes
	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥ 3:1
586.95	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
588.25	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
589.75	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? ⁵	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K_{sat}_{DESIGN} includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes: StormTech MC-7200 System with infiltration below



FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/node name:

Bioretention Basin #1

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.58 ac	A = Area draining to the practice	
0.29 ac	A _I = Impervious area draining to the practice	
0.51 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.51 unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)	
0.29 ac-in	WQV = 1" x R _v x A	
1,064 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
266 cf	25% x WQV (check calc for sediment forebay volume)	
798 cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay	Method of Pretreatment? (not required for clean or roof runoff)	
857 cf	V _{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:		
1,720 sf	A _{SA} = Surface area of the practice	
0.50 iph	K _{sat} _{DESIGN} = Design infiltration rate ¹	
	If K _{sat} (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
Yes/No	(Use the calculations below)	
14.8 hours	T _{DRAIN} = Drain time = V / (A _{SA} * I _{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:		
ft	E _{WQV} = Elevation of WQV (attach stage-storage table)	
cfs	Q _{WQV} = Discharge at the E _{WQV} (attach stage-discharge table)	
- hours	T _{DRAIN} = Drain time = 2WQV/Q _{WQV}	≤ 72-hrs
593.50 feet	E _{FC} = Elevation of the bottom of the filter course material ²	
- feet	E _{UD} = Invert elevation of the underdrain (UD), if applicable	
592.50 feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
592.50 feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
#VALUE! feet	D _{FC to UD} = Depth to UD from the bottom of the filter course	≥ 1'
1.00 feet	D _{FC to ROCK} = Depth to bedrock from the bottom of the filter course	≥ 1'
1.00 feet	D _{FC to SHWT} = Depth to SHWT from the bottom of the filter course	≥ 1'
596.60 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
598.00 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
3,428	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		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	> 3:1
Sheet	L1.3	Note what sheet in the plan set contains the planting plans and surface cover	

If porous pavement is proposed:

		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A _{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D _{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). K_{sat}_{design} includes factor of safety. 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 structure, 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:

Rainfall Data

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	72.254 degrees West
Latitude	43.654 degrees North
Elevation	0 feet
Date/Time	Mon, 07 Nov 2022 13:43:45 -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	0.66	0.82	1.02	1yr	0.71	0.93	1.17	1.44	1.76	2.15	2.42	1yr	1.90	2.32	2.69	3.30	3.79	1yr
2yr	0.31	0.47	0.59	0.78	0.98	1.22	2yr	0.85	1.11	1.40	1.70	2.07	2.50	2.81	2yr	2.21	2.70	3.15	3.76	4.31	2yr
5yr	0.37	0.57	0.72	0.96	1.23	1.54	5yr	1.06	1.40	1.76	2.14	2.57	3.07	3.47	5yr	2.71	3.34	3.87	4.55	5.18	5yr
10yr	0.41	0.65	0.82	1.12	1.45	1.83	10yr	1.26	1.67	2.10	2.54	3.03	3.58	4.08	10yr	3.17	3.92	4.52	5.25	5.95	10yr
25yr	0.49	0.78	1.00	1.37	1.82	2.30	25yr	1.57	2.11	2.64	3.18	3.77	4.40	5.05	25yr	3.90	4.85	5.55	6.36	7.16	25yr
50yr	0.56	0.90	1.15	1.61	2.17	2.75	50yr	1.87	2.52	3.15	3.79	4.45	5.15	5.93	50yr	4.56	5.71	6.49	7.35	8.24	50yr
100yr	0.64	1.03	1.33	1.89	2.58	3.28	100yr	2.22	3.01	3.76	4.50	5.25	6.03	6.98	100yr	5.33	6.71	7.59	8.49	9.48	100yr
200yr	0.74	1.20	1.56	2.23	3.07	3.91	200yr	2.65	3.60	4.48	5.33	6.19	7.05	8.21	200yr	6.24	7.89	8.88	9.82	10.91	200yr
500yr	0.89	1.46	1.90	2.76	3.86	4.94	500yr	3.33	4.55	5.65	6.68	7.70	8.69	10.18	500yr	7.69	9.79	10.94	11.92	13.15	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.60	0.74	0.83	1yr	0.64	0.81	0.99	1.19	1.58	1.94	2.20	1yr	1.72	2.11	2.46	2.95	3.50	1yr
2yr	0.30	0.46	0.56	0.76	0.94	1.11	2yr	0.81	1.08	1.24	1.62	2.06	2.45	2.75	2yr	2.17	2.65	3.09	3.70	4.23	2yr
5yr	0.34	0.52	0.65	0.89	1.13	1.32	5yr	0.98	1.29	1.49	1.91	2.41	2.91	3.28	5yr	2.58	3.15	3.66	4.30	4.92	5yr
10yr	0.38	0.58	0.71	1.00	1.29	1.50	10yr	1.11	1.47	1.69	2.16	2.70	3.31	3.75	10yr	2.93	3.60	4.15	4.81	5.51	10yr
25yr	0.43	0.66	0.82	1.16	1.53	1.77	25yr	1.32	1.73	1.97	2.52	3.13	3.93	4.48	25yr	3.47	4.30	4.91	5.57	6.39	25yr
50yr	0.47	0.72	0.89	1.28	1.73	2.00	50yr	1.49	1.96	2.21	2.85	3.51	4.46	5.12	50yr	3.95	4.92	5.58	6.21	7.15	50yr
100yr	0.52	0.79	0.99	1.43	1.96	2.26	100yr	1.69	2.21	2.48	3.19	3.94	5.08	5.84	100yr	4.50	5.62	6.35	6.93	7.99	100yr
200yr	0.58	0.87	1.10	1.59	2.21	2.55	200yr	1.91	2.50	2.78	3.60	4.47	5.78	6.68	200yr	5.11	6.42	7.23	7.72	8.93	200yr
500yr	0.66	0.98	1.26	1.83	2.61	2.98	500yr	2.25	2.91	3.20	4.19	5.23	6.87	7.99	500yr	6.08	7.68	8.60	8.89	10.34	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.73	0.90	1.03	1yr	0.78	1.01	1.19	1.51	1.89	2.31	2.62	1yr	2.05	2.52	2.87	3.51	4.01	1yr
2yr	0.32	0.49	0.61	0.82	1.01	1.19	2yr	0.88	1.17	1.36	1.73	2.17	2.57	2.87	2yr	2.27	2.76	3.22	3.86	4.40	2yr
5yr	0.40	0.61	0.76	1.05	1.33	1.56	5yr	1.15	1.53	1.73	2.16	2.71	3.23	3.66	5yr	2.86	3.52	4.07	4.78	5.44	5yr
10yr	0.48	0.74	0.91	1.28	1.65	1.95	10yr	1.42	1.90	2.14	2.61	3.22	3.87	4.40	10yr	3.43	4.24	4.88	5.64	6.40	10yr
25yr	0.61	0.93	1.16	1.66	2.18	2.61	25yr	1.88	2.56	2.85	3.34	4.03	4.91	5.65	25yr	4.35	5.43	6.18	7.04	7.94	25yr
50yr	0.74	1.12	1.40	2.01	2.70	3.27	50yr	2.33	3.19	3.55	4.02	4.80	5.87	6.81	50yr	5.20	6.55	7.40	8.34	9.37	50yr
100yr	0.89	1.35	1.69	2.44	3.35	4.10	100yr	2.89	4.01	4.44	4.85	5.72	7.04	8.23	100yr	6.23	7.92	8.86	9.88	11.06	100yr
200yr	1.08	1.63	2.06	2.98	4.16	5.14	200yr	3.59	5.02	5.55	5.86	6.84	8.43	9.94	200yr	7.46	9.55	10.63	11.73	13.06	200yr
500yr	1.40	2.09	2.68	3.90	5.54	6.96	500yr	4.78	6.80	7.47	7.50	8.58	10.72	12.76	500yr	9.48	12.27	13.50	14.75	16.30	500yr

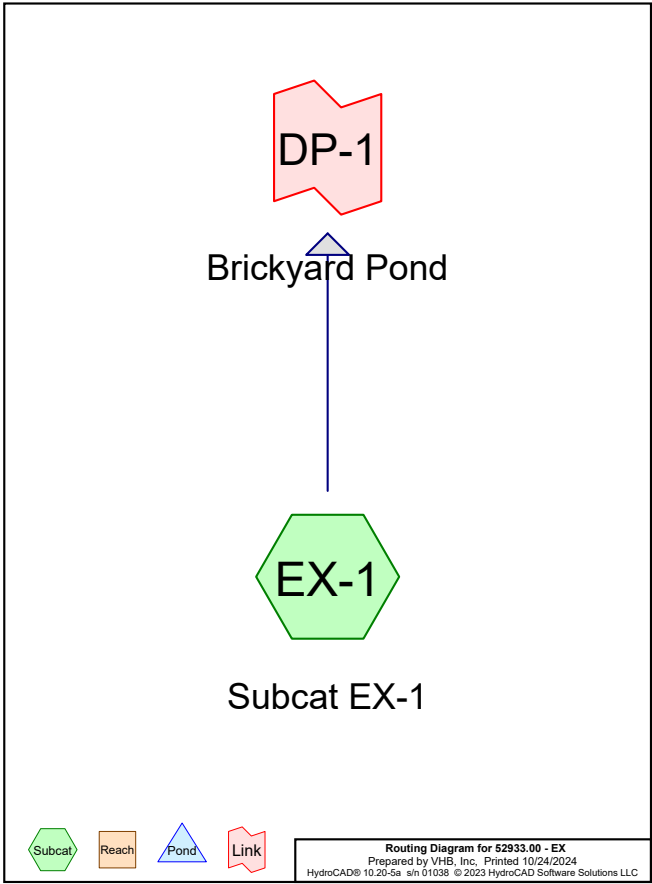
Appendix B: Hydrologic Calculations

- › Existing Conditions
- › Proposed Conditions

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Existing Conditions

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-year	Type II 24-hr		Default	24.00	1	2.50	2
2	10-year	Type II 24-hr		Default	24.00	1	3.58	2
3	25-year	Type II 24-hr		Default	24.00	1	4.40	2
4	50-year	Type II 24-hr		Default	24.00	1	5.15	2
5	100-year	Type II 24-hr		Default	24.00	1	6.03	2

Project Notes

Rainfall events imported from "5262101 - EX.hcp"

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.11	39	>75% Grass cover, Good, HSG A (EX-1)
0.48	61	>75% Grass cover, Good, HSG B (EX-1)
0.12	74	>75% Grass cover, Good, HSG C (EX-1)
0.00	80	>75% Grass cover, Good, HSG D (EX-1)
0.01	30	Brush, Good, HSG A (EX-1)
2.22	48	Brush, Good, HSG B (EX-1)
0.25	65	Brush, Good, HSG C (EX-1)
0.17	98	Paved parking, HSG A (EX-1)
0.06	98	Paved parking, HSG B (EX-1)
0.06	98	Roofs, HSG A (EX-1)
0.46	98	Roofs, HSG B (EX-1)
2.20	98	Water Surface, 0% imp, HSG B (EX-1)
4.52	98	Water Surface, 0% imp, HSG C (EX-1)
0.25	98	Water Surface, 0% imp, HSG D (EX-1)
0.03	30	Woods, Good, HSG A (EX-1)
6.07	55	Woods, Good, HSG B (EX-1)
90.23	70	Woods, Good, HSG C (EX-1)
0.53	77	Woods, Good, HSG D (EX-1)
0.00	32	Woods/grass comb., Good, HSG A (EX-1)
0.32	58	Woods/grass comb., Good, HSG B (EX-1)
108.11	71	TOTAL AREA

52933.00 - EX

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.39	HSG A	EX-1
11.82	HSG B	EX-1
95.12	HSG C	EX-1
0.78	HSG D	EX-1
0.00	Other	
108.11	TOTAL AREA	

52933.00 - EX

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.11	0.48	0.12	0.00	0.00	0.72	>75% Grass cover, Good	EX-1
0.01	2.22	0.25	0.00	0.00	2.49	Brush, Good	EX-1
0.17	0.06	0.00	0.00	0.00	0.23	Paved parking	EX-1
0.06	0.46	0.00	0.00	0.00	0.52	Roofs	EX-1
0.00	2.20	4.52	0.25	0.00	6.98	Water Surface, 0% imp	EX-1
0.03	6.07	90.23	0.53	0.00	96.87	Woods, Good	EX-1
0.00	0.32	0.00	0.00	0.00	0.32	Woods/grass comb., Good	EX-1
0.39	11.82	95.12	0.78	0.00	108.11	TOTAL AREA	

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Type II 24-hr 2-year Rainfall=2.50"

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Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-1: Subcat EX-1

Runoff Area=108.11 ac 0.69% Impervious Runoff Depth=0.49"

Flow Length=3,025' Tc=32.8 min CN=71 Runoff=33.6 cfs 4.4 af

Link DP-1: Brickyard Pond

Inflow=33.6 cfs 4.4 af

Primary=33.6 cfs 4.4 af

Total Runoff Area = 108.11 ac Runoff Volume = 4.4 af Average Runoff Depth = 0.49"

99.31% Pervious = 107.37 ac 0.69% Impervious = 0.74 ac

52933.00 - EX

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Type II 24-hr 2-year Rainfall=2.50"

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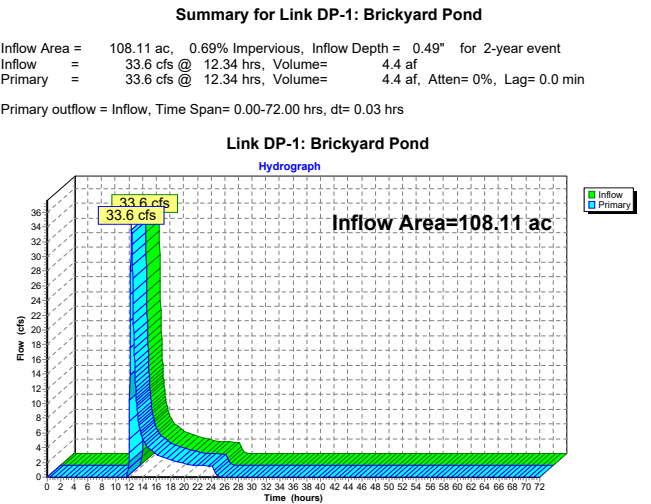
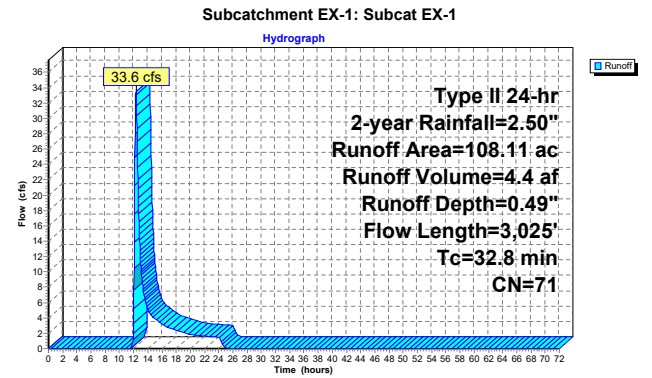
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Summary for Subcatchment EX-1: Subcat EX-1

Runoff = 33.6 cfs @ 12.34 hrs, Volume= 4.4 af, Depth= 0.49"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description			
0.11	39	>75% Grass cover, Good, HSG A			
0.48	61	>75% Grass cover, Good, HSG B			
0.12	74	>75% Grass cover, Good, HSG C			
0.00	80	>75% Grass cover, Good, HSG D			
0.01	30	Brush, Good, HSG A			
2.22	48	Brush, Good, HSG B			
0.25	65	Brush, Good, HSG C			
0.17	98	Paved parking, HSG A			
0.06	98	Paved parking, HSG B			
0.06	98	Roofs, HSG A			
0.46	98	Roofs, HSG B			
2.20	98	Water Surface, 0% imp, HSG B			
4.52	98	Water Surface, 0% imp, HSG C			
0.25	98	Water Surface, 0% imp, HSG D			
0.03	30	Woods, Good, HSG A			
6.07	55	Woods, Good, HSG B			
90.23	70	Woods, Good, HSG C			
0.53	77	Woods, Good, HSG D			
0.00	32	Woods/grass comb., Good, HSG A			
0.32	58	Woods/grass comb., Good, HSG B			
108.11	71	Weighted Average			
107.37		99.31% Pervious Area			
0.74		0.69% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			



Link DP-1: Brickyard Pond

Hydrograph

Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-1: Subcat EX-1

Runoff Area=108.11 ac 0.69% Impervious Runoff Depth=1.11"
Flow Length=3,025' Tc=32.8 min CN=71 Runoff=90.4 cfs 10.0 af

Link DP-1: Brickyard Pond

Inflow=90.4 cfs 10.0 af
Primary=90.4 cfs 10.0 af

Total Runoff Area = 108.11 ac Runoff Volume = 10.0 af Average Runoff Depth = 1.11"
99.31% Pervious = 107.37 ac 0.69% Impervious = 0.74 ac

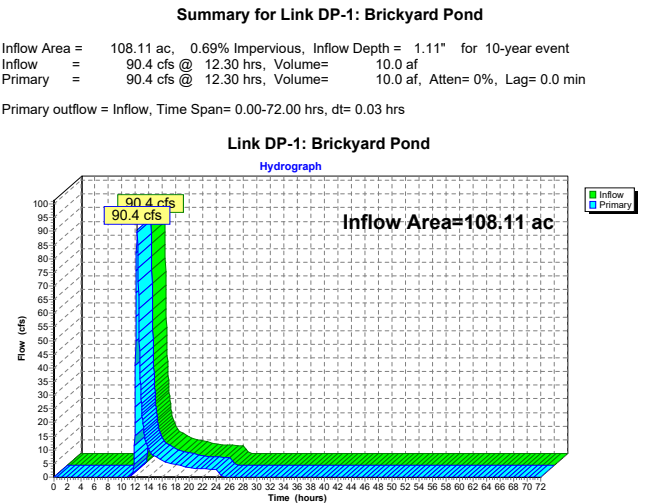
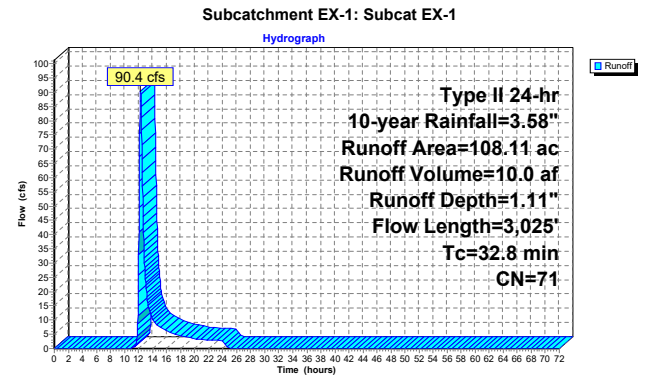
Summary for Subcatchment EX-1: Subcat EX-1

Runoff = 90.4 cfs @ 12.30 hrs, Volume= 10.0 af, Depth= 1.11"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.48	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	30	Brush, Good, HSG A
2.22	48	Brush, Good, HSG B
0.25	65	Brush, Good, HSG C
0.17	98	Paved parking, HSG A
0.06	98	Paved parking, HSG B
0.06	98	Roofs, HSG A
0.46	98	Roofs, HSG B
2.20	98	Water Surface, 0% imp, HSG B
4.52	98	Water Surface, 0% imp, HSG C
0.25	98	Water Surface, 0% imp, HSG D
0.03	30	Woods, Good, HSG A
6.07	55	Woods, Good, HSG B
90.23	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
0.00	32	Woods/grass comb., Good, HSG A
0.32	58	Woods/grass comb., Good, HSG B
108.11	71	Weighted Average
107.37		99.31% Pervious Area
0.74		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-1: Subcat EX-1 Runoff Area=108.11 ac 0.69% Impervious Runoff Depth=1.67"
Flow Length=3,025' Tc=32.8 min CN=71 Runoff=141.8 cfs 15.1 af

Link DP-1: Brickyard Pond Inflow=141.8 cfs 15.1 af
Primary=141.8 cfs 15.1 af

Total Runoff Area = 108.11 ac Runoff Volume = 15.1 af Average Runoff Depth = 1.67"
99.31% Pervious = 107.37 ac 0.69% Impervious = 0.74 ac

Summary for Subcatchment EX-1: Subcat EX-1

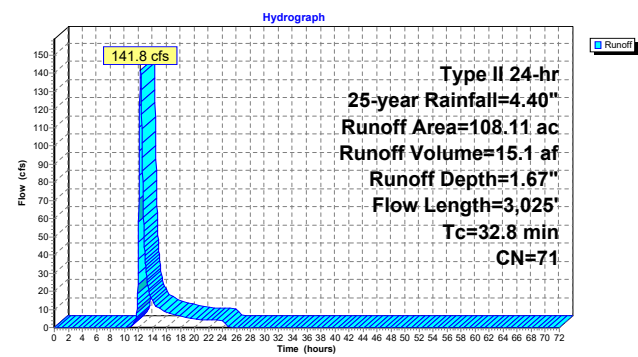
Runoff = 141.8 cfs @ 12.29 hrs, Volume= 15.1 af, Depth= 1.67"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.48	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	30	Brush, Good, HSG A
2.22	48	Brush, Good, HSG B
0.25	65	Brush, Good, HSG C
0.17	98	Paved parking, HSG A
0.06	98	Paved parking, HSG B
0.06	98	Roofs, HSG A
0.46	98	Roofs, HSG B
2.20	98	Water Surface, 0% imp, HSG B
4.52	98	Water Surface, 0% imp, HSG C
0.25	98	Water Surface, 0% imp, HSG D
0.03	30	Woods, Good, HSG A
6.07	55	Woods, Good, HSG B
90.23	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
0.00	32	Woods/grass comb., Good, HSG A
0.32	58	Woods/grass comb., Good, HSG B
108.11	71	Weighted Average
107.37		99.31% Pervious Area
0.74		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

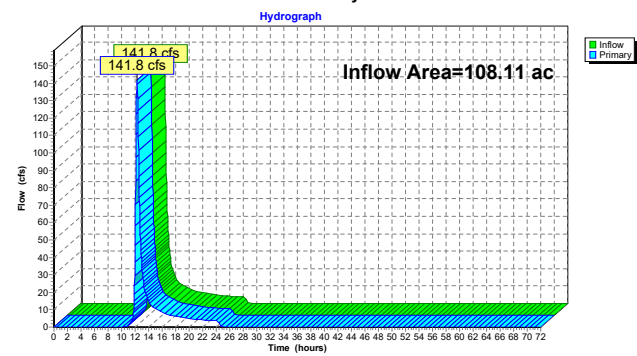
Subcatchment EX-1: Subcat EX-1



Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 0.69% Impervious, Inflow Depth = 1.67" for 25-year event
Inflow = 141.8 cfs @ 12.29 hrs, Volume= 15.1 af
Primary = 141.8 cfs @ 12.29 hrs, Volume= 15.1 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-1: Subcat EX-1 Runoff Area=108.11 ac 0.69% Impervious Runoff Depth=2.23"
Flow Length=3,025' Tc=32.8 min CN=71 Runoff=192.7 cfs 20.1 af

Link DP-1: Brickyard Pond Inflow=192.7 cfs 20.1 af
Primary=192.7 cfs 20.1 af

Total Runoff Area = 108.11 ac Runoff Volume = 20.1 af Average Runoff Depth = 2.23"
99.31% Pervious = 107.37 ac 0.69% Impervious = 0.74 ac

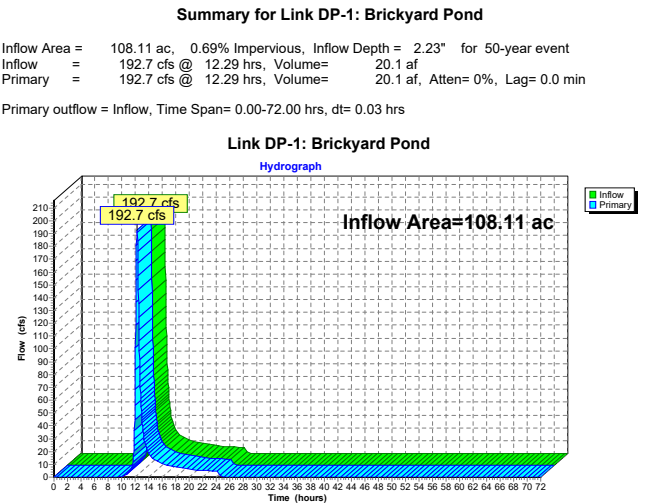
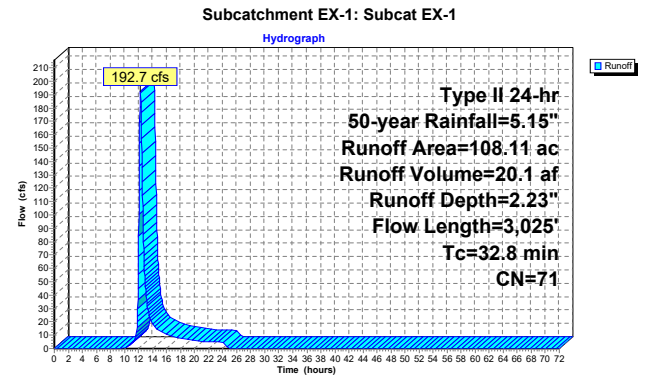
Summary for Subcatchment EX-1: Subcat EX-1

Runoff = 192.7 cfs @ 12.29 hrs, Volume= 20.1 af, Depth= 2.23"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.48	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	30	Brush, Good, HSG A
2.22	48	Brush, Good, HSG B
0.25	65	Brush, Good, HSG C
0.17	98	Paved parking, HSG A
0.06	98	Paved parking, HSG B
0.06	98	Roofs, HSG A
0.46	98	Roofs, HSG B
2.20	98	Water Surface, 0% imp, HSG B
4.52	98	Water Surface, 0% imp, HSG C
0.25	98	Water Surface, 0% imp, HSG D
0.03	30	Woods, Good, HSG A
6.07	55	Woods, Good, HSG B
90.23	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
0.00	32	Woods/grass comb., Good, HSG A
0.32	58	Woods/grass comb., Good, HSG B
108.11	71	Weighted Average
107.37		99.31% Pervious Area
0.74		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-1: Subcat EX-1 Runoff Area=108.11 ac 0.69% Impervious Runoff Depth=2.92"
Flow Length=3,025' Tc=32.8 min CN=71 Runoff=255.8 cfs 26.3 af

Link DP-1: Brickyard Pond Inflow=255.8 cfs 26.3 af
Primary=255.8 cfs 26.3 af

Total Runoff Area = 108.11 ac Runoff Volume = 26.3 af Average Runoff Depth = 2.92"
99.31% Pervious = 107.37 ac 0.69% Impervious = 0.74 ac

Summary for Subcatchment EX-1: Subcat EX-1

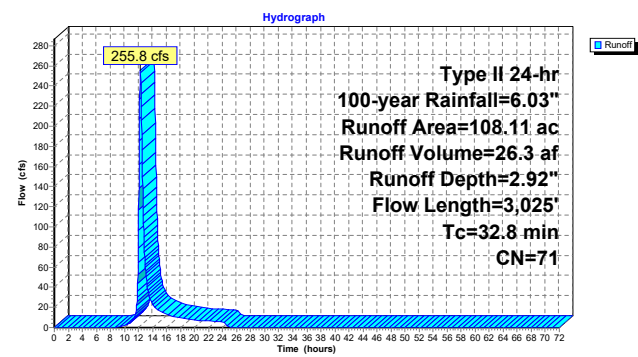
Runoff = 255.8 cfs @ 12.28 hrs, Volume= 26.3 af, Depth= 2.92"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.48	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	30	Brush, Good, HSG A
2.22	48	Brush, Good, HSG B
0.25	65	Brush, Good, HSG C
0.17	98	Paved parking, HSG A
0.06	98	Paved parking, HSG B
0.06	98	Roofs, HSG A
0.46	98	Roofs, HSG B
2.20	98	Water Surface, 0% imp, HSG B
4.52	98	Water Surface, 0% imp, HSG C
0.25	98	Water Surface, 0% imp, HSG D
0.03	30	Woods, Good, HSG A
6.07	55	Woods, Good, HSG B
90.23	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
0.00	32	Woods/grass comb., Good, HSG A
0.32	58	Woods/grass comb., Good, HSG B
108.11	71	Weighted Average
107.37		99.31% Pervious Area
0.74		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

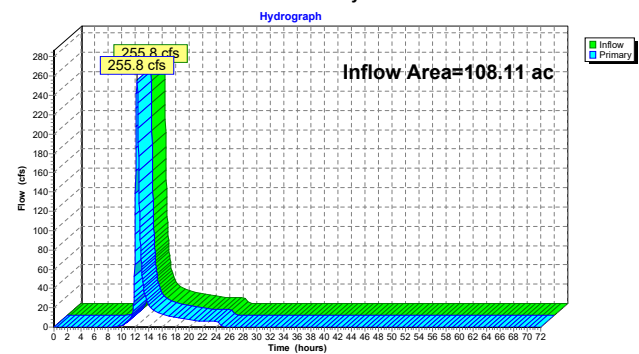
Subcatchment EX-1: Subcat EX-1



Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 0.69% Impervious, Inflow Depth = 2.92" for 100-year event
Inflow = 255.8 cfs @ 12.28 hrs, Volume= 26.3 af
Primary = 255.8 cfs @ 12.28 hrs, Volume= 26.3 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond

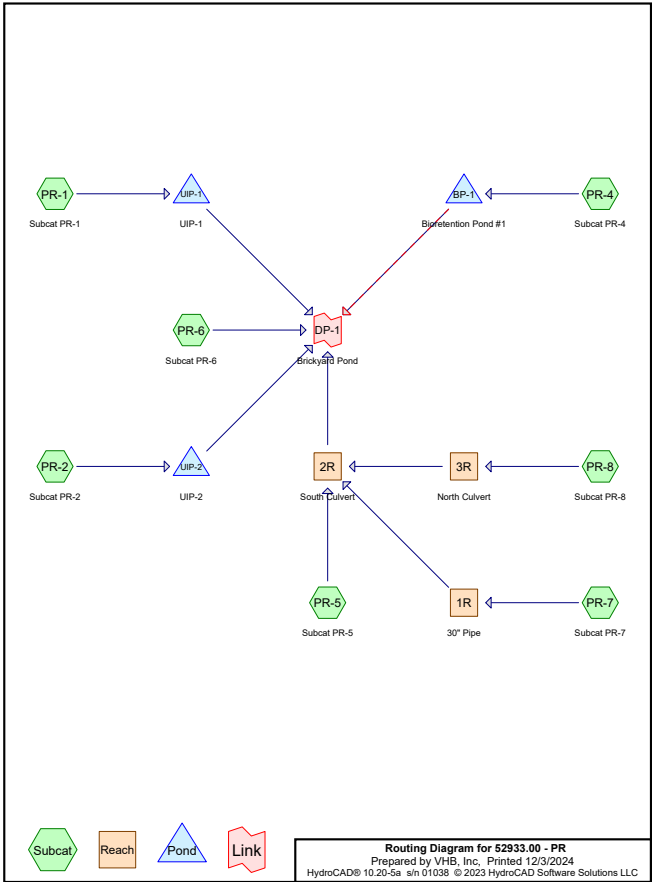


Proposed Conditions

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-year	Type II 24-hr		Default	24.00	1	2.50	2
2	10-year	Type II 24-hr		Default	24.00	1	3.58	2
3	25-year	Type II 24-hr		Default	24.00	1	4.40	2
4	50-year	Type II 24-hr		Default	24.00	1	5.15	2
5	100-year	Type II 24-hr		Default	24.00	1	6.03	2



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.30	39	>75% Grass cover, Good, HSG A (PR-4, PR-5, PR-6)
2.56	61	>75% Grass cover, Good, HSG B (PR-1, PR-2, PR-4, PR-5, PR-6, PR-8)
3.85	74	>75% Grass cover, Good, HSG C (PR-1, PR-4, PR-5, PR-6, PR-7, PR-8)
0.01	80	>75% Grass cover, Good, HSG D (PR-4, PR-5, PR-6, PR-7, PR-8)
0.00	30	Brush, Good, HSG A (PR-5)
1.00	48	Brush, Good, HSG B (PR-2, PR-5, PR-6, PR-8)
0.07	65	Brush, Good, HSG C (PR-5)
0.04	98	Paved parking, HSG A (PR-4, PR-6)
1.64	98	Paved parking, HSG B (PR-1, PR-2, PR-4, PR-5, PR-6)
2.94	98	Paved parking, HSG C (PR-1, PR-4, PR-5, PR-7)
0.01	98	Paved parking, HSG D (PR-4)
0.02	98	Roofs, HSG A (PR-4)
1.16	98	Roofs, HSG B (PR-1, PR-2, PR-4, PR-6)
1.77	98	Roofs, HSG C (PR-1)
2.18	98	Water Surface, 0% imp, HSG B (PR-5, PR-6, PR-8)
4.52	98	Water Surface, 0% imp, HSG C (PR-5, PR-8)
0.24	98	Water Surface, 0% imp, HSG D (PR-4, PR-5, PR-8)
0.01	30	Woods, Good, HSG A (PR-5)
3.29	55	Woods, Good, HSG B (PR-1, PR-5, PR-6, PR-8)
81.97	70	Woods, Good, HSG C (PR-1, PR-5, PR-6, PR-7, PR-8)
0.53	77	Woods, Good, HSG D (PR-5, PR-6)
108.11	73	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.37	HSG A	PR-4, PR-5, PR-6
11.84	HSG B	PR-1, PR-2, PR-4, PR-5, PR-6, PR-8
95.12	HSG C	PR-1, PR-4, PR-5, PR-6, PR-7, PR-8
0.78	HSG D	PR-4, PR-5, PR-6, PR-8
0.00	Other	
108.11		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.30	2.56	3.85	0.01	0.00	6.72	>75% Grass cover, Good	PR-1, PR-2, PR-4, PR-5, PR-6, PR-7, PR-8
0.00	1.00	0.07	0.00	0.00	1.07	Brush, Good	PR-2, PR-5, PR-6, PR-8
0.04	1.64	2.94	0.01	0.00	4.63	Paved parking	PR-1, PR-2, PR-4, PR-5, PR-6, PR-7
0.02	1.16	1.77	0.00	0.00	2.95	Roofs	PR-1, PR-2, PR-4, PR-6
0.00	2.18	4.52	0.24	0.00	6.93	Water Surface, 0% imp	PR-4, PR-5, PR-6, PR-8
0.01	3.29	81.97	0.53	0.00	85.81	Woods, Good	PR-1, PR-5, PR-6, PR-7, PR-8
0.37	11.84	95.12	0.78	0.00	108.11	TOTAL AREA	

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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)	Node Name
1	1R	590.60	583.00	270.0	0.0281	0.013	0.0	30.0	0.0	
2	2R	579.50	579.00	50.0	0.0100	0.011	96.0	108.0	0.0	
3	3R	602.00	600.00	60.0	0.0333	0.011	96.0	120.0	0.0	
4	BP-1	595.00	594.80	20.0	0.0100	0.013	0.0	18.0	0.0	
5	UIP-1	592.50	592.00	39.0	0.0128	0.013	0.0	30.0	0.0	
6	UIP-2	583.00	582.80	20.0	0.0100	0.013	0.0	24.0	0.0	

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Type II 24-hr 2-year Rainfall=2.50"

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Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-1: Subcat PR-1 Runoff Area=6.76 ac 78.45% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=93 Runoff=21.1 cfs 1.0 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=2.21 ac 79.75% Impervious Runoff Depth=1.61"
Tc=5.0 min CN=91 Runoff=6.4 cfs 0.3 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=0.58 ac 50.57% Impervious Runoff Depth=1.00"
Tc=5.0 min CN=82 Runoff=1.1 cfs 0.0 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=9.65 ac 1.30% Impervious Runoff Depth=1.12"
Tc=5.0 min CN=84 Runoff=19.9 cfs 0.9 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=63.07 ac 0.08% Impervious Runoff Depth=0.46"
Flow Length=3,025' Tc=32.8 min CN=70 Runoff=17.5 cfs 2.4 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=24.25 ac 0.20% Impervious Runoff Depth=0.46"
Flow Length=1,740' Tc=23.6 min CN=70 Runoff=8.5 cfs 0.9 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=1.59 ac 0.00% Impervious Runoff Depth=0.53"
Flow Length=410' Tc=11.6 min CN=72 Runoff=1.1 cfs 0.1 af

Reach 1R: 30" Pipe Avg. Flow Depth=0.59' Max Vel=9.53 fps Inflow=8.5 cfs 0.9 af
30.0" Round Pipe n=0.013 L=270.0' S=0.0281' Capacity=68.8 cfs Outflow=8.5 cfs 0.9 af

Reach 2R: South Culvert Avg. Flow Depth=0.40' Max Vel=6.89 fps Inflow=21.9 cfs 1.9 af
96.0" x 108.0" Box Pipe n=0.011 L=50.0' S=0.0100' Capacity=1,604.0 cfs Outflow=21.9 cfs 1.9 af

Reach 3R: North Culvert Avg. Flow Depth=0.03' Max Vel=5.23 fps Inflow=1.1 cfs 0.1 af
96.0" x 120.0" Box Pipe n=0.011 L=60.0' S=0.0333' Capacity=3,360.1 cfs Outflow=1.1 cfs 0.1 af

Pond BP-1: Bioretention Pond #1 Peak Elev=595.52' Storage=1,226 cf Inflow=1.1 cfs 0.0 af
Discarded=0.0 cfs 0.0 af Primary=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af

Pond UIP-1: UIP-1 Peak Elev=596.13' Storage=32,543 cf Inflow=21.1 cfs 1.0 af
Discarded=0.1 cfs 0.7 af Primary=0.2 cfs 0.1 af Outflow=0.3 cfs 0.8 af

Pond UIP-2: UIP-2 Peak Elev=585.88' Storage=7,450 cf Inflow=6.4 cfs 0.3 af
Discarded=0.0 cfs 0.2 af Primary=0.2 cfs 0.1 af Outflow=0.3 cfs 0.3 af

Link DP-1: Brickyard Pond Inflow=27.7 cfs 4.4 af
Primary=27.7 cfs 4.4 af

Total Runoff Area = 108.11 ac Runoff Volume = 5.6 af Average Runoff Depth = 0.62"
92.99% Pervious = 100.53 ac 7.01% Impervious = 7.58 ac

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Type II 24-hr 2-year Rainfall=2.50"

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Summary for Subcatchment PR-1: Subcat PR-1

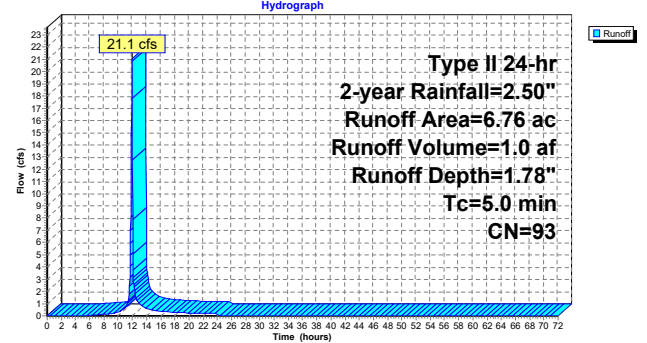
Runoff = 21.1 cfs @ 11.96 hrs, Volume= 1.0 af, Depth= 1.78"
Routed to Pond UIP-1 : UIP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.10	61	>75% Grass cover, Good, HSG B
1.34	74	>75% Grass cover, Good, HSG C
0.29	98	Paved parking, HSG B
2.82	98	Paved parking, HSG C
0.43	98	Roofs, HSG B
1.77	98	Roofs, HSG C
0.00	55	Woods, Good, HSG B
0.02	70	Woods, Good, HSG C
6.76	93	Weighted Average
1.46		21.55% Pervious Area
5.31		78.45% Impervious Area

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

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-2: Subcat PR-2

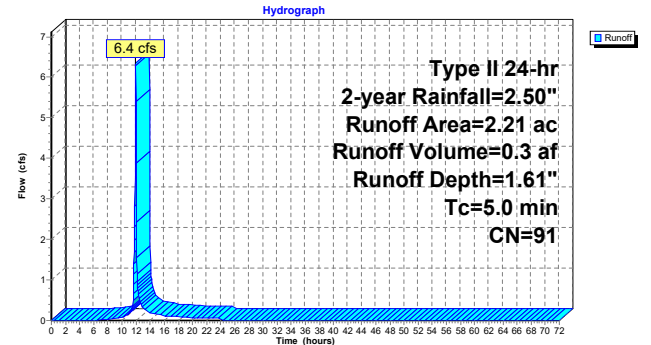
Runoff = 6.4 cfs @ 11.96 hrs, Volume= 0.3 af, Depth= 1.61"
Routed to Pond UIP-2 : UIP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.45	61	>75% Grass cover, Good, HSG B
0.00	48	Brush, Good, HSG B
1.07	98	Paved parking, HSG B
0.69	98	Roofs, HSG B
2.21	91	Weighted Average
0.45		20.25% Pervious Area
1.76		79.75% Impervious Area

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

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-4: Subcat PR-4

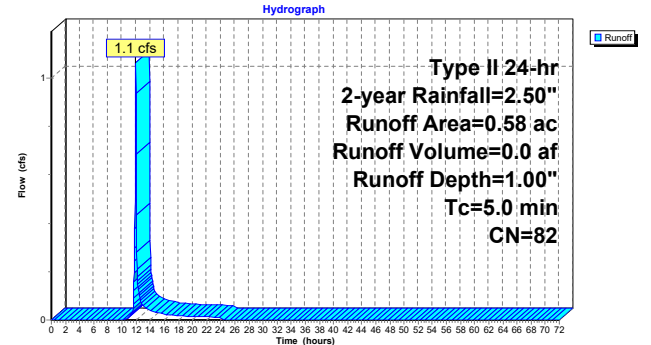
Runoff = 1.1 cfs @ 11.97 hrs, Volume= 0.0 af, Depth= 1.00"
Routed to Pond BP-1 : Bioretention Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.00	39	>75% Grass cover, Good, HSG A
0.20	61	>75% Grass cover, Good, HSG B
0.09	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	98	Paved parking, HSG A
0.20	98	Paved parking, HSG B
0.03	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.02	98	Roofs, HSG A
0.03	98	Roofs, HSG B
0.00	98	Water Surface, 0% imp, HSG D
0.58	82	Weighted Average
0.29		49.43% Pervious Area
0.29		50.57% Impervious Area

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

Subcatchment PR-4: Subcat PR-4



Summary for Subcatchment PR-5: Subcat PR-5

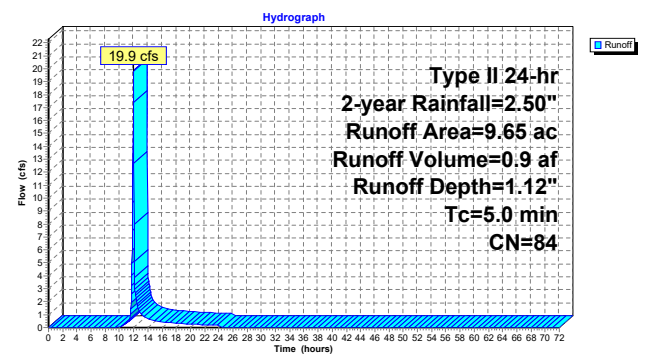
Runoff = 19.9 cfs @ 11.96 hrs, Volume= 0.9 af, Depth= 1.12"
Routed to Reach 2R : South Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
1.24	61	>75% Grass cover, Good, HSG B
1.20	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.00	30	Brush, Good, HSG A
0.14	48	Brush, Good, HSG B
0.07	65	Brush, Good, HSG C
0.08	98	Paved parking, HSG B
0.05	98	Paved parking, HSG C
0.81	98	Water Surface, 0% imp, HSG B
4.51	98	Water Surface, 0% imp, HSG C
0.21	98	Water Surface, 0% imp, HSG D
0.01	30	Woods, Good, HSG A
0.83	55	Woods, Good, HSG B
0.40	70	Woods, Good, HSG C
0.00	77	Woods, Good, HSG D
9.65	84	Weighted Average
9.52		98.70% Pervious Area
0.13		1.30% Impervious Area

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

Subcatchment PR-5: Subcat PR-5



Summary for Subcatchment PR-6: Subcat PR-6

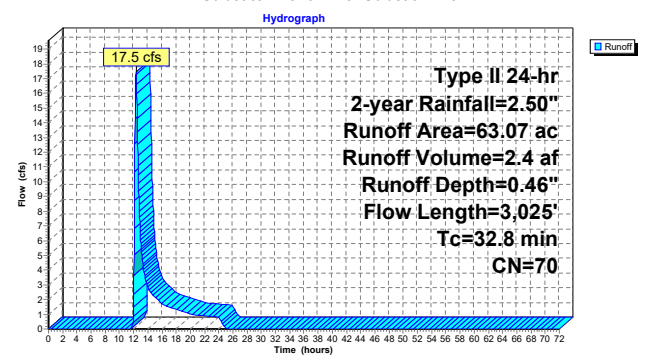
Runoff = 17.5 cfs @ 12.35 hrs, Volume= 2.4 af, Depth= 0.46"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.20	39	>75% Grass cover, Good, HSG A
0.57	61	>75% Grass cover, Good, HSG B
0.22	74	>75% Grass cover, Good, HSG C
0.00	30	Brush, Good, HSG A
0.84	48	Brush, Good, HSG B
0.03	98	Paved parking, HSG A
0.01	98	Paved parking, HSG B
0.01	98	Roofs, HSG B
1.26	98	Water Surface, 0% imp, HSG B
0.00	30	Woods, Good, HSG A
2.40	55	Woods, Good, HSG B
57.00	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
63.07	70	Weighted Average
63.02		99.92% Pervious Area
0.05		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

Subcatchment PR-6: Subcat PR-6



Summary for Subcatchment PR-7: Subcat PR-7

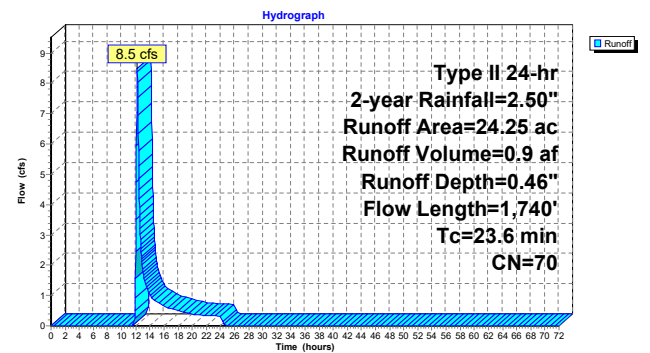
Runoff = 8.5 cfs @ 12.21 hrs, Volume= 0.9 af, Depth= 0.46"
Routed to Reach 1R : 30" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.98	74	>75% Grass cover, Good, HSG C
0.05	98	Paved parking, HSG C
23.23	70	Woods, Good, HSG C
24.25	70	Weighted Average
24.21		99.80% Pervious Area
0.05		0.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0800	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
8.6	1,430	0.3100	2.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	260	0.0103	4.38	96.25	Channel Flow, Area= 22.0 sf Perim= 17.6' r= 1.25' n= 0.040 Earth, cobble bottom, clean sides
23.6	1,740	Total			

Subcatchment PR-7: Subcat PR-7



Summary for Subcatchment PR-8: Subcat PR-8

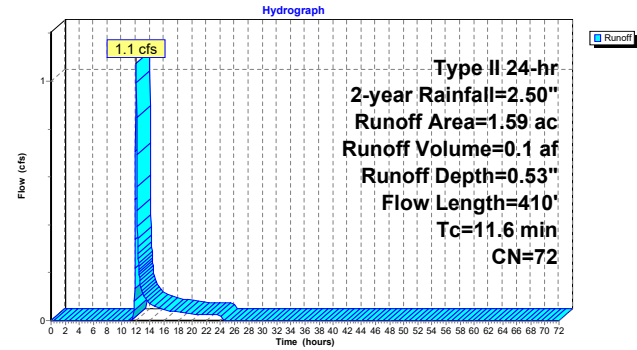
Runoff = 1.1 cfs @ 12.05 hrs, Volume= 0.1 af, Depth= 0.53"
Routed to Reach 3R : North Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.50"

Area (ac)	CN	Description
0.01	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.02	48	Brush, Good, HSG B
0.10	98	Water Surface, 0% imp, HSG B
0.01	98	Water Surface, 0% imp, HSG C
0.03	98	Water Surface, 0% imp, HSG D
0.06	55	Woods, Good, HSG B
1.33	70	Woods, Good, HSG C
1.59	72	Weighted Average
1.59		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.3000	0.10		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
2.6	180	0.2200	1.17		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.8	180	0.0670	3.88		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.6	410	Total			

Subcatchment PR-8: Subcat PR-8



Summary for Reach 1R: 30" Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 24.25 ac, 0.20% Impervious, Inflow Depth = 0.46" for 2-year event
Inflow = 8.5 cfs @ 12.21 hrs, Volume= 0.9 af
Outflow = 8.5 cfs @ 12.22 hrs, Volume= 0.9 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 2R : South Culvert

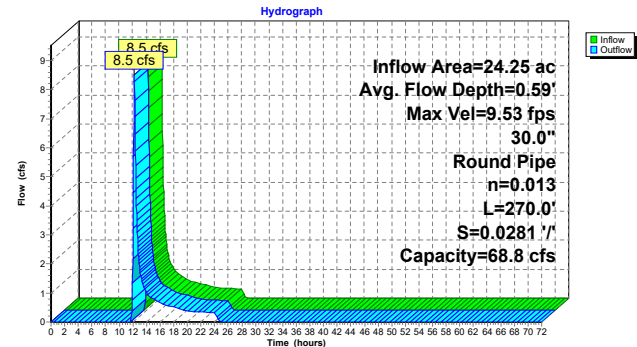
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 9.53 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.22 fps, Avg. Travel Time= 1.1 min

Peak Storage= 241 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 2.13'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 68.8 cfs

30.0" Round Pipe
n= 0.013
Length= 270.0' Slope= 0.0281 '/'
Inlet Invert= 590.60', Outlet Invert= 583.00'



Reach 1R: 30" Pipe



Stage-Area-Storage for Reach 1R: 30" Pipe		
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
590.60	0.0	0
590.65	0.0	6
590.70	0.1	18
590.75	0.1	32
590.80	0.2	50
590.85	0.3	69
590.90	0.3	90
590.95	0.4	113
591.00	0.5	137
591.05	0.6	162
591.10	0.7	189
591.15	0.8	216
591.20	0.9	245
591.25	1.0	274
591.30	1.1	304
591.35	1.2	334
591.40	1.4	366
591.45	1.5	397
591.50	1.6	430
591.55	1.7	462
591.60	1.8	495
591.65	2.0	528
591.70	2.1	562
591.75	2.2	595
591.80	2.3	629
591.85	2.5	663
591.90	2.6	696
591.95	2.7	730
592.00	2.8	764
592.05	3.0	797
592.10	3.1	830
592.15	3.2	863
592.20	3.3	896
592.25	3.4	928
592.30	3.6	960
592.35	3.7	991
592.40	3.8	1,022
592.45	3.9	1,052
592.50	4.0	1,081
592.55	4.1	1,109
592.60	4.2	1,137
592.65	4.3	1,163
592.70	4.4	1,188
592.75	4.5	1,213
592.80	4.6	1,235
592.85	4.7	1,256
592.90	4.7	1,276
592.95	4.8	1,293
593.00	4.8	1,308
593.05	4.9	1,319
593.10	4.9	1,325

Summary for Reach 2R: South Culvert

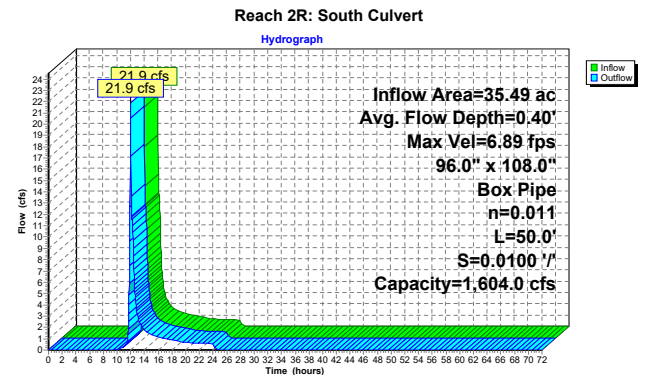
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 35.49 ac, 0.49% Impervious, Inflow Depth = 0.64" for 2-year event
Inflow = 21.9 cfs @ 11.97 hrs, Volume= 1.9 af
Outflow = 21.9 cfs @ 11.97 hrs, Volume= 1.9 af, Atten= 0%, Lag= 0.1 min
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 6.89 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.85 fps, Avg. Travel Time= 0.3 min

Peak Storage= 159 cf @ 11.97 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 8.00'
Bank-Full Depth= 9.00' Flow Area= 72.0 sf, Capacity= 1,604.0 cfs

96.0" W x 108.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 579.50', Outlet Invert= 579.00'



Stage-Area-Storage for Reach 2R: South Culvert					
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
579.50	0.0	0	584.80	42.4	2,120
579.60	0.8	40	584.90	43.2	2,160
579.70	1.6	80	585.00	44.0	2,200
579.80	2.4	120	585.10	44.8	2,240
579.90	3.2	160	585.20	45.6	2,280
580.00	4.0	200	585.30	46.4	2,320
580.10	4.8	240	585.40	47.2	2,360
580.20	5.6	280	585.50	48.0	2,400
580.30	6.4	320	585.60	48.8	2,440
580.40	7.2	360	585.70	49.6	2,480
580.50	8.0	400	585.80	50.4	2,520
580.60	8.8	440	585.90	51.2	2,560
580.70	9.6	480	586.00	52.0	2,600
580.80	10.4	520	586.10	52.8	2,640
580.90	11.2	560	586.20	53.6	2,680
581.00	12.0	600	586.30	54.4	2,720
581.10	12.8	640	586.40	55.2	2,760
581.20	13.6	680	586.50	56.0	2,800
581.30	14.4	720	586.60	56.8	2,840
581.40	15.2	760	586.70	57.6	2,880
581.50	16.0	800	586.80	58.4	2,920
581.60	16.8	840	586.90	59.2	2,960
581.70	17.6	880	587.00	60.0	3,000
581.80	18.4	920	587.10	60.8	3,040
581.90	19.2	960	587.20	61.6	3,080
582.00	20.0	1,000	587.30	62.4	3,120
582.10	20.8	1,040	587.40	63.2	3,160
582.20	21.6	1,080	587.50	64.0	3,200
582.30	22.4	1,120	587.60	64.8	3,240
582.40	23.2	1,160	587.70	65.6	3,280
582.50	24.0	1,200	587.80	66.4	3,320
582.60	24.8	1,240	587.90	67.2	3,360
582.70	25.6	1,280	588.00	68.0	3,400
582.80	26.4	1,320	588.10	68.8	3,440
582.90	27.2	1,360	588.20	69.6	3,480
583.00	28.0	1,400	588.30	70.4	3,520
583.10	28.8	1,440	588.40	71.2	3,560
583.20	29.6	1,480	588.50	72.0	3,600
583.30	30.4	1,520			
583.40	31.2	1,560			
583.50	32.0	1,600			
583.60	32.8	1,640			
583.70	33.6	1,680			
583.80	34.4	1,720			
583.90	35.2	1,760			
584.00	36.0	1,800			
584.10	36.8	1,840			
584.20	37.6	1,880			
584.30	38.4	1,920			
584.40	39.2	1,960			
584.50	40.0	2,000			
584.60	40.8	2,040			
584.70	41.6	2,080			

Summary for Reach 3R: North Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.59 ac, 0.00% Impervious, Inflow Depth = 0.53" for 2-year event
Inflow = 1.1 cfs @ 12.05 hrs, Volume= 0.1 af
Outflow = 1.1 cfs @ 12.06 hrs, Volume= 0.1 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

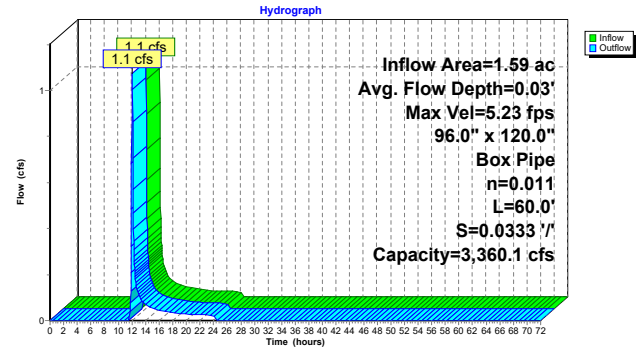
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 5.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 12 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.03' , Surface Width= 8.00'
Bank-Full Depth= 10.00' Flow Area= 80.0 sf, Capacity= 3,360.1 cfs

96.0" W x 120.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 60.0' Slope= 0.0333 '/
Inlet Invert= 602.00', Outlet Invert= 600.00'



Reach 3R: North Culvert



Stage-Area-Storage for Reach 3R: North Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
602.00	0.0	0	607.30	42.4	2,544
602.10	0.8	48	607.40	43.2	2,592
602.20	1.6	96	607.50	44.0	2,640
602.30	2.4	144	607.60	44.8	2,688
602.40	3.2	192	607.70	45.6	2,736
602.50	4.0	240	607.80	46.4	2,784
602.60	4.8	288	607.90	47.2	2,832
602.70	5.6	336	608.00	48.0	2,880
602.80	6.4	384	608.10	48.8	2,928
602.90	7.2	432	608.20	49.6	2,976
603.00	8.0	480	608.30	50.4	3,024
603.10	8.8	528	608.40	51.2	3,072
603.20	9.6	576	608.50	52.0	3,120
603.30	10.4	624	608.60	52.8	3,168
603.40	11.2	672	608.70	53.6	3,216
603.50	12.0	720	608.80	54.4	3,264
603.60	12.8	768	608.90	55.2	3,312
603.70	13.6	816	609.00	56.0	3,360
603.80	14.4	864	609.10	56.8	3,408
603.90	15.2	912	609.20	57.6	3,456
604.00	16.0	960	609.30	58.4	3,504
604.10	16.8	1,008	609.40	59.2	3,552
604.20	17.6	1,056	609.50	60.0	3,600
604.30	18.4	1,104	609.60	60.8	3,648
604.40	19.2	1,152	609.70	61.6	3,696
604.50	20.0	1,200	609.80	62.4	3,744
604.60	20.8	1,248	609.90	63.2	3,792
604.70	21.6	1,296	610.00	64.0	3,840
604.80	22.4	1,344	610.10	64.8	3,888
604.90	23.2	1,392	610.20	65.6	3,936
605.00	24.0	1,440	610.30	66.4	3,984
605.10	24.8	1,488	610.40	67.2	4,032
605.20	25.6	1,536	610.50	68.0	4,080
605.30	26.4	1,584	610.60	68.8	4,128
605.40	27.2	1,632	610.70	69.6	4,176
605.50	28.0	1,680	610.80	70.4	4,224
605.60	28.8	1,728	610.90	71.2	4,272
605.70	29.6	1,776	611.00	72.0	4,320
605.80	30.4	1,824	611.10	72.8	4,368
605.90	31.2	1,872	611.20	73.6	4,416
606.00	32.0	1,920	611.30	74.4	4,464
606.10	32.8	1,968	611.40	75.2	4,512
606.20	33.6	2,016	611.50	76.0	4,560
606.30	34.4	2,064	611.60	76.8	4,608
606.40	35.2	2,112	611.70	77.6	4,656
606.50	36.0	2,160	611.80	78.4	4,704
606.60	36.8	2,208	611.90	79.2	4,752
606.70	37.6	2,256	612.00	80.0	4,800
606.80	38.4	2,304			
606.90	39.2	2,352			
607.00	40.0	2,400			
607.10	40.8	2,448			
607.20	41.6	2,496			

Summary for Pond BP-1: Bioretention Pond #1

Inflow Area = 0.58 ac, 50.57% Impervious, Inflow Depth = 1.00" for 2-year event
Inflow = 1.1 cfs @ 11.97 hrs, Volume= 0.0 af
Outflow = 0.0 cfs @ 16.15 hrs, Volume= 0.0 af, Atten= 98%, Lag= 251.3 min
Discarded = 0.0 cfs @ 16.15 hrs, Volume= 0.0 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 595.52' @ 16.15 hrs Surf.Area= 1,985 sf Storage= 1,226 cf
Flood Elev= 598.50' Surf.Area= 3,846 sf Storage= 9,769 cf

Plug-Flow detention time= 593.5 min calculated for 0.0 af (100% of inflow)
Center-of-Mass det. time= 593.6 min (1,438.3 - 844.7)

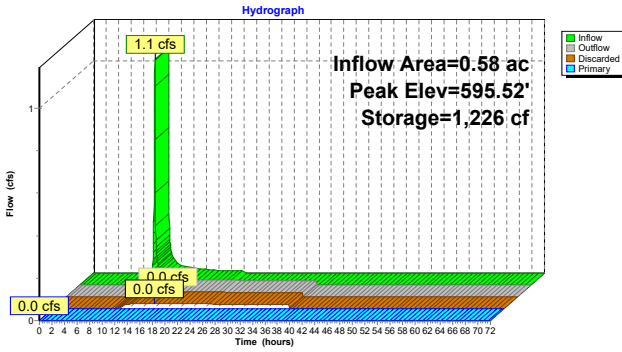
Volume	Invert	Avail.Storage	Storage Description			
#1	593.50'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.50	1,720	169.6	0.0	0	0	1,720
595.00	1,720	169.6	10.0	258	258	1,974
598.00	3,501	226.2	100.0	7,675	7,933	3,853
599.00	4,208	245.6	100.0	3,849	11,782	4,619

Device	Routing	Invert	Outlet Devices
#1	Primary	595.00'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.00' / 594.80' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	596.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	597.00'	48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	593.50'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 16.15 hrs HW=595.52' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.50' TW=0.00' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)
2=Orifice (Controls 0.0 cfs)
3=Grate (Controls 0.0 cfs)

Pond BP-1: Bioretention Pond #1



Stage-Area-Storage for Pond BP-1: Bioretention Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
593.50	1,720	0	598.80	4,061	10,955
593.60	1,720	17	598.90	4,134	11,365
593.70	1,720	34	599.00	4,208	11,782
593.80	1,720	52			
593.90	1,720	69			
594.00	1,720	86			
594.10	1,720	103			
594.20	1,720	120			
594.30	1,720	138			
594.40	1,720	155			
594.50	1,720	172			
594.60	1,720	189			
594.70	1,720	206			
594.80	1,720	224			
594.90	1,720	241			
595.00	1,720	258			
595.10	1,769	432			
595.20	1,819	612			
595.30	1,870	796			
595.40	1,921	986			
595.50	1,973	1,181			
595.60	2,026	1,381			
595.70	2,080	1,586			
595.80	2,134	1,797			
595.90	2,189	2,013			
596.00	2,244	2,234			
596.10	2,300	2,461			
596.20	2,357	2,694			
596.30	2,415	2,933			
596.40	2,473	3,177			
596.50	2,532	3,428			
596.60	2,592	3,684			
596.70	2,652	3,946			
596.80	2,713	4,214			
596.90	2,775	4,489			
597.00	2,838	4,769			
597.10	2,901	5,056			
597.20	2,965	5,350			
597.30	3,029	5,649			
597.40	3,095	5,955			
597.50	3,161	6,268			
597.60	3,227	6,588			
597.70	3,295	6,914			
597.80	3,363	7,247			
597.90	3,432	7,586			
598.00	3,501	7,933			
598.10	3,569	8,286			
598.20	3,637	8,647			
598.30	3,706	9,014			
598.40	3,776	9,388			
598.50	3,846	9,769			
598.60	3,917	10,157			
598.70	3,989	10,553			

Summary for Pond UIP-1: UIP-1

Inflow Area = 6.76 ac, 78.45% Impervious, Inflow Depth = 1.78" for 2-year event
Inflow = 21.1 cfs @ 11.96 hrs, Volume= 1.0 af
Outflow = 0.3 cfs @ 17.33 hrs, Volume= 0.8 af, Atten= 99%, Lag= 322.0 min
Discarded = 0.1 cfs @ 9.54 hrs, Volume= 0.7 af
Primary = 0.2 cfs @ 17.33 hrs, Volume= 0.1 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 596.13' @ 17.33 hrs Surf.Area= 11,441 sf Storage= 32,543 cf
Flood Elev= 598.55' Surf.Area= 11,441 sf Storage= 47,881 cf

Plug-Flow detention time= 1,532.6 min calculated for 0.8 af (79% of inflow)
Center-of-Mass det. time= 1,449.9 min (2,247.4 - 797.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	592.30'	18,038 cf	55.75'W x 205.22'L x 6.75'H Field A 77,226 cf Overall - 32,132 cf Embedded = 45,094 cf x 40.0% Voids
#2A	593.05'	32,132 cf	ADS StormTech MC-7200 +Cap x 180 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 180 Chambers in 6 Rows Cap Storage= 39.5 cf x 2 x 6 rows = 474.0 cf
50,169 cf			Total Available Storage

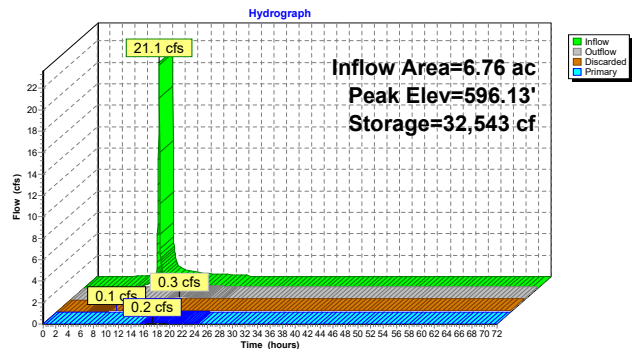
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	30.0" Round Culvert L= 39.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 592.50' / 592.00' S= 0.0128 ' /' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	597.30'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Discarded	592.30'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#4	Device 1	596.05'	30.0" W x 15.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.1 cfs @ 9.54 hrs HW=592.37' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.2 cfs @ 17.33 hrs HW=596.13' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.2 cfs of 32.2 cfs potential flow)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)
4=Orifice (Orifice Controls 0.2 cfs @ 0.91 fps)

Pond UIP-1: UIP-1



Stage-Area-Storage for Pond UIP-1: UIP-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.30	11,441	0	597.60	11,441	43,352
592.40	11,441	458	597.70	11,441	43,885
592.50	11,441	915	597.80	11,441	44,392
592.60	11,441	1,373	597.90	11,441	44,885
592.70	11,441	1,831	598.00	11,441	45,362
592.80	11,441	2,288	598.10	11,441	45,822
592.90	11,441	2,746	598.20	11,441	46,279
593.00	11,441	3,203	598.30	11,441	46,737
593.10	11,441	3,635	598.40	11,441	47,195
593.20	11,441	4,040	598.50	11,441	47,652
593.30	11,441	5,942	598.60	11,441	48,110
593.40	11,441	6,942	598.70	11,441	48,567
593.50	11,441	7,939	598.80	11,441	49,025
593.60	11,441	8,934	598.90	11,441	49,483
593.70	11,441	9,925	599.00	11,441	49,940
593.80	11,441	10,914			
593.90	11,441	11,899			
594.00	11,441	12,882			
594.10	11,441	13,860			
594.20	11,441	14,835			
594.30	11,441	15,805			
594.40	11,441	16,772			
594.50	11,441	17,733			
594.60	11,441	18,690			
594.70	11,441	19,643			
594.80	11,441	20,590			
594.90	11,441	21,531			
595.00	11,441	22,466			
595.10	11,441	23,395			
595.20	11,441	24,318			
595.30	11,441	25,235			
595.40	11,441	26,144			
595.50	11,441	27,046			
595.60	11,441	27,941			
595.70	11,441	28,827			
595.80	11,441	29,705			
595.90	11,441	30,575			
596.00	11,441	31,435			
596.10	11,441	32,285			
596.20	11,441	33,126			
596.30	11,441	33,956			
596.40	11,441	34,774			
596.50	11,441	35,581			
596.60	11,441	36,375			
596.70	11,441	37,156			
596.80	11,441	37,923			
596.90	11,441	38,675			
597.00	11,441	39,410			
597.10	11,441	40,127			
597.20	11,441	40,825			
597.30	11,441	41,502			
597.40	11,441	42,154			
597.50	11,441	42,774			

Summary for Pond UIP-2: UIP-2

Inflow Area = 2.21 ac, 79.75% Impervious, Inflow Depth = 1.61" for 2-year event
Inflow = 6.4 cfs @ 11.96 hrs, Volume= 0.3 af
Outflow = 0.3 cfs @ 13.12 hrs, Volume= 0.3 af, Atten= 95%, Lag= 69.8 min
Discarded = 0.0 cfs @ 10.17 hrs, Volume= 0.2 af
Primary = 0.2 cfs @ 13.12 hrs, Volume= 0.1 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 585.88' @ 13.12 hrs Surf.Area= 3,594 sf Storage= 7,450 cf
Flood Elev= 589.25' Surf.Area= 3,594 sf Storage= 14,826 cf

Plug-Flow detention time= 1,057.1 min calculated for 0.3 af (100% of inflow)
Center-of-Mass det. time= 1,057.8 min (1,865.8 - 808.0)

Volume	Invert	Avail. Storage	Storage Description
#1A	583.00'	5,811 cf	28.50'W x 126.12'L x 6.75'H Field A 24,262 cf Overall - 9,734 cf Embedded = 14,527 cf x 40.0% Voids ADS StornTech MC-7200 *Cap x 54 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 54 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
#2A	583.75'	9,734 cf	
			15,545 cf Total Available Storage

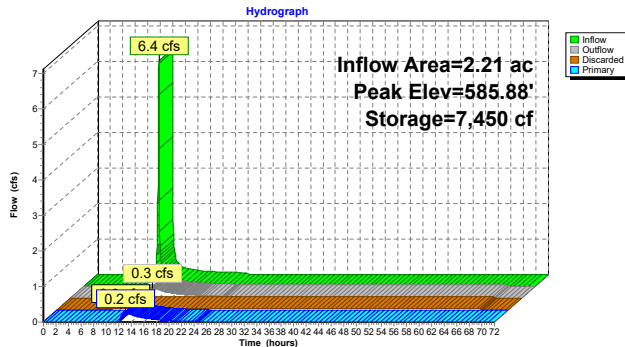
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	583.00'	24.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.00' / 582.80' S= 0.0100' /' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	585.50'	4.0" W x 24.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Discarded	583.00'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 10.17 hrs HW=583.07' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.2 cfs @ 13.12 hrs HW=585.88' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.2 cfs of 19.8 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.2 cfs @ 1.97 fps)
3=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Pond UIP-2: UIP-2



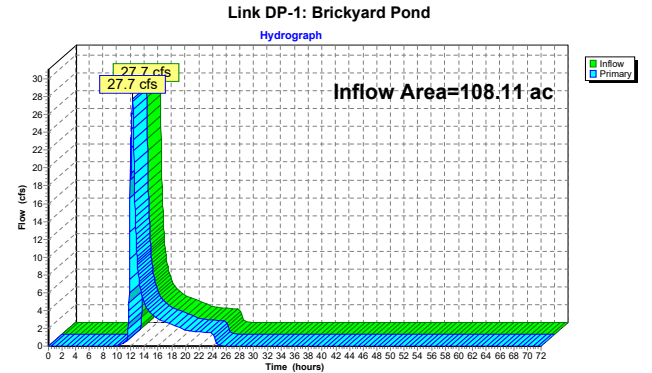
Stage-Area-Storage for Pond UIP-2: UIP-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
583.00	3,594	0	588.30	3,594	13,406
583.10	3,594	144	588.40	3,594	13,572
583.20	3,594	288	588.50	3,594	13,731
583.30	3,594	431	588.60	3,594	13,885
583.40	3,594	575	588.70	3,594	14,035
583.50	3,594	719	588.80	3,594	14,179
583.60	3,594	863	588.90	3,594	14,323
583.70	3,594	1,006	589.00	3,594	14,467
583.80	3,594	1,233	589.10	3,594	14,611
583.90	3,594	1,543	589.20	3,594	14,754
584.00	3,594	1,852	589.30	3,594	14,898
584.10	3,594	2,159	589.40	3,594	15,042
584.20	3,594	2,467	589.50	3,594	15,186
584.30	3,594	2,773	589.60	3,594	15,330
584.40	3,594	3,079	589.70	3,594	15,473
584.50	3,594	3,383			
584.60	3,594	3,687			
584.70	3,594	3,990			
584.80	3,594	4,291			
584.90	3,594	4,592			
585.00	3,594	4,891			
585.10	3,594	5,189			
585.20	3,594	5,485			
585.30	3,594	5,780			
585.40	3,594	6,074			
585.50	3,594	6,366			
585.60	3,594	6,656			
585.70	3,594	6,945			
585.80	3,594	7,231			
585.90	3,594	7,516			
586.00	3,594	7,799			
586.10	3,594	8,079			
586.20	3,594	8,358			
586.30	3,594	8,634			
586.40	3,594	8,908			
586.50	3,594	9,179			
586.60	3,594	9,447			
586.70	3,594	9,713			
586.80	3,594	9,976			
586.90	3,594	10,236			
587.00	3,594	10,492			
587.10	3,594	10,745			
587.20	3,594	10,995			
587.30	3,594	11,241			
587.40	3,594	11,482			
587.50	3,594	11,720			
587.60	3,594	11,953			
587.70	3,594	12,180			
587.80	3,594	12,403			
587.90	3,594	12,620			
588.00	3,594	12,830			
588.10	3,594	13,032			
588.20	3,594	13,225			

Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 7.01% Impervious, Inflow Depth = 0.49" for 2-year event
Inflow = 27.7 cfs @ 12.29 hrs, Volume= 4.4 af
Primary = 27.7 cfs @ 12.29 hrs, Volume= 4.4 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-1: Subcat PR-1 Runoff Area=6.76 ac 78.45% Impervious Runoff Depth=2.81"
Tc=5.0 min CN=93 Runoff=32.3 cfs 1.6 af

Subcatchment PR-2: Subcat PR-2 Runoff Area=2.21 ac 79.75% Impervious Runoff Depth=2.62"
Tc=5.0 min CN=91 Runoff=10.0 cfs 0.5 af

Subcatchment PR-4: Subcat PR-4 Runoff Area=0.58 ac 50.57% Impervious Runoff Depth=1.85"
Tc=5.0 min CN=82 Runoff=2.0 cfs 0.1 af

Subcatchment PR-5: Subcat PR-5 Runoff Area=9.65 ac 1.30% Impervious Runoff Depth=2.01"
Tc=5.0 min CN=84 Runoff=35.3 cfs 1.6 af

Subcatchment PR-6: Subcat PR-6 Runoff Area=63.07 ac 0.08% Impervious Runoff Depth=1.06"
Flow Length=3,025' Tc=32.8 min CN=70 Runoff=49.3 cfs 5.6 af

Subcatchment PR-7: Subcat PR-7 Runoff Area=24.25 ac 0.20% Impervious Runoff Depth=1.06"
Flow Length=1,740' Tc=23.6 min CN=70 Runoff=23.8 cfs 2.1 af

Subcatchment PR-8: Subcat PR-8 Runoff Area=1.59 ac 0.00% Impervious Runoff Depth=1.17"
Flow Length=410' Tc=11.6 min CN=72 Runoff=2.6 cfs 0.2 af

Reach 1R: 30" Pipe Avg. Flow Depth=1.01' Max Vel=12.73 fps Inflow=23.8 cfs 2.1 af
30.0" Round Pipe n=0.013 L=270.0' S=0.0281' Capacity=68.8 cfs Outflow=23.8 cfs 2.1 af

Reach 2R: South Culvert Avg. Flow Depth=0.63' Max Vel=8.96 fps Inflow=44.9 cfs 3.9 af
96.0" x 108.0" Box Pipe n=0.011 L=50.0' S=0.0100' Capacity=1,604.0 cfs Outflow=44.9 cfs 3.9 af

Reach 3R: North Culvert Avg. Flow Depth=0.06' Max Vel=5.23 fps Inflow=2.6 cfs 0.2 af
96.0" x 120.0" Box Pipe n=0.011 L=60.0' S=0.0333' Capacity=3,360.1 cfs Outflow=2.6 cfs 0.2 af

Pond BP-1: Bioretention Pond #1 Peak Elev=596.18' Storage=2,637 cf Inflow=2.0 cfs 0.1 af
Discarded=0.0 cfs 0.1 af Primary=0.0 cfs 0.0 af Outflow=0.0 cfs 0.1 af

Pond UIP-1: UIP-1 Peak Elev=596.69' Storage=37,064 cf Inflow=32.3 cfs 1.6 af
Discarded=0.1 cfs 0.7 af Primary=4.1 cfs 0.6 af Outflow=4.2 cfs 1.4 af

Pond UIP-2: UIP-2 Peak Elev=586.95' Storage=10,367 cf Inflow=10.0 cfs 0.5 af
Discarded=0.0 cfs 0.2 af Primary=1.9 cfs 0.3 af Outflow=1.9 cfs 0.5 af

Link DP-1: Brickyard Pond Inflow=81.2 cfs 10.4 af
Primary=81.2 cfs 10.4 af

Total Runoff Area = 108.11 ac Runoff Volume = 11.6 af Average Runoff Depth = 1.29"
92.99% Pervious = 100.53 ac 7.01% Impervious = 7.58 ac

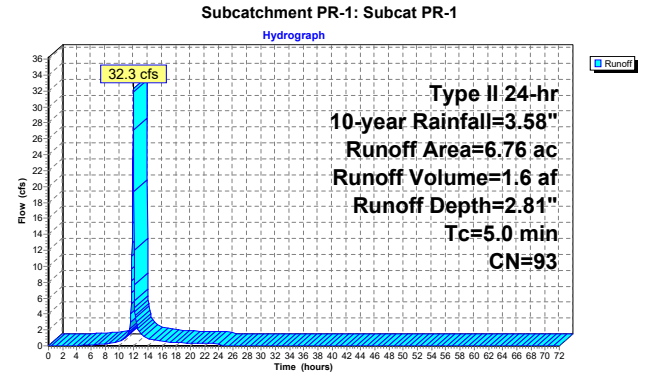
Summary for Subcatchment PR-1: Subcat PR-1

Runoff = 32.3 cfs @ 11.96 hrs, Volume= 1.6 af, Depth= 2.81"
Routed to Pond UIP-1 : UIP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.10	61	>75% Grass cover, Good, HSG B
1.34	74	>75% Grass cover, Good, HSG C
0.29	98	Paved parking, HSG B
2.82	98	Paved parking, HSG C
0.43	98	Roofs, HSG B
1.77	98	Roofs, HSG C
0.00	55	Woods, Good, HSG B
0.02	70	Woods, Good, HSG C
6.76	93	Weighted Average
1.46		21.55% Pervious Area
5.31		78.45% Impervious Area

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



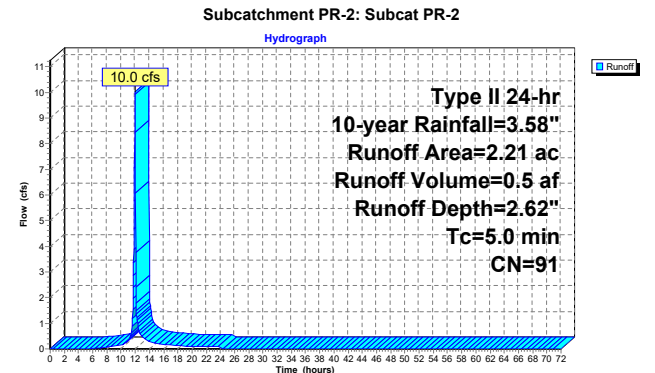
Summary for Subcatchment PR-2: Subcat PR-2

Runoff = 10.0 cfs @ 11.96 hrs, Volume= 0.5 af, Depth= 2.62"
Routed to Pond UIP-2 : UIP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.45	61	>75% Grass cover, Good, HSG B
0.00	48	Brush, Good, HSG B
1.07	98	Paved parking, HSG B
0.69	98	Roofs, HSG B
2.21	91	Weighted Average
0.45		20.25% Pervious Area
1.76		79.75% Impervious Area

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



Summary for Subcatchment PR-4: Subcat PR-4

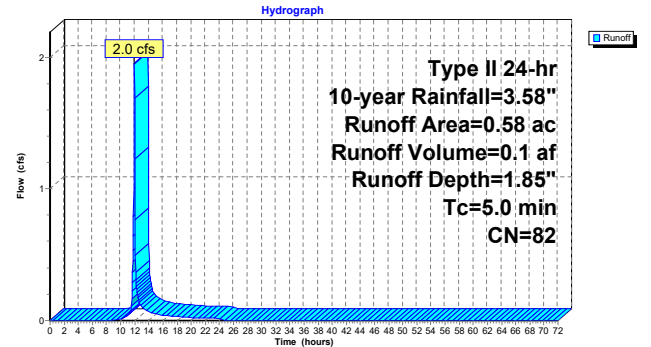
Runoff = 2.0 cfs @ 11.96 hrs, Volume= 0.1 af, Depth= 1.85"
Routed to Pond BP-1 : Bioretention Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.00	39	>75% Grass cover, Good, HSG A
0.20	61	>75% Grass cover, Good, HSG B
0.09	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	98	Paved parking, HSG A
0.20	98	Paved parking, HSG B
0.03	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.02	98	Roofs, HSG A
0.03	98	Roofs, HSG B
0.00	98	Water Surface, 0% imp, HSG D
0.58	82	Weighted Average
0.29		49.43% Pervious Area
0.29		50.57% Impervious Area

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

Subcatchment PR-4: Subcat PR-4



Summary for Subcatchment PR-5: Subcat PR-5

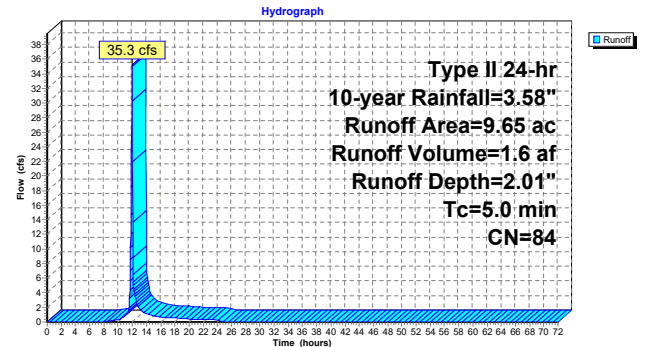
Runoff = 35.3 cfs @ 11.96 hrs, Volume= 1.6 af, Depth= 2.01"
Routed to Reach 2R : South Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
1.24	61	>75% Grass cover, Good, HSG B
1.20	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.00	30	Brush, Good, HSG A
0.14	48	Brush, Good, HSG B
0.07	65	Brush, Good, HSG C
0.08	98	Paved parking, HSG B
0.05	98	Paved parking, HSG C
0.81	98	Water Surface, 0% imp, HSG B
4.51	98	Water Surface, 0% imp, HSG C
0.21	98	Water Surface, 0% imp, HSG D
0.01	30	Woods, Good, HSG A
0.83	55	Woods, Good, HSG B
0.40	70	Woods, Good, HSG C
0.00	77	Woods, Good, HSG D
9.65	84	Weighted Average
9.52		98.70% Pervious Area
0.13		1.30% Impervious Area

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

Subcatchment PR-5: Subcat PR-5



Summary for Subcatchment PR-6: Subcat PR-6

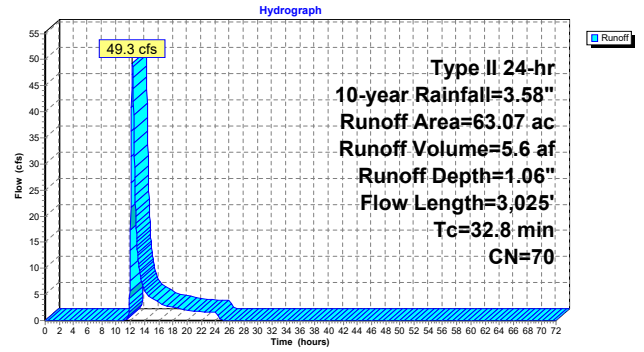
Runoff = 49.3 cfs @ 12.31 hrs, Volume= 5.6 af, Depth= 1.06"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.20	39	>75% Grass cover, Good, HSG A
0.57	61	>75% Grass cover, Good, HSG B
0.22	74	>75% Grass cover, Good, HSG C
0.00	30	Brush, Good, HSG A
0.84	48	Brush, Good, HSG B
0.03	98	Paved parking, HSG A
0.01	98	Paved parking, HSG B
0.01	98	Roofs, HSG B
1.26	98	Water Surface, 0% imp, HSG B
0.00	30	Woods, Good, HSG A
2.40	55	Woods, Good, HSG B
57.00	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
63.07	70	Weighted Average
63.02		99.92% Pervious Area
0.05		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

Subcatchment PR-6: Subcat PR-6



Summary for Subcatchment PR-7: Subcat PR-7

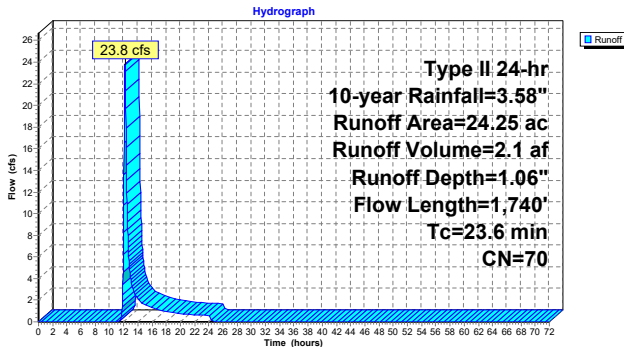
Runoff = 23.8 cfs @ 12.19 hrs, Volume= 2.1 af, Depth= 1.06"
Routed to Reach 1R : 30" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.98	74	>75% Grass cover, Good, HSG C
0.05	98	Paved parking, HSG C
23.23	70	Woods, Good, HSG C
24.25	70	Weighted Average
24.21		99.80% Pervious Area
0.05		0.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0800	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
8.6	1,430	0.3100	2.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	260	0.0103	4.38	96.25	Channel Flow, Area= 22.0 sf Perim= 17.6' r= 1.25' n= 0.040 Earth, cobble bottom, clean sides
23.6	1,740	Total			

Subcatchment PR-7: Subcat PR-7



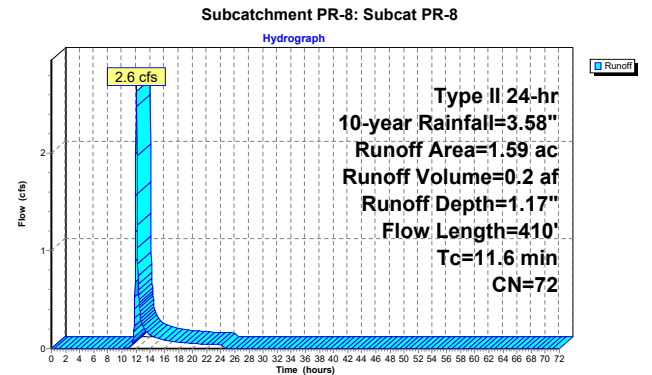
Summary for Subcatchment PR-8: Subcat PR-8

Runoff = 2.6 cfs @ 12.04 hrs, Volume= 0.2 af, Depth= 1.17"
Routed to Reach 3R : North Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.58"

Area (ac)	CN	Description
0.01	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.02	48	Brush, Good, HSG B
0.10	98	Water Surface, 0% imp, HSG B
0.01	98	Water Surface, 0% imp, HSG C
0.03	98	Water Surface, 0% imp, HSG D
0.06	55	Woods, Good, HSG B
1.33	70	Woods, Good, HSG C
1.59	72	Weighted Average
1.59		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.3000	0.10		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
2.6	180	0.2200	1.17		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.8	180	0.0670	3.88		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.6	410	Total			



Summary for Reach 1R: 30" Pipe

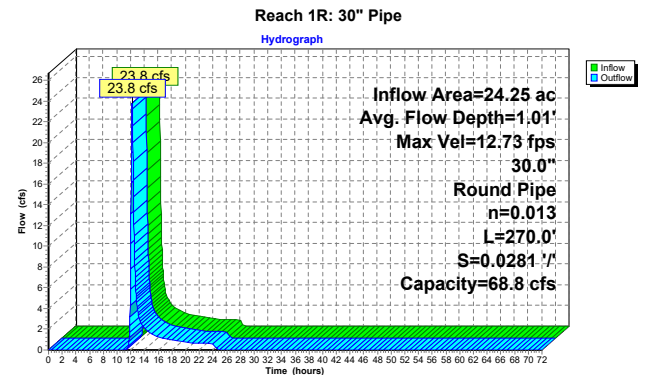
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 24.25 ac, 0.20% Impervious, Inflow Depth = 1.06" for 10-year event
Inflow = 23.8 cfs @ 12.19 hrs, Volume= 2.1 af
Outflow = 23.8 cfs @ 12.19 hrs, Volume= 2.1 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 2R : South Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 12.73 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 5.13 fps, Avg. Travel Time= 0.9 min

Peak Storage= 504 cf @ 12.19 hrs
Average Depth at Peak Storage= 1.01', Surface Width= 2.46'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 68.8 cfs

30.0" Round Pipe
n= 0.013
Length= 270.0' Slope= 0.0281 '/
Inlet Invert= 590.60', Outlet Invert= 583.00'



Stage-Area-Storage for Reach 1R: 30" Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
590.60	0.0	0
590.65	0.0	6
590.70	0.1	18
590.75	0.1	32
590.80	0.2	50
590.85	0.3	69
590.90	0.3	90
590.95	0.4	113
591.00	0.5	137
591.05	0.6	162
591.10	0.7	189
591.15	0.8	216
591.20	0.9	245
591.25	1.0	274
591.30	1.1	304
591.35	1.2	334
591.40	1.4	366
591.45	1.5	397
591.50	1.6	430
591.55	1.7	462
591.60	1.8	495
591.65	2.0	528
591.70	2.1	562
591.75	2.2	595
591.80	2.3	629
591.85	2.5	663
591.90	2.6	696
591.95	2.7	730
592.00	2.8	764
592.05	3.0	797
592.10	3.1	830
592.15	3.2	863
592.20	3.3	896
592.25	3.4	928
592.30	3.6	960
592.35	3.7	991
592.40	3.8	1,022
592.45	3.9	1,052
592.50	4.0	1,081
592.55	4.1	1,109
592.60	4.2	1,137
592.65	4.3	1,163
592.70	4.4	1,188
592.75	4.5	1,213
592.80	4.6	1,235
592.85	4.7	1,256
592.90	4.7	1,276
592.95	4.8	1,293
593.00	4.8	1,308
593.05	4.9	1,319
593.10	4.9	1,325

Summary for Reach 2R: South Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 35.49 ac, 0.49% Impervious, Inflow Depth = 1.32" for 10-year event
Inflow = 44.9 cfs @ 11.97 hrs, Volume= 3.9 af
Outflow = 44.9 cfs @ 11.98 hrs, Volume= 3.9 af, Atten= 0%, Lag= 0.1 min
Routed to Link DP-1 : Brickyard Pond

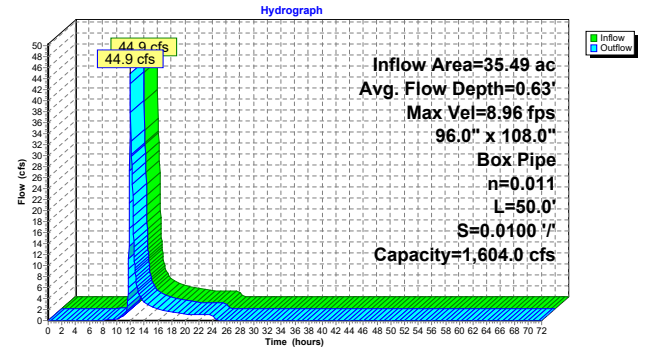
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 8.96 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.05 fps, Avg. Travel Time= 0.3 min

Peak Storage= 250 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 8.00'
Bank-Full Depth= 9.00' Flow Area= 72.0 sf, Capacity= 1,604.0 cfs

96.0" W x 108.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 579.50', Outlet Invert= 579.00'



Reach 2R: South Culvert



Stage-Area-Storage for Reach 2R: South Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
579.50	0.0	0	584.80	42.4	2,120
579.60	0.8	40	584.90	43.2	2,160
579.70	1.6	80	585.00	44.0	2,200
579.80	2.4	120	585.10	44.8	2,240
579.90	3.2	160	585.20	45.6	2,280
580.00	4.0	200	585.30	46.4	2,320
580.10	4.8	240	585.40	47.2	2,360
580.20	5.6	280	585.50	48.0	2,400
580.30	6.4	320	585.60	48.8	2,440
580.40	7.2	360	585.70	49.6	2,480
580.50	8.0	400	585.80	50.4	2,520
580.60	8.8	440	585.90	51.2	2,560
580.70	9.6	480	586.00	52.0	2,600
580.80	10.4	520	586.10	52.8	2,640
580.90	11.2	560	586.20	53.6	2,680
581.00	12.0	600	586.30	54.4	2,720
581.10	12.8	640	586.40	55.2	2,760
581.20	13.6	680	586.50	56.0	2,800
581.30	14.4	720	586.60	56.8	2,840
581.40	15.2	760	586.70	57.6	2,880
581.50	16.0	800	586.80	58.4	2,920
581.60	16.8	840	586.90	59.2	2,960
581.70	17.6	880	587.00	60.0	3,000
581.80	18.4	920	587.10	60.8	3,040
581.90	19.2	960	587.20	61.6	3,080
582.00	20.0	1,000	587.30	62.4	3,120
582.10	20.8	1,040	587.40	63.2	3,160
582.20	21.6	1,080	587.50	64.0	3,200
582.30	22.4	1,120	587.60	64.8	3,240
582.40	23.2	1,160	587.70	65.6	3,280
582.50	24.0	1,200	587.80	66.4	3,320
582.60	24.8	1,240	587.90	67.2	3,360
582.70	25.6	1,280	588.00	68.0	3,400
582.80	26.4	1,320	588.10	68.8	3,440
582.90	27.2	1,360	588.20	69.6	3,480
583.00	28.0	1,400	588.30	70.4	3,520
583.10	28.8	1,440	588.40	71.2	3,560
583.20	29.6	1,480	588.50	72.0	3,600
583.30	30.4	1,520			
583.40	31.2	1,560			
583.50	32.0	1,600			
583.60	32.8	1,640			
583.70	33.6	1,680			
583.80	34.4	1,720			
583.90	35.2	1,760			
584.00	36.0	1,800			
584.10	36.8	1,840			
584.20	37.6	1,880			
584.30	38.4	1,920			
584.40	39.2	1,960			
584.50	40.0	2,000			
584.60	40.8	2,040			
584.70	41.6	2,080			

Summary for Reach 3R: North Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.59 ac, 0.00% Impervious, Inflow Depth = 1.17" for 10-year event
Inflow = 2.6 cfs @ 12.04 hrs, Volume= 0.2 af
Outflow = 2.6 cfs @ 12.05 hrs, Volume= 0.2 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

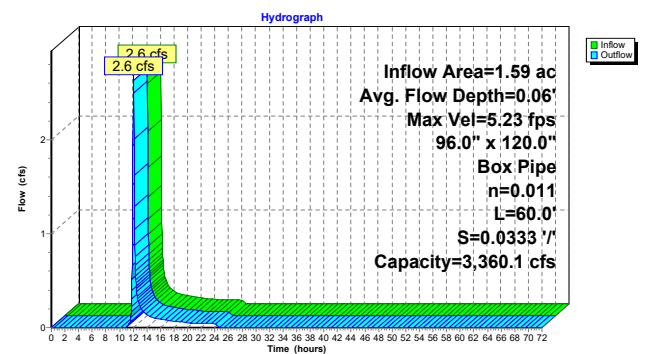
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 5.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 30 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 8.00'
Bank-Full Depth= 10.00' Flow Area= 80.0 sf, Capacity= 3,360.1 cfs

96.0" W x 120.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 602.00', Outlet Invert= 600.00'



Reach 3R: North Culvert



Stage-Area-Storage for Reach 3R: North Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
602.00	0.0	0	607.30	42.4	2,544
602.10	0.8	48	607.40	43.2	2,592
602.20	1.6	96	607.50	44.0	2,640
602.30	2.4	144	607.60	44.8	2,688
602.40	3.2	192	607.70	45.6	2,736
602.50	4.0	240	607.80	46.4	2,784
602.60	4.8	288	607.90	47.2	2,832
602.70	5.6	336	608.00	48.0	2,880
602.80	6.4	384	608.10	48.8	2,928
602.90	7.2	432	608.20	49.6	2,976
603.00	8.0	480	608.30	50.4	3,024
603.10	8.8	528	608.40	51.2	3,072
603.20	9.6	576	608.50	52.0	3,120
603.30	10.4	624	608.60	52.8	3,168
603.40	11.2	672	608.70	53.6	3,216
603.50	12.0	720	608.80	54.4	3,264
603.60	12.8	768	608.90	55.2	3,312
603.70	13.6	816	609.00	56.0	3,360
603.80	14.4	864	609.10	56.8	3,408
603.90	15.2	912	609.20	57.6	3,456
604.00	16.0	960	609.30	58.4	3,504
604.10	16.8	1,008	609.40	59.2	3,552
604.20	17.6	1,056	609.50	60.0	3,600
604.30	18.4	1,104	609.60	60.8	3,648
604.40	19.2	1,152	609.70	61.6	3,696
604.50	20.0	1,200	609.80	62.4	3,744
604.60	20.8	1,248	609.90	63.2	3,792
604.70	21.6	1,296	610.00	64.0	3,840
604.80	22.4	1,344	610.10	64.8	3,888
604.90	23.2	1,392	610.20	65.6	3,936
605.00	24.0	1,440	610.30	66.4	3,984
605.10	24.8	1,488	610.40	67.2	4,032
605.20	25.6	1,536	610.50	68.0	4,080
605.30	26.4	1,584	610.60	68.8	4,128
605.40	27.2	1,632	610.70	69.6	4,176
605.50	28.0	1,680	610.80	70.4	4,224
605.60	28.8	1,728	610.90	71.2	4,272
605.70	29.6	1,776	611.00	72.0	4,320
605.80	30.4	1,824	611.10	72.8	4,368
605.90	31.2	1,872	611.20	73.6	4,416
606.00	32.0	1,920	611.30	74.4	4,464
606.10	32.8	1,968	611.40	75.2	4,512
606.20	33.6	2,016	611.50	76.0	4,560
606.30	34.4	2,064	611.60	76.8	4,608
606.40	35.2	2,112	611.70	77.6	4,656
606.50	36.0	2,160	611.80	78.4	4,704
606.60	36.8	2,208	611.90	79.2	4,752
606.70	37.6	2,256	612.00	80.0	4,800
606.80	38.4	2,304			
606.90	39.2	2,352			
607.00	40.0	2,400			
607.10	40.8	2,448			
607.20	41.6	2,496			

Summary for Pond BP-1: Bioretention Pond #1

Inflow Area = 0.58 ac, 50.57% Impervious, Inflow Depth = 1.85" for 10-year event
Inflow = 2.0 cfs @ 11.96 hrs, Volume = 0.1 af
Outflow = 0.0 cfs @ 18.88 hrs, Volume = 0.1 af, Atten= 99%, Lag= 415.2 min
Discarded = 0.0 cfs @ 18.88 hrs, Volume = 0.1 af
Primary = 0.0 cfs @ 0.00 hrs, Volume = 0.0 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 596.18' @ 18.88 hrs Surf.Area= 2,343 sf Storage= 2,637 cf
Flood Elev= 598.50' Surf.Area= 3,846 sf Storage= 9,769 cf

Plug-Flow detention time= 1,045.2 min calculated for 0.1 af (100% of inflow)
Center-of-Mass det. time= 1,045.6 min (1,872.4 - 826.8)

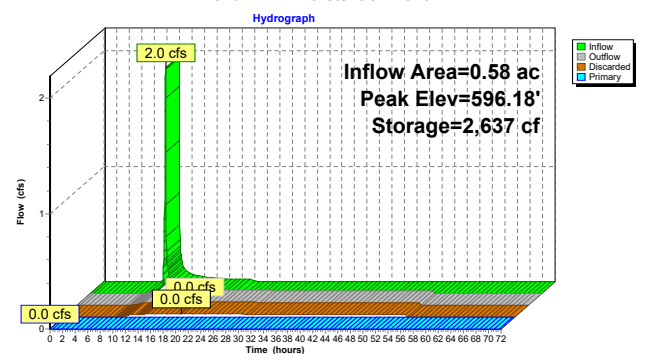
Volume	Invert	Avail.Storage	Storage Description			
#1	593.50'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.50	1,720	169.6	0.0	0	0	1,720
595.00	1,720	169.6	10.0	258	258	1,974
598.00	3,501	226.2	100.0	7,675	7,933	3,853
599.00	4,208	245.6	100.0	3,849	11,782	4,619

Device	Routing	Invert	Outlet Devices
#1	Primary	595.00'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.00' / 594.80' S= 0.0100 '/ft Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	596.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	597.00'	48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	593.50'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 18.88 hrs HW=596.18' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=593.50' TW=0.00' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)
2=Orifice (Controls 0.0 cfs)
3=Grate (Controls 0.0 cfs)

Pond BP-1: Bioretention Pond #1



Stage-Area-Storage for Pond BP-1: Bioretention Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
593.50	1,720	0	598.80	4,061	10,955
593.60	1,720	17	598.90	4,134	11,365
593.70	1,720	34	599.00	4,208	11,782
593.80	1,720	52			
593.90	1,720	69			
594.00	1,720	86			
594.10	1,720	103			
594.20	1,720	120			
594.30	1,720	138			
594.40	1,720	155			
594.50	1,720	172			
594.60	1,720	189			
594.70	1,720	206			
594.80	1,720	224			
594.90	1,720	241			
595.00	1,720	258			
595.10	1,769	432			
595.20	1,819	612			
595.30	1,870	796			
595.40	1,921	986			
595.50	1,973	1,181			
595.60	2,026	1,381			
595.70	2,080	1,586			
595.80	2,134	1,797			
595.90	2,189	2,013			
596.00	2,244	2,234			
596.10	2,300	2,461			
596.20	2,357	2,694			
596.30	2,415	2,933			
596.40	2,473	3,177			
596.50	2,532	3,428			
596.60	2,592	3,684			
596.70	2,652	3,946			
596.80	2,713	4,214			
596.90	2,775	4,489			
597.00	2,838	4,769			
597.10	2,901	5,056			
597.20	2,965	5,350			
597.30	3,029	5,649			
597.40	3,095	5,955			
597.50	3,161	6,268			
597.60	3,227	6,588			
597.70	3,295	6,914			
597.80	3,363	7,247			
597.90	3,432	7,586			
598.00	3,501	7,933			
598.10	3,569	8,286			
598.20	3,637	8,647			
598.30	3,706	9,014			
598.40	3,776	9,388			
598.50	3,846	9,769			
598.60	3,917	10,157			
598.70	3,989	10,553			

Summary for Pond UIP-1: UIP-1

Inflow Area = 6.76 ac, 78.45% Impervious, Inflow Depth = 2.81" for 10-year event
Inflow = 32.3 cfs @ 11.96 hrs, Volume= 1.6 af
Outflow = 4.2 cfs @ 12.19 hrs, Volume= 1.4 af, Atten= 87%, Lag= 13.8 min
Discarded = 0.1 cfs @ 7.77 hrs, Volume= 0.7 af
Primary = 4.1 cfs @ 12.19 hrs, Volume= 0.6 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 596.69' @ 12.19 hrs Surf.Area= 11,441 sf Storage= 37,064 cf
Flood Elev= 598.55' Surf.Area= 11,441 sf Storage= 47,881 cf

Plug-Flow detention time= 930.3 min calculated for 1.4 af (86% of inflow)
Center-of-Mass det. time= 867.5 min (1,652.1 - 784.7)

Volume	Invert	Avail. Storage	Storage Description
#1A	592.30'	18,038 cf	55.75'W x 205.22'L x 6.75'H Field A 77,226 cf Overall - 32,132 cf Embedded = 45,094 cf x 40.0% Voids ADS StornTech MC-7200 +Cap x 180 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 180 Chambers in 6 Rows Cap Storage= 39.5 cf x 2 x 6 rows = 474.0 cf
#2A	593.05'	32,132 cf	
50,169 cf			Total Available Storage

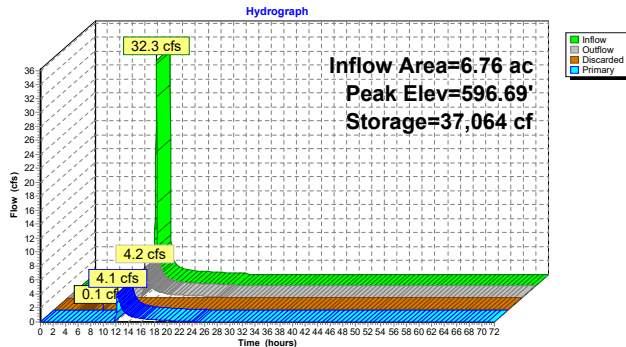
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	30.0" Round Culvert L= 39.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 592.50' / 592.00' S= 0.0128 ' / Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	597.30'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Discarded	592.30'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#4	Device 1	596.05'	30.0" W x 15.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.1 cfs @ 7.77 hrs HW=592.37' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=4.1 cfs @ 12.19 hrs HW=596.69' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 4.1 cfs of 35.7 cfs potential flow)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)
4=Orifice (Orifice Controls 4.1 cfs @ 2.56 fps)

Pond UIP-1: UIP-1



Stage-Area-Storage for Pond UIP-1: UIP-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.30	11,441	0	597.60	11,441	43,352
592.40	11,441	458	597.70	11,441	43,885
592.50	11,441	915	597.80	11,441	44,392
592.60	11,441	1,373	597.90	11,441	44,885
592.70	11,441	1,831	598.00	11,441	45,362
592.80	11,441	2,288	598.10	11,441	45,822
592.90	11,441	2,746	598.20	11,441	46,279
593.00	11,441	3,203	598.30	11,441	46,737
593.10	11,441	3,659	598.40	11,441	47,195
593.20	11,441	4,116	598.50	11,441	47,652
593.30	11,441	4,573	598.60	11,441	48,110
593.40	11,441	5,030	598.70	11,441	48,567
593.50	11,441	5,487	598.80	11,441	49,025
593.60	11,441	5,944	598.90	11,441	49,483
593.70	11,441	6,401	599.00	11,441	49,940
593.80	11,441	6,858			
593.90	11,441	7,315			
594.00	11,441	7,772			
594.10	11,441	8,229			
594.20	11,441	8,686			
594.30	11,441	9,143			
594.40	11,441	9,600			
594.50	11,441	10,057			
594.60	11,441	10,514			
594.70	11,441	10,971			
594.80	11,441	11,428			
594.90	11,441	11,885			
595.00	11,441	12,342			
595.10	11,441	12,799			
595.20	11,441	13,256			
595.30	11,441	13,713			
595.40	11,441	14,170			
595.50	11,441	14,627			
595.60	11,441	15,084			
595.70	11,441	15,541			
595.80	11,441	15,998			
595.90	11,441	16,455			
596.00	11,441	16,912			
596.10	11,441	17,369			
596.20	11,441	17,826			
596.30	11,441	18,283			
596.40	11,441	18,740			
596.50	11,441	19,197			
596.60	11,441	19,654			
596.70	11,441	20,111			
596.80	11,441	20,568			
596.90	11,441	21,025			
597.00	11,441	21,482			
597.10	11,441	21,939			
597.20	11,441	22,396			
597.30	11,441	22,853			
597.40	11,441	23,310			
597.50	11,441	23,767			

Summary for Pond UIP-2: UIP-2

Inflow Area = 2.21 ac, 79.75% Impervious, Inflow Depth = 2.62" for 10-year event
Inflow = 10.0 cfs @ 11.96 hrs, Volume= 0.5 af
Outflow = 1.9 cfs @ 12.12 hrs, Volume= 0.5 af, Atten= 81%, Lag= 9.5 min
Discarded = 0.0 cfs @ 8.58 hrs, Volume= 0.2 af
Primary = 1.9 cfs @ 12.12 hrs, Volume= 0.3 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 586.95' @ 12.12 hrs Surf.Area= 3,594 sf Storage= 10,367 cf
Flood Elev= 589.25' Surf.Area= 3,594 sf Storage= 14,826 cf

Plug-Flow detention time= 684.8 min calculated for 0.5 af (100% of inflow)
Center-of-Mass det. time= 685.6 min (1,479.9 - 794.3)

Volume	Invert	Avail. Storage	Storage Description
#1A	583.00'	5,811 cf	28.50'W x 126.12'L x 6.75'H Field A
#2A	583.75'	9,734 cf	24,262 cf Overall - 9,734 cf Embedded = 14,527 cf x 40.0% Voids ADS StormTech MC-7200+Cap x 54 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 54 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
15,545 cf Total Available Storage			

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	583.00'	24.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.00' / 582.80' S= 0.0100' /' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	585.50'	4.0" W x 24.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Discarded	583.00'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

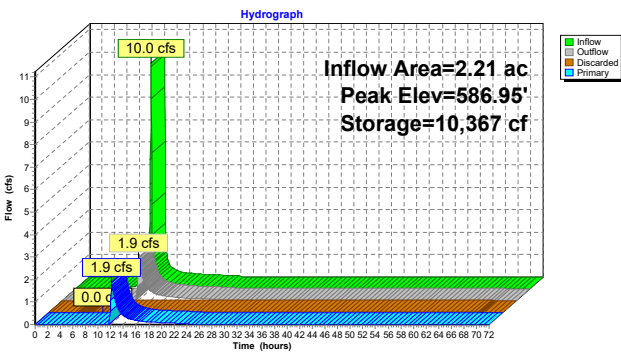
Discarded OutFlow Max=0.0 cfs @ 8.58 hrs HW=583.07' (Free Discharge)

4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=1.9 cfs @ 12.12 hrs HW=586.95' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 1.9 cfs of 26.0 cfs potential flow)
2=Orifice/Grate (Orifice Controls 1.9 cfs @ 3.87 fps)
3=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Pond UIP-2: UIP-2



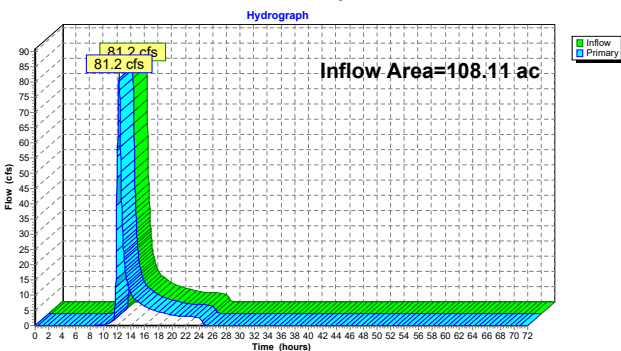
Stage-Area-Storage for Pond UIP-2: UIP-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
583.00	3,594	0	588.30	3,594	13,406
583.10	3,594	144	588.40	3,594	13,572
583.20	3,594	288	588.50	3,594	13,731
583.30	3,594	431	588.60	3,594	13,885
583.40	3,594	575	588.70	3,594	14,035
583.50	3,594	719	588.80	3,594	14,179
583.60	3,594	863	588.90	3,594	14,323
583.70	3,594	1,006	589.00	3,594	14,467
583.80	3,594	1,233	589.10	3,594	14,611
583.90	3,594	1,543	589.20	3,594	14,754
584.00	3,594	1,852	589.30	3,594	14,898
584.10	3,594	2,159	589.40	3,594	15,042
584.20	3,594	2,467	589.50	3,594	15,186
584.30	3,594	2,773	589.60	3,594	15,330
584.40	3,594	3,079	589.70	3,594	15,473
584.50	3,594	3,383			
584.60	3,594	3,687			
584.70	3,594	3,990			
584.80	3,594	4,291			
584.90	3,594	4,592			
585.00	3,594	4,891			
585.10	3,594	5,189			
585.20	3,594	5,485			
585.30	3,594	5,780			
585.40	3,594	6,074			
585.50	3,594	6,366			
585.60	3,594	6,656			
585.70	3,594	6,945			
585.80	3,594	7,231			
585.90	3,594	7,516			
586.00	3,594	7,799			
586.10	3,594	8,079			
586.20	3,594	8,358			
586.30	3,594	8,634			
586.40	3,594	8,908			
586.50	3,594	9,179			
586.60	3,594	9,447			
586.70	3,594	9,713			
586.80	3,594	9,976			
586.90	3,594	10,236			
587.00	3,594	10,492			
587.10	3,594	10,745			
587.20	3,594	10,995			
587.30	3,594	11,241			
587.40	3,594	11,482			
587.50	3,594	11,720			
587.60	3,594	11,953			
587.70	3,594	12,180			
587.80	3,594	12,403			
587.90	3,594	12,620			
588.00	3,594	12,830			
588.10	3,594	13,032			
588.20	3,594	13,225			

Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 7.01% Impervious, Inflow Depth = 1.15" for 10-year event
Inflow = 81.2 cfs @ 12.25 hrs, Volume= 10.4 af
Primary = 81.2 cfs @ 12.25 hrs, Volume= 10.4 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-1: Subcat PR-1	Runoff Area=6.76 ac 78.45% Impervious Runoff Depth=3.61" Tc=5.0 min CN=93 Runoff=40.8 cfs 2.0 af
Subcatchment PR-2: Subcat PR-2	Runoff Area=2.21 ac 79.75% Impervious Runoff Depth=3.40" Tc=5.0 min CN=91 Runoff=12.8 cfs 0.6 af
Subcatchment PR-4: Subcat PR-4	Runoff Area=0.58 ac 50.57% Impervious Runoff Depth=2.55" Tc=5.0 min CN=82 Runoff=2.7 cfs 0.1 af
Subcatchment PR-5: Subcat PR-5	Runoff Area=9.65 ac 1.30% Impervious Runoff Depth=2.73" Tc=5.0 min CN=84 Runoff=4.7 cfs 2.2 af
Subcatchment PR-6: Subcat PR-6	Runoff Area=63.07 ac 0.08% Impervious Runoff Depth=1.60" Flow Length=3,025' Tc=32.8 min CN=70 Runoff=78.6 cfs 8.4 af
Subcatchment PR-7: Subcat PR-7	Runoff Area=24.25 ac 0.20% Impervious Runoff Depth=1.60" Flow Length=1,740' Tc=23.6 min CN=70 Runoff=37.7 cfs 3.2 af
Subcatchment PR-8: Subcat PR-8	Runoff Area=1.59 ac 0.00% Impervious Runoff Depth=1.75" Flow Length=410' Tc=11.6 min CN=72 Runoff=4.0 cfs 0.2 af
Reach 1R: 30" Pipe	Avg. Flow Depth=1.32' Max Vel=14.34 fps Inflow=37.7 cfs 3.2 af 30.0" Round Pipe n=0.013 L=270.0' S=0.0281' Capacity=68.8 cfs Outflow=37.7 cfs 3.2 af
Reach 2R: South Culvert	Avg. Flow Depth=0.79' Max Vel=10.23 fps Inflow=64.6 cfs 5.7 af 96.0" x 108.0" Box Pipe n=0.011 L=50.0' S=0.0100' Capacity=1,604.0 cfs Outflow=64.7 cfs 5.7 af
Reach 3R: North Culvert	Avg. Flow Depth=0.10' Max Vel=5.23 fps Inflow=4.0 cfs 0.2 af 96.0" x 120.0" Box Pipe n=0.011 L=60.0' S=0.0333' Capacity=3,360.1 cfs Outflow=4.0 cfs 0.2 af
Pond BP-1: Bioretention Pond #1	Peak Elev=596.53' Storage=3,509 cf Inflow=2.7 cfs 0.1 af Discarded=0.0 cfs 0.1 af Primary=0.0 cfs 0.0 af Outflow=0.1 cfs 0.1 af
Pond UIP-1: UIP-1	Peak Elev=597.62' Storage=43,457 cf Inflow=40.8 cfs 2.0 af Discarded=0.1 cfs 0.7 af Primary=17.2 cfs 1.1 af Outflow=17.4 cfs 1.8 af
Pond UIP-2: UIP-2	Peak Elev=587.84' Storage=12,489 cf Inflow=12.8 cfs 0.6 af Discarded=0.0 cfs 0.2 af Primary=6.2 cfs 0.4 af Outflow=6.2 cfs 0.6 af
Link DP-1: Brickyard Pond	Inflow=130.4 cfs 15.6 af Primary=130.4 cfs 15.6 af
Total Runoff Area = 108.11 ac Runoff Volume = 16.9 af Average Runoff Depth = 1.87" 92.99% Pervious = 100.53 ac 7.01% Impervious = 7.58 ac	

Summary for Subcatchment PR-1: Subcat PR-1

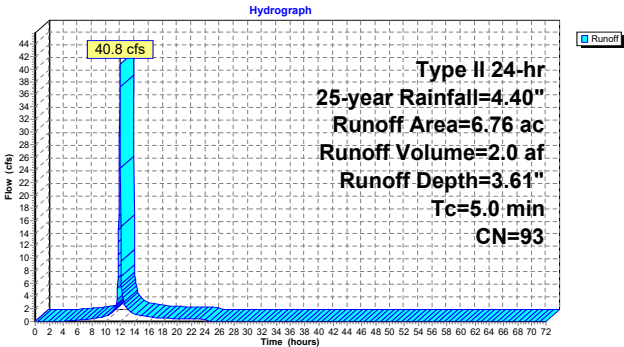
Runoff = 40.8 cfs @ 11.96 hrs, Volume= 2.0 af, Depth= 3.61"
Routed to Pond UIP-1 : UIP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.10	61	>75% Grass cover, Good, HSG B
1.34	74	>75% Grass cover, Good, HSG C
0.29	98	Paved parking, HSG B
2.82	98	Paved parking, HSG C
0.43	98	Roofs, HSG B
1.77	98	Roofs, HSG C
0.00	55	Woods, Good, HSG B
0.02	70	Woods, Good, HSG C
6.76	93	Weighted Average
1.46		21.55% Pervious Area
5.31		78.45% Impervious Area

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

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-2: Subcat PR-2

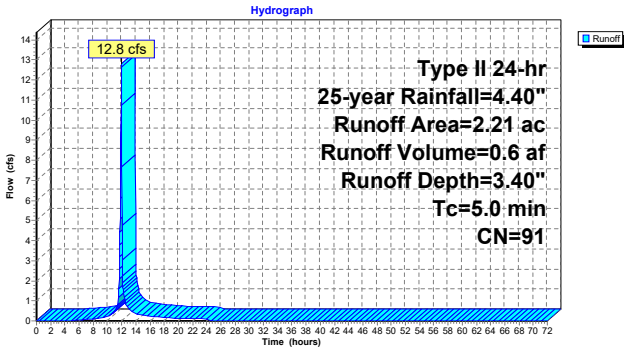
Runoff = 12.8 cfs @ 11.96 hrs, Volume= 0.6 af, Depth= 3.40"
Routed to Pond UIP-2 : UIP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.45	61	>75% Grass cover, Good, HSG B
0.00	48	Brush, Good, HSG B
1.07	98	Paved parking, HSG B
0.69	98	Roofs, HSG B
2.21	91	Weighted Average
0.45		20.25% Pervious Area
1.76		79.75% Impervious Area

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

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-4: Subcat PR-4

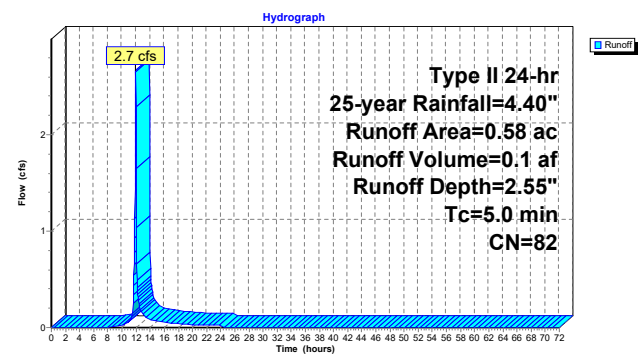
Runoff = 2.7 cfs @ 11.96 hrs, Volume= 0.1 af, Depth= 2.55"
Routed to Pond BP-1 : Bioretention Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.00	39	>75% Grass cover, Good, HSG A
0.20	61	>75% Grass cover, Good, HSG B
0.09	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	98	Paved parking, HSG A
0.20	98	Paved parking, HSG B
0.03	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.02	98	Roofs, HSG A
0.03	98	Roofs, HSG B
0.00	98	Water Surface, 0% imp, HSG D
0.58	82	Weighted Average
0.29		49.43% Pervious Area
0.29		50.57% Impervious Area

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

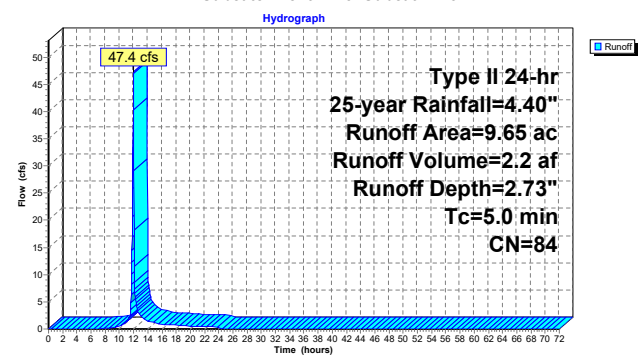
Subcatchment PR-4: Subcat PR-4



Summary for Subcatchment PR-5: Subcat PR-5

Runoff	=	47.4 cfs @ 11.96 hrs,	Volume=	2.2 af, Depth=	2.73"
Routed to Reach 2R : South Culvert					
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs Type II 24-hr 25-year Rainfall=4.40"					
Area (ac)	CN	Description			
0.10	39	>75% Grass cover, Good, HSG A			
1.24	61	>75% Grass cover, Good, HSG B			
1.20	74	>75% Grass cover, Good, HSG C			
0.00	80	>75% Grass cover, Good, HSG D			
0.00	30	Brush, Good, HSG A			
0.14	48	Brush, Good, HSG B			
0.07	65	Brush, Good, HSG C			
0.08	98	Paved parking, HSG B			
0.05	98	Paved parking, HSG C			
0.81	98	Water Surface, 0% imp, HSG B			
4.51	98	Water Surface, 0% imp, HSG C			
0.21	98	Water Surface, 0% imp, HSG D			
0.01	30	Woods, Good, HSG A			
0.83	55	Woods, Good, HSG B			
0.40	70	Woods, Good, HSG C			
0.00	77	Woods, Good, HSG D			
9.65	84	Weighted Average			
9.52		98.70% Pervious Area			
0.13		1.30% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

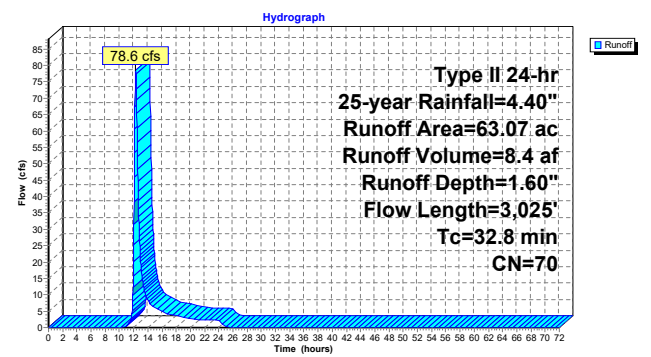
Subcatchment PR-5: Subcat PR-5



Summary for Subcatchment PR-6: Subcat PR-6

Runoff	=	78.6 cfs @ 12.29 hrs,	Volume=	8.4 af, Depth=	1.60"
Routed to Link DP-1 : Brickyard Pond					
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs Type II 24-hr 25-year Rainfall=4.40"					
Area (ac)	CN	Description			
0.20	39	>75% Grass cover, Good, HSG A			
0.57	61	>75% Grass cover, Good, HSG B			
0.22	74	>75% Grass cover, Good, HSG C			
0.00	30	Brush, Good, HSG A			
0.84	48	Brush, Good, HSG B			
0.03	98	Paved parking, HSG A			
0.01	98	Paved parking, HSG B			
0.01	98	Roofs, HSG B			
1.26	98	Water Surface, 0% imp, HSG B			
0.00	30	Woods, Good, HSG A			
2.40	55	Woods, Good, HSG B			
57.00	70	Woods, Good, HSG C			
0.53	77	Woods, Good, HSG D			
63.07	70	Weighted Average			
63.02		99.92% Pervious Area			
0.05		0.08% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

Subcatchment PR-6: Subcat PR-6



Summary for Subcatchment PR-7: Subcat PR-7

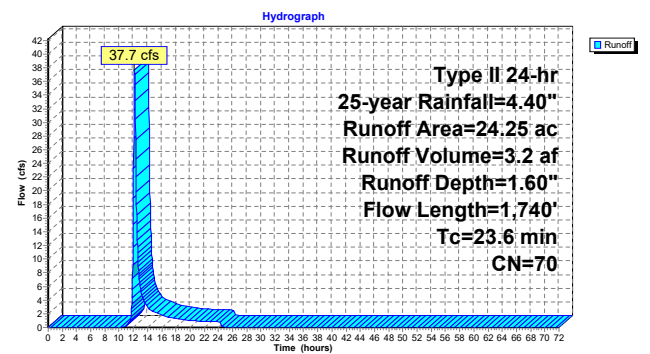
Runoff = 37.7 cfs @ 12.18 hrs, Volume= 3.2 af, Depth= 1.60"
Routed to Reach 1R : 30" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.98	74	>75% Grass cover, Good, HSG C
0.05	98	Paved parking, HSG C
23.23	70	Woods, Good, HSG C
24.25	70	Weighted Average
24.21		99.80% Pervious Area
0.05		0.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0800	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
8.6	1,430	0.3100	2.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	260	0.0103	4.38	96.25	Channel Flow, Area= 22.0 sf Perim= 17.6' r= 1.25' n= 0.040 Earth, cobble bottom, clean sides
23.6	1,740	Total			

Subcatchment PR-7: Subcat PR-7



Summary for Subcatchment PR-8: Subcat PR-8

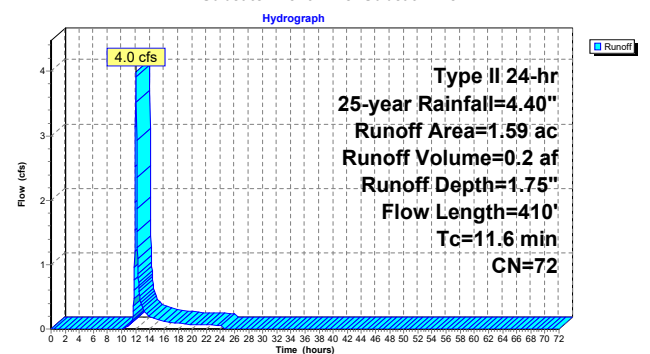
Runoff = 4.0 cfs @ 12.04 hrs, Volume= 0.2 af, Depth= 1.75"
Routed to Reach 3R : North Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-year Rainfall=4.40"

Area (ac)	CN	Description
0.01	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.02	48	Brush, Good, HSG B
0.10	98	Water Surface, 0% imp, HSG B
0.01	98	Water Surface, 0% imp, HSG C
0.03	98	Water Surface, 0% imp, HSG D
0.06	55	Woods, Good, HSG B
1.33	70	Woods, Good, HSG C
1.59	72	Weighted Average
1.59		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.3000	0.10		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
2.6	180	0.2200	1.17		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.8	180	0.0670	3.88		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.6	410	Total			

Subcatchment PR-8: Subcat PR-8



Summary for Reach 1R: 30" Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 24.25 ac, 0.20% Impervious, Inflow Depth = 1.60" for 25-year event
Inflow = 37.7 cfs @ 12.18 hrs, Volume= 3.2 af
Outflow = 37.7 cfs @ 12.18 hrs, Volume= 3.2 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

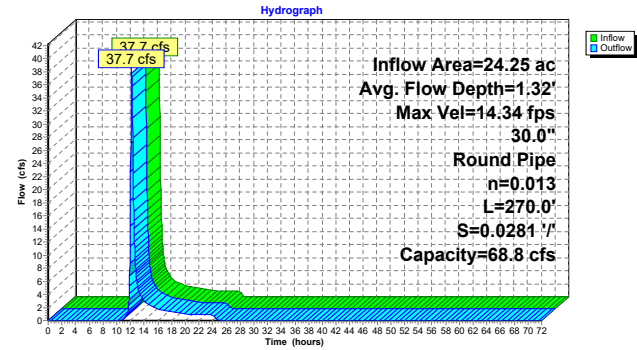
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 14.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.61 fps, Avg. Travel Time= 0.8 min

Peak Storage= 710 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.32' , Surface Width= 2.50'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 68.8 cfs

30.0" Round Pipe
n= 0.013
Length= 270.0' Slope= 0.0281 '/
Inlet Invert= 590.60', Outlet Invert= 583.00'



Reach 1R: 30" Pipe



Stage-Area-Storage for Reach 1R: 30" Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
590.60	0.0	0
590.65	0.0	6
590.70	0.1	18
590.75	0.1	32
590.80	0.2	50
590.85	0.3	69
590.90	0.3	90
590.95	0.4	113
591.00	0.5	137
591.05	0.6	162
591.10	0.7	189
591.15	0.8	216
591.20	0.9	245
591.25	1.0	274
591.30	1.1	304
591.35	1.2	334
591.40	1.4	366
591.45	1.5	397
591.50	1.6	430
591.55	1.7	462
591.60	1.8	495
591.65	2.0	528
591.70	2.1	562
591.75	2.2	595
591.80	2.3	629
591.85	2.5	663
591.90	2.6	696
591.95	2.7	730
592.00	2.8	764
592.05	3.0	797
592.10	3.1	830
592.15	3.2	863
592.20	3.3	896
592.25	3.4	928
592.30	3.6	960
592.35	3.7	991
592.40	3.8	1,022
592.45	3.9	1,052
592.50	4.0	1,081
592.55	4.1	1,109
592.60	4.2	1,137
592.65	4.3	1,163
592.70	4.4	1,188
592.75	4.5	1,213
592.80	4.6	1,235
592.85	4.7	1,256
592.90	4.7	1,276
592.95	4.8	1,293
593.00	4.8	1,308
593.05	4.9	1,319
593.10	4.9	1,325

Summary for Reach 2R: South Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

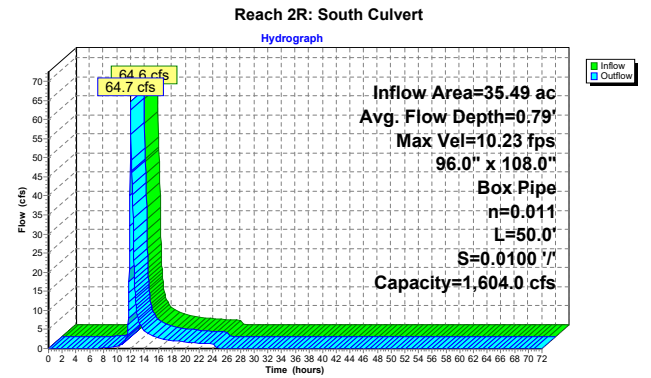
Inflow Area = 35.49 ac, 0.49% Impervious, Inflow Depth = 1.92" for 25-year event
Inflow = 64.6 cfs @ 11.98 hrs, Volume= 5.7 af
Outflow = 64.7 cfs @ 11.98 hrs, Volume= 5.7 af, Atten= 0%, Lag= 0.0 min
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 10.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.22 fps, Avg. Travel Time= 0.3 min

Peak Storage= 316 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.79' , Surface Width= 8.00'
Bank-Full Depth= 9.00' Flow Area= 72.0 sf, Capacity= 1,604.0 cfs

96.0" W x 108.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 50.0' Slope= 0.0100 '/
Inlet Invert= 579.50', Outlet Invert= 579.00'





Stage-Area-Storage for Reach 2R: South Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
579.50	0.0	0	584.80	42.4	2,120
579.60	0.8	40	584.90	43.2	2,160
579.70	1.6	80	585.00	44.0	2,200
579.80	2.4	120	585.10	44.8	2,240
579.90	3.2	160	585.20	45.6	2,280
580.00	4.0	200	585.30	46.4	2,320
580.10	4.8	240	585.40	47.2	2,360
580.20	5.6	280	585.50	48.0	2,400
580.30	6.4	320	585.60	48.8	2,440
580.40	7.2	360	585.70	49.6	2,480
580.50	8.0	400	585.80	50.4	2,520
580.60	8.8	440	585.90	51.2	2,560
580.70	9.6	480	586.00	52.0	2,600
580.80	10.4	520	586.10	52.8	2,640
580.90	11.2	560	586.20	53.6	2,680
581.00	12.0	600	586.30	54.4	2,720
581.10	12.8	640	586.40	55.2	2,760
581.20	13.6	680	586.50	56.0	2,800
581.30	14.4	720	586.60	56.8	2,840
581.40	15.2	760	586.70	57.6	2,880
581.50	16.0	800	586.80	58.4	2,920
581.60	16.8	840	586.90	59.2	2,960
581.70	17.6	880	587.00	60.0	3,000
581.80	18.4	920	587.10	60.8	3,040
581.90	19.2	960	587.20	61.6	3,080
582.00	20.0	1,000	587.30	62.4	3,120
582.10	20.8	1,040	587.40	63.2	3,160
582.20	21.6	1,080	587.50	64.0	3,200
582.30	22.4	1,120	587.60	64.8	3,240
582.40	23.2	1,160	587.70	65.6	3,280
582.50	24.0	1,200	587.80	66.4	3,320
582.60	24.8	1,240	587.90	67.2	3,360
582.70	25.6	1,280	588.00	68.0	3,400
582.80	26.4	1,320	588.10	68.8	3,440
582.90	27.2	1,360	588.20	69.6	3,480
583.00	28.0	1,400	588.30	70.4	3,520
583.10	28.8	1,440	588.40	71.2	3,560
583.20	29.6	1,480	588.50	72.0	3,600
583.30	30.4	1,520			
583.40	31.2	1,560			
583.50	32.0	1,600			
583.60	32.8	1,640			
583.70	33.6	1,680			
583.80	34.4	1,720			
583.90	35.2	1,760			
584.00	36.0	1,800			
584.10	36.8	1,840			
584.20	37.6	1,880			
584.30	38.4	1,920			
584.40	39.2	1,960			
584.50	40.0	2,000			
584.60	40.8	2,040			
584.70	41.6	2,080			

Summary for Reach 3R: North Culvert

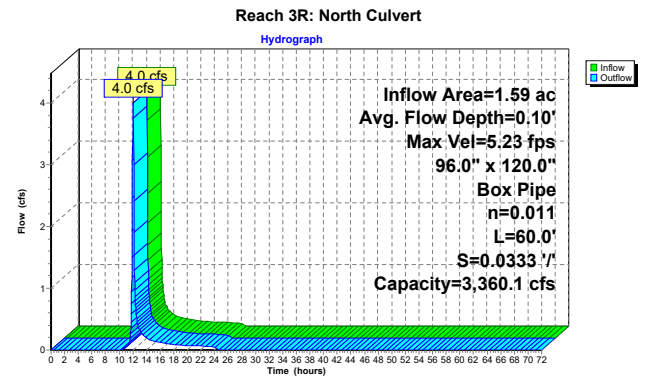
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.59 ac, 0.00% Impervious, Inflow Depth = 1.75" for 25-year event
Inflow = 4.0 cfs @ 12.04 hrs, Volume= 0.2 af
Outflow = 4.0 cfs @ 12.04 hrs, Volume= 0.2 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 5.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 46 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.10' , Surface Width= 8.00'
Bank-Full Depth= 10.00' Flow Area= 80.0 sf, Capacity= 3,360.1 cfs

96.0" W x 120.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 602.00', Outlet Invert= 600.00'



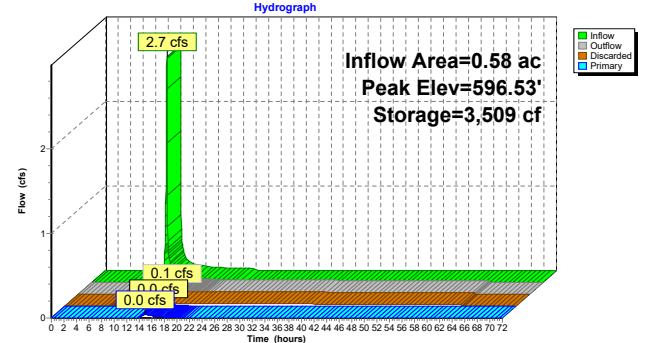
Stage-Area-Storage for Reach 3R: North Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
602.00	0.0	0	607.30	42.4	2,544
602.10	0.8	48	607.40	43.2	2,592
602.20	1.6	96	607.50	44.0	2,640
602.30	2.4	144	607.60	44.8	2,688
602.40	3.2	192	607.70	45.6	2,736
602.50	4.0	240	607.80	46.4	2,784
602.60	4.8	288	607.90	47.2	2,832
602.70	5.6	336	608.00	48.0	2,880
602.80	6.4	384	608.10	48.8	2,928
602.90	7.2	432	608.20	49.6	2,976
603.00	8.0	480	608.30	50.4	3,024
603.10	8.8	528	608.40	51.2	3,072
603.20	9.6	576	608.50	52.0	3,120
603.30	10.4	624	608.60	52.8	3,168
603.40	11.2	672	608.70	53.6	3,216
603.50	12.0	720	608.80	54.4	3,264
603.60	12.8	768	608.90	55.2	3,312
603.70	13.6	816	609.00	56.0	3,360
603.80	14.4	864	609.10	56.8	3,408
603.90	15.2	912	609.20	57.6	3,456
604.00	16.0	960	609.30	58.4	3,504
604.10	16.8	1,008	609.40	59.2	3,552
604.20	17.6	1,056	609.50	60.0	3,600
604.30	18.4	1,104	609.60	60.8	3,648
604.40	19.2	1,152	609.70	61.6	3,696
604.50	20.0	1,200	609.80	62.4	3,744
604.60	20.8	1,248	609.90	63.2	3,792
604.70	21.6	1,296	610.00	64.0	3,840
604.80	22.4	1,344	610.10	64.8	3,888
604.90	23.2	1,392	610.20	65.6	3,936
605.00	24.0	1,440	610.30	66.4	3,984
605.10	24.8	1,488	610.40	67.2	4,032
605.20	25.6	1,536	610.50	68.0	4,080
605.30	26.4	1,584	610.60	68.8	4,128
605.40	27.2	1,632	610.70	69.6	4,176
605.50	28.0	1,680	610.80	70.4	4,224
605.60	28.8	1,728	610.90	71.2	4,272
605.70	29.6	1,776	611.00	72.0	4,320
605.80	30.4	1,824	611.10	72.8	4,368
605.90	31.2	1,872	611.20	73.6	4,416
606.00	32.0	1,920	611.30	74.4	4,464
606.10	32.8	1,968	611.40	75.2	4,512
606.20	33.6	2,016	611.50	76.0	4,560
606.30	34.4	2,064	611.60	76.8	4,608
606.40	35.2	2,112	611.70	77.6	4,656
606.50	36.0	2,160	611.80	78.4	4,704
606.60	36.8	2,208	611.90	79.2	4,752
606.70	37.6	2,256	612.00	80.0	4,800
606.80	38.4	2,304			
606.90	39.2	2,352			
607.00	40.0	2,400			
607.10	40.8	2,448			
607.20	41.6	2,496			

Summary for Pond BP-1: Bioretention Pond #1

Inflow Area =	0.58 ac	50.57% Impervious,	Inflow Depth = 2.55"	for 25-year event		
Inflow =	2.7 cfs @	11.96 hrs,	Volume=	0.1 af		
Outflow =	0.1 cfs @	14.97 hrs,	Volume=	0.1 af, Atten= 98%, Lag= 180.4 min		
Discarded =	0.0 cfs @	14.97 hrs,	Volume=	0.1 af		
Primary =	0.0 cfs @	14.97 hrs,	Volume=	0.0 af		
Routed to Link DP-1 : Brickyard Pond						
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2						
Peak Elev= 596.53' @ 14.97 hrs Surf.Area= 2,551 sf Storage= 3,509 cf						
Flood Elev= 598.50' Surf.Area= 3,846 sf Storage= 9,769 cf						
Plug-Flow detention time= 1,165.8 min calculated for 0.1 af (100% of inflow)						
Center-of-Mass det. time= 1,166.3 min (1,984.0 - 817.7)						
Volume	Invert	Avail.Storage	Storage Description			
#1	593.50'	11,782 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)
593.50	1,720	169.6	0.0	0	0	1,720
595.00	1,720	169.6	10.0	258	258	1,974
598.00	3,501	226.2	100.0	7,675	7,933	3,853
599.00	4,208	245.6	100.0	3,849	11,782	4,619
Device	Routing	Invert	Outlet Devices			
#1	Primary	595.00'	18.0" Round Culvert			
L= 20.0' CPP, square edge headwall, Ke= 0.500						
Inlet / Outlet Invert= 595.00' / 594.80' S= 0.0100' /' Cc= 0.900						
n= 0.013, Flow Area= 1.77 sf						
#2	Device 1	596.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600			
Limited to weir flow at low heads						
#3	Device 1	597.00'	48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads			
#4	Discarded	593.50'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'			
Discarded OutFlow Max=0.0 cfs @ 14.97 hrs HW=596.53' (Free Discharge)						
4=Exfiltration (Exfiltration Controls 0.0 cfs)						
Primary OutFlow Max=0.0 cfs @ 14.97 hrs HW=596.53' TW=0.00' (Dynamic Tailwater)						
1=Culvert (Passes 0.0 cfs of 6.7 cfs potential flow)						
2=Orifice (Orifice Controls 0.0 cfs @ 0.57 fps)						
3=Grate (Controls 0.0 cfs)						

Pond BP-1: Bioretention Pond #1



Stage-Area-Storage for Pond BP-1: Bioretention Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
593.50	1,720	0	598.80	4,061	10,955
593.60	1,720	17	598.90	4,134	11,365
593.70	1,720	34	599.00	4,208	11,782
593.80	1,720	52			
593.90	1,720	69			
594.00	1,720	86			
594.10	1,720	103			
594.20	1,720	120			
594.30	1,720	138			
594.40	1,720	155			
594.50	1,720	172			
594.60	1,720	189			
594.70	1,720	206			
594.80	1,720	224			
594.90	1,720	241			
595.00	1,720	258			
595.10	1,769	432			
595.20	1,819	612			
595.30	1,870	796			
595.40	1,921	986			
595.50	1,973	1,181			
595.60	2,026	1,381			
595.70	2,080	1,586			
595.80	2,134	1,797			
595.90	2,189	2,013			
596.00	2,244	2,234			
596.10	2,300	2,461			
596.20	2,357	2,694			
596.30	2,415	2,933			
596.40	2,473	3,177			
596.50	2,532	3,428			
596.60	2,592	3,684			
596.70	2,652	3,946			
596.80	2,713	4,214			
596.90	2,775	4,489			
597.00	2,838	4,769			
597.10	2,901	5,056			
597.20	2,965	5,350			
597.30	3,029	5,649			
597.40	3,095	5,955			
597.50	3,161	6,268			
597.60	3,227	6,588			
597.70	3,295	6,914			
597.80	3,363	7,247			
597.90	3,432	7,586			
598.00	3,501	7,933			
598.10	3,569	8,286			
598.20	3,637	8,647			
598.30	3,706	9,014			
598.40	3,776	9,388			
598.50	3,846	9,769			
598.60	3,917	10,157			
598.70	3,989	10,553			

Summary for Pond UIP-1: UIP-1

Inflow Area = 6.76 ac, 78.45% Impervious, Inflow Depth = 3.61" for 25-year event
Inflow = 40.8 cfs @ 11.96 hrs, Volume= 2.0 af
Outflow = 17.4 cfs @ 12.06 hrs, Volume= 1.8 af, Atten= 57%, Lag= 6.1 min
Discarded = 0.1 cfs @ 6.54 hrs, Volume= 0.7 af
Primary = 17.2 cfs @ 12.06 hrs, Volume= 1.1 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 597.62' @ 12.06 hrs Surf.Area= 11,441 sf Storage= 43,457 cf
Flood Elev= 598.55' Surf.Area= 11,441 sf Storage= 47,881 cf

Plug-Flow detention time= 716.9 min calculated for 1.8 af (89% of inflow)
Center-of-Mass det. time= 664.0 min (1,441.9 - 777.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	592.30'	18,038 cf	55.75'W x 205.22'L x 6.75'H Field A 77,226 cf Overall - 32,132 cf Embedded = 45,094 cf x 40.0% Voids ADS StormTech MC-7200 *Cap x 180 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 180 Chambers in 6 Rows Cap Storage= 39.5 cf x 2 x 6 rows = 474.0 cf
#2A	593.05'	32,132 cf	
50,169 cf Total Available Storage			

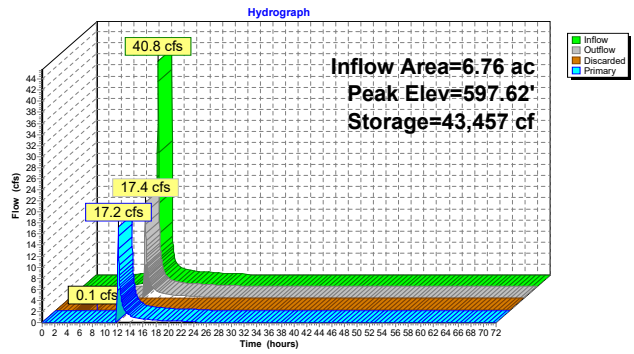
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	30.0" Round Culvert L= 39.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 592.50' / 592.00' S= 0.0128' /' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	597.30'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Discarded	592.30'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#4	Device 1	596.05'	30.0" W x 15.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.1 cfs @ 6.54 hrs HW=592.37' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=17.1 cfs @ 12.06 hrs HW=597.61' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 17.1 cfs of 41.0 cfs potential flow)
2=Sharp-Crested Rectangular Weir (Weir Controls 2.8 cfs @ 1.83 fps)
4=Orifice (Orifice Controls 14.3 cfs @ 4.57 fps)

Pond UIP-1: UIP-1



Stage-Area-Storage for Pond UIP-1: UIP-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.30	11,441	0	597.60	11,441	43,352
592.40	11,441	458	597.70	11,441	43,885
592.50	11,441	915	597.80	11,441	44,392
592.60	11,441	1,373	597.90	11,441	44,885
592.70	11,441	1,831	598.00	11,441	45,362
592.80	11,441	2,288	598.10	11,441	45,822
592.90	11,441	2,746	598.20	11,441	46,279
593.00	11,441	3,203	598.30	11,441	46,737
593.10	11,441	3,935	598.40	11,441	47,195
593.20	11,441	4,940	598.50	11,441	47,652
593.30	11,441	5,942	598.60	11,441	48,110
593.40	11,441	6,942	598.70	11,441	48,567
593.50	11,441	7,939	598.80	11,441	49,025
593.60	11,441	8,934	598.90	11,441	49,483
593.70	11,441	9,925	599.00	11,441	49,940
593.80	11,441	10,914			
593.90	11,441	11,899			
594.00	11,441	12,882			
594.10	11,441	13,860			
594.20	11,441	14,835			
594.30	11,441	15,805			
594.40	11,441	16,772			
594.50	11,441	17,733			
594.60	11,441	18,690			
594.70	11,441	19,643			
594.80	11,441	20,590			
594.90	11,441	21,531			
595.00	11,441	22,466			
595.10	11,441	23,395			
595.20	11,441	24,318			
595.30	11,441	25,235			
595.40	11,441	26,144			
595.50	11,441	27,046			
595.60	11,441	27,941			
595.70	11,441	28,827			
595.80	11,441	29,705			
595.90	11,441	30,575			
596.00	11,441	31,435			
596.10	11,441	32,285			
596.20	11,441	33,126			
596.30	11,441	33,956			
596.40	11,441	34,774			
596.50	11,441	35,581			
596.60	11,441	36,375			
596.70	11,441	37,156			
596.80	11,441	37,923			
596.90	11,441	38,675			
597.00	11,441	39,410			
597.10	11,441	40,127			
597.20	11,441	40,825			
597.30	11,441	41,502			
597.40	11,441	42,154			
597.50	11,441	42,774			

Summary for Pond UIP-2: UIP-2

Inflow Area = 2.21 ac, 79.75% Impervious, Inflow Depth = 3.40" for 25-year event
Inflow = 12.8 cfs @ 11.96 hrs, Volume= 0.6 af
Outflow = 6.2 cfs @ 12.05 hrs, Volume= 0.6 af, Atten= 52%, Lag= 5.4 min
Discarded = 0.0 cfs @ 7.35 hrs, Volume= 0.2 af
Primary = 6.2 cfs @ 12.05 hrs, Volume= 0.4 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 587.84' @ 12.05 hrs Surf.Area= 3,594 sf Storage= 12,489 cf
Flood Elev= 589.25' Surf.Area= 3,594 sf Storage= 14,826 cf

Plug-Flow detention time= 543.7 min calculated for 0.6 af (100% of inflow)
Center-of-Mass det. time= 543.6 min (1,330.6 - 787.0)

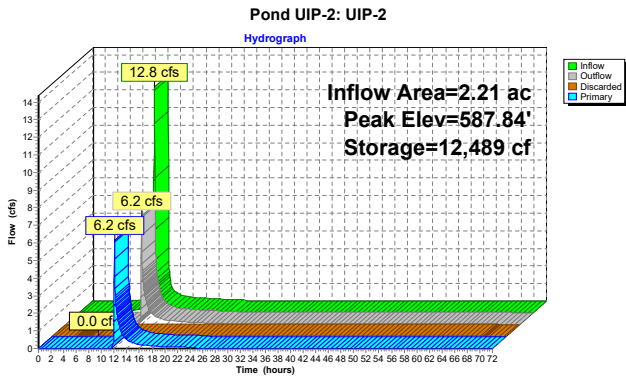
Volume	Invert	Avail.Storage	Storage Description
#1A	583.00'	5,811 cf	28.50'W x 126.12'L x 6.75'H Field A 24,262 cf Overall - 9,734 cf Embedded = 14,527 cf x 40.0% Voids
#2A	583.75'	9,734 cf	ADS StormTech MC-7200 *Cap x 54 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 54 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
15,545 cf Total Available Storage			

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	583.00'	24.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.00' / 582.80' S= 0.0100' /' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	585.50'	4.0" W x 24.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.50'	4.0" long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Discarded	583.00'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 7.35 hrs HW=583.07' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=6.0 cfs @ 12.05 hrs HW=587.83' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 6.0 cfs of 29.6 cfs potential flow)
2=Orifice/Grate (Orifice Controls 3.6 cfs @ 5.40 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 2.4 cfs @ 1.87 fps)



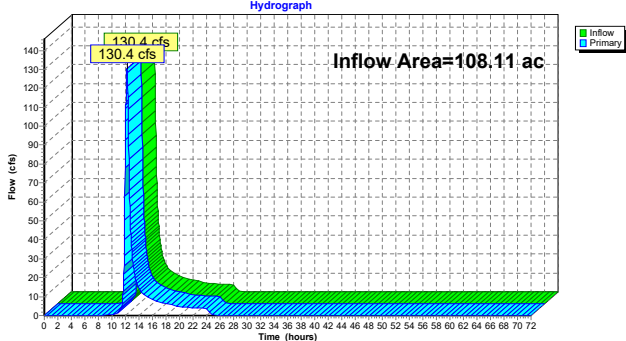
Stage-Area-Storage for Pond UIP-2: UIP-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
583.00	3,594	0	588.30	3,594	13,406
583.10	3,594	144	588.40	3,594	13,572
583.20	3,594	288	588.50	3,594	13,731
583.30	3,594	431	588.60	3,594	13,885
583.40	3,594	575	588.70	3,594	14,035
583.50	3,594	719	588.80	3,594	14,179
583.60	3,594	863	588.90	3,594	14,323
583.70	3,594	1,006	589.00	3,594	14,467
583.80	3,594	1,233	589.10	3,594	14,611
583.90	3,594	1,543	589.20	3,594	14,754
584.00	3,594	1,852	589.30	3,594	14,898
584.10	3,594	2,159	589.40	3,594	15,042
584.20	3,594	2,467	589.50	3,594	15,186
584.30	3,594	2,773	589.60	3,594	15,330
584.40	3,594	3,079	589.70	3,594	15,473
584.50	3,594	3,383			
584.60	3,594	3,687			
584.70	3,594	3,990			
584.80	3,594	4,291			
584.90	3,594	4,592			
585.00	3,594	4,891			
585.10	3,594	5,189			
585.20	3,594	5,485			
585.30	3,594	5,780			
585.40	3,594	6,074			
585.50	3,594	6,366			
585.60	3,594	6,656			
585.70	3,594	6,945			
585.80	3,594	7,231			
585.90	3,594	7,516			
586.00	3,594	7,799			
586.10	3,594	8,079			
586.20	3,594	8,358			
586.30	3,594	8,634			
586.40	3,594	8,908			
586.50	3,594	9,179			
586.60	3,594	9,447			
586.70	3,594	9,713			
586.80	3,594	9,976			
586.90	3,594	10,236			
587.00	3,594	10,492			
587.10	3,594	10,745			
587.20	3,594	10,995			
587.30	3,594	11,241			
587.40	3,594	11,482			
587.50	3,594	11,720			
587.60	3,594	11,953			
587.70	3,594	12,180			
587.80	3,594	12,403			
587.90	3,594	12,620			
588.00	3,594	12,830			
588.10	3,594	13,032			
588.20	3,594	13,225			

Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 7.01% Impervious, Inflow Depth = 1.73" for 25-year event
Inflow = 130.4 cfs @ 12.23 hrs, Volume= 15.6 af
Primary = 130.4 cfs @ 12.23 hrs, Volume= 15.6 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond
Hydrograph



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-1: Subcat PR-1	Runoff Area=6.76 ac 78.45% Impervious Runoff Depth=4.35" Tc=5.0 min CN=93 Runoff=48.5 cfs 2.4 af
Subcatchment PR-2: Subcat PR-2	Runoff Area=2.21 ac 79.75% Impervious Runoff Depth=4.13" Tc=5.0 min CN=91 Runoff=15.4 cfs 0.8 af
Subcatchment PR-4: Subcat PR-4	Runoff Area=0.58 ac 50.57% Impervious Runoff Depth=3.21" Tc=5.0 min CN=82 Runoff=3.3 cfs 0.2 af
Subcatchment PR-5: Subcat PR-5	Runoff Area=9.65 ac 1.30% Impervious Runoff Depth=3.41" Tc=5.0 min CN=84 Runoff=58.5 cfs 2.7 af
Subcatchment PR-6: Subcat PR-6	Runoff Area=63.07 ac 0.08% Impervious Runoff Depth=2.15" Flow Length=3,025' Tc=32.8 min CN=70 Runoff=107.7 cfs 11.3 af
Subcatchment PR-7: Subcat PR-7	Runoff Area=24.25 ac 0.20% Impervious Runoff Depth=2.15" Flow Length=1,740' Tc=23.6 min CN=70 Runoff=51.5 cfs 4.3 af
Subcatchment PR-8: Subcat PR-8	Runoff Area=1.59 ac 0.00% Impervious Runoff Depth=2.31" Flow Length=410' Tc=11.6 min CN=72 Runoff=5.3 cfs 0.3 af
Reach 1R: 30" Pipe	Avg. Flow Depth=1.61' Max Vel=15.38 fps Inflow=51.5 cfs 4.3 af 30.0" Round Pipe n=0.013 L=270.0' S=0.0281' Capacity=68.8 cfs Outflow=51.5 cfs 4.3 af
Reach 2R: South Culvert	Avg. Flow Depth=0.93' Max Vel=11.21 fps Inflow=83.7 cfs 7.4 af 96.0" x 108.0" Box Pipe n=0.011 L=50.0' S=0.0100' Capacity=1,604.0 cfs Outflow=83.7 cfs 7.4 af
Reach 3R: North Culvert	Avg. Flow Depth=0.11' Max Vel=5.87 fps Inflow=5.3 cfs 0.3 af 96.0" x 120.0" Box Pipe n=0.011 L=60.0' S=0.0333' Capacity=3,360.1 cfs Outflow=5.3 cfs 0.3 af
Pond BP-1: Bioretention Pond #1	Peak Elev=586.60' Storage=3,682 cf Inflow=3.3 cfs 0.2 af Discarded=0.0 cfs 0.1 af Primary=0.2 cfs 0.0 af Outflow=0.2 cfs 0.2 af
Pond UIP-1: UIP-1	Peak Elev=588.30' Storage=46,729 cf Inflow=48.5 cfs 2.4 af Discarded=0.1 cfs 0.7 af Primary=34.7 cfs 1.5 af Outflow=34.8 cfs 2.2 af
Pond UIP-2: UIP-2	Peak Elev=588.25' Storage=13,318 cf Inflow=15.4 cfs 0.8 af Discarded=0.0 cfs 0.2 af Primary=12.4 cfs 0.5 af Outflow=12.4 cfs 0.8 af
Link DP-1: Brickyard Pond	Inflow=175.2 cfs 20.7 af Primary=175.2 cfs 20.7 af

Total Runoff Area = 108.11 ac Runoff Volume = 22.0 af Average Runoff Depth = 2.45"
92.99% Pervious = 100.53 ac 7.01% Impervious = 7.58 ac

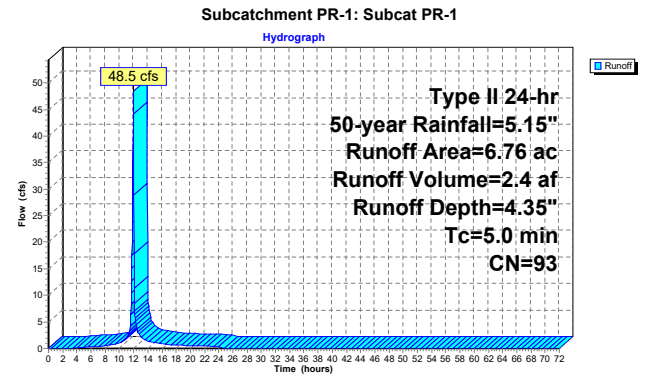
Summary for Subcatchment PR-1: Subcat PR-1

Runoff = 48.5 cfs @ 11.96 hrs, Volume= 2.4 af, Depth= 4.35"
Routed to Pond UIP-1 : UIP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.10	61	>75% Grass cover, Good, HSG B
1.34	74	>75% Grass cover, Good, HSG C
0.29	98	Paved parking, HSG B
2.82	98	Paved parking, HSG C
0.43	98	Roofs, HSG B
1.77	98	Roofs, HSG C
0.00	55	Woods, Good, HSG B
0.02	70	Woods, Good, HSG C
6.76	93	Weighted Average
1.46		21.55% Pervious Area
5.31		78.45% Impervious Area

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



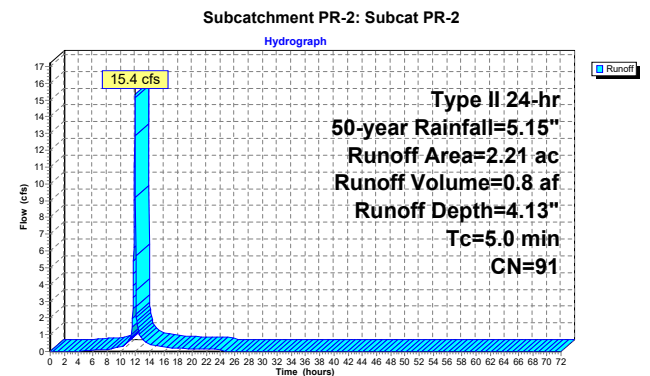
Summary for Subcatchment PR-2: Subcat PR-2

Runoff = 15.4 cfs @ 11.96 hrs, Volume= 0.8 af, Depth= 4.13"
Routed to Pond UIP-2 : UIP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.45	61	>75% Grass cover, Good, HSG B
0.00	48	Brush, Good, HSG B
1.07	98	Paved parking, HSG B
0.69	98	Roofs, HSG B
2.21	91	Weighted Average
0.45		20.25% Pervious Area
1.76		79.75% Impervious Area

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



Summary for Subcatchment PR-4: Subcat PR-4

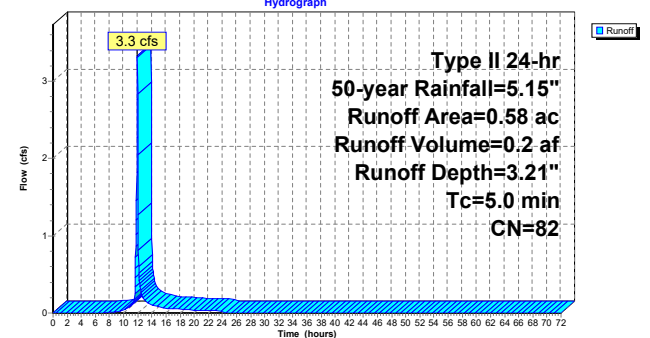
Runoff = 3.3 cfs @ 11.96 hrs, Volume= 0.2 af, Depth= 3.21"
Routed to Pond BP-1 : Bioretention Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.00	39	>75% Grass cover, Good, HSG A
0.20	61	>75% Grass cover, Good, HSG B
0.09	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	98	Paved parking, HSG A
0.20	98	Paved parking, HSG B
0.03	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.02	98	Roofs, HSG A
0.03	98	Roofs, HSG B
0.00	98	Water Surface, 0% imp, HSG D
0.58	82	Weighted Average
0.29		49.43% Pervious Area
0.29		50.57% Impervious Area

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

Subcatchment PR-4: Subcat PR-4



Summary for Subcatchment PR-5: Subcat PR-5

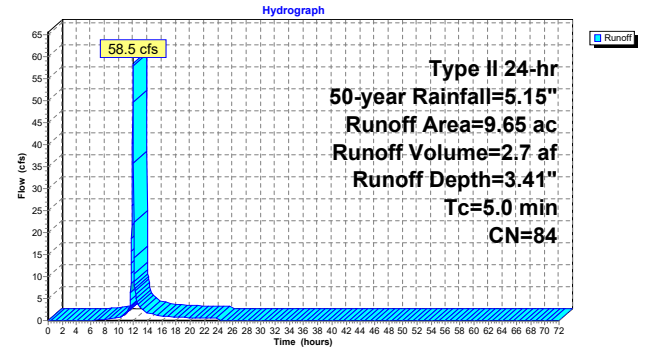
Runoff = 58.5 cfs @ 11.96 hrs, Volume= 2.7 af, Depth= 3.41"
Routed to Reach 2R : South Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
1.24	61	>75% Grass cover, Good, HSG B
1.20	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.00	30	Brush, Good, HSG A
0.14	48	Brush, Good, HSG B
0.07	65	Brush, Good, HSG C
0.08	98	Paved parking, HSG B
0.05	98	Paved parking, HSG C
0.81	98	Water Surface, 0% imp, HSG B
4.51	98	Water Surface, 0% imp, HSG C
0.21	98	Water Surface, 0% imp, HSG D
0.01	30	Woods, Good, HSG A
0.83	55	Woods, Good, HSG B
0.40	70	Woods, Good, HSG C
0.00	77	Woods, Good, HSG D
9.65	84	Weighted Average
9.52		98.70% Pervious Area
0.13		1.30% Impervious Area

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

Subcatchment PR-5: Subcat PR-5



Summary for Subcatchment PR-6: Subcat PR-6

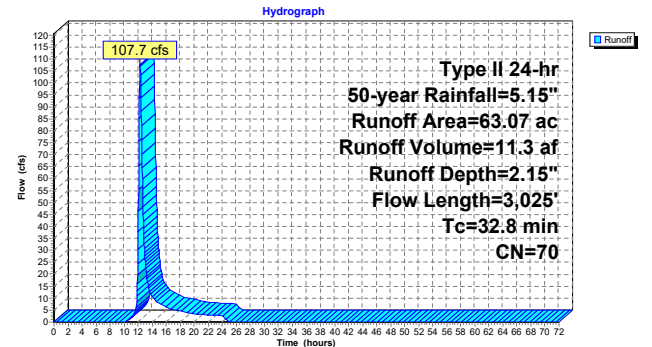
Runoff = 107.7 cfs @ 12.29 hrs, Volume= 11.3 af, Depth= 2.15"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.20	39	>75% Grass cover, Good, HSG A
0.57	61	>75% Grass cover, Good, HSG B
0.22	74	>75% Grass cover, Good, HSG C
0.00	30	Brush, Good, HSG A
0.84	48	Brush, Good, HSG B
0.03	98	Paved parking, HSG A
0.01	98	Paved parking, HSG B
0.01	98	Roofs, HSG B
1.26	98	Water Surface, 0% imp, HSG B
0.00	30	Woods, Good, HSG A
2.40	55	Woods, Good, HSG B
57.00	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
63.07	70	Weighted Average
63.02		99.92% Pervious Area
0.05		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			

Subcatchment PR-6: Subcat PR-6



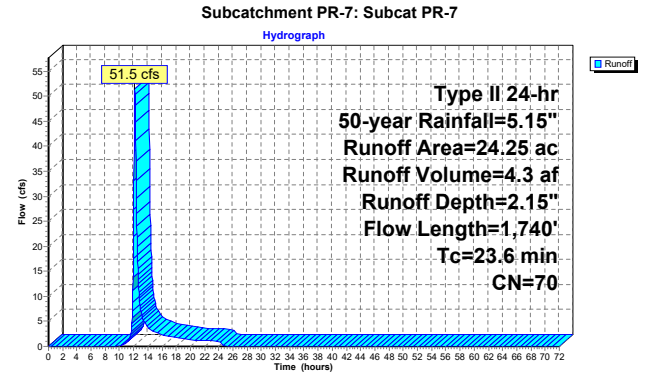
Summary for Subcatchment PR-7: Subcat PR-7

Runoff = 51.5 cfs @ 12.18 hrs, Volume= 4.3 af, Depth= 2.15"
Routed to Reach 1R : 30" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.98	74	>75% Grass cover, Good, HSG C
0.05	98	Paved parking, HSG C
23.23	70	Woods, Good, HSG C
24.25	70	Weighted Average
24.21		99.80% Pervious Area
0.05		0.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0800	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
8.6	1,430	0.3100	2.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	260	0.0103	4.38	96.25	Channel Flow, Area= 22.0 sf Perim= 17.6' r= 1.25' n= 0.040 Earth, cobble bottom, clean sides
23.6	1,740	Total			



Summary for Subcatchment PR-8: Subcat PR-8

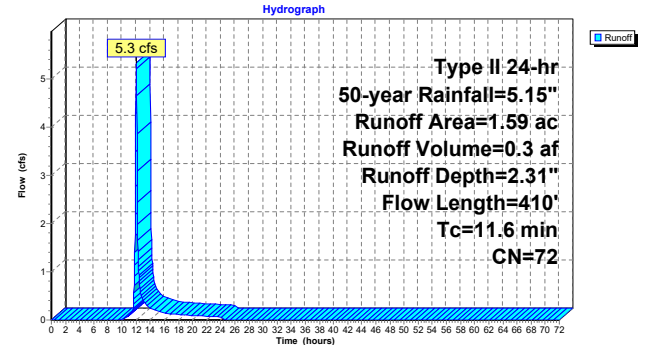
Runoff = 5.3 cfs @ 12.04 hrs, Volume= 0.3 af, Depth= 2.31"
Routed to Reach 3R : North Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 50-year Rainfall=5.15"

Area (ac)	CN	Description
0.01	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.02	48	Brush, Good, HSG B
0.10	98	Water Surface, 0% imp, HSG B
0.01	98	Water Surface, 0% imp, HSG C
0.03	98	Water Surface, 0% imp, HSG D
0.06	55	Woods, Good, HSG B
1.33	70	Woods, Good, HSG C
1.59	72	Weighted Average
1.59		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.3000	0.10		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
2.6	180	0.2200	1.17		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.8	180	0.0670	3.88		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.6	410	Total			

Subcatchment PR-8: Subcat PR-8



Summary for Reach 1R: 30" Pipe

[52] Hint: Inlet/Outlet conditions not evaluated

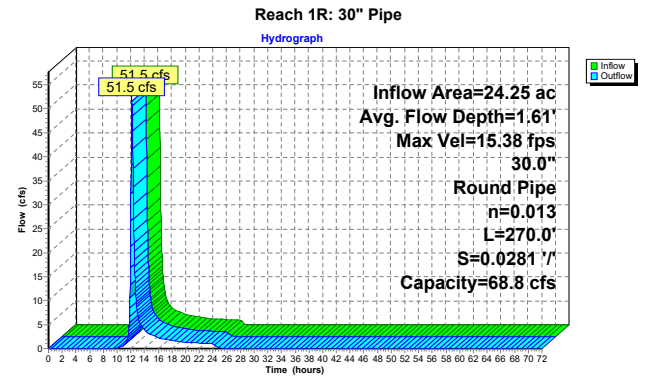
Inflow Area = 24.25 ac, 0.20% Impervious, Inflow Depth = 2.15" for 50-year event
Inflow = 51.5 cfs @ 12.18 hrs, Volume= 4.3 af
Outflow = 5.3 cfs @ 12.18 hrs, Volume= 0.3 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 15.38 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 5.95 fps, Avg. Travel Time= 0.8 min

Peak Storage= 904 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.61' , Surface Width= 2.39'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 68.8 cfs

30.0" Round Pipe
n= 0.013
Length= 270.0' Slope= 0.0281 1'
Inlet Invert= 590.60', Outlet Invert= 583.00'





Stage-Area-Storage for Reach 1R: 30" Pipe

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
590.60	0.0	0
590.65	0.0	6
590.70	0.1	18
590.75	0.1	32
590.80	0.2	50
590.85	0.3	69
590.90	0.3	90
590.95	0.4	113
591.00	0.5	137
591.05	0.6	162
591.10	0.7	189
591.15	0.8	216
591.20	0.9	245
591.25	1.0	274
591.30	1.1	304
591.35	1.2	334
591.40	1.4	366
591.45	1.5	397
591.50	1.6	430
591.55	1.7	462
591.60	1.8	495
591.65	2.0	528
591.70	2.1	562
591.75	2.2	595
591.80	2.3	629
591.85	2.5	663
591.90	2.6	696
591.95	2.7	730
592.00	2.8	764
592.05	3.0	797
592.10	3.1	830
592.15	3.2	863
592.20	3.3	896
592.25	3.4	928
592.30	3.6	960
592.35	3.7	991
592.40	3.8	1,022
592.45	3.9	1,052
592.50	4.0	1,081
592.55	4.1	1,109
592.60	4.2	1,137
592.65	4.3	1,163
592.70	4.4	1,188
592.75	4.5	1,213
592.80	4.6	1,235
592.85	4.7	1,256
592.90	4.7	1,276
592.95	4.8	1,293
593.00	4.8	1,308
593.05	4.9	1,319
593.10	4.9	1,325

Summary for Reach 2R: South Culvert

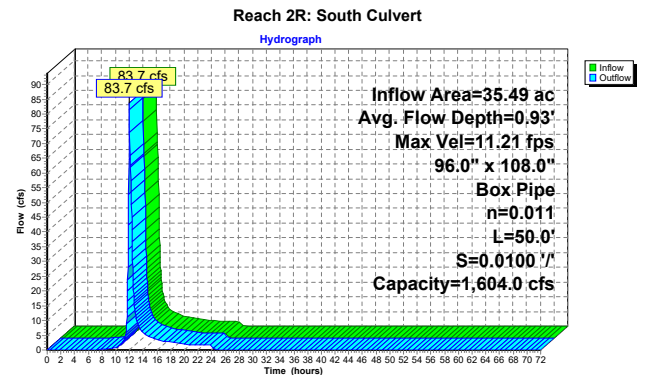
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 35.49 ac, 0.49% Impervious, Inflow Depth = 2.50" for 50-year event
Inflow = 83.7 cfs @ 11.98 hrs, Volume= 7.4 af
Outflow = 83.7 cfs @ 11.98 hrs, Volume= 7.4 af, Atten= 0%, Lag= 0.0 min
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 11.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.38 fps, Avg. Travel Time= 0.2 min

Peak Storage= 373 cf @ 11.98 hrs
Average Depth at Peak Storage= 0.93' , Surface Width= 8.00'
Bank-Full Depth= 9.00' Flow Area= 72.0 sf, Capacity= 1,604.0 cfs

96.0" W x 108.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 579.50', Outlet Invert= 579.00'



Stage-Area-Storage for Reach 2R: South Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
579.50	0.0	0	584.80	42.4	2,120
579.60	0.8	40	584.90	43.2	2,160
579.70	1.6	80	585.00	44.0	2,200
579.80	2.4	120	585.10	44.8	2,240
579.90	3.2	160	585.20	45.6	2,280
580.00	4.0	200	585.30	46.4	2,320
580.10	4.8	240	585.40	47.2	2,360
580.20	5.6	280	585.50	48.0	2,400
580.30	6.4	320	585.60	48.8	2,440
580.40	7.2	360	585.70	49.6	2,480
580.50	8.0	400	585.80	50.4	2,520
580.60	8.8	440	585.90	51.2	2,560
580.70	9.6	480	586.00	52.0	2,600
580.80	10.4	520	586.10	52.8	2,640
580.90	11.2	560	586.20	53.6	2,680
581.00	12.0	600	586.30	54.4	2,720
581.10	12.8	640	586.40	55.2	2,760
581.20	13.6	680	586.50	56.0	2,800
581.30	14.4	720	586.60	56.8	2,840
581.40	15.2	760	586.70	57.6	2,880
581.50	16.0	800	586.80	58.4	2,920
581.60	16.8	840	586.90	59.2	2,960
581.70	17.6	880	587.00	60.0	3,000
581.80	18.4	920	587.10	60.8	3,040
581.90	19.2	960	587.20	61.6	3,080
582.00	20.0	1,000	587.30	62.4	3,120
582.10	20.8	1,040	587.40	63.2	3,160
582.20	21.6	1,080	587.50	64.0	3,200
582.30	22.4	1,120	587.60	64.8	3,240
582.40	23.2	1,160	587.70	65.6	3,280
582.50	24.0	1,200	587.80	66.4	3,320
582.60	24.8	1,240	587.90	67.2	3,360
582.70	25.6	1,280	588.00	68.0	3,400
582.80	26.4	1,320	588.10	68.8	3,440
582.90	27.2	1,360	588.20	69.6	3,480
583.00	28.0	1,400	588.30	70.4	3,520
583.10	28.8	1,440	588.40	71.2	3,560
583.20	29.6	1,480	588.50	72.0	3,600
583.30	30.4	1,520			
583.40	31.2	1,560			
583.50	32.0	1,600			
583.60	32.8	1,640			
583.70	33.6	1,680			
583.80	34.4	1,720			
583.90	35.2	1,760			
584.00	36.0	1,800			
584.10	36.8	1,840			
584.20	37.6	1,880			
584.30	38.4	1,920			
584.40	39.2	1,960			
584.50	40.0	2,000			
584.60	40.8	2,040			
584.70	41.6	2,080			

Summary for Reach 3R: North Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.59 ac, 0.00% Impervious, Inflow Depth = 2.31" for 50-year event
Inflow = 5.3 cfs @ 12.04 hrs, Volume= 0.3 af
Outflow = 5.3 cfs @ 12.04 hrs, Volume= 0.3 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 2R : South Culvert

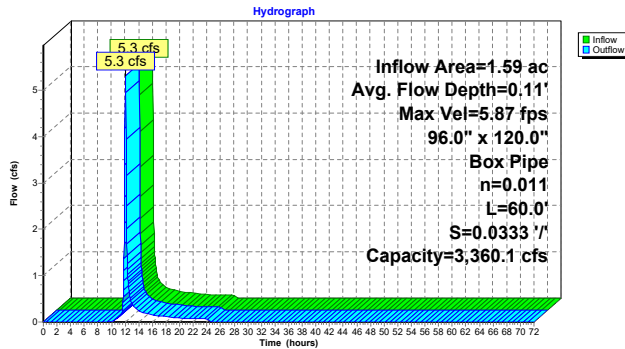
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 5.87 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 54 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.11', Surface Width= 8.00'
Bank-Full Depth= 10.00' Flow Area= 80.0 sf, Capacity= 3,360.1 cfs

96.0" W x 120.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 60.0' Slope= 0.0333 '/'
Inlet Invert= 602.00', Outlet Invert= 600.00'



Reach 3R: North Culvert



Stage-Area-Storage for Reach 3R: North Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
602.00	0.0	0	607.30	42.4	2,544
602.10	0.8	48	607.40	43.2	2,592
602.20	1.6	96	607.50	44.0	2,640
602.30	2.4	144	607.60	44.8	2,688
602.40	3.2	192	607.70	45.6	2,736
602.50	4.0	240	607.80	46.4	2,784
602.60	4.8	288	607.90	47.2	2,832
602.70	5.6	336	608.00	48.0	2,880
602.80	6.4	384	608.10	48.8	2,928
602.90	7.2	432	608.20	49.6	2,976
603.00	8.0	480	608.30	50.4	3,024
603.10	8.8	528	608.40	51.2	3,072
603.20	9.6	576	608.50	52.0	3,120
603.30	10.4	624	608.60	52.8	3,168
603.40	11.2	672	608.70	53.6	3,216
603.50	12.0	720	608.80	54.4	3,264
603.60	12.8	768	608.90	55.2	3,312
603.70	13.6	816	609.00	56.0	3,360
603.80	14.4	864	609.10	56.8	3,408
603.90	15.2	912	609.20	57.6	3,456
604.00	16.0	960	609.30	58.4	3,504
604.10	16.8	1,008	609.40	59.2	3,552
604.20	17.6	1,056	609.50	60.0	3,600
604.30	18.4	1,104	609.60	60.8	3,648
604.40	19.2	1,152	609.70	61.6	3,696
604.50	20.0	1,200	609.80	62.4	3,744
604.60	20.8	1,248	609.90	63.2	3,792
604.70	21.6	1,296	610.00	64.0	3,840
604.80	22.4	1,344	610.10	64.8	3,888
604.90	23.2	1,392	610.20	65.6	3,936
605.00	24.0	1,440	610.30	66.4	3,984
605.10	24.8	1,488	610.40	67.2	4,032
605.20	25.6	1,536	610.50	68.0	4,080
605.30	26.4	1,584	610.60	68.8	4,128
605.40	27.2	1,632	610.70	69.6	4,176
605.50	28.0	1,680	610.80	70.4	4,224
605.60	28.8	1,728	610.90	71.2	4,272
605.70	29.6	1,776	611.00	72.0	4,320
605.80	30.4	1,824	611.10	72.8	4,368
605.90	31.2	1,872	611.20	73.6	4,416
606.00	32.0	1,920	611.30	74.4	4,464
606.10	32.8	1,968	611.40	75.2	4,512
606.20	33.6	2,016	611.50	76.0	4,560
606.30	34.4	2,064	611.60	76.8	4,608
606.40	35.2	2,112	611.70	77.6	4,656
606.50	36.0	2,160	611.80	78.4	4,704
606.60	36.8	2,208	611.90	79.2	4,752
606.70	37.6	2,256	612.00	80.0	4,800
606.80	38.4	2,304			
606.90	39.2	2,352			
607.00	40.0	2,400			
607.10	40.8	2,448			
607.20	41.6	2,496			

Summary for Pond BP-1: Bioretention Pond #1

Inflow Area = 0.58 ac, 50.57% Impervious, Inflow Depth = 3.21" for 50-year event
Inflow = 3.3 cfs @ 11.96 hrs, Volume= 0.2 af
Outflow = 0.2 cfs @ 12.57 hrs, Volume= 0.2 af, Atten= 93%, Lag= 36.4 min
Discarded = 0.0 cfs @ 12.57 hrs, Volume= 0.1 af
Primary = 0.2 cfs @ 12.57 hrs, Volume= 0.0 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 596.60' @ 12.57 hrs Surf.Area= 2,592 sf Storage= 3,682 cf
Flood Elev= 598.50' Surf.Area= 3,846 sf Storage= 9,769 cf

Plug-Flow detention time= 948.8 min calculated for 0.2 af (100% of inflow)
Center-of-Mass det. time= 949.4 min (1,760.5 - 811.1)

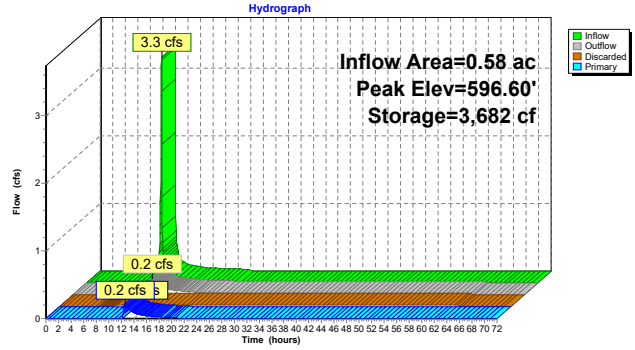
Volume	Invert	Avail.Storage	Storage Description			
#1	593.50'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet Area (sq-ft)
593.50	1,720	169.6	0.0	0	0	1,720
595.00	1,720	169.6	10.0	258	258	1,974
598.00	3,501	226.2	100.0	7,675	7,933	3,853
599.00	4,208	245.6	100.0	3,849	11,782	4,619

Device	Routing	Invert	Outlet Devices
#1	Primary	595.00'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.00' / 594.80' S= 0.0100 ' /' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	596.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	597.00'	48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	593.50'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 12.57 hrs HW=596.60' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.2 cfs @ 12.57 hrs HW=596.60' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.2 cfs of 7.1 cfs potential flow)
2=Orifice (Orifice Controls 0.2 cfs @ 1.01 fps)
3=Grate (Controls 0.0 cfs)

Pond BP-1: Bioretention Pond #1



Stage-Area-Storage for Pond BP-1: Bioretention Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
593.50	1,720	0	598.80	4,061	10,955
593.60	1,720	17	598.90	4,134	11,365
593.70	1,720	34	599.00	4,208	11,782
593.80	1,720	52			
593.90	1,720	69			
594.00	1,720	86			
594.10	1,720	103			
594.20	1,720	120			
594.30	1,720	138			
594.40	1,720	155			
594.50	1,720	172			
594.60	1,720	189			
594.70	1,720	206			
594.80	1,720	224			
594.90	1,720	241			
595.00	1,720	258			
595.10	1,769	432			
595.20	1,819	612			
595.30	1,870	796			
595.40	1,921	986			
595.50	1,973	1,181			
595.60	2,026	1,381			
595.70	2,080	1,586			
595.80	2,134	1,797			
595.90	2,189	2,013			
596.00	2,244	2,234			
596.10	2,300	2,461			
596.20	2,357	2,694			
596.30	2,415	2,933			
596.40	2,473	3,177			
596.50	2,532	3,428			
596.60	2,592	3,684			
596.70	2,652	3,946			
596.80	2,713	4,214			
596.90	2,775	4,489			
597.00	2,838	4,769			
597.10	2,901	5,056			
597.20	2,965	5,350			
597.30	3,029	5,649			
597.40	3,095	5,955			
597.50	3,161	6,268			
597.60	3,227	6,588			
597.70	3,295	6,914			
597.80	3,363	7,247			
597.90	3,432	7,586			
598.00	3,501	7,933			
598.10	3,569	8,286			
598.20	3,637	8,647			
598.30	3,706	9,014			
598.40	3,776	9,388			
598.50	3,846	9,769			
598.60	3,917	10,157			
598.70	3,989	10,553			

Summary for Pond UIP-1: UIP-1

Inflow Area = 6.76 ac, 78.45% Impervious, Inflow Depth = 4.35" for 50-year event
Inflow = 48.5 cfs @ 11.96 hrs, Volume= 2.4 af
Outflow = 34.8 cfs @ 12.02 hrs, Volume= 2.2 af, Atten= 28%, Lag= 3.6 min
Discarded = 0.1 cfs @ 5.70 hrs, Volume= 0.7 af
Primary = 34.7 cfs @ 12.02 hrs, Volume= 1.5 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 598.30' @ 12.02 hrs Surf.Area= 11,441 sf Storage= 46,729 cf
Flood Elev= 598.55' Surf.Area= 11,441 sf Storage= 47,881 cf

Plug-Flow detention time= 595.3 min calculated for 2.2 af (91% of inflow)
Center-of-Mass det. time= 549.0 min (1,322.0 - 773.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	592.30'	18,038 cf	55.75'W x 205.22'L x 6.75'H Field A 77,226 cf Overall - 32,132 cf Embedded = 45,094 cf x 40.0% Voids
#2A	593.05'	32,132 cf	ADS StormTech MC-7200 +Cap x 180 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 180 Chambers in 6 Rows Cap Storage= 39.5 cf x 2 x 6 rows = 474.0 cf
50,169 cf			Total Available Storage

Storage Group A created with Chamber Wizard

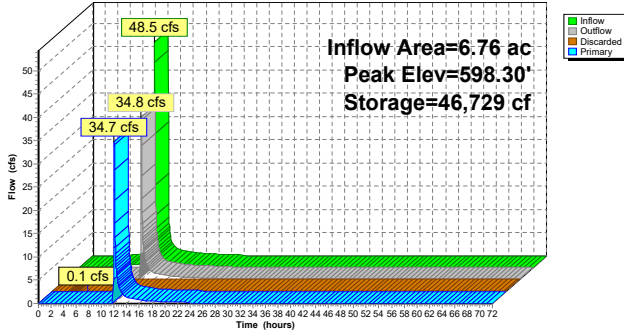
Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	30.0" Round Culvert L= 39.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 592.50' / 592.00' S= 0.0128 ' /' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Device 1	597.30'	5.0' long Sharp-Crested Rectangular Weir 2 End Contractions(s)
#3	Discarded	592.30'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'
#4	Device 1	596.05'	30.0" W x 15.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.1 cfs @ 5.70 hrs HW=592.37' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=34.0 cfs @ 12.02 hrs HW=598.27' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 34.0 cfs of 44.4 cfs potential flow)
2=Sharp-Crested Rectangular Weir (Weir Controls 15.1 cfs @ 3.23 fps)
4=Orifice (Orifice Controls 18.9 cfs @ 6.05 fps)

Pond UIP-1: UIP-1

Hydrograph



Stage-Area-Storage for Pond UIP-1: UIP-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.30	11,441	0	597.60	11,441	43,352
592.40	11,441	458	597.70	11,441	43,885
592.50	11,441	915	597.80	11,441	44,392
592.60	11,441	1,373	597.90	11,441	44,885
592.70	11,441	1,831	598.00	11,441	45,362
592.80	11,441	2,288	598.10	11,441	45,822
592.90	11,441	2,746	598.20	11,441	46,279
593.00	11,441	3,203	598.30	11,441	46,737
593.10	11,441	3,935	598.40	11,441	47,195
593.20	11,441	4,940	598.50	11,441	47,652
593.30	11,441	5,942	598.60	11,441	48,110
593.40	11,441	6,942	598.70	11,441	48,567
593.50	11,441	7,939	598.80	11,441	49,025
593.60	11,441	8,934	598.90	11,441	49,483
593.70	11,441	9,925	599.00	11,441	49,940
593.80	11,441	10,914			
593.90	11,441	11,899			
594.00	11,441	12,882			
594.10	11,441	13,860			
594.20	11,441	14,835			
594.30	11,441	15,805			
594.40	11,441	16,772			
594.50	11,441	17,733			
594.60	11,441	18,690			
594.70	11,441	19,643			
594.80	11,441	20,590			
594.90	11,441	21,531			
595.00	11,441	22,466			
595.10	11,441	23,395			
595.20	11,441	24,318			
595.30	11,441	25,235			
595.40	11,441	26,144			
595.50	11,441	27,046			
595.60	11,441	27,941			
595.70	11,441	28,827			
595.80	11,441	29,705			
595.90	11,441	30,575			
596.00	11,441	31,435			
596.10	11,441	32,285			
596.20	11,441	33,126			
596.30	11,441	33,956			
596.40	11,441	34,774			
596.50	11,441	35,581			
596.60	11,441	36,375			
596.70	11,441	37,156			
596.80	11,441	37,923			
596.90	11,441	38,675			
597.00	11,441	39,410			
597.10	11,441	40,127			
597.20	11,441	40,825			
597.30	11,441	41,502			
597.40	11,441	42,154			
597.50	11,441	42,774			

Summary for Pond UIP-2: UIP-2

Inflow Area = 2.21 ac, 79.75% Impervious, Inflow Depth = 4.13" for 50-year event
Inflow = 15.4 cfs @ 11.96 hrs, Volume= 0.8 af
Outflow = 12.4 cfs @ 12.01 hrs, Volume= 0.8 af, Atten= 19%, Lag= 3.1 min
Discarded = 0.0 cfs @ 6.48 hrs, Volume= 0.2 af
Primary = 12.4 cfs @ 12.01 hrs, Volume= 0.5 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 588.25' @ 12.01 hrs Surf.Area= 3,594 sf Storage= 13,318 cf
Flood Elev= 589.25' Surf.Area= 3,594 sf Storage= 14,826 cf

Plug-Flow detention time= 457.8 min calculated for 0.8 af (100% of inflow)
Center-of-Mass det. time= 458.8 min (1,240.4 - 781.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	583.00'	5,811 cf	28.50'W x 126.12'L x 6.75'H Field A 24,262 cf Overall - 9,734 cf Embedded = 14,527 cf x 40.0% Voids
#2A	583.75'	9,734 cf	ADS_StormTech MC-7200 +Cap x 54 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 54 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
15,545 cf			Total Available Storage

Storage Group A created with Chamber Wizard

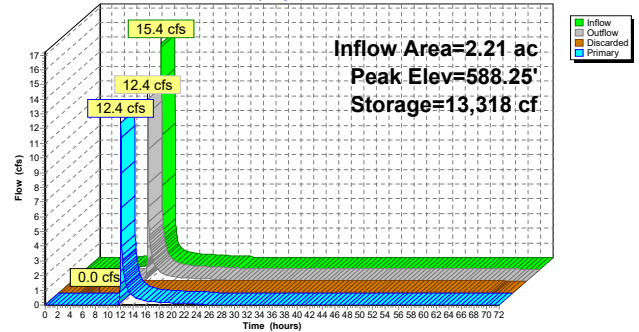
Device	Routing	Invert	Outlet Devices
#1	Primary	583.00'	24.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.00' / 582.80' S= 0.0100' /' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	585.50'	4.0" W x 24.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.50'	4.0" long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Discarded	583.00'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 6.48 hrs HW=583.07' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=12.0 cfs @ 12.01 hrs HW=588.23' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 12.0 cfs of 31.1 cfs potential flow)
2=Orifice/Grate (Orifice Controls 4.2 cfs @ 6.23 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 7.8 cfs @ 2.79 fps)

Pond UIP-2: UIP-2

Hydrograph



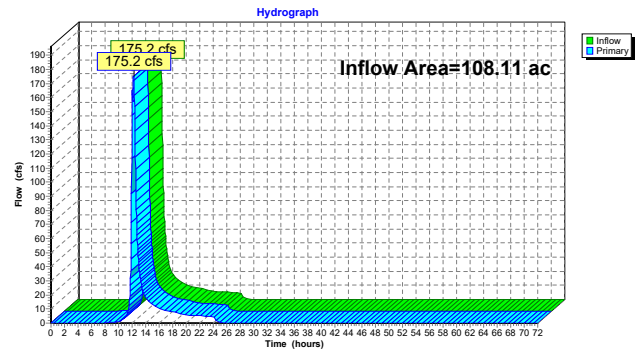
Stage-Area-Storage for Pond UIP-2: UIP-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
583.00	3,594	0	588.30	3,594	13,406
583.10	3,594	144	588.40	3,594	13,572
583.20	3,594	288	588.50	3,594	13,731
583.30	3,594	431	588.60	3,594	13,885
583.40	3,594	575	588.70	3,594	14,035
583.50	3,594	719	588.80	3,594	14,179
583.60	3,594	863	588.90	3,594	14,323
583.70	3,594	1,006	589.00	3,594	14,467
583.80	3,594	1,233	589.10	3,594	14,611
583.90	3,594	1,543	589.20	3,594	14,754
584.00	3,594	1,852	589.30	3,594	14,898
584.10	3,594	2,159	589.40	3,594	15,042
584.20	3,594	2,467	589.50	3,594	15,186
584.30	3,594	2,773	589.60	3,594	15,330
584.40	3,594	3,079	589.70	3,594	15,473
584.50	3,594	3,383			
584.60	3,594	3,687			
584.70	3,594	3,990			
584.80	3,594	4,291			
584.90	3,594	4,592			
585.00	3,594	4,891			
585.10	3,594	5,189			
585.20	3,594	5,485			
585.30	3,594	5,780			
585.40	3,594	6,074			
585.50	3,594	6,366			
585.60	3,594	6,656			
585.70	3,594	6,945			
585.80	3,594	7,231			
585.90	3,594	7,516			
586.00	3,594	7,799			
586.10	3,594	8,079			
586.20	3,594	8,358			
586.30	3,594	8,634			
586.40	3,594	8,908			
586.50	3,594	9,179			
586.60	3,594	9,447			
586.70	3,594	9,713			
586.80	3,594	9,976			
586.90	3,594	10,236			
587.00	3,594	10,492			
587.10	3,594	10,745			
587.20	3,594	10,995			
587.30	3,594	11,241			
587.40	3,594	11,482			
587.50	3,594	11,720			
587.60	3,594	11,953			
587.70	3,594	12,180			
587.80	3,594	12,403			
587.90	3,594	12,620			
588.00	3,594	12,830			
588.10	3,594	13,032			
588.20	3,594	13,225			

Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 7.01% Impervious, Inflow Depth = 2.30" for 50-year event
Inflow = 175.2 cfs @ 12.23 hrs, Volume= 20.7 af
Primary = 175.2 cfs @ 12.23 hrs, Volume= 20.7 af, Atten= 0%, Lag= 0.0 min
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond



Time span=0.00-72.00 hrs, dt=0.03 hrs, 2401 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-1: Subcat PR-1	Runoff Area=6.76 ac 78.45% Impervious Runoff Depth=5.21" Tc=5.0 min CN=93 Runoff=57.5 cfs 2.9 af
Subcatchment PR-2: Subcat PR-2	Runoff Area=2.21 ac 79.75% Impervious Runoff Depth=4.99" Tc=5.0 min CN=91 Runoff=4.1 cfs 0.9 af
Subcatchment PR-4: Subcat PR-4	Runoff Area=0.58 ac 50.57% Impervious Runoff Depth=4.01" Tc=5.0 min CN=82 Runoff=4.1 cfs 0.2 af
Subcatchment PR-5: Subcat PR-5	Runoff Area=9.65 ac 1.30% Impervious Runoff Depth=4.22" Tc=5.0 min CN=84 Runoff=7.1 cfs 3.4 af
Subcatchment PR-6: Subcat PR-6	Runoff Area=63.07 ac 0.08% Impervious Runoff Depth=2.83" Flow Length=3,025' Tc=32.8 min CN=70 Runoff=144.0 cfs 14.9 af
Subcatchment PR-7: Subcat PR-7	Runoff Area=24.25 ac 0.20% Impervious Runoff Depth=2.83" Flow Length=1,740' Tc=23.6 min CN=70 Runoff=68.6 cfs 5.7 af
Subcatchment PR-8: Subcat PR-8	Runoff Area=1.59 ac 0.00% Impervious Runoff Depth=3.02" Flow Length=410' Tc=11.6 min CN=72 Runoff=7.0 cfs 0.4 af
Reach 1R: 30" Pipe	Avg. Flow Depth=2.04' Max Vel=15.98 fps Inflow=68.6 cfs 5.7 af 30.0' Round Pipe n=0.013 L=270.0' S=0.0281' Capacity=68.8 cfs Outflow=68.6 cfs 5.7 af
Reach 2R: South Culvert	Avg. Flow Depth=1.09' Max Vel=12.19 fps Inflow=106.9 cfs 9.5 af 96.0' x 108.0' Box Pipe n=0.011 L=50.0' S=0.0100' Capacity=1,604.0 cfs Outflow=106.9 cfs 9.5 af
Reach 3R: North Culvert	Avg. Flow Depth=0.13' Max Vel=6.63 fps Inflow=7.0 cfs 0.4 af 96.0' x 120.0' Box Pipe n=0.011 L=60.0' S=0.0333' Capacity=3,360.1 cfs Outflow=7.0 cfs 0.4 af
Pond BP-1: Bioretention Pond #1	Peak Elev=596.74' Storage=4,063 cf Inflow=4.1 cfs 0.2 af Discarded=0.0 cfs 0.1 af Primary=0.8 cfs 0.1 af Outflow=0.8 cfs 0.2 af
Pond UIP-1: UIP-1	Peak Elev=598.84' Storage=49,200 cf Inflow=57.5 cfs 2.9 af Discarded=0.1 cfs 0.8 af Primary=47.0 cfs 2.0 af Outflow=47.2 cfs 2.7 af
Pond UIP-2: UIP-2	Peak Elev=588.52' Storage=13,756 cf Inflow=18.3 cfs 0.9 af Discarded=0.0 cfs 0.2 af Primary=17.2 cfs 0.7 af Outflow=17.3 cfs 0.9 af
Link DP-1: Brickyard Pond	Inflow=230.8 cfs 27.1 af Primary=230.8 cfs 27.1 af

Total Runoff Area = 108.11 ac Runoff Volume = 28.4 af Average Runoff Depth = 3.16"
92.99% Pervious = 100.53 ac 7.01% Impervious = 7.58 ac

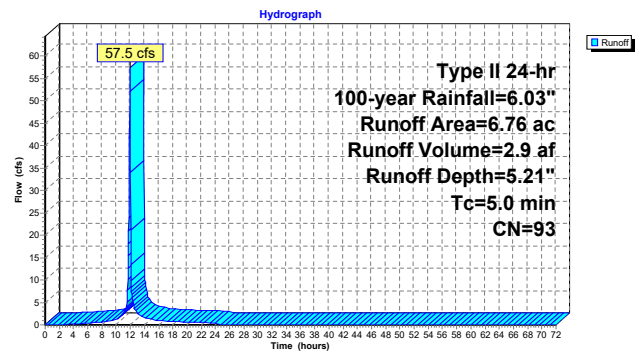
Summary for Subcatchment PR-1: Subcat PR-1

Runoff = 57.5 cfs @ 11.96 hrs, Volume= 2.9 af, Depth= 5.21"
Routed to Pond UIP-1 : UIP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description			
0.10	61	>75% Grass cover, Good, HSG B			
1.34	74	>75% Grass cover, Good, HSG C			
0.29	98	Paved parking, HSG B			
2.82	98	Paved parking, HSG C			
0.43	98	Roofs, HSG B			
1.77	98	Roofs, HSG C			
0.00	55	Woods, Good, HSG B			
0.02	70	Woods, Good, HSG C			
6.76	93	Weighted Average			
1.46		21.55% Pervious Area			
5.31		78.45% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment PR-1: Subcat PR-1



Summary for Subcatchment PR-2: Subcat PR-2

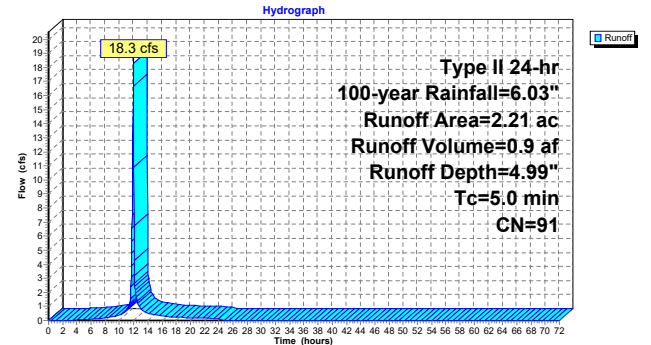
Runoff = 18.3 cfs @ 11.96 hrs, Volume= 0.9 af, Depth= 4.99"
Routed to Pond UIP-2 : UIP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.45	61	>75% Grass cover, Good, HSG B
0.00	48	Brush, Good, HSG B
1.07	98	Paved parking, HSG B
0.69	98	Roofs, HSG B
2.21	91	Weighted Average
0.45		20.25% Pervious Area
1.76		79.75% Impervious Area

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

Subcatchment PR-2: Subcat PR-2



Summary for Subcatchment PR-4: Subcat PR-4

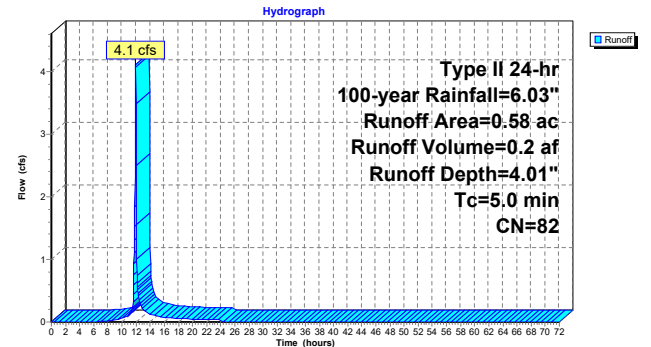
Runoff = 4.1 cfs @ 11.96 hrs, Volume= 0.2 af, Depth= 4.01"
Routed to Pond BP-1 : Bioretention Pond #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.00	39	>75% Grass cover, Good, HSG A
0.20	61	>75% Grass cover, Good, HSG B
0.09	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.01	98	Paved parking, HSG A
0.20	98	Paved parking, HSG B
0.03	98	Paved parking, HSG C
0.01	98	Paved parking, HSG D
0.02	98	Roofs, HSG A
0.03	98	Roofs, HSG B
0.00	98	Water Surface, 0% imp, HSG D
0.58	82	Weighted Average
0.29		49.43% Pervious Area
0.29		50.57% Impervious Area

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

Subcatchment PR-4: Subcat PR-4



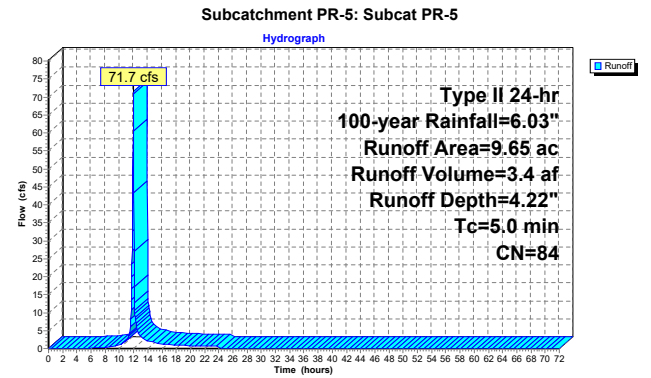
Summary for Subcatchment PR-5: Subcat PR-5

Runoff = 71.7 cfs @ 11.96 hrs, Volume= 3.4 af, Depth= 4.22"
Routed to Reach 2R : South Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
1.24	61	>75% Grass cover, Good, HSG B
1.20	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.00	30	Brush, Good, HSG A
0.14	48	Brush, Good, HSG B
0.07	65	Brush, Good, HSG C
0.08	98	Paved parking, HSG B
0.05	98	Paved parking, HSG C
0.81	98	Water Surface, 0% imp, HSG B
4.51	98	Water Surface, 0% imp, HSG C
0.21	98	Water Surface, 0% imp, HSG D
0.01	30	Woods, Good, HSG A
0.83	55	Woods, Good, HSG B
0.40	70	Woods, Good, HSG C
0.00	77	Woods, Good, HSG D
9.65	84	Weighted Average
9.52		98.70% Pervious Area
0.13		1.30% Impervious Area

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



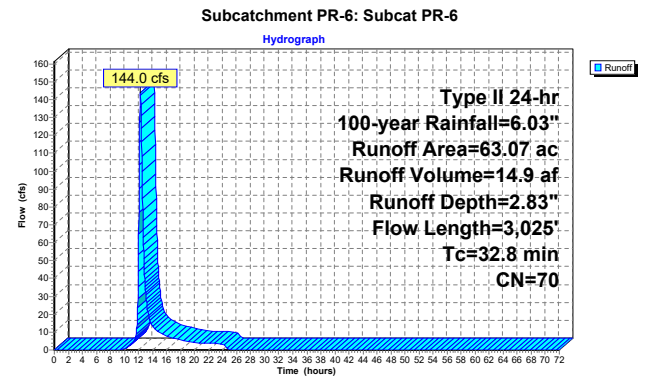
Summary for Subcatchment PR-6: Subcat PR-6

Runoff = 144.0 cfs @ 12.28 hrs, Volume= 14.9 af, Depth= 2.83"
Routed to Link DP-1 : Brickyard Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.20	39	>75% Grass cover, Good, HSG A
0.57	61	>75% Grass cover, Good, HSG B
0.22	74	>75% Grass cover, Good, HSG C
0.00	30	Brush, Good, HSG A
0.84	48	Brush, Good, HSG B
0.03	98	Paved parking, HSG A
0.01	98	Paved parking, HSG B
0.01	98	Roofs, HSG B
1.26	98	Water Surface, 0% imp, HSG B
0.00	30	Woods, Good, HSG A
2.40	55	Woods, Good, HSG B
57.00	70	Woods, Good, HSG C
0.53	77	Woods, Good, HSG D
63.07	70	Weighted Average
63.02		99.92% Pervious Area
0.05		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1600	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
15.3	2,100	0.2100	2.29		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.9	875	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
32.8	3,025	Total			



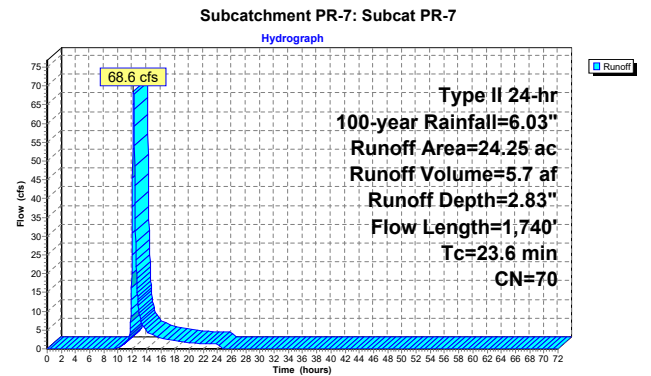
Summary for Subcatchment PR-7: Subcat PR-7

Runoff = 68.6 cfs @ 12.17 hrs, Volume= 5.7 af, Depth= 2.83"
Routed to Reach 1R : 30" Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.98	74	>75% Grass cover, Good, HSG C
0.05	98	Paved parking, HSG C
23.23	70	Woods, Good, HSG C
24.25	70	Weighted Average
24.21		99.80% Pervious Area
0.05		0.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	50	0.0800	0.06		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
8.6	1,430	0.3100	2.78		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.0	260	0.0103	4.38	96.25	Channel Flow, Area= 22.0 sf Perim= 17.6' r= 1.25' n= 0.040 Earth, cobble bottom, clean sides
23.6	1,740	Total			



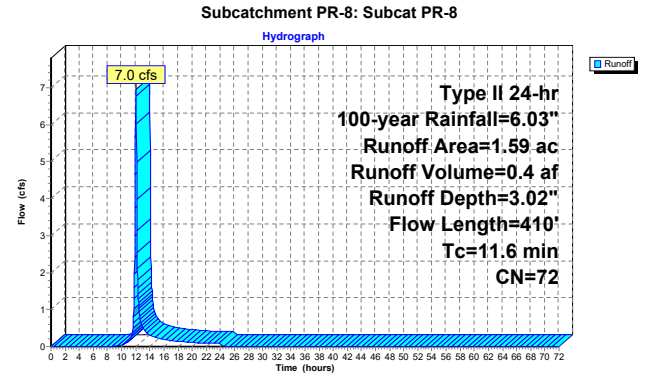
Summary for Subcatchment PR-8: Subcat PR-8

Runoff = 7.0 cfs @ 12.04 hrs, Volume= 0.4 af, Depth= 3.02"
Routed to Reach 3R : North Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.03"

Area (ac)	CN	Description
0.01	61	>75% Grass cover, Good, HSG B
0.03	74	>75% Grass cover, Good, HSG C
0.00	80	>75% Grass cover, Good, HSG D
0.02	48	Brush, Good, HSG B
0.10	98	Water Surface, 0% imp, HSG B
0.01	98	Water Surface, 0% imp, HSG C
0.03	98	Water Surface, 0% imp, HSG D
0.06	55	Woods, Good, HSG B
1.33	70	Woods, Good, HSG C
1.59	72	Weighted Average
1.59		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.2	50	0.3000	0.10		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 2.50"
2.6	180	0.2200	1.17		Shallow Concentrated Flow, Forest w/Heavy Litter Kv= 2.5 fps
0.8	180	0.0670	3.88		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.6	410				Total



Summary for Reach 1R: 30" Pipe

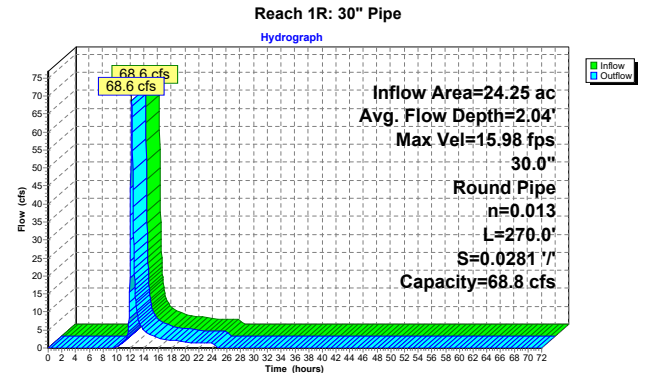
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 24.25 ac, 0.20% Impervious, Inflow Depth = 2.83" for 100-year event
Inflow = 68.6 cfs @ 12.17 hrs, Volume= 5.7 af
Outflow = 68.6 cfs @ 12.18 hrs, Volume= 5.7 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 2R : South Culvert

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 15.98 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 6.30 fps, Avg. Travel Time= 0.7 min

Peak Storage= 1,159 cf @ 12.18 hrs
Average Depth at Peak Storage= 2.04' , Surface Width= 1.94'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 68.8 cfs

30.0" Round Pipe
n= 0.013
Length= 270.0' Slope= 0.0281 '/'
Inlet Invert= 590.60', Outlet Invert= 583.00'



Stage-Area-Storage for Reach 1R: 30" Pipe		
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
590.60	0.0	0
590.65	0.0	6
590.70	0.1	18
590.75	0.1	32
590.80	0.2	50
590.85	0.3	69
590.90	0.3	90
590.95	0.4	113
591.00	0.5	137
591.05	0.6	162
591.10	0.7	189
591.15	0.8	216
591.20	0.9	245
591.25	1.0	274
591.30	1.1	304
591.35	1.2	334
591.40	1.4	366
591.45	1.5	397
591.50	1.6	430
591.55	1.7	462
591.60	1.8	495
591.65	2.0	528
591.70	2.1	562
591.75	2.2	595
591.80	2.3	629
591.85	2.5	663
591.90	2.6	696
591.95	2.7	730
592.00	2.8	764
592.05	3.0	797
592.10	3.1	830
592.15	3.2	863
592.20	3.3	896
592.25	3.4	928
592.30	3.6	960
592.35	3.7	991
592.40	3.8	1,022
592.45	3.9	1,052
592.50	4.0	1,081
592.55	4.1	1,109
592.60	4.2	1,137
592.65	4.3	1,163
592.70	4.4	1,188
592.75	4.5	1,213
592.80	4.6	1,235
592.85	4.7	1,256
592.90	4.7	1,276
592.95	4.8	1,293
593.00	4.8	1,308
593.05	4.9	1,319
593.10	4.9	1,325

Summary for Reach 2R: South Culvert

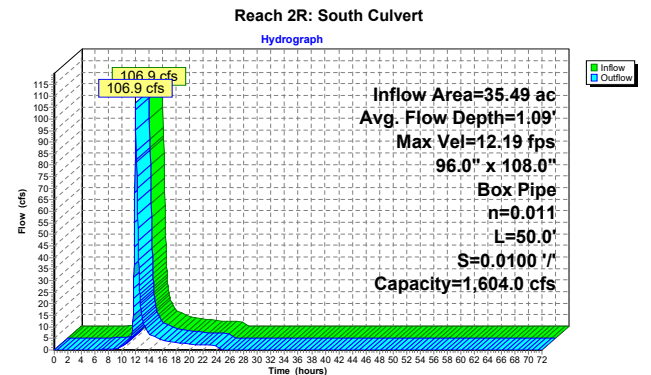
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 35.49 ac, 0.49% Impervious, Inflow Depth = 3.22" for 100-year event
Inflow = 106.9 cfs @ 11.98 hrs, Volume= 9.5 af
Outflow = 106.9 cfs @ 11.98 hrs, Volume= 9.5 af, Atten= 0%, Lag= 0.0 min
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 12.19 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 0.2 min

Peak Storage= 438 cf @ 11.98 hrs
Average Depth at Peak Storage= 1.09' , Surface Width= 8.00'
Bank-Full Depth= 9.00' Flow Area= 72.0 sf, Capacity= 1,604.0 cfs

96.0" W x 108.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 579.50', Outlet Invert= 579.00'



Stage-Area-Storage for Reach 2R: South Culvert					
Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
579.50	0.0	0	584.80	42.4	2,120
579.60	0.8	40	584.90	43.2	2,160
579.70	1.6	80	585.00	44.0	2,200
579.80	2.4	120	585.10	44.8	2,240
579.90	3.2	160	585.20	45.6	2,280
580.00	4.0	200	585.30	46.4	2,320
580.10	4.8	240	585.40	47.2	2,360
580.20	5.6	280	585.50	48.0	2,400
580.30	6.4	320	585.60	48.8	2,440
580.40	7.2	360	585.70	49.6	2,480
580.50	8.0	400	585.80	50.4	2,520
580.60	8.8	440	585.90	51.2	2,560
580.70	9.6	480	586.00	52.0	2,600
580.80	10.4	520	586.10	52.8	2,640
580.90	11.2	560	586.20	53.6	2,680
581.00	12.0	600	586.30	54.4	2,720
581.10	12.8	640	586.40	55.2	2,760
581.20	13.6	680	586.50	56.0	2,800
581.30	14.4	720	586.60	56.8	2,840
581.40	15.2	760	586.70	57.6	2,880
581.50	16.0	800	586.80	58.4	2,920
581.60	16.8	840	586.90	59.2	2,960
581.70	17.6	880	587.00	60.0	3,000
581.80	18.4	920	587.10	60.8	3,040
581.90	19.2	960	587.20	61.6	3,080
582.00	20.0	1,000	587.30	62.4	3,120
582.10	20.8	1,040	587.40	63.2	3,160
582.20	21.6	1,080	587.50	64.0	3,200
582.30	22.4	1,120	587.60	64.8	3,240
582.40	23.2	1,160	587.70	65.6	3,280
582.50	24.0	1,200	587.80	66.4	3,320
582.60	24.8	1,240	587.90	67.2	3,360
582.70	25.6	1,280	588.00	68.0	3,400
582.80	26.4	1,320	588.10	68.8	3,440
582.90	27.2	1,360	588.20	69.6	3,480
583.00	28.0	1,400	588.30	70.4	3,520
583.10	28.8	1,440	588.40	71.2	3,560
583.20	29.6	1,480	588.50	72.0	3,600
583.30	30.4	1,520			
583.40	31.2	1,560			
583.50	32.0	1,600			
583.60	32.8	1,640			
583.70	33.6	1,680			
583.80	34.4	1,720			
583.90	35.2	1,760			
584.00	36.0	1,800			
584.10	36.8	1,840			
584.20	37.6	1,880			
584.30	38.4	1,920			
584.40	39.2	1,960			
584.50	40.0	2,000			
584.60	40.8	2,040			
584.70	41.6	2,080			

Summary for Reach 3R: North Culvert

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 1.59 ac, 0.00% Impervious, Inflow Depth = 3.02" for 100-year event
Inflow = 7.0 cfs @ 12.04 hrs, Volume= 0.4 af
Outflow = 7.0 cfs @ 12.04 hrs, Volume= 0.4 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 2R : South Culvert

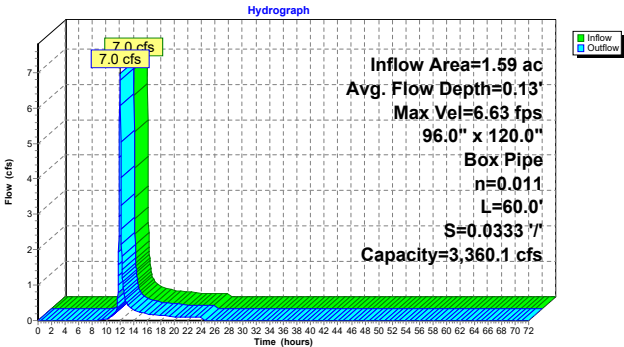
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Max. Velocity= 6.63 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.24 fps, Avg. Travel Time= 0.2 min

Peak Storage= 63 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 8.00'
Bank-Full Depth= 10.00' Flow Area= 80.0 sf, Capacity= 3,360.1 cfs

96.0" W x 120.0" H Box Pipe
n= 0.011 Concrete pipe, straight & clean
Length= 60.0' Slope= 0.0333 '/
Inlet Invert= 602.00', Outlet Invert= 600.00'



Reach 3R: North Culvert



Stage-Area-Storage for Reach 3R: North Culvert

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
602.00	0.0	0	607.30	42.4	2,544
602.10	0.8	48	607.40	43.2	2,592
602.20	1.6	96	607.50	44.0	2,640
602.30	2.4	144	607.60	44.8	2,688
602.40	3.2	192	607.70	45.6	2,736
602.50	4.0	240	607.80	46.4	2,784
602.60	4.8	288	607.90	47.2	2,832
602.70	5.6	336	608.00	48.0	2,880
602.80	6.4	384	608.10	48.8	2,928
602.90	7.2	432	608.20	49.6	2,976
603.00	8.0	480	608.30	50.4	3,024
603.10	8.8	528	608.40	51.2	3,072
603.20	9.6	576	608.50	52.0	3,120
603.30	10.4	624	608.60	52.8	3,168
603.40	11.2	672	608.70	53.6	3,216
603.50	12.0	720	608.80	54.4	3,264
603.60	12.8	768	608.90	55.2	3,312
603.70	13.6	816	609.00	56.0	3,360
603.80	14.4	864	609.10	56.8	3,408
603.90	15.2	912	609.20	57.6	3,456
604.00	16.0	960	609.30	58.4	3,504
604.10	16.8	1,008	609.40	59.2	3,552
604.20	17.6	1,056	609.50	60.0	3,600
604.30	18.4	1,104	609.60	60.8	3,648
604.40	19.2	1,152	609.70	61.6	3,696
604.50	20.0	1,200	609.80	62.4	3,744
604.60	20.8	1,248	609.90	63.2	3,792
604.70	21.6	1,296	610.00	64.0	3,840
604.80	22.4	1,344	610.10	64.8	3,888
604.90	23.2	1,392	610.20	65.6	3,936
605.00	24.0	1,440	610.30	66.4	3,984
605.10	24.8	1,488	610.40	67.2	4,032
605.20	25.6	1,536	610.50	68.0	4,080
605.30	26.4	1,584	610.60	68.8	4,128
605.40	27.2	1,632	610.70	69.6	4,176
605.50	28.0	1,680	610.80	70.4	4,224
605.60	28.8	1,728	610.90	71.2	4,272
605.70	29.6	1,776	611.00	72.0	4,320
605.80	30.4	1,824	611.10	72.8	4,368
605.90	31.2	1,872	611.20	73.6	4,416
606.00	32.0	1,920	611.30	74.4	4,464
606.10	32.8	1,968	611.40	75.2	4,512
606.20	33.6	2,016	611.50	76.0	4,560
606.30	34.4	2,064	611.60	76.8	4,608
606.40	35.2	2,112	611.70	77.6	4,656
606.50	36.0	2,160	611.80	78.4	4,704
606.60	36.8	2,208	611.90	79.2	4,752
606.70	37.6	2,256	612.00	80.0	4,800
606.80	38.4	2,304			
606.90	39.2	2,352			
607.00	40.0	2,400			
607.10	40.8	2,448			
607.20	41.6	2,496			

Summary for Pond BP-1: Bioretention Pond #1

Inflow Area = 0.58 ac, 50.57% Impervious, Inflow Depth = 4.01" for 100-year event
Inflow = 4.1 cfs @ 11.96 hrs, Volume= 0.2 af
Outflow = 0.8 cfs @ 12.12 hrs, Volume= 0.2 af, Atten= 80%, Lag= 9.4 min
Discarded = 0.0 cfs @ 12.12 hrs, Volume= 0.1 af
Primary = 0.8 cfs @ 12.12 hrs, Volume= 0.1 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 596.74' @ 12.12 hrs Surf.Area= 2,679 sf Storage= 4,063 cf
Flood Elev= 598.50' Surf.Area= 3,846 sf Storage= 9,769 cf

Plug-Flow detention time= 770.2 min calculated for 0.2 af (100% of inflow)
Center-of-Mass det. time= 770.2 min (1,574.9 - 804.7)

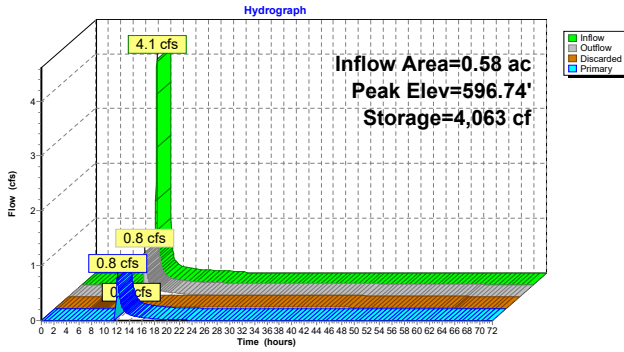
Volume	Invert	Avail.Storage	Storage Description			
#1	593.50'	11,782 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.50	1,720	169.6	0.0	0	0	1,720
595.00	1,720	169.6	10.0	258	258	1,974
598.00	3,501	226.2	100.0	7,675	7,933	3,853
599.00	4,208	245.6	100.0	3,849	11,782	4,619

Device	Routing	Invert	Outlet Devices
#1	Primary	595.00'	18.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.00' / 594.80' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	596.50'	24.0" W x 6.0" H Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	597.00'	48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	593.50'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 12.12 hrs HW=596.74' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.8 cfs @ 12.12 hrs HW=596.74' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.8 cfs of 7.8 cfs potential flow)
2=Orifice (Orifice Controls 0.8 cfs @ 1.58 fps)
3=Grate (Controls 0.0 cfs)

Pond BP-1: Bioretention Pond #1



Stage-Area-Storage for Pond BP-1: Bioretention Pond #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
593.50	1,720	0	598.80	4,061	10,955
593.60	1,720	17	598.90	4,134	11,365
593.70	1,720	34	599.00	4,208	11,782
593.80	1,720	52			
593.90	1,720	69			
594.00	1,720	86			
594.10	1,720	103			
594.20	1,720	120			
594.30	1,720	138			
594.40	1,720	155			
594.50	1,720	172			
594.60	1,720	189			
594.70	1,720	206			
594.80	1,720	224			
594.90	1,720	241			
595.00	1,720	258			
595.10	1,769	432			
595.20	1,819	612			
595.30	1,870	796			
595.40	1,921	986			
595.50	1,973	1,181			
595.60	2,026	1,381			
595.70	2,080	1,586			
595.80	2,134	1,797			
595.90	2,189	2,013			
596.00	2,244	2,234			
596.10	2,300	2,461			
596.20	2,357	2,694			
596.30	2,415	2,933			
596.40	2,473	3,177			
596.50	2,532	3,428			
596.60	2,592	3,684			
596.70	2,652	3,946			
596.80	2,713	4,214			
596.90	2,775	4,489			
597.00	2,838	4,769			
597.10	2,901	5,056			
597.20	2,965	5,350			
597.30	3,029	5,649			
597.40	3,095	5,955			
597.50	3,161	6,268			
597.60	3,227	6,588			
597.70	3,295	6,914			
597.80	3,363	7,247			
597.90	3,432	7,586			
598.00	3,501	7,933			
598.10	3,569	8,286			
598.20	3,637	8,647			
598.30	3,706	9,014			
598.40	3,776	9,388			
598.50	3,846	9,769			
598.60	3,917	10,157			
598.70	3,989	10,553			

Summary for Pond UIP-1: UIP-1

[58] Hint: Peaked 0.29' above defined flood level

Inflow Area = 6.76 ac, 78.45% Impervious, Inflow Depth = 5.21" for 100-year event
Inflow = 57.5 cfs @ 11.96 hrs, Volume = 2.9 af
Outflow = 47.2 cfs @ 12.00 hrs, Volume = 2.7 af, Atten = 18%, Lag = 2.6 min
Discarded = 0.1 cfs @ 4.95 hrs, Volume = 0.8 af
Primary = 47.0 cfs @ 12.00 hrs, Volume = 2.0 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span = 0.00-72.00 hrs, dt = 0.03 hrs / 2
Peak Elev = 598.84' @ 12.00 hrs Surf.Area = 11,441 sf Storage = 49,200 cf
Flood Elev = 598.55' Surf.Area = 11,441 sf Storage = 47,881 cf

Plug-Flow detention time = 500.2 min calculated for 2.7 af (93% of inflow)
Center-of-Mass det. time = 458.8 min (1,227.2 - 768.4)

Volume	Invert	Avail. Storage	Storage Description
#1A	592.30'	18,038 cf	55.75'W x 205.22'L x 6.75'H Field A 77,226 cf Overall - 32,132 cf Embedded = 45,094 cf x 40.0% Voids
#2A	593.05'	32,132 cf	ADS StormTech MC-7200 +Cap x 180 Inside #1 Effective Size = 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size = 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 180 Chambers in 6 Rows Cap Storage = 39.5 cf x 2 x 6 rows = 474.0 cf
		50,169 cf	Total Available Storage

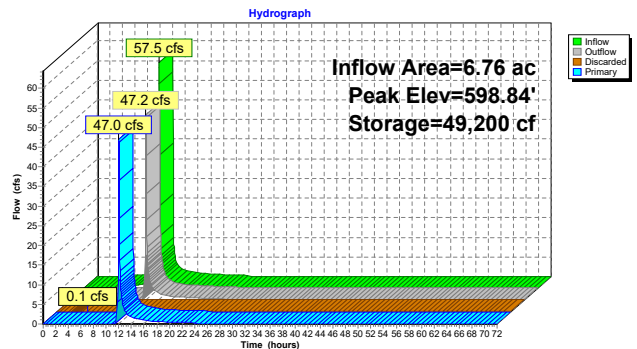
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	30.0" Round Culvert L = 39.0' CPP, mitered to conform to fill, Ke = 0.700 Inlet / Outlet Invert = 592.50' / 592.00' S = 0.0128 /' Cc = 0.900 n = 0.013, Flow Area = 4.91 sf
#2	Device 1	597.30'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Discarded	592.30'	0.500 in/hr Exfiltration over Surface area Phase-In = 0.01'
#4	Device 1	596.05'	30.0" W x 15.0" H Vert. Orifice C = 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.1 cfs @ 4.95 hrs HW=592.37' (Free Discharge)
3=Exfiltration (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=47.0 cfs @ 12.00 hrs HW=598.83' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 47.0 cfs @ 9.58 fps)
2=Sharp-Crested Rectangular Weir (Passes < 29.2 cfs potential flow)
4=Orifice (Passes < 22.0 cfs potential flow)

Pond UIP-1: UIP-1



Stage-Area-Storage for Pond UIP-1: UIP-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.30	11,441	0	597.60	11,441	43,352
592.40	11,441	458	597.70	11,441	43,885
592.50	11,441	915	597.80	11,441	44,392
592.60	11,441	1,373	597.90	11,441	44,885
592.70	11,441	1,831	598.00	11,441	45,362
592.80	11,441	2,288	598.10	11,441	45,822
592.90	11,441	2,746	598.20	11,441	46,279
593.00	11,441	3,203	598.30	11,441	46,737
593.10	11,441	3,635	598.40	11,441	47,195
593.20	11,441	4,040	598.50	11,441	47,652
593.30	11,441	5,942	598.60	11,441	48,110
593.40	11,441	6,942	598.70	11,441	48,567
593.50	11,441	7,939	598.80	11,441	49,025
593.60	11,441	8,934	598.90	11,441	49,483
593.70	11,441	9,925	599.00	11,441	49,940
593.80	11,441	10,914			
593.90	11,441	11,899			
594.00	11,441	12,882			
594.10	11,441	13,860			
594.20	11,441	14,835			
594.30	11,441	15,805			
594.40	11,441	16,772			
594.50	11,441	17,733			
594.60	11,441	18,690			
594.70	11,441	19,643			
594.80	11,441	20,590			
594.90	11,441	21,531			
595.00	11,441	22,466			
595.10	11,441	23,395			
595.20	11,441	24,318			
595.30	11,441	25,235			
595.40	11,441	26,144			
595.50	11,441	27,046			
595.60	11,441	27,941			
595.70	11,441	28,827			
595.80	11,441	29,705			
595.90	11,441	30,575			
596.00	11,441	31,435			
596.10	11,441	32,285			
596.20	11,441	33,126			
596.30	11,441	33,956			
596.40	11,441	34,774			
596.50	11,441	35,581			
596.60	11,441	36,375			
596.70	11,441	37,156			
596.80	11,441	37,923			
596.90	11,441	38,675			
597.00	11,441	39,410			
597.10	11,441	40,127			
597.20	11,441	40,825			
597.30	11,441	41,502			
597.40	11,441	42,154			
597.50	11,441	42,774			

Summary for Pond UIP-2: UIP-2

Inflow Area = 2.21 ac, 79.75% Impervious, Inflow Depth = 4.99" for 100-year event
Inflow = 18.3 cfs @ 11.96 hrs, Volume= 0.9 af
Outflow = 17.3 cfs @ 11.98 hrs, Volume= 0.9 af, Atten= 6%, Lag= 1.6 min
Discarded = 0.0 cfs @ 5.67 hrs, Volume= 0.2 af
Primary = 17.2 cfs @ 11.98 hrs, Volume= 0.7 af
Routed to Link DP-1 : Brickyard Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs / 2
Peak Elev= 588.52' @ 11.98 hrs Surf.Area= 3,594 sf Storage= 13,756 cf
Flood Elev= 589.25' Surf.Area= 3,594 sf Storage= 14,826 cf

Plug-Flow detention time= 390.1 min calculated for 0.9 af (100% of inflow)
Center-of-Mass det. time= 390.1 min (1,166.6 - 776.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	583.00'	5,811 cf	28.50'W x 126.12'L x 6.75'H Field A 24,262 cf Overall - 9,734 cf Embedded = 14,527 cf x 40.0% Voids ADS StormTech MC-7200 *Cap x 54 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 54 Chambers in 3 Rows Cap Storage= 39.5 cf x 2 x 3 rows = 237.0 cf
#2A	583.75'	9,734 cf	
			15,545 cf Total Available Storage

Storage Group A created with Chamber Wizard

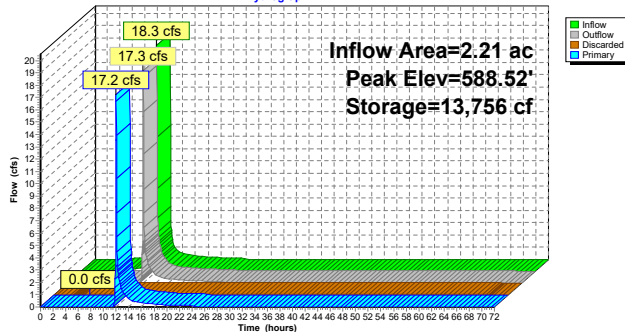
Device	Routing	Invert	Outlet Devices
#1	Primary	583.00'	24.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.00' / 582.80' S= 0.0100' /' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	585.50'	4.0" W x 24.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	587.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Discarded	583.00'	0.500 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.0 cfs @ 5.67 hrs HW=583.07' (Free Discharge)
4=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=16.8 cfs @ 11.98 hrs HW=588.49' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 16.8 cfs of 32.1 cfs potential flow)
2=Orifice/Grate (Orifice Controls 4.5 cfs @ 6.72 fps)
3=Sharp-Crested Rectangular Weir (Weir Controls 12.3 cfs @ 3.26 fps)

Pond UIP-2: UIP-2

Hydrograph



Stage-Area-Storage for Pond UIP-2: UIP-2

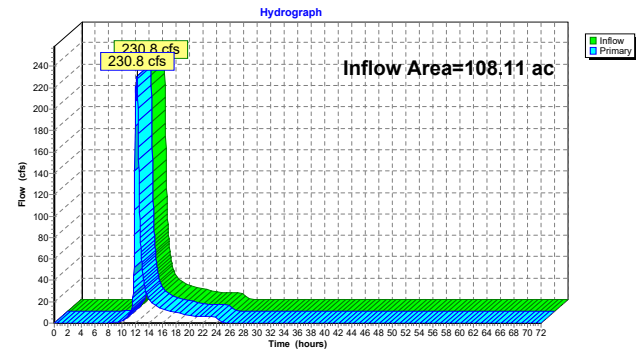
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
583.00	3,594	0	588.30	3,594	13,406
583.10	3,594	144	588.40	3,594	13,572
583.20	3,594	288	588.50	3,594	13,731
583.30	3,594	431	588.60	3,594	13,885
583.40	3,594	575	588.70	3,594	14,035
583.50	3,594	719	588.80	3,594	14,179
583.60	3,594	863	588.90	3,594	14,323
583.70	3,594	1,006	589.00	3,594	14,467
583.80	3,594	1,233	589.10	3,594	14,611
583.90	3,594	1,543	589.20	3,594	14,754
584.00	3,594	1,852	589.30	3,594	14,898
584.10	3,594	2,159	589.40	3,594	15,042
584.20	3,594	2,467	589.50	3,594	15,186
584.30	3,594	2,773	589.60	3,594	15,330
584.40	3,594	3,079	589.70	3,594	15,473
584.50	3,594	3,383			
584.60	3,594	3,687			
584.70	3,594	3,990			
584.80	3,594	4,291			
584.90	3,594	4,592			
585.00	3,594	4,891			
585.10	3,594	5,189			
585.20	3,594	5,485			
585.30	3,594	5,780			
585.40	3,594	6,074			
585.50	3,594	6,366			
585.60	3,594	6,656			
585.70	3,594	6,945			
585.80	3,594	7,231			
585.90	3,594	7,516			
586.00	3,594	7,799			
586.10	3,594	8,079			
586.20	3,594	8,358			
586.30	3,594	8,634			
586.40	3,594	8,908			
586.50	3,594	9,179			
586.60	3,594	9,447			
586.70	3,594	9,713			
586.80	3,594	9,976			
586.90	3,594	10,236			
587.00	3,594	10,492			
587.10	3,594	10,745			
587.20	3,594	10,995			
587.30	3,594	11,241			
587.40	3,594	11,482			
587.50	3,594	11,720			
587.60	3,594	11,953			
587.70	3,594	12,180			
587.80	3,594	12,403			
587.90	3,594	12,620			
588.00	3,594	12,830			
588.10	3,594	13,032			
588.20	3,594	13,225			

Summary for Link DP-1: Brickyard Pond

Inflow Area = 108.11 ac, 7.01% Impervious, Inflow Depth = 3.01" for 100-year event
Inflow = 230.8 cfs @ 12.23 hrs, Volume= 27.1 af
Primary = 230.8 cfs @ 12.23 hrs, Volume= 27.1 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Link DP-1: Brickyard Pond



Appendix C: Hydraulic Calculations

- › Storm Drain Piping Calculations
- › Riprap Channel Design Calculations
- › Riprap Outlet Sizing Calculations
- › Inlet Capacity Calculations

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Storm Drain Piping Calculations

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Stormcad Conduit Output Table - Hydraulic Pipe Analysis

25-YR

Project

The Brickyard Residential I

Project # 52933

Calculated by

DJB

Date 12/3/2024

Checked by

TMD

Date 12/3/2024

Start Node	Stop Node	Upstream Inlet Area	Upstream Inlet C	System CA	Intensity	Pipe Size	Material	Manning's "n"	Slope	Length	Capacity (Full Flow)	Capacity (Design)	Velocity (Average)	Rim (Upper)	Hydraulic Grade Line In	Rim (Lower)	Hydraulic Grade Line Out	Invert (Upper)	Invert (Lower)	Flow /Capacity (Design)	Depth (Normal) /Rise
-	-	(acres)	-	(acres)	(in/hr)	(in)	-	-	(ft/ft)	(ft)	(cfs)	(cfs)	(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)	(%)
CB-209	O-19	0.13	0.9	2.46	7.07	24		0.013	0.009	80.7	20.9	17.53	7.45	599.94	596.21	601.21	595.41	594.7	594.01	83.9	72.8
106 (4) (PR Drain (4))	CB-105	(N/A)	(N/A)	0.71	7.07	15		0.013	0.01	94.5	6.3	5.06	5.71	599.49	590.41	597.86	589.56	589.5	588.6	80.2	74.7
CB-220	CB-219	0.07	0.9	0.552	7.07	15		0.013	0.006	42	4.98	3.94	4.5	599.64	596.64	599.81	596.35	595.8	595.55	79	65.6
CB-212	207	0.09	0.82	0.521	7.07	15		0.013	0.005	113.4	4.7	3.71	4.24	600.34	595.84	600.75	595.18	595	594.4	78.9	64.6
CB-226	CB-209	0.04	0.9	2.343	7.07	24		0.013	0.009	91.2	21.2	16.69	7.47	599.81	596.97	599.94	596.21	595.5	594.7	78.8	74.6
CB-508	CB-506	0.22	(N/A)	0.387	7.07	12		0.013	0.01	192	3.59	2.76	5.04	609.28	606.51	607.35	604.66	605.8	603.85	76.8	76.2
CB-227	CB-226	0.03	0.9	2.307	7.07	24		0.013	0.009	33.4	21.44	16.44	7.52	600.64	597.36	599.81	596.93	595.9	595.6	76.7	69.8
CB-506	CB-504	0.27	(N/A)	0.708	7.07	15		0.013	0.011	192	6.67	5.05	5.98	607.35	604.66	605.41	602.71	603.75	601.7	75.6	77
CB-105	104	0.29	0.9	0.971	7.07	15		0.013	0.022	64.9	9.48	6.92	8.43	597.86	589.56	597.89	587.9	588.5	587.1	72.9	74.1
RD6	CB-108	0.56	0.8	0.448	7.07	12		0.013	0.015	33	4.38	3.19	6.09	600.92	595.67	599.02	595.04	594.9	594.4	72.8	70.2
501C (PR Drain (4))	CB-501A	(N/A)	(N/A)	1.599	7.07	24		0.013	0.005	79.1	16.09	11.39	5.55	602.53	598.64	601.7	598.21	597.4	597	70.8	61.4
RD-5	CB-229	0.52	0.82	0.426	7.07	12		0.013	0.015	33	4.38	3.04	6.03	603.13	599	601.09	598.37	598.25	597.75	69.3	68.2
CB-211	CB-210	0.12	0.9	0.543	7.07	15		0.013	0.008	27.4	5.67	3.87	4.97	600.09	596.8	599.9	596.56	596	595.8	68.3	62.1
CB-502	501C (PR Drain (4))	0.27	(N/A)	1.599	7.07	24		0.013	0.006	101.3	17.41	11.39	5.91	603.51	599.31	602.53	598.68	598.1	597.5	65.5	59.8
CB-228	CB-227	0.08	0.9	0.591	7.07	15		0.013	0.01	47.7	6.61	4.21	5.71	600.95	597.48	600.64	597.36	596.5	596	63.7	93.8
CB-101	O-17	0.02	0.9	1.079	7.07	18		0.013	0.013	15.1	12.1	7.69	7.25	595.77	586.28	594.74	585.92	585.2	585	63.5	66.6
CB-210	CB-208	0.1	0.83	0.626	7.07	15		0.013	0.012	40.6	7.05	4.46	6.08	599.9	596.56	599.94	595.92	595.7	595.2	63.3	63.2
CB-504	CB-502	0.28	(N/A)	1.159	7.07	18		0.013	0.017	187.8	13.49	8.26	8.02	605.41	602.71	603.51	599.35	601.6	598.5	61.2	65.4
CB-501A	CB-227	0.05	0.9	1.689	7.07	24		0.013	0.008	116.9	19.86	12.04	6.62	601.7	598.15	600.64	597.36	596.9	596	60.6	65.2
104	CB-101	(N/A)	(N/A)	0.971	7.07	15		0.013	0.032	46.3	11.63	6.92	9.88	597.89	588.06	595.77	586.22	587	585.5	59.5	71
214	CB-212	(N/A)	(N/A)	0.402	7.07	15		0.013	0.006	90	4.82	2.86	4.09	601.09	596.3	600.34	595.84	595.6	595.1	59.4	57.3
CB-217	CB-215	0.19	0.68	0.219	7.07	12		0.013	0.006	106.7	2.66	1.56	3.52	599.45	597.65	599.89	597.09	597.1	596.5	58.8	57
CB-215	214	0.17	0.65	0.402	7.07	15		0.013	0.006	122.6	4.88	2.86	4.14	599.89	597.09	601.09	596.38	596.4	595.7	58.7	54.7
207	O-18	(N/A)	(N/A)	1.869	7.07	24		0.013	0.01	24.8	22.72	13.32	7.52	600.75	594.92	601.18	594.5	593.6	593.35	58.6	61.5
RD-2	O-19	0.54	0.8	0.432	7.07	12		0.013	0.023	38.7	5.43	3.08	7.14	603.37	595.75	601.21	594.65	595	594.1	56.7	64.9
CB-107	106 (4) (PR Drain (4))	0.11	0.71	0.71	7.07	15		0.013	0.02	44.5	9.19	5.06	7.67	599.06	592.81	599.49	591.68	591.9	591	55.1	63.5
CB-222	CB-220	0.21	0.77	0.352	7.07	15		0.013	0.005	56.4	4.71	2.51	3.9	600.06	596.8	599.64	596.64	596.15	595.85	53.3	57.5
CB-224	223 (PR Drain (4))	0.1	0.9	0.191	7.07	12		0.013	0.005	116	2.56	1.36	3.31	600.16	597.92	601.75	597.29	597.4	596.8	53.1	50.6
RD-1	O-16	0.33	0.82	0.271	7.07	12		0.013	0.011	37.7	3.65	1.93	4.71	594.5	589.99	594.65	589.52	589.4	589	52.8	55.4
CB-229	CB-228	0.11	0.84	0.519	7.07	12		0.013	0.04	26	7.16	3.7	9.19	601.09	598.47	600.95	597.48	597.65	596.6	51.7	85.1
223 (PR Drain (4))	CB-222	(N/A)	(N/A)	0.191	7.07	12		0.013	0.006	90.4	2.65	1.36	3.4	601.75	597.21	600.06	596.8	596.7	596.2	51.3	55.4
CB-108	CB-107	0.07	0.9	0.511	7.07	15		0.013	0.012	24	7.22	3.64	5.9	599.02	595.07	599.06	594.64	594.3	594	50.4	56.5
RD-4	CB-211	0.53	0.82	0.435	7.07	15		0.013	0.009	33	6.16	3.1	5.03	601.43	597.11	600.09	596.73	596.4	596.1	50.3	53.4
CB-208	207	0.15	0.9	1.349	7.07	24		0.013	0.008	87.3	20.26	9.61	6.36	599.94	595.51	600.75	594.92	594.4	593.7	47.5	58.1
CB-503	CB-502	0.25	(N/A)	0.211	7.07	12		0.013	0.008	24	3.25	1.5	4.06	603.51	599.35	603.51	599.31	598.4	598.2	46.2	103.1
CB-507	CB-506	0.26	(N/A)	0.213	7.07	12		0.013	0.012	24	3.98	1.52	4.73	607.35	604.67	607.35	604.66	604.15	603.85	38.1	66.7
CB-509	CB-508	0.24	(N/A)	0.203	7.07	12		0.013	0.017	24	4.6	1.44	5.18	609.28	606.81	609.28	606.51	606.3	605.9	31.4	56
CB-505	CB-504	0.26	(N/A)	0.213	7.07	12		0.013	0.021	24	5.14	1.52	5.7	605.41	602.72	605.41	602.71	602.2	601.7	29.5	76.8
CB-109	CB-107	0.09	0.74	0.121	7.07	12		0.013	0.01	100	3.56	0.86	3.74	599.56	593.39	599.06	592.81	593	592	24.1	60
CB-225	CB-224	0.12	0.84	0.101	7.07	12		0.013	0.008	24	3.25	0.72	3.32	600.22	598.35	600.16	598.12	598	597.8	22.1	33.7
CB-221	CB-220	0.19	0.72	0.137	7.07	12		0.013	0.015	26	4.42	0.97	4.51	599.64	596.67	599.64	596.64	596.25	595.85	22.1	60.1
CB-219	CB-208	0.04	0.9	0.588	7.07	24		0.013	0.008	91.2	19.81	4.19	5	599.81	595.92	599.94	595.51	595.2	594.5	21.2	43.2
CB-218	CB-217	0.1	0.9	0.09	7.07	12		0.013	0.008	25.1	3.12	0.64	3.13	599.35	597.73	599.45	597.65	597.4	597.2	20.5	39.2

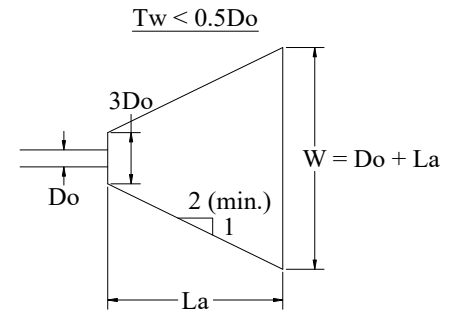
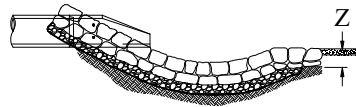
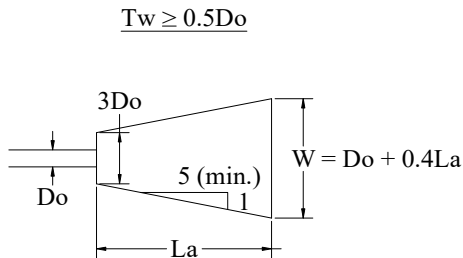
Riprap Channel Design Calculations

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Outfall Riprap Sizing and Velocity Calculations

Project	Brickyard Residential Development	Project #	52933.00
Calculated by	DJB	Date	10/25/2024
Checked by	TMD	Date	10/25/2024



OUTLET DESCRIPTION:

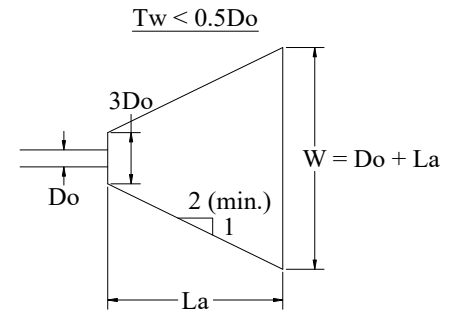
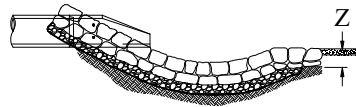
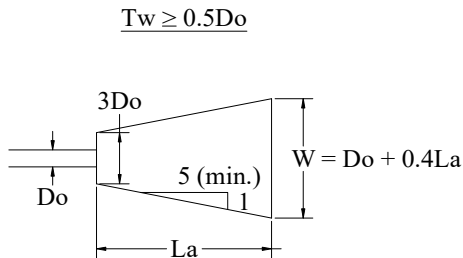
		FES-301	FES-400	FES-700	FES-1001	
Design Storm	(yr)	25	25	25	50	
Flow / Discharge (Q)	(cfs)	37.7	2.7	2.7	0.2	
Defined Channel ?	-	NO	NO	NO	NO	
Defined Channel Width	(ft)	0	0	0	0	
Outlet Pipe Diameter (D_o)	(in)	30	12	12	12	
Tailwater Condition (T_w)	(ft)	$T_w < 0.5D$	$T_w \geq 0.5D$	$T_w < 0.5D$	$T_w < 0.5D$	
Apron Length (L_A)	(ft)	12	6	6	6	
Apron Width at Outlet ($3D_o$)	(ft)	7.5	3	3	3	
Apron Width at End (W)	(ft)	14.5	3.4	7	7	
Median Stone Diameter (d_{50})	(in)	6	6	6	6	
Largest Stone Diameter	(in)	9	9	9	9	
Apron Depth (Z)	(in)	13.5	13.5	13.5	13.5	

Apron Length (L_A):	Length = From Virginia DCR Handbook - Plate 3.18-3	if $T_w < 0.5D$
	Length = From Virginia DCR Handbook - Plate 3.18-4	if $T_w \geq 0.5D$
Apron Width at Outlet ($3D_o$):	Width = 3 x pipe dia. (or width of channel)	
Apron Width at End (W):	Width = dia. + apron length	if $T_w < 0.5D$
	Width = dia. + 0.4 x apron length	if $T_w \geq 0.5D$
	or apron width = channel width if a well defined channel exists	
Rock Riprap:	Median Diameter (d_{50}) = From Virginia DCR Handbook - Plate 3.18-3 or 4	
	Largest stone dia = 1.5 x d_{50}	
Apron Depth (Z):	6" or 1.5 x largest stone dia	



Outfall Riprap Sizing and Velocity Calculations

Project	Brickyard Residential Development	Project #	52933.00
Calculated by	DJB	Date	12/3/2024
Checked by	TMD	Date	12/3/2024



OUTLET DESCRIPTION:

		HW-201	HW-802	HW-914		
Design Storm	(yr)	25	25	25		
Flow / Discharge (Q)	(cfs)	17.1	2.0	6.0		
Defined Channel ?	-	NO	NO	NO		
Defined Channel Width	(ft)	0	0	0		
Outlet Pipe Diameter (D_o)	(in)	30	12	12		
Tailwater Condition (T_w)	(ft)	$T_w < 0.5D$	$T_w < 0.5D$	$T_w < 0.5D$		
Apron Length (L_A)	(ft)	6	6	6		
Apron Width at Outlet ($3D_o$)	(ft)	7.5	3	3	0	
Apron Width at End (W)	(ft)	8.5	7	7	0	
Median Stone Diameter (d_{50})	(in)	6	6	6	6	
Largest Stone Diameter	(in)	9	9	9	9	
Apron Depth (Z)	(in)	13.5	13.5	13.5	13.5	

Apron Length (L_A):	Length = From Virginia DCR Handbook - Plate 3.18-3	if $T_w < 0.5D$
	Length = From Virginia DCR Handbook - Plate 3.18-4	if $T_w \geq 0.5D$
Apron Width at Outlet ($3D_o$):	Width = 3 x pipe dia. (or width of channel)	
Apron Width at End (W):	Width = dia. + apron length	if $T_w < 0.5D$
	Width = dia. + 0.4 x apron length	if $T_w \geq 0.5D$
	or apron width = channel width if a well defined channel exists	
Rock Riprap:	Median Diameter (d_{50}) = From Virginia DCR Handbook - Plate 3.18-3 or 4	
	Largest stone dia = 1.5 x d_{50}	
Apron Depth (Z):	6" or 1.5 x largest stone dia	

Riprap Channel Design Calculations

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Computations

Project:	52933.00	Project	Brickyard Residential Development
Location:	Lebanon, NH	Sheet	1 of 5
Calculated by:	TMD	Date:	10/25/2024
Checked by:	DHF	Date:	10/25/2024
Title	Perimeter Swale Design Calculations		

Site Data

Segment: Behind Townhomes

Storm Event = 100 year Q = CIA
Tributary Area = 477,758 ft²

C = 0.25
i = 5.72 in/hr
A = 10.96781 acres

Q_{Design} = 15.68 ft³/sec

Channel Data

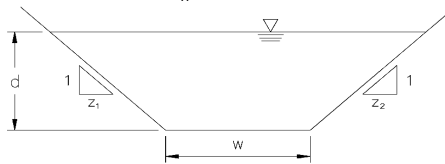
$Q = 1.486 A R^{2/3} s^{1/2}$

n = 0.04
s = 0.01 ft/ft
z₁ = 3 ft/ft
z₂ = 3 ft/ft
w = 5 ft
d_{Full} = 2 ft

A = 22 ft²
P_w = 17.65 ft
R_h = 1.25 ft

Q_{Full} = 94.73 ft³/sec
V_{Full} = 4.31 ft/sec

d_{Design} = 0.8 ft
A_{Design} = 5.92
V_{Design} = 2.65 ft/sec





Computations

Project:	52933.00	Project	Brickyard Residential Development
Location:	Lebanon, NH	Sheet	2 of 5
Calculated by:	TMD	Date:	10/25/2024
Checked by:	DHF	Date:	10/25/2024
Title	Perimeter Swale Design Calculations		

Site Data

Segment: Behind Building 5

Storm Event = 100 year Q = CIA
Tributary Area = 315,449 ft²

C = 0.25
i = 4.2 in/hr
A = 7.241713 acres

Q_{Design} = 13.95 ft³/sec

Channel Data

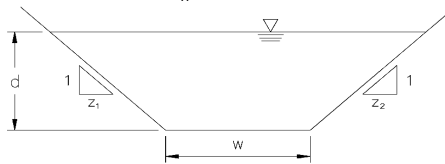
$Q = 1.486 A R^{2/3} s^{1/2}$

n = 0.035
s = 0.01 ft/ft
z₁ = 3 ft/ft
z₂ = 3 ft/ft
w = 5 ft
d_{Full} = 2 ft

A = 22 ft²
P_w = 17.65 ft
R_h = 1.25 ft

Q_{Full} = 108.27 ft³/sec
V_{Full} = 4.92 ft/sec

d_{Design} = 0.7 ft
A_{Design} = 4.97
V_{Design} = 2.81 ft/sec





Computations

Project:	52933.00	Project	Brickyard Residential Development
Location:	Lebanon, NH	Sheet	3 of 5
Calculated by:	TMD	Date:	10/25/2024
Checked by:	DHF	Date:	10/25/2024
Title	Perimeter Swale Design Calculations		

Site Data

Segment: Behind Building 5 Wall

Storm Event = 100 year Q = CIA
Tributary Area = 263,219 ft²

C = 0.25
i = 4.2 in/hr
A = 6.042677 acres

Q_{Design} = 6.34 ft³/sec

Channel Data

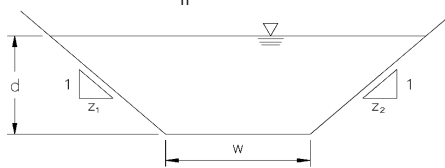
$Q = 1.486 A R^{2/3} s^{1/2}$

n = 0.035
s = 0.08 ft/ft
z₁ = 3 ft/ft
z₂ = 3 ft/ft
w = 2 ft
d_{Full} = 0.67 ft

A = 2.6867 ft²
P_w = 6.24 ft
R_h = 0.43 ft

Q_{Full} = 18.35 ft³/sec
V_{Full} = 6.83 ft/sec

d_{Design} = 0.25 ft
A_{Design} = 0.69
V_{Design} = 9.23 ft/sec





Computations

Project:	52933.00	Project	Brickyard Residential Development
Location:	Lebanon, NH	Sheet	4 of 5
Calculated by:	TMD	Date:	10/25/2024
Checked by:	DHF	Date:	10/25/2024
Title	Perimeter Swale Design Calculations		

Site Data

Segment: Behind Building 4 Wall

Storm Event = 100 year Q = CIA
Tributary Area = 202,312 ft²

C = 0.25
i = 3.8 in/hr
A = 4.644444 acres

Q_{Design} = 4.41 ft³/sec

Channel Data

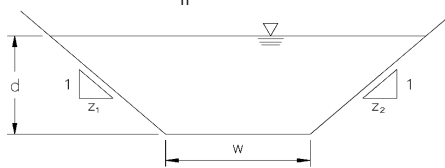
$Q = 1.486 A R^{2/3} s^{1/2}$

n = 0.035
s = 0.08 ft/ft
z₁ = 3 ft/ft
z₂ = 3 ft/ft
w = 3 ft
d_{Full} = 0.67 ft

A = 3.3567 ft²
P_w = 7.24 ft
R_h = 0.46 ft

Q_{Full} = 24.09 ft³/sec
V_{Full} = 7.18 ft/sec

d_{Design} = 0.2 ft
A_{Design} = 0.72
V_{Design} = 6.13 ft/sec





Computations

Project:	52933.00	Project	Brickyard Residential Development
Location:	Lebanon, NH	Sheet	5 of 5
Calculated by:	TMD	Date:	10/25/2024
Checked by:	DHF	Date:	10/25/2024
Title	Perimeter Swale Design Calculations		

Site Data

Segment: Behind Building 4

Storm Event = 100 year Q = CIA
Tributary Area = 246,543 ft²

C = 0.25
i = 3.8 in/hr
A = 5.659848 acres

Q_{Design} = 9.79 ft³/sec

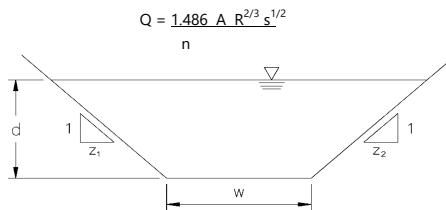
Channel Data

n = 0.035
s = 0.0125 ft/ft
z₁ = 3 ft/ft
z₂ = 3 ft/ft
w = 5 ft
d_{Full} = 2 ft

A = 22 ft²
P_w = 17.65 ft
R_h = 1.25 ft

Q_{Full} = 121.05 ft³/sec
V_{Full} = 5.50 ft/sec

d_{Design} = 0.54 ft
A_{Design} = 3.57
V_{Design} = 2.74 ft/sec



Inlet Capacity Calculations

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2 Bedford Farms Drive, Suite 200
Bedford, NH 03101
603.391.3900

Inlet Capacity

Project Brickyard Residential
Calculated by DJB
Checked by TMD

Project # 52933.00
Date 12/3/2024
Date 12/3/2024

CB #	Flow to CB (cfs)	Grate Type	Grate Area (sf)	Head (ft)	Head (in)	Grate Capacity (cfs)	Adequate Capacity (Y/N)
401	0.1	A	1.51	0.17	2.00	2.08	YES
405	0.1	A	1.51	0.17	2.00	2.08	YES
406	0.1	A	1.51	0.17	2.00	2.08	YES
402	0.2	A	1.51	0.17	2.00	2.08	YES
403	0.3	A	1.51	0.17	2.00	2.08	YES
406	0.6	A	1.51	0.17	2.00	2.08	YES
105	1.9	A	1.51	0.50	6.00	3.60	YES
107	0.6	A	1.51	0.17	2.00	2.08	YES
109	0.5	A	1.51	0.50	6.00	3.60	YES
110	0.4	A	1.51	0.50	6.00	3.60	YES
108	0.5	A	1.51	0.17	2.00	2.08	YES
102	0.2	A	1.51	0.17	2.00	2.08	YES
103	0.5	A	1.51	0.17	2.00	2.08	YES
208	1.0	A	1.51	0.50	6.00	3.60	YES
210	0.6	A	1.51	0.50	6.00	3.60	YES
211	0.8	A	1.51	0.50	6.00	3.60	YES
219	0.3	A	1.51	0.50	6.00	3.60	YES
220	0.5	A	1.51	0.50	6.00	3.60	YES
221	1.0	A	1.51	0.50	6.00	3.60	YES
222	1.2	A	1.51	0.50	6.00	3.60	YES
224	0.6	A	1.51	0.17	2.00	2.08	YES
225	0.7	A	1.51	0.17	2.00	2.08	YES
212	0.5	A	1.51	0.17	2.00	2.08	YES
215	0.8	A	1.51	0.50	6.00	3.60	YES
217	0.9	A	1.51	0.50	6.00	3.60	YES
218	0.6	A	1.51	0.50	6.00	3.60	YES
216	0.5	A	1.51	0.50	6.00	3.60	YES
213	0.3	A	1.51	0.17	2.00	2.08	YES
209	0.8	A	1.51	0.50	6.00	3.60	YES
226	0.3	A	1.51	0.50	6.00	3.60	YES
501A	0.3	A	1.51	0.17	2.00	2.08	YES
502	1.6	A	1.51	0.17	2.00	2.08	YES
504	1.7	A	1.51	0.17	2.00	2.08	YES
506	0.8	A	1.51	0.17	2.00	2.08	YES
508	1.3	A	1.51	0.17	2.00	2.08	YES
509	1.4	A	1.51	0.17	2.00	2.08	YES
507	1.5	A	1.51	0.17	2.00	2.08	YES
505	1.5	A	1.51	0.17	2.00	2.08	YES
503	1.5	A	1.51	0.17	2.00	2.08	YES
501B	0.3	A	1.51	0.17	2.00	2.08	YES
228	0.5	A	1.51	0.17	2.00	2.08	YES
229	0.7	A	1.51	0.17	2.00	2.08	YES

Notes:

1. CxA values from StormCAD analysis
2. Grate Types:

Name
East Jordan 5520M5 (Single)

Type
A

Area (sf)
1.51

Appendix D: Site Specific Soil Survey Report

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To: Dave Fenstermacher, PE

Date: January 9, 2024
Project #: 52933.00

Memorandum

From: Sherrie Trefry, CSS

Re: Site-Specific Soil Mapping Report

Vanasse Hangen Brustlin, Inc. (VHB) has prepared this Site-Specific Soil Mapping Report to accompany the soils map that was prepared for TRB Group in Lebanon, New Hampshire. Certified Soil Scientist, Sherrie Trefry, CSS #93, developed a soils map on October 5th and 6th to classify the soils within ~35 acres of Lot 1, 2, and 4 on Map #48 and Lot 1 on Map #63. The property is being evaluated for a proposed residential development off Hanover Street. This Site-Site Specific Soil Map (SSSM) and Report were developed in accordance with Site-Specific Soil Mapping Standards For New Hampshire and Vermont, Special Publication No. 3, Version 7.0 (July 2021). The soils map was prepared on an existing condition plan at a scale of 1" = 80' Attachment 1.

Portions of the site have been previously developed for industrial and residential uses. Lot 4 was previously developed for brick production. There were several storage buildings, two brick kilns, and a smokestack still present on the lot at the time of the evaluation. The brickyard used a large deposit of clay from the site to make the bricks. The excavation of clay resulted in the creation of the existing pond on Lot 2 of the site. The operation of the brickyard resulted in most of Lot 4 and a portion of Lot 2 west of Lot 4 being disturbed. Excavations revealed buried urban fill consisting mostly of brick, brick dust, and other materials from the production process across most of the lot. The edge of disturbance was mapped west of Lot 4 in Lot 2 between a dump, mapped off the north corner of Lot 4, and the edge of the wetland that extends from Lot 2 south into Lot 4.

Lot 1 of Map #63 was previously developed for residential use. There was a house with an attached garage at the front of the lot, a cottage at the back of the lot near the stream that bisects the parcel and several small outbuildings on the lot at the time of the evaluation. The portion of the lot north of the existing house and east of the stream is a maintained lawn over undisturbed soil deposits. West of the stream portions of the ledge have been quarried leaving open water wetlands in some of the quarried areas.

Lot 1 on Map #48 is undeveloped with a portion of the lot having frontage on Hanover Street. The lot contains wetlands and a portion of the stream that flows across Lot 1 on Map #63 through this lot and into the pond on Lot 4. A large stand of the non-native Japanese knotweed extends between the wetland and the stream. The portion of the site west of the stream is forested and is contiguous with the forested portion of Lot 2.

The area evaluated, as depicted on the SSSM, the site contains soils formed in glacial lacustrine, eolian, or alluvial materials. The site is nearly level near Hanover Street at elevation ~580 ft ABMSL. The site rises to the west with moderate slopes giving way to steeper slopes that correspond with underlying ledge within 40 inches of the surface. The delineation of Hollis, Chatfield and Montauk series was not possible without an excavator given the extensive amount of ledge and surface stones in the area. Therefore, complexes were used as part of this SSSM. The ledge outcrops were delineated with sub-meter accuracy GPS.

The brick manufacturing lot was classified using disturbed soil classifications and modifiers to describe the observation of urban fill in much of that area. The table below summarizes the observed soil series and characteristics identified on the soil map. Official soil descriptions are provided in Attachment 2.

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Test Pit Observations:

Test Pit 1	Located just beyond the dump and disturbance associated with the brick production operation within a forested portion of Lot 2. Pit was located on a 3-8% slope. Moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. Soil classification: Pittstown Seasonal high-water table at ~25 inches No observed, bedrock, gravel/rocks, or surface stones Many stones and						
Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-2.5"	Oe	7.5YR 3/2	loam	granular	very friable	none	Many fine to medium roots
2.5-6.5"	A	2.5Y 4/3	loam	granular	very friable	none	Many fine to medium roots
6.5-13.5"	AB	2.5Y 5/3	silt loam	subangular blocky	friable	few, faint concentrations	Many fine to medium roots
13.5-19"	B ₁	2.5Y 6/2	silt loam	subangular blocky	firm	few, faint concentrations	Few fine-medium roots
19-23"	Cd	5Y 5/2	silt loam	platy	very firm	distinct, many concentrations 10YR 4/4 depletions 5Y 6/1	Few fine-medium roots
23-40"	C	5Y 5/2	silt loam	platy	firm	Distinct, many concentrations 2.5Y 5/4 depletions 2.5Y 6/1	Color of depletions represented more than 50% of color in profile

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Test Pit 3	Located upslope of Test Pit 1 within a forested area that appears undisturbed. The pit was located on a 3-8% slope. Pit was representative of the lower elevation well drained soils on the western portion of the site that have a densic contact. These are very deep, well drained soils formed in till derived mainly from dark gray phyllite, slate, or schist. Soil classification: Bernardston, very stony No observed seasonal high-water table or bedrock Stones and boulders within the profile						
Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-5"	Oa	2.5Y 2.5/2	loam	granular	very friable	no redox	some fine, medium, large roots
5-9"	A	10YR 4/6	fine sandy loam	granular	very friable	no redox	some fine, medium, large roots
9-15"	Bw ₁	2.5Y 4/3	fine sandy loam	subangular blocky	friable	no redox	some fine, medium, large roots
15-22"	Bw ₂	2.5Y 5/3	silt loam	Subangular blocky	firm	no redox	some fine, medium, large roots
22-40"	Cd	5Y 4/2 and 2.5Y 6/1	silt loam	platy	very firm	no redox	some fine roots

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Test Pit 4	Located upslope of Test Pit 3 within a forested area that appears undisturbed. The pit was located on a 8-15% slope. Pit was representative of the higher elevation well drained soils on a large portion of the site that have a densic contact. These soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. Soil classification: Montauk, very stony No observed seasonal high-water table or bedrock Stones and gravel within the profile Many surface boulders and stones						
Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-12"	O	10 YR 2/2	loam	granular	very friable	no redox	many fine and medium roots
12-16"	E	7.5Y 5/1	loamy sand	granular	very friable	no redox	many fine and medium roots
16-35"	Bs	7.5YR 4/4	fine sandy loam	subangular blocky	friable	no redox	many fine and medium roots to about 24"
35-40"	Cd	5Y 5/2	fine sandy loam	Subangular blocky	firm	no redox	

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Test Pit 16	Located just behind the existing house within a maintained lawn. Pit was located on a 3-8% slope. Moderately well drained soils formed in in loamy over sandy and gravelly glacial outwash. These soils are very deep formed on glaciofluvial landforms. Soil classification: Ninigret Seasonal high-water table at ~36 inches No observed bedrock or surface stones						
Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-8"	A	10 YR 3/3	fine sandy loam	subangular blocky	friable	no redox	many fine roots,10% gravel
8-12"	Bh	10 YR 3/6	fine sandy loam	subangular blocky	very friable	no redox	many fine roots to 10", 30-50% gravel and cobbles
12-24"	Bw	2.5Y 4/4	loamy fine sand	granular	very friable	no redox	35-50% gravel and cobbles
24-36"	C ₁	2.5Y 4/4	loamy sand	granular	very friable	no redox	35-50% gravel and cobbles
36-40"	C ₂	2.5Y 3/3	loamy sand	granular	friable	Faint, many concentrations 7.5Y 4/4 depletions 2.5Y 5/2	50% gravel and cobbles
40+ "	C ₃	2.5Y 5/2	very fine sand	platy	firm	Faint, many concentrations 7.5Y 4/3 depletions 2.5Y 6/2	lenses of silt present

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Test Pit 19	Located within the maintained lawn adjacent to the house near the apple tree. The pit was located on a 0-3% slope. Pit was representative of the well drained soils on the eastern portion of the site near the residence. These are very deep, well drained soils formed in loamy over sandy and gravelly outwash. Soil classification: Haven No observed seasonal high-water table or bedrock No observed bedrock or surface stones						
Depth	Horizon	Color	Texture	Structure	Consistence	Redox	Other observations
0-12"	Ap	10YR 3/2	fine sandy loam	subangular blocky	friable	no redox	many fine roots, 5% gravel
12-20"	Bhs	7.5YR 3/3	fine sandy loam	subangular blocky	friable	no redox	many fine roots to 10", 10% gravel
20-28"	Bh	2.5Y 4/3	loamy fine sand	granular	very friable	no redox	35-50% gravel and cobbles
28-36"	C ₁	2.5Y 4/3	medium – coarse sand	granular	very friable	no redox	35-50% gravel and cobbles
36-40"	C ₂	2.5Y 4/3	medium – coarse sand	granular	very friable	few faint concentrations 10YR 4/4	35-50% gravel and cobbles

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Hollis – Rock Outcrop – Chatfield Complex	Site and Soil Photos
Ledge outcrops observed in the northeast region of the site.	
Soil observation of Hollis Series. These are well drained soils formed in a thin mantle of till that are shallow to bedrock.	
Soil observation of Chatfield Series. These are well drained soils formed in loamy melt-out till. They are moderately deep to bedrock. Observed colors of sandy loam soils with no gravel Bw₁ 10YR 3/6 Bw₂ 10YR 5/6 C 2.5Y 4/6 R – bedrock observed at 16"	



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Urban Fill and Disturbed Soils	Site and Soil Photos
Test pit 6 located adjacent to the open water channel on the brick making property. Urban fill observed within 40" with no natural soil horizons observed. Free water was observed at 54" which is similar to the surface water depth in the adjacent channel. There was an odor detectable during excavation of the pit.	
Test pit 7 located adjacent to the open water channel west of the test pit 6 in front of a warehouse on the brick making property. Urban fill including brick pieces and brick dust observed down to 60" with no natural soil horizons observed. Free water was observed at 24" which is shallower than the surface water depth in the adjacent channel.	
	

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Test pit 10 is located close to one of the brick ovens seen here behind the spoils pile. Urban fill was observed down to 60" with no native soil horizons observed. The first 24" contained sandy texture soils with brick debris. At depth 24" or greater, gray colors and silty loam textures were observed that may indicate native soils. Observed free water at 40".



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Test pit 13 was located east of the warehouse located to the right of the smokestack visible in the adjacent photo. No brick fill or dark soil observed as compared to the other pits excavated on the brickmaking property. Sandy loam soils observed over clay soils with a color of 2.5Y 5/1. Clay depth at 36" that is saturated with a seasonal high water table of 36".





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Soil symbol	Soil series; Taxonomic class	Soil Unit Map Description
540B/P	Raypol; Coarse-loamy over sandy or sandy-skeletal, mixed, active, acid, mesic Aeric Endoaquepts	Very deep, poorly drained soils formed in loamy over sandy and gravelly outwash. This soil is on gently sloping soils on a shallow drainageway. The soil has a water table near the surface. Permeability of the Raypol soils is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. This soil is on a 3-8% slope. Hydrologic Soil Group D.
540D/P	Raypol; Coarse-loamy over sandy or sandy-skeletal, mixed, active, acid, mesic Aeric Endoaquepts	Very deep, poorly drained soils formed in loamy over sandy and gravelly outwash. This soil is uncharacteristically on a steep slope because the area was historically excavated. The soil has a water table near the surface. Permeability of the Raypol soils is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. This soil is on a 15-25% slope. Hydrologic Soil Group D.
513A	Ninigret; Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquic Dystrudepts	Very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. This soil formed on a glaciofluvial landform with characteristics of an outwash plain. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. This soil is on a 0-3% slope. Hydrologic Soil Group B.
513B	Ninigret; Coarse-loamy over sandy or sandy-skeletal,	Very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. This soil formed on a glaciofluvial landform. Saturated hydraulic conductivity is moderately high or



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	mixed, active, mesic Aquic Dystrudepts	high in the solum and high or very high in the substratum. This soil is gently sloping a 3-8% slope. Hydrologic Soil Group B.
917A	Ninigret Variant; Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquic Dystrudepts	Very deep, somewhat poorly drained soils formed in loamy over sandy and gravelly glacial outwash. This soil formed on a glaciofluvial landform with characteristics of an outwash plain. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. This soil is on a 0-3% slope. Hydrologic Soil Group C.
917C	Ninigret Variant; Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquic Dystrudepts	Very deep, somewhat poorly drained soils formed in loamy over sandy and gravelly glacial outwash. This soil formed on a glaciofluvial landform with characteristics of an outwash plain. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. This soil is on a 8-15% slope. Hydrologic Soil Group C.
917D	Ninigret Variant; Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquic Dystrudepts	Very deep, somewhat poorly drained soils formed in loamy over sandy and gravelly glacial outwash. This soil formed on a glaciofluvial landform with characteristics of an outwash plain. This soil is uncharacteristically on a steep slope because the area was historically excavated. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. This soil is on a 15-25% slope. Hydrologic Soil Group C.
299A/ cbaaa	Smoothed Udorthents	Very deep, well drained filled area with parent material formed from glacial outwash. Area was filled with on-site materials and regraded likely for the construction of the existing house. Observed water at 36". This soil is on a 0-3% slopes. Hydrologic Soil Group A.
410A	Haven; Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Typic Dystrudepts	Very deep, well drained soils formed in loamy over sandy and gravelly outwash. The soil is nearly level on an outwash plain. Saturated hydraulic conductivity is moderately high or high in the mineral solum and very high in the substratum. This soil is on a 0-3% slopes. Hydrologic Soil Group B.

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200B/ dccbb	Smoothed Udorthents	This is a disturbed soil that has been used as a refuse dump. Underlying soils are moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. The soil is on a 3-8% slope. Hydrologic Soil Group B.
200C/ dccbb	Smoothed Udorthents	This is a disturbed soil that has been used as a refuse dump. Underlying soils are moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. The soil is on a 8-15% slope. Hydrologic Soil Group B.
200D/ dccbb	Smoothed Udorthents; refuse substratum	This is a disturbed soil that has been used as a refuse dump. Underlying soils are moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. The soil is on a 15-25% slope. Hydrologic Soil Group B.
299A/ caabb	Smoothed Udorthents	Very deep, well drained filled area with no parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has no restrictive layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 0-3% slopes.
299A/ daabb	Smoothed Udorthents	Very deep, moderately well drained filled area with no parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has no restrictive layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 0-3% slopes.
299B/ caabb	Smoothed Udorthents	Very deep, well drained filled area with no parent material within 60 inches. Area was filled with on-site materials consisting largely of

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		brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has no restrictive layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 3-8% slopes.
299C/ caabb	Smoothed Udorthents	Very deep, well drained filled area with no parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has no restrictive layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 8-15% slopes.
299D/ caabb	Smoothed Udorthents	Very deep, well drained filled area with no parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has no restrictive layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 15-25% slopes.
299C/ cccbb	Smoothed Udorthents	Very deep, moderately well drained filled area with glacial till parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has a mineral densic layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 8-15% slopes.
299D/ cccbb	Smoothed Udorthents	Very deep, moderately well drained filled area with glacial till parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has a mineral densic layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 15-25% slopes.
299E/ cccbb	Smoothed Udorthents	Very deep, moderately well drained filled area with glacial till parent material within 60 inches. Area was filled with on-site materials

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		consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has a mineral densic layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 25-50% slopes.
600C/ fccbb/P	Endoaquents	Very deep, moderately poorly drained filled area with glacial till parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has a mineral densic layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 8-15% slopes.
600A/fccbb/P	Endoaquents	Very deep, moderately poorly drained filled area with glacial till parent material within 60 inches. Area was filled with on-site materials consisting largely of brick pieces, brick dust, ash and regraded materials from the surrounding site. This soil has a mineral densic layer and moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 8-15% slopes.
600A/fcdcd/P	Endoaquents	Shallow poorly drained soils created from the excavation of bedrock. These soils were formed in glacial till. Area had standing water at the time of evaluation. Bedrock was within 20 inches. Soil was on a 0-3% slope at the base of rock outcrops. Hydrologic Soil Group D.
336B	Pittstown, Coarse-loamy, mixed, active, mesic Aquic Dystrudepts	Moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. The soil is on a 3-8% slope. Hydrologic Soil Group C.
331A	Bernardston, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Very deep, well drained soils formed in till derived mainly from dark gray phyllite, slate, or schist. The soils are moderately deep to dense till. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. The soil is on a 0-3% slope. Hydrologic Soil Group C.

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331B	Bernardston, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Very deep, well drained soils formed in till derived mainly from dark gray phyllite, slate, or schist. The soils are moderately deep to dense till. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. The soil is on a 3-8% slope. Hydrologic Soil Group C.
331C	Bernardston, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Very deep, well drained soils formed in till derived mainly from dark gray phyllite, slate, or schist. The soils are moderately deep to dense till. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. The soil is on a 8-15% slope. Hydrologic Soil Group C.
45B	Montauk, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Well drained soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. The soils are very deep to bedrock and moderately deep to a densic contact. These soils are located along the less steep upland hill slope on the site. Saturated hydraulic conductivity is moderately high or high in the mineral solum and low to moderately high in the substratum. The soil is on a 3-8% slope.
45C	Montauk, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Well drained soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. The soils are very deep to bedrock and moderately deep to a densic contact. These soils are located along the less steep upland hill slope on the site. Saturated hydraulic conductivity is moderately high or high in the mineral solum and low to moderately high in the substratum. The soil is on a 8-15% slope. Hydrologic Soil Group C.
45D	Montauk, Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts, very stony	Well drained soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. The soils are very deep to bedrock and moderately deep to a densic contact. These soils are on upland hills and moraines. Slope ranges from 0 to 35 percent. Saturated hydraulic conductivity is moderately

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		high or high in the mineral solum and low to moderately high in the substratum. Hydrologic Soil Group C.
141B	Hollis-rock outcrop – Chatfield complex	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. These soils are located along the steep slope of the upland hill that extends to the northeast. Rock out crops were abundant along the hill side. There is too much variability to delineate between the series. Saturated hydraulic conductivity is moderately high or high in the mineral soil. The soil is on a 3-8% slope. Hydrologic Soil Group C.
141C	Hollis-rock outcrop – Chatfield complex	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. These soils are located along the steep slope of the upland hill that extends to the northeast. Rock out crops were abundant along the hill side. There is too much variability to delineate between the series. Saturated hydraulic conductivity is moderately high or high in the mineral soil. The soil is on a 8-15% slope. Hydrologic Soil Group C.
141D	Hollis-rock outcrop – Chatfield complex	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. These soils are located along the steep slope of the upland hill that extends to the northeast. Rock out crops were abundant along the hill side. There is too much variability to delineate between the series. Saturated hydraulic conductivity is moderately high or high in the mineral soil. The soil is on a 15-25% slope. Hydrologic Soil Group C.



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141E	Hollis-rock outcrop – Chatfield complex	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. These soils are located along the steep slope of the upland hill that extends to the northeast. Rock out crops were abundant along the hill side. There is too much variability to delineate between the series. Saturated hydraulic conductivity is moderately high or high in the mineral soil. The soil is on a 25-35% slope. Hydrologic Soil Group C.
250B	Chatfield – Hollis – Montauk complex, very stony	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. Montauk series consists of well drained soils formed in lodgment till derived primarily from granitic materials with lesser amounts of gneiss and schist. These soils are very deep to bedrock and moderately deep to a densic contact. There is too much variability to delineate between the series with the amount of stone present. The soils occurs on gently sloping foothill on 3-8% slope. Hydrologic Soil Group C.
250C	Chatfield – Hollis – Montauk complex, very stony	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well drained soils formed in loamy melt-out till that are moderately deep to bedrock. Montauk series consists of well drained soils formed in lodgment till derived primarily from granitic materials with lesser amounts of gneiss and schist. These soils are very deep to bedrock and moderately deep to a densic contact. There is too much variability to delineate between the series with the amount of stone present. The soils occurs on gently sloping foothill on 8-15% slope. Hydrologic Soil Group C.
250D	Chatfield – Hollis – Montauk complex, very stony	Hollis series consists of well drained soils formed in a thin mantle of till that are shallow to bedrock. Chatfield series consists of well

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		drained soils formed in loamy melt-out till that are moderately deep to bedrock. Montauk series consists of well drained soils formed in lodgment till derived primarily from granitic materials with lesser amounts of gneiss and schist. These soils are very deep to bedrock and moderately deep to a densic contact. There is too much variability to delineate between the series with the amount of stone present. The soils occurs on gently sloping foothill on 15-25% slope. Hydrologic Soil Group C.
500B/ccfbb	Udorthents, loamy	These are well drained soils that have been excavated on the edge of the pond likely during the removal of clay for the brick manufacturing process. These soils were formed in glacial till with bedrock that is too variable to distinguish. Moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 3-8% slopes. Hydrologic Soil Group B.
500C/ccfbb	Udorthents, loamy	These are well drained soils that have been excavated on the edge of the pond likely during the removal of clay for the brick manufacturing process. These soils were formed in glacial till with bedrock that is too variable to distinguish. Moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 8-15% slopes. Hydrologic Soil Group B.
500E/ccfbb	Udorthents, loamy	These are well drained soils that have been excavated on the edge of the pond likely during the removal of clay for the brick manufacturing process. These soils were formed in glacial till with bedrock that is too variable to distinguish. Moderate saturated hydraulic conductivity and is Hydrologic Soil Group B. This soil is on a 25-35% slopes. Hydrologic Soil Group B.

Disturbed Map Units

This edition of the New Hampshire State-Wide Numerical Soil Legend contains eleven distinct map units used for identifying areas of soils altered or disturbed by human influence and the addition of one naturally formed map unit. These map units were designed for the Order 2 and Order 3 levels of mapping intensity, but can be used in Order 1 mapping if appropriate.

The definition of disturbed map units is intentionally brief and vague. Classification at the Great Group level allows for a wide range in soil properties and behavioral characteristics. The variability in soil properties typically requires on-site investigations before any interpretation can be developed. The map unit descriptions are intended to provide guidance in differentiating map units. The author of the soil map is expected to provide additional information to reflect the nature of the disturbed areas within the survey area.

I. Excavated land

300 Udipsamments

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from excessively drained to well drained. The Hydrologic Soil Group (HSG) is A. Typical sand pit.

350 Udipsamments, wet substratum

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from moderately well drained to somewhat poorly drained.

400 Udorthents, sandy or gravelly

This map unit typically includes the following concepts: 1) very gravelly (> 35%) sand or very gravelly loamy sand; Or 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class ranges from excessively drained to somewhat poorly drained. Typical gravel pit.

Disturbed Map Units (continued)

500 Udorthents, loamy

This map unit is characterized typically by soil textures that are sandy loam, loam, or silt loam within the particle size control section (25 – 100cm or 10 – 40"). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class ranges from well drained to somewhat poorly drained. These areas typically represent excavated glacial till or perhaps areas where sand and gravel was excavated down to the loamy underlying material.

550 Udorthents, Bedrock substratum

This map unit is characterized by soil textures of sandy loam, loam, or silt loam within the particle-size class control section (25 - 100 cm or 10 - 40 inches). These areas typically represent excavated soil materials where the range in depth to bedrock is 10 - 60 inches (25 - 152 cm). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class ranges from somewhat excessively drained to somewhat poorly drained.

600 Endoaquents, loamy

This map unit represents areas where soil material was excavated down to, or near the water table. Soil material is typically sandy loam, loam or silt loam within the particle-size class control section (25 - 100 cm or 10 - 40 inches). Saturated hydraulic conductivity (K_{sat}) is low through high. Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D.

900 Endoaquents, sandy or gravelly

This map unit represents areas where soil material was excavated down to / near the water table. This map unit is characterized typically by soil textures of: 1) very gravelly (> 35% gravel) sand or very gravelly loamy sand or; 2) sand or loamy sand textures that may have lenses of loamy very fine sand or finer somewhere in the particle-size class control section (25 - 100 cm or 10 - 40"). Saturated hydraulic conductivity (K_{sat}) is high or very high. Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D. Typical gravel pit dug down to or close to the water table.

Disturbed Map Units (continued)

II. Filled land

100 Udorthents, wet substratum

This map unit represents areas that have been filled and leveled over what were originally hydric soils.

199 Dumps, bark chips, and organic material

This map unit consists of man-made deposits of bark, wood chips, sawdust, paper mill sludge, cinders, waste paper, ashes, and other similar refuse from the operation of paper mills and sawmills.

200 Udorthents, refuse substratum

This map unit represents alternating layers of soil and refuse such as in sanitary landfills. Closed landfills typically have 2 feet of loamy material capping the area.

299 Udorthents, smoothed

This map unit represents areas that have been cut and filled to create a large level or nearly level area. Soil material making up the map units typically came from the immediate area. School athletic fields are an example (unless they were created on hydric soils – see Map Unit 100).

III. Bottom Land

7 Fluvaquents

This map unit represents areas of various kinds of soil materials on the bottom lands of streams and rivers. The soil material ranges in texture from silt loam to sand and gravel within the particle-size class control section (25 - 100 cm or 10 - 40 inches). Drainage class is poorly or very poorly drained. The Hydrologic Soil Group (HSG) is D.

Disturbed Map Units (continued)**Catena Key for Excavated & Bottom Land**

Disturbed Map Units	Map Unit						
	Drainage Class						
	Excessively Drained	Somewhat Excessively Drained	Well Drained	Moderately Well Drained	Somewhat Poorly Drained	Poorly Drained	Very Poorly Drained
<i>Parent Material</i>							
I. Excavated Land							
<i>Typically sands</i>	300 Udipsamments nearly level	300 Udipsamments nearly level	300 Udipsamment nearly level	350 Udipsamments wet substratum	350 Udipsamments wet substratum	900 Endoaquents sandy or gravelly	900 Endoaquents, sandy or gravelly
<i>Typically gravels</i>	400 Udorthents, sandy or gravelly	400 Udorthents, sandy or gravelly	400 Udorthents, sandy or gravelly	400 Udorthents, sandy or gravelly	400 Udorthents, sandy or gravelly	900 Endoaquents sandy or gravelly	900 Endoaquent, sandy or gravelly
<i>Typically loams</i>			500 Udorthents, loamy	500 Udorthents, loamy	500 Udorthents, loamy	600 Endoaquents loamy	600 Endoaquent, loamy
<i>Bedrock controlled loams</i>		550 Udorthents, Bedrock substratum	550 Udorthents, Bedrock substratum	550 Udorthents, Bedrock substratum	550 Udorthents, Bedrock substratum	600 Endoaquents loamy	600 Endoaquent, loamy
III. Bottom Land							
<i>Typically silt loam to sands and gravels</i>						7 Fluvaquents	7 Fluvaquents

NOTE: Filled soils in Section II page 21 are too variable to place into the above key.

4. Use of the map symbol denominators for disturbed or altered soils, is at the discretion of the Certified Soil Scientist.

Map Symbol Denominators for Disturbed or Altered Soil Map Units

The map symbols for Site-Specific Soil Mapping of disturbed or altered soils in New Hampshire is a two-part symbol with parts separated by a forward slash (/).

The first part consists of the USDA-NRCS Disturbed Map Unit symbol from the NH State-Wide Numerical Soil Legend. The map symbol is composed of 1 to 3 digits followed by a capital letter designating slope.

The second part consists of symbols of the SSSNNE NH Disturbed or Altered Soil Supplement to the Site-Specific Soil Survey Standards, as detailed below. The disturbed map symbol is composed of 5 lower case letters.

A Site-Specific Map symbol for a map prepared for an AoT application would be formatted as follows: **400A/aaaaa**

These New Hampshire Disturbed Soil Supplemental symbols can only be used in conjunction with the USDA-NRCS Disturbed Map Unit symbols for the NH Statewide Numerical Soil Legend.

Supplemental Symbols

Supplemental symbols may be used at the discretion of the Certified Soil Scientist who creates the Site-Specific Soil Survey. The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

Symbol 1: Drainage Class

- a -Excessively Drained
- b-Somewhat Excessively Drained
- c-Well Drained
- d-Moderately Well Drained
- e-Somewhat Poorly Drained
- f-Poorly Drained
- g-Very Poorly Drained
- h-Not Determined

Symbol 2: Parent Material (of naturally formed soil only, if present)

- a-No natural soil within 60"
- b-Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
- c-Glacial till Material (active ice)
- d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
- e-Loamy/sandy over Silt/Clay deposits
- f-Marine Silt and Clay deposits (ocean waters)
- g-Alluvial Deposits (floodplains)
- h-Organic Materials-Fresh water wetlands
- i- Organic Materials-Tidal wetlands

Symbol 3: Restrictive/Impervious Layers

a-None

b-Bouldery surface with more than 15% of the surface covered with boulders

c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm (i.e., more than 20 newtons). For other examples of soil characteristics that qualify for restrictive layers, see "Soil Manual for Site evaluations in NH" 2 Ed., (page 3-17, figure 3-14)

d-Bedrock in the soil profile; 0-20 inches

e-Bedrock in the soil profile; 20-60 inches

f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types

g-Subject to Flooding

h-Man-made impervious surface including pavement, concrete, or built-up surfaces (i.e., buildings) with no morphological restrictive layer within control section

Symbol 4: Estimated Ksat* (most limiting layer excluding symbol 3h above).

a- High.

b- Moderate

c- Low

d- Not determined *See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

Symbol 5: Hydrologic Soil Group*

a-Group A

b-Group B

c-Group C

d-Group D

e-Not determined

*Excluding man-made surface impervious/restrictive layers

Established Series
Rev. SMF-DAF-MFF
07/2004

BERNARDSTON SERIES

The Bernardston series consists of very deep, well drained soils formed in till derived mainly from dark gray phyllite, slate, or schist. The soils are moderately deep to dense till. They are nearly level to very steep soils on uplands. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. Slope ranges from 0 to 50 percent. The mean annual temperature is about 49 degrees F. and the mean annual precipitation is about 45 inches.

TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts

TYPICAL PEDON: Bernardston silt loam, on a 10 percent slope in a cultivated field. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; very friable; 5 percent phyllite channers; many fine roots; strongly acid; abrupt smooth boundary. (5 to 10 inches thick)

Bw1--6 to 10 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; 10 percent phyllite channers; many fine roots; strongly acid; gradual smooth boundary.

Bw2--10 to 20 inches; olive brown (2.5Y 4/4) channery silt loam; weak fine granular structure; very friable; common fine roots; 15 percent phyllite channers; strongly acid; abrupt wavy boundary. (Combined thickness of the Bw horizons is 7 to 25 inches.)

Cd1--20 to 36 inches; olive gray (5Y 4/2) channery silt loam; weak medium platy structure; very firm; few roots in upper part; few to common fine discontinuous vesicular pores; thin discontinuous films in pores; 25 percent phyllite and slate channers; strongly acid; gradual smooth boundary. (10 to 25 inches thick)

Cd2--36 to 65 inches; olive gray (5Y 4/2) channery silt loam; weak medium platy structure; firm; 30 percent phyllite and slate channers; strongly acid.

TYPE LOCATION: Franklin County, Massachusetts; town of Bernardston, 100 feet west of U.S. Route 5 at a point 0.4 miles north of the intersection of U.S. Route 5 and Massachusetts Route 10. Bernardston 7 1/2 minute quadrangle; latitude 42 degrees 40 minutes 38 seconds North and longitude 72 degrees 33 minutes 10 seconds West, NAD 27.

RANGE IN CHARACTERISTICS: Solum thickness commonly ranges from 20 to 30 inches and generally is the same as the depth to the dense substratum. The solum is silt loam, loam, or very fine sandy loam in the fine-earth fraction with more than 65 percent silt plus very fine sand. The volume of rock fragments larger than 3 inches ranges from 0 to 25 percent in the A horizon and 0 to 10 percent in the B and C horizons. Rock fragments smaller than 3 inches range from 5 to 25 percent in the A and B horizons, and 5 to 35 percent in the C horizon. The soil ranges from very strongly acid to moderately acid except where limed.

Some pedons have an O horizon 1 to 4 inches thick.

The Ap or A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. The A horizon has weak or moderate, fine or medium granular structure and friable or very friable consistence.

Some pedons have an E horizon 1 to 3 inches thick that has hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 0 to 2.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. Hue of 7.5YR is restricted to the upper part of the Bw horizon. The Bw horizon has weak or moderate, fine or medium granular structure or weak, fine or medium subangular blocky structure and very friable or friable consistence.

Some pedons have a BC horizon with characteristics similar to the lower part of the Bw.

The Cd horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It has weak or moderate, medium platy structure or it is massive. Fine-earth texture is silt loam, loam, or very fine sandy loam. It is firm or very firm.

COMPETING SERIES: [Amostown](#), [Broadbrook](#), [Horseneck](#) (tentative), [Nantucket](#), [Paxton](#), [Scituate](#), and [Wethersfield](#) soils are in the same family. Amostown soils are underlain by stratified very fine sand or silt within a depth of 40 inches. Broadbrook soils have a lithologic discontinuity at the top of the substratum. Horseneck soils do not have dense materials in the substratum. Scituate soils have sandy substrata. Nantucket soils have a lithologic discontinuity and formed in till mixed with Pleistocene Age silts and clays. Paxton soils have less than 65 percent silt plus very fine sand in the solum. Wethersfield soils have hues of 2.5YR or 5YR in the B horizon.

GEOGRAPHIC SETTING: Bernardston soils are nearly level to very steep and are on glaciated uplands and drumlins. Slope is commonly 8 to 25 percent, but ranges from 0 to 50 percent. The soils formed in acid, dense till derived mainly from dark gray phyllite, shale, slate, and schist. Mean annual temperature ranges from 45 to 52 degrees F. Mean annual precipitation ranges from 40 to 50 inches. The frost-free period ranges from 120 to 180 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Cardigan](#), [Dutchess](#), [Kearsarge](#), [Mansfield](#), [Nassau](#), [Pittstown](#), [Quonset](#), [Stissing](#), and [Warwick](#) soils on nearby landscapes. Kearsarge and Nassau soils have a lithic contact within a depth of 20 inches. The moderately well drained Pittstown, the poorly drained Stissing, and the very poorly drained Mansfield soils are associated in a drainage sequence. Quonset and Warwick soils are on outwash plains, terraces, eskers, and kames.

DRAINAGE AND PERMEABILITY: Well drained. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. Runoff is low to high.

USE AND VEGETATION: Mostly woodland. Cleared areas are used mainly for growing hay, pasture, silage, corn, and apples. Common trees in woodlots include sugar maple, beech, white birch, white pine, red maple, northern red oak, white oak, and hemlock.

DISTRIBUTION AND EXTENT: Glacial uplands in Connecticut, Massachusetts, New Hampshire, Vermont, and eastern New York (MLRAs 142, 144A, 144B, and 145). The series is of moderate extent, about 20,000 acres.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Connecticut Valley Area, Connecticut-Massachusetts, 1903.

REMARKS: Cation exchange activity class was determined from a review of available data and similar soils.

The Second Edition of the Keys to Soil Taxonomy, Agricultural Handbook 436 (1999) distinguishes a shallow soil depth class family based upon the presence of a densic contact at a depth less than 50 cm. from the mineral soil surface. Soils correlated and/or published as the Bernardston series prior to 1996 may have included what would now be classified as a shallow family of Oxyaquic Dystrudepts. These soils are of minor extent throughout the range of the Bernardston series.

Diagnostic horizons and features recognized in this pedon include:

1. Ochric epipedon - from 0 to 6 inches (Ap horizon).
2. Cambic horizon - from 6 to 20 inches (Bw horizons).
3. Densic material - unaltered very firm and firm basal till at a depth of 20 to 65 inches (Cd horizon).
4. Oxyaquic feature - based upon saturation in one or more layers within 100 cm of the mineral soil surface, for one month or more per year, in 6 out of 10 years. A perched water table is at 18 to 24 inches February to April.

ADDITIONAL DATA: Full characterization data for samples S93MA011005, S78NH005024, S77NH019001, and S68VT021005. Analyzed by the National Soil Survey Laboratory, Lincoln, NE.

National Cooperative Soil Survey
U.S.A.

LOCATION CHATFIELD

NH+CT MA NJ NY

Established Series
Rev. LWK-ERS-JTI
04/2017

CHATFIELD SERIES

The Chatfield series consists of well drained soils formed in loamy melt-out till. They are moderately deep to bedrock. They are nearly level to very steep soils on bedrock-controlled hills and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 50 to 100 cm. Saturated hydraulic conductivity is moderately high or high in the mineral soil. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, superactive, mesic Typic Dystrudepts

TYPICAL PEDON: Chatfield fine sandy loam, on a 13 percent slope in a wooded area. (Colors are for moist soil unless otherwise noted).

Oi -- 0 to 3 cm, slightly decomposed leaf, needle, and twig litter; extremely acid, pH 4.2. (0 to 15 cm thick.)

A -- 3 to 5 cm, very dark gray (10YR 3/1) fine sandy loam, gray (10YR 5/1), dry; weak fine subangular blocky structure; friable; many fine and medium roots throughout; 5 percent mixed gravel and cobbles; very strongly acid, pH 4.5; abrupt smooth boundary. (1 to 25 cm thick.)

Bw1 -- 5 to 33 cm, strong brown (7.5YR 5/6) gravelly fine sandy loam; weak fine subangular blocky structure; friable; common fine roots throughout and common medium roots throughout; 15 percent mixed gravel and cobbles; very strongly acid, pH 4.5; abrupt wavy boundary.

Bw2 -- 33 to 76 cm, strong brown (7.5YR 5/6) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; few fine roots throughout; 20 percent mixed rock fragments; very strongly acid, pH 4.5; abrupt irregular boundary. (Combined thickness of the Bw horizons is 10 to 80 cm.)

2R -- 76 cm; fractured slightly-weathered schist bedrock.

TYPE LOCATION: Merrimack County, New Hampshire; Town of Epsom, 450 feet north-northwest from point 3,550 feet southwest along Old Mountain Road from intersection of Mountain Road and Tarlton Road. USGS Gossville, NH topographic quadrangle; Latitude 43 degrees, 11 minutes, 55.79 seconds N. and Longitude 71 degrees, 19 minutes, 22.31 seconds W., WGS 1984.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 40 to 97 cm. Depth to bedrock ranges from 50 to 100 cm from the mineral soil surface. Rock fragments range from 5 to 50 percent by volume in the A horizon and from 5 to 35 percent in the B and C horizons. Rock fragments are typically gravel or channers, but include cobbles, stones, boulders and flagstones, particularly just above the bedrock.

The O horizon has hue of 5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2. It is slightly, intermediately, and/or highly decomposed plant material. Reaction ranges from extremely acid to moderately acid.

The A, or Ap horizon where present, has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. Dry value is 6 or higher. Texture is sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth

fraction. Structure is granular. Consistence is friable or very friable. Reaction ranges from extremely acid to moderately acid, unless limed.

The AB or BA horizon, where present, has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. Texture is similar to the A horizon.

The Bw horizon commonly has hue of 10YR or 2.5Y, and includes 7.5YR when a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (greater than 0.15) exists, value of 3 to 6, and chroma of 4 to 6. Texture is similar to the A horizon. The Bw horizon has subangular blocky or granular structure and is friable or very friable. Reaction ranges from very strongly acid to moderately acid.

Some pedons have a BC horizon with color and texture similar to the C horizon.

The C horizon, where present, has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4, and the 7.5YR hue is limited to horizons having a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (> 0.15). Texture is sandy loam, fine sandy loam, very fine sandy loam, loam, or silt loam in the fine-earth fraction and may have lenses or pockets of loamy sand. It is massive and may have plate-like divisions. It is friable or firm. Reaction ranges from very strongly through moderately acid.

The 2R horizon is dominantly schist, granite, or gneiss bedrock. In places it is massive, but it dominantly has vertical and horizontal fractures in the upper 30 to 76 cm.

COMPETING SERIES: These are the [Chadakoin](#), [Charlton](#), [Maplecrest](#), [Riverhead](#), [Stinger](#), and [Valois](#) series. Chadakoin, Maplecrest, and Valois soils formed in till derived primary from sedimentary rock parent materials and are greater than 100 cm to bedrock. Charlton soils formed in similar parent material to that of Chatfield but are greater than 150 cm to bedrock. Riverhead soils formed in glacial outwash deposits and are greater than 100 cm to bedrock. Stinger soils are not from Region R and have a paralithic contact.

GEOGRAPHIC SETTING: Chatfield soils are nearly level through very steep, and are on bedrock-controlled glaciated upland landscapes. The soils formed in a moderately thick mantle of melt-out till overlying granite, gneiss, or schist bedrock. Slope ranges from 0 to 70 percent. Mean annual precipitation ranges from 660 to 1270 mm, mean annual temperature ranges from 7 to 13 degrees C, and the frost free season ranges from 130 to 180 days. Elevation ranges from 0 to 305 meters above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Brimfield](#), [Brookfield](#), [Cardigan](#), [Charlton](#), [Hollis](#), [Narragansett](#), [Nipmuck](#), and [Paxton](#) soils and their wetter associates on nearby landscapes where the soil mantle is deeper than 100 cm. Brimfield, Brookfield and Nipmuck soils formed in sulfur bearing parent materials and have a ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron less than 0.15 and have pedogenic iron contents greater than 1 percent throughout the pedon. Brookfield, Charlton, Narragansett, and Paxton soils are very deep soils. Cardigan soils are moderately deep soils that formed in till derived from phyllite, slate, shale, and schist. Hollis soils are shallow to bedrock and are on nearby ridge crests and areas adjacent to rock outcrops.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Potential for surface runoff ranges from low to high. Saturated hydraulic conductivity is moderately high or high in the mineral soil.

USE AND VEGETATION: Most areas of Chatfield soils are in woodland. Major tree species include white and northern red oaks, sugar maple, beech, eastern hemlock, eastern white pine, eastern red cedar, and shagbark hickory. Some small cleared areas are used for pasture, are idle, or are sites for residential and recreational development.

DISTRIBUTION AND EXTENT: Connecticut, eastern New York, Massachusetts, New Jersey, and New Hampshire. MLRAs 142, 143, 144A and 145. The soils are of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Orange County, New York, 1940.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon - the zone from 0 to 5 cm (Oi and A horizons).

Cambic horizon - the zone from 5 to 76 cm (Bw1 and Bw2 horizons).

Lithic contact - bedrock at 76 cm (2R horizon).

Particle-size control section - the zone from 28 to 76 cm (part of the Bw1 horizon and all of the Bw2 horizon).

Lithologic discontinuity - at a depth of 76 cm.

ADDITIONAL DATA: M.S. Thesis work by Shawn McVey, University of Connecticut, 2006. Full characterization data for pedons with User Pedon IDs of S1955NH015003, S1982CT007005, S1982CT007005, S1982NY061001, S1995NH013003, S1995NJ037003, S1998NY005001, S1999NY005004, S2000NY005002, S2000NY005004, S2000NY005008, S2000NY119002, S2000NY119003, S2002CT005007, and S2002CT005008. Pedons analyzed by the NSSL, Lincoln, NE. The laboratory characterization data for these pedons and similar soils is available through the National Cooperative Soil Survey Soil Characterization Database: <http://ncsslabdatamart.sc.egov.usda.gov/>

National Cooperative Soil Survey
U.S.A.

LOCATION HAVEN

NY CT MA NH PA

Established Series
Rev. RLM-JWW-MFF
03/2010

HAVEN SERIES

The Haven series consists of very deep, well drained soils formed in loamy over sandy and gravelly outwash. They are nearly level through moderately sloping soils on outwash plains, valley trains, terraces, and water-sorted moraine deposits. Saturated hydraulic conductivity is moderately high or high in the mineral solum and very high in the substratum. Slope ranges from 0 through 15 percent. Mean annual temperature is 50 degrees F. (10 degrees C.), and mean annual precipitation is 47 inches (1194 millimeters).

TAXONOMIC CLASS: Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Typic Dystrudepts

TYPICAL PEDON: Haven loam - forested. (Colors are for moist soil.)

Oi-- 0 to 2 inches (0 to 5 centimeters); slightly decomposed plant material derived from loose pine needles, leaves and twigs.

Oa-- 2 to 3 inches (5 to 8 centimeters); black (5YR 2/1) highly decomposed plant material. (0 to 3 inches (0 to 8 centimeters) thick.)

A-- 3 to 6 inches (8 to 15 centimeters); dark grayish brown (10YR 4/2) loam; weak fine and medium granular structure; friable; many fine and coarse roots; very strongly acid; abrupt smooth boundary. (1 to 4 inches (3 to 10 centimeters) thick.)

Bw1-- 6 to 13 inches (15 to 33 centimeters); brown (7.5YR 4/4) loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine pores; very strongly acid; clear wavy boundary.

Bw2-- 13 to 22 inches (33 to 56 centimeters); strong brown (7.5YR 5/6) loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine pores; 5 percent fine gravel; very strongly acid; gradual wavy boundary. (Combined thickness of Bw horizon is 3 to 22 inches (8 to 56 centimeters) thick.)

BC-- 22 to 31 inches (56 to 79 centimeters); yellowish brown (10YR 5/6) gravelly loam; weak medium and fine subangular blocky structure; friable; few fine roots; common fine pores; 20 percent fine gravel; very strongly acid; clear wavy boundary. (0 to 11 inches (0 to 28 centimeters) thick.)

2C-- 31 to 65 inches (79 to 165 centimeters); yellowish brown (10YR 5/4) to brownish yellow (10YR 6/6) stratified gravelly sand; single grained; loose; 30 percent fine gravel; very strongly acid.

TYPE LOCATION: Suffolk County, New York; town of Brookhaven, one and one-half miles north of Sunrise Highway by Gerrard Road. USGS Bellport, NY topographic quadrangle; Latitude 40 degrees, 49 minutes, 4 seconds N. and Longitude 72 degrees, 54 minutes, 51 seconds W. NAD 1983.

RANGE IN CHARACTERISTICS: Thickness of solum and depth to the lithologic discontinuity range from 18 through 36 inches (46 through 91 centimeters). Gravel content ranges from 0 through 15 percent by volume in the A and Bw horizons, from 0 through 40 percent in the BC horizon, and from 0 through 65 percent in the 2C horizon. Cobble content ranges from 0 through 2 percent in the solum and 0 to 5 percent in the substratum. The soil ranges from very strongly acid through moderately acid.

The O horizon, where present, has hue 7.5YR or 10YR, value 2 or 2.5, and chroma of 0 through 2. The O horizons typically have increased decomposition with depth and range from fibric through sapric material.

A or Ap horizon, where present, has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 or 3. The A horizon is allowed to have value of 2 and chroma of 1. It is loam, silt loam, or very fine sandy loam. Structure is weak or moderate granular or massive. Consistence is friable or very friable.

Some pedons have thin albic and spodic horizons less than 2 inches (5 centimeters) thick. They have hue 7.5YR or 10YR, value 3 through 6, and chroma 1 through 3. Texture is very fine sandy loam. Structure is weak subangular blocky. Consistence is very friable or friable.

The B horizons have hues of 5YR through 2.5Y, values of 4 through 6, and chroma of 3 through 8. They are loam, silt loam, or very fine sandy loam, except the BC horizon is fine sandy loam, sandy loam, or loamy coarse sand in the fine earth fraction of some pedons. Structure is weak fine through coarse subangular blocky, or they are massive. Consistence is very friable or friable.

The 2C horizons have hues of 7.5YR through 2.5Y, values of 4 through 6, and chroma of 2 through 6. They are loamy fine sandy or coarser in the fine earth fraction. They are usually stratified.

COMPETING SERIES: The [Agawam](#), [Barnstable](#), [Branford](#), and [Narragansett](#) series are members of the same family. Agawam soils typically have less than 40 percent silt in lower part of the Bw horizon. Barnstable soils formed in till overlying outwash and have subangular or angular rock fragments larger than pebble-sized throughout. Branford soils have hues redder than 7.5YR. Narragansett do not have stratified sand and gravel in the substratum.

The [Allard](#), [Alton](#), [Bridgehampton](#), [Chenango](#), [Enfield](#), [Hartland](#), [Hoosic](#), [Riverhead](#) and [Tunkhannock](#) series are similar soils in related families. Allard soils have less than 15 percent fine sand and coarse in the upper part of the solum. Alton, Chenango, and Tunkhannock soil lack contrasting textures and have more than 35 percent coarse fragments in the particle-size control section. Bridgehampton, Enfield, and Hartland soils have more silt in the solum. Hoosic soils have sandy textures with more than 35 percent coarse fragments throughout. Riverhead soils have sandy loam or fine sandy loam B horizons with more than 50 percent fine sands and coarser.

GEOGRAPHIC SETTING: Haven soils are nearly level to moderately sloping soils of glacial outwash plains, valley trains, terraces, and water-sorted moraine deposits. Slope ranges from 0 through 15 percent in gradient. The regolith consists of 18 through 36 inches (46 through 91 centimeters) of water-sorted loamy material low in gravel over stratified gravel and sand. Mean annual air temperature ranges from 45 through 55 degrees F. (7 through 13 degrees C.), mean annual precipitation from 40 through 50 inches (1016 through 1270 millimeters), and mean growing season from 125 through 220 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Bridgehampton](#), [Carver](#), [Enfield](#), [Ninigret](#), [Plymouth](#), [Riverhead](#), and [Tisbury](#) soils. Bridgehampton soils have a coarse-silty particle size control section. Carver and Plymouth soils are sandy. Enfield soils are coarse-silty over sandy or sandy skeletal. Ninigret and Tisbury soils are moderately well drained. Riverhead soils have less silt in the upper part.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. The potential for surface runoff is very low to medium. Saturated hydraulic conductivity is moderately high or high in the mineral solum and very high in the substratum.

USE AND VEGETATION: Most of the soil has been cleared and is used for crops or is in community development. Principal crops are potatoes and other vegetables, corn, tobacco, or nursery stock. Common forest trees in woodlots include black, white, and northern red oak, beech, and maple.

DISTRIBUTION AND EXTENT: Southeastern New York and Connecticut. MLRA's 139, 140, 144A, 145, and 149B. The soil is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Dukes and Nantucket Counties, Massachusetts, 1925.

REMARKS: It should be noted that as a competing series, Agawam soils typically have soil temperatures that may be slightly cooler, but a precise difference could not be quantified based on available data and historic use. The present separation of the Haven and Agawam series may not match historic use of the two series.

Diagnostic horizons and features recognized in the typical pedon:

1. Ochric epipedon - the zone from 0 to 6 inches (0 to 15 centimeters) (O and A horizons).
2. Cambic horizon - the zone from 6 to 31 inches (15 to 79 centimeters) (Bw1, Bw2, and BC horizons).
3. Strongly contrasting particle-size class - both the coarse-loamy part and the sandy part of the particle-size control section are greater than 5 inches (12.5 cm) thick and the transition zone between the two parts is less than 5 inches (12.5 cm) thick.
- 4) Particle-size control section - the zone from 10 to 40 inches (25 to 100 centimeters) (Bw1, Bw2, BC and 2C horizons).
- 5) Lithologic discontinuity - at a depth of 31 inches (79 centimeters).

National Cooperative Soil Survey
U.S.A.

LOCATION HOLLIS

CT+MA NH NJ NY

Established Series

Rev. MFF-SMF-SJM-DCP

05/2016

HOLLIS SERIES

The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

TAXONOMIC CLASS: Loamy, mixed, superactive, mesic Lithic Dystrudepts

TYPICAL PEDON: Hollis gravelly fine sandy loam, 3 to 15 percent slopes, forested. (Colors are for moist soil.)

Oi--0 to 3 cm; slightly decomposed plant material.

Oa--3 to 5 cm; black (10YR 2/1) highly decomposed plant material; moderate fine granular structure; very friable; many fine and very fine roots; abrupt smooth boundary. (Combined thickness of the O horizons is 0 to 10 cm.)

A--5 to 18 cm; very dark grayish brown (10YR 3/2) gravelly fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common fine, very fine, medium, and coarse roots; 10 percent gravel, 5 percent channers; very strongly acid; clear smooth boundary. (3 to 15 cm thick)

Bw1--18 to 25 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; few very fine and fine roots, common medium roots; 10 percent gravel, 10 percent channers; strongly acid; clear wavy boundary.

Bw2--25 to 41 cm; yellowish brown (10YR 5/6) gravelly fine sandy loam; moderate medium and coarse subangular blocky structure; friable; few fine and very fine roots, common medium roots; 10 percent gravel, 5 percent channers; strongly acid; abrupt smooth boundary. (Combined thickness of the Bw horizons is 18 to 48 cm.)

2R--41 cm; schist bedrock.

TYPE LOCATION: Middlesex County, Connecticut, town of East Hampton, 1000 feet due west of Connecticut Route 196 and 3200 feet due north of Connecticut Route 151; USGS Moodus, CT topographic quadrangle, Latitude 41 degrees 31, minutes 28, seconds N., Longitude 72 degrees, 29 minutes, 48 seconds W., NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum and depth to bedrock range from 25 to 50 cm. Rock fragments commonly range from 5 through 35 percent by volume, but some pedons have less than 5 percent rock fragments. The fragments are mostly subrounded gravel, except where the surface is stony. The soil has 20 percent or more silt in the particle-size control section. Unless limed, reaction ranges from extremely acid through moderately acid in the organic horizons and very strongly acid through moderately acid

in the mineral horizons.

The O horizon, where present, ranges from slightly decomposed to highly decomposed plant material.

The A horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 to 3. It is sandy loam, fine sandy loam, or loam in the fine-earth fraction. Consistence is friable or very friable.

Some pedons have a BA horizon with colors similar to the A horizon and other properties similar to the Bw horizon.

The Bw horizon commonly has hue of 10YR or 2.5Y, and includes 7.5YR when a high ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron (greater than 0.15) exists, value of 4 or 5, and chroma of 4 through 8. It is sandy loam, fine sandy loam, or loam in the fine-earth fraction. The Bw horizon has granular or subangular blocky structure. Consistence is friable or very friable.

Some pedons have a thin BC or C horizon with color like the Bw horizon, except it includes hue of 5Y. Texture, structure, and consistence are similar to the Bw horizon.

Some pedons have a thin 2Cr horizon that is typically weathered schist and moderately cemented.

COMPETING SERIES: This is the [Holyoke](#) series. Holyoke soils formed in a thin mantle of till derived mainly from basalt and red sandstone, conglomerate, and shale, and typically overly basalt, red sandstone, conglomerate, or shale bedrock.

The [Cleveland](#), [Kearsarge](#), and [Brimfield](#) series are in closely related families. Cleveland soils have less than 20 percent silt in the particle-size control section and lack a 2R horizon. Kearsarge soils lack a 2R horizon and have rock fragments of phyllite, slate, or schist. Brimfield soils formed in parent materials derived from sulfur bearing schist and have a ratio of ammonium oxalate extractable iron to dithionite-citrate extractable iron of less than 0.15. They have pedogenic iron contents of greater than 1 percent throughout the pedon.

GEOGRAPHIC SETTING: Hollis soils are nearly level to very steep soils on bedrock controlled hills, modified by glacial processes. Slope ranges from 0 to 60 percent. The soils formed in a thin mantle of till derived from local bedrock of schist, granite, and gneiss. Mean annual temperature ranges from 7 to 13 degrees C and mean annual precipitation ranges from 910 to 1295 mm, but the range includes as low as 660 mm in some places east of Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 115 through 185 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Brimfield](#), [Acton](#), [Broadbrook](#), [Brookfield](#), [Canton](#), [Charlton](#), [Chatfield](#), [Essex](#), [Gloucester](#), [Hibernia](#), [Leicester](#), [Montauk](#), [Narragansett](#), [Paxton](#), [Rainbow](#), [Ridgebury](#), [Rockaway](#), [Scituate](#), [Sutton](#), [Wapping](#), [Whitman](#), and [Woodbridge](#) soils on nearby landscapes. All are very deep upland soils formed in till except for the Brimfield and Chatfield soils. Acton, Rainbow, Rockaway, Scituate, Sutton, Wapping, and Woodbridge soils are moderately well drained. The Broadbrook, Brookfield, Canton, Charlton, Essex, Montauk, Narragansett, and Paxton soils are well drained. Chatfield soils have bedrock within a depth of 50 to 100 cm. Gloucester soils are somewhat excessively drained. Hibernia, Leicester, and Ridgebury soils are somewhat poorly drained or poorly drained soils in drainageways or low lying areas.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained and somewhat excessively drained. Surface runoff is negligible to very high. Saturated hydraulic conductivity is moderately high or high.

USE AND VEGETATION: Mostly forested. Small areas with few rock outcrops are cleared of stones and used for cultivated crops, but most cleared areas are in hay or pasture. Scattered areas are used for community

development. Common trees are northern red, white, black, and chestnut oak, hickory, eastern white pine, eastern hemlock, and gray and black birch.

DISTRIBUTION AND EXTENT: Glaciated uplands in Connecticut, Massachusetts, New Jersey, New Hampshire, and eastern New York. MLRAs 101, 142, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Nashua Area, New Hampshire, 1909.

REMARKS: Diagnostic horizons and features recognized in this pedon include:

1. Ochric epipedon - the zone from 0 to 18 cm (O and A horizons).
2. Cambic horizon - the zone from 18 to 41 cm (Bw1 and Bw2 horizons).
3. Lithic contact - hard bedrock at 41 cm (2R horizon).
4. Particle-size control section - the zone from 30 to 41 cm.
5. Loamy (coarse-loamy) particle-size class - the control section from 30 to 41 cm averages less than 35 percent clay in fine-earth fraction and the soil is in a Lithic subgroup.
6. Lithologic discontinuity - till with rock fragments from mixed sources overlying single kind of hard bedrock at 41 cm.

ADDITIONAL DATA: M.S. Thesis work by Shawn McVey, University of Connecticut, 2006. Full characterization data for sample no. 1999CT005001, 2000CT007004, S2002CT005001, S2002CT005004, S2002CT005005, S2002CT005006, S1998NY061001, S2000NY119001. Partial characterization data for sample no. S99NY061003 and S99NY061003A-3D. Analyzed by the NSSL, Lincoln, NE.

National Cooperative Soil Survey
U.S.A.

LOCATION MONTAUK

NY+CT MA NH

Established Series

Rev. RLM-JWW-MCT

05/2015

MONTAUK SERIES

The Montauk series consists of well drained soils formed in lodgment or flow till derived primarily from granitic materials with lesser amounts of gneiss and schist. The soils are very deep to bedrock and moderately deep to a densic contact. These soils are on upland hills and moraines. Slope ranges from 0 to 35 percent. Saturated hydraulic conductivity is moderately high or high in the mineral solum and low to moderately high in the substratum. Mean annual temperature is about 9 degrees C., and mean annual precipitation is about 1143 mm.

TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts

TYPICAL PEDON: Montauk loam on a 14 percent slope in a wooded area with a discontinuous layer of undecomposed and slightly decomposed plant material less than 1 cm thick on the surface. (Colors are for moist soil unless otherwise noted.)

Ap-- 0 to 10 cm; very dark gray (10YR 3/1) loam; moderate fine granular structure; very friable; many very fine, fine, medium, and coarse roots; 2 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.1); clear smooth boundary. (5 to 25 cm thick)

BA-- 10 to 34 cm; brown (10YR 4/3) loam; moderate medium and coarse subangular blocky structure; friable; many fine, medium, and coarse roots; many fine and medium pores; 4 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.3); clear wavy boundary. (0 to 25 cm thick)

Bw1-- 34 to 65 cm; dark yellowish brown (10YR 4/6) loam; moderate coarse subangular blocky structure; friable; many fine, medium, and coarse roots; many fine and medium pores; 6 percent gravel, 1 percent cobbles, and 1 percent stones; extremely acid (pH 4.3); clear wavy boundary.

Bw2-- 65 to 87 cm; yellowish brown (10YR 5/6) sandy loam; moderate medium and coarse subangular blocky structure; friable; many very fine, fine, and coarse roots; many fine and medium pores; 5 percent gravel and 1 percent cobbles; extremely acid (pH 4.3); clear smooth boundary. (Combined thickness of the Bw horizons is 31 to 86 cm.)

2Cd1-- 87 to 101 cm; strong brown (7.5YR 5/6) gravelly loamy sand; moderate medium plates; firm; few fine roots; many fine pores; 10 percent gravel, 5 percent cobbles, and 1 percent stones; very strongly acid (pH 4.7); clear wavy boundary. (18 to 76 cm thick.)

2Cd2-- 101 to 184 cm; dark yellowish brown (10YR 4/6) gravelly loamy sand; moderate medium plates; firm; many fine pores; 10 percent gravel, 5 percent cobbles, and 1 percent stones; strongly acid (pH 5.1).

TYPE LOCATION: Queens County, New York; in Alley Pond Park near the Cross Island Parkway. USGS Flushing, NY topographic quadrangle; latitude 40 degrees, 45 minutes, 35 seconds N. and Longitude 73 degrees, 45 minutes, 20 seconds W. WGS 84.

RANGE IN CHARACTERISTICS: The thickness of the mineral solum and depth to the dense substratum

from the mineral soil surface ranges from 50 to 100 cm. Rock fragments range from 3 to 35 percent in the solum and 5 to 50 percent in the substratum. Reaction ranges from extremely acid to moderately acid.

Some pedons have Oi, Oe, and/or Oa horizons overlying the A horizon. Combined thickness of the O horizons is 0 to 10 cm thick.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 5, and chroma of 1 to 4. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is granular. Consistence is friable or very friable. Undisturbed pedons have an A horizon that has properties similar to the Ap horizon.

The BA horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is subangular blocky or granular. Consistence is friable or very friable.

Some pedons have an E horizon up to 8 cm thick.

The upper part of the Bw horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8. The lower part has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Texture of the fine-earth fraction is silt loam, loam, fine sandy loam, or sandy loam. Structure is subangular blocky and may part to granular. Consistence is friable or very friable. Some pedons have an E, C, or BC horizon immediately above the Cd.

The Cd layer has hue of 5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. Texture of the fine-earth fraction ranges from coarse sand to fine sandy loam, and at least one sublayer of the Cd is loamy fine sand or coarser. The horizon has plates of geogenic origin or is massive. Consistence is firm or very firm and is brittle. Some pedons have firm dark reddish brown bands up to 1 cm thick that are spaced 12 to 20 cm apart. Silt coatings on the upper side of stones and gravel are common.

COMPETING SERIES: These are the [Amostown](#), [Bernardston](#), [Broadbrook](#), [Horseneck](#), [Nantucket](#), [Paxton](#), [Scituate](#), and [Wethersfield](#) series. Amostown and Scituate soils are moderately well drained and have redoximorphic features in the B horizon. The Bearnardston, Nantucket, Paxton, and Wethersfield soils do not have sandy substratums. Broadbrook soils have a silty mantle with more than 65 percent silt plus very fine sand. Horseneck soils formed in friable glacialfluvial deposits and do not have a dense substratum.

GEOGRAPHIC SETTING: Montauk soils are on undulating to hilly slopes of terminal and recessional moraines in MLRA 149B and on glaciated uplands, hills, and ground moraines in MLRAs 144A and 145. Slope ranges from 0 to 35 percent. The soils formed in loamy friable till underlain by firm sandy lodgment or flow till derived from granite with lesser amounts of gneiss and schist. The climate is humid and cool temperate. The mean annual precipitation is 889 to 1422 mm, and the mean annual temperature is 8 to 11 degrees C. The frost-free period ranges from 120 to 200 days. Elevation ranges from 3 to 122 m above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the well drained [Charlton](#), [Chatfield](#), [Riverhead](#), [Canton](#), and [Haven](#) soils that do not have dense substratums, the excessively drained and sandy [Carver](#) and [Plymouth](#) soils, the moderately well drained [Scituate](#), [Sutton](#), and [Woodbridge](#) soils, the somewhat poorly and poorly drained [Ridgebury](#) soils, the poorly drained [Leicester](#) soils, the very poorly drained [Whitman](#) soils, and the shallow [Hollis](#) soils.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. Runoff is low to high. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum.

USE AND VEGETATION: Many of the nearly level and gently sloping areas are cleared and used for production of potatoes and vegetable crops, hay, silage corn, and pasture. Steeper and uneven areas are largely forested and contain northern red oak, white oak, and occasionally yellow poplar, eastern white pine, red pine,

sugar maple, beech, and birch.

DISTRIBUTION AND EXTENT: New York, Connecticut, Massachusetts, New Hampshire and possibly New Jersey and Rhode Island, MLRAs 149B, 144A, and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Suffolk County, New York, 1970.

REMARKS: The typical pedon was updated from 1975NY103005 to the lab-sampled pedon S1998NY081002 that better represents the typical textures, horizonation, and location.

Diagnostic horizons and features recognized in this pedon include:

1. Ochric epipedon - the zone from 0 to 10 cm (Ap horizon).
2. Cambic horizon - the zone from 34 to 87 cm (Bw1 & Bw2 horizons).
3. Densic material - the zone from 87 to 184 cm (2Cd1 and 2Cd2 layers).
4. Oxyaquic subgroup - based on saturation in one or more layers within 100 cm of the mineral soil surface, for either or both 20 or more consecutive days or 30 or more cumulative days.
5. Lithologic discontinuity - at a depth of 87 cm.

ADDITIONAL DATA: Full characterization data for pedons with User Pedon IDs of S1973MA009003, S1987NY103002, S1993MA011001, S1998NY081002, and S02MA-011-002. Pedons analyzed by the KSSL, Lincoln, NE. Laboratory characterization data for these pedons and similar soils is available through the National Cooperative Soil Survey Soil Characterization Database: <http://ncsslslabdatamart.sc.egov.usda.gov/>

National Cooperative Soil Survey
U.S.A.

LOCATION NINIGRET

CT+MA NH NY RI VT

Established Series

Rev. RAS-EHS-TDT

01/2013

NINIGRET SERIES

The Ninigret series consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. Slope ranges from 0 through 15 percent. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. Mean annual temperature is about 49 degrees F. and mean annual precipitation is about 48 inches.

TAXONOMIC CLASS: Coarse-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquic Dystrudepts

TYPICAL PEDON: Ninigret fine sandy loam - idle field, 2 percent slope. (Colors are for moist soil unless otherwise noted.)

Ap --0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; pale brown (10YR 6/3) dry; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary. (6 to 12 inches thick.)

Bw1 --8 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak coarse granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

Bw2 --16 to 26 inches; yellowish brown (10YR 5/4) fine sandy loam; very weak coarse granular structure; very friable; very few fine roots; common medium distinct light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) redoximorphic features; strongly acid; clear wavy boundary. (Combined thickness of the Bw horizon is 11 to 32 inches.)

2C --26 to 65 inches; pale brown (10YR 6/3) loamy sand and few lenses of loamy fine sand; single grain; loose; many medium distinct light olive gray (5Y 6/2) and many prominent yellowish brown (10YR 5/8) redoximorphic features; strongly acid.

TYPE LOCATION: New London County, Connecticut; town of Stonington, 1,000 feet southwest along Riverside Drive from the intersection with Green Haven Road, 300 feet east of Riverside Drive, and 350 feet west of the Pawcatuck River. USGS Watch Hill, RI topographic quadrangle; Latitude 41 degrees, 20 minutes, 03 seconds N.; Longitude 71 degrees 50 minutes, 36 seconds W.; NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 18 through 38 inches and typically corresponds to the depth of sand or sand and gravel. Rock fragments, mainly rounded pebbles, range from 0 to 15 percent by volume in the solum, from 0 to 30 percent in the substratum above a depth of 40 inches, and from 0 to 60 percent below. Unless limed, the soil is very strongly acid through moderately acid to a depth of 30 inches and very strongly acid through slightly acid below 30 inches.

Some pedons have an O horizon up to 2 inches thick. It has hue of 7.5YR or 10YR, value of 2 through 3, and chroma of 1 or 2. It has weak or moderate granular structure, or it is massive

The Ap horizon has hue of 7.5YR through 2.5Y, value and chroma of 2 through 4. Dry value is 6 or more.

Undisturbed pedons have a thin A horizon with value of 2 through 3 and chroma of 1 through 3. The Ap or A horizon is fine sandy loam, very fine sandy loam, loam, or silt loam. It has weak or moderate granular structure and is friable or very friable.

The upper part of the Bw horizon has hue of 7.5YR through 2.5Y, value of 4 through 6, and chroma of 4 through 8. The lower part of the Bw horizon has hue of 7.5YR through 5Y, value of 3 through 6, and chroma of 2 through 6. Texture is typically fine sandy loam with less than 50 percent fine or coarser sand or very fine sandy loam, but includes silt loam and loam. Structure is weak or moderate, granular or subangular blocky, or it is massive. Consistence is very friable or friable. Some pedons have a sandy loam Bw subhorizon or BC horizon less than 5 inches thick just above the 2C horizon.

The 2C horizon has hue of 10YR through 5Y, value of 4 through 7, and chroma of 1 through 6. It typically has redoximorphic features. The horizon is commonly stratified sand and gravel. Texture of individual layers ranges from coarse sand to fine sand through loamy fine sand in the fine-earth fraction.

COMPETING SERIES: There are no other series in this family.

In a related family, [Ellington](#) soils have dominant hue of 5YR or 2.5YR in the B and C horizons.

GEOGRAPHIC SETTING: Ninigret soils are nearly level to strongly sloping soils on glaciofluvial landforms. Slopes range from 0 through 15 percent, but commonly are 0 through 8 percent. The soils formed in loamy over stratified sandy and gravelly glacial outwash derived from a variety of acid rocks. Mean annual temperature ranges from 45 through 52 degrees F., mean annual precipitation ranges from 35 through 50 inches, and the growing season ranges from 120 through 195 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Agawam](#), [Dartmouth](#), [Deerfield](#), [Enfield](#), [Haven](#), [Narragansett](#), [Raynham](#), [Raypol](#), [Scio](#), [Sudbury](#), [Tisbury](#), [Walpole](#), and [Wapping](#) soils. The well drained Agawam and Haven soils and the poorly drained Walpole and Raypol soils are associated in a drainage sequence. Dartmouth and Scio soils have coarse-silty particle-size control sections. Deerfield and Sudbury soils are sandy terrace associates. Enfield, Haven, and Narragansett soils do not have low chroma depletions within a 24 inch depth. Raynham soils are poorly drained silty soils in low areas. Tisbury soils are coarse-silty over sandy or sandy-skeletal. Wapping soils are coarse-loamy.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Surface runoff is negligible to medium. Saturated hydraulic conductivity is moderately high or high in the solum and high or very high in the substratum. The soil has a seasonal high water table.

USE AND VEGETATION: Much of the acreage is used for cultivated crops, hay, or pasture. Common crops are silage corn, vegetables, tobacco, and nursery stock. Some areas are idle, wooded, or used for community development. Common trees are red, white and black oak, red maple, sugar maple, white pine, gray birch, white ash, and hemlock.

DISTRIBUTION AND EXTENT: Connecticut, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont: MLRA 144A. The series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Washington-Kent Counties, Rhode Island, 1934.

REMARKS: Cation exchange activity class placement determined from a review of available data.

Diagnostic horizons and other features recognized in this pedon include:

1. Ochric epipedon - the zone from 0 through 8 inches (Ap horizon).

2. Cambic horizon - the zone from 8 through 26 inches (Bw horizon).
3. Aquic feature - low chroma depletions within a 24 inch depth (Bw2 horizon).
4. Particle-size control section from 10 to 40 inches that is coarse-loamy to 26 inches and contrasting sandy or sandy-skeletal below.

National Cooperative Soil Survey
U.S.A.

Established Series
Rev. DGG-WHT-DAS
12/2012

PITTSTOWN SERIES

The Pittstown series consists of moderately well drained soils formed in lodgement till derived mainly from slate, phyllite, shale, and schist. These soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level through moderately steep soils on uplands. Slope ranges from 0 through 25 percent. Saturated hydraulic conductivity is moderately high or high in the mineral solum and moderately low or moderately high in the substratum. Mean annual temperature is about 49 degrees F. (9 degrees C.), and mean annual precipitation is about 45 inches (1143 millimeters).

TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Aquic Dystrudepts

TYPICAL PEDON: Pittstown loam, cultivated field. (Colors are for moist soil unless noted.)

Ap --0 to 10 inches (0 to 25 centimeters); very dark grayish brown (10YR 3/2) loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; 10 percent phyllite fragments; very strongly acid; abrupt smooth boundary.

Bw1 --10 to 18 inches (25 to 46 centimeters); olive brown (2.5Y 4/4) loam; weak medium granular structure; friable; 10 percent phyllite fragments; very strongly acid; abrupt smooth boundary.

Bw2 --18 to 29 inches (46 to 74 centimeters); olive (5Y 4/3) channery loam; massive; friable; 15 percent phyllite fragments; common medium prominent dark yellowish brown (10YR 4/4) masses of iron accumulations and common medium distinct gray (5Y 5/1) iron depletions; very strongly acid; abrupt smooth boundary.

Cd --29 to 65 inches (74 to 165 centimeters); olive (5Y 5/3) channery loam; massive; very firm, brittle; 20 percent phyllite fragments; many coarse prominent dark yellowish brown (10YR 4/4) masses of iron accumulation and many coarse distinct olive gray (5Y 5/2) iron depletions; very strongly acid.

TYPE LOCATION: Bristol County, Massachusetts; Town of Somerset, 400 feet north of Wilbur Avenue, and 900 feet east of Brayton Point Road. Fall River, MA quadrangle: Latitude 41 degrees, 43 minutes, 25 seconds N. and Longitude 71 degrees, 10 minutes, 35 seconds W., NAD 1927.

RANGE IN CHARACTERISTICS: Thickness of the mineral solum and depth to dense substratum ranges from 20 through 30 inches (50 through 76 centimeters), but the range currently includes 15 through 30 inches (38 through 76 centimeters). The solum in the fine earth fraction is silt loam, loam, or very fine sandy loam with more than 65 percent silt plus very fine sand. Rock fragments consist of dark phyllite, slate, and schist. Rock fragments, by volume, larger than 10 inches range from 0 through 20 percent in the surface and 0 through 5 percent in the subsoil and substratum. 3 through 10 inch size fragments range from 0 through 15 percent in surface, 0 through 10 percent in the subsoil, and 0 through 15 percent in the substratum. Fragments less than 3 inches range from 5 through 25 percent in the surface, 5 through 25 percent in the subsoil, and 15 through 30 percent in the substratum. The soil, below the A or Ap horizon and above a depth of 30 inches (76 centimeters), is very strongly acid through moderately acid where not limed, and ranges from very strongly acid through slightly acid below a depth of 30 inches (76 centimeters).

Some pedons have an O horizon underlain by a thin A horizon. The A horizon commonly has hue of 10YR but the range includes 2.5Y, value of 2 or 3, and chroma of 1 through 3.

The Ap horizon has hue of 10YR, value of 2 through 4, and chroma of 2 or 3. Structure is granular. Consistence is friable or very friable.

Some pedons have a thin E horizon.

The upper part of the Bw horizon has hue of 7.5YR through 2.5Y, value of 4 or 5, and chroma of 3 through 6. The lower part of the Bw horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 3 through 6. Redoximorphic depletions and concentrations are commonly few to many in the lower part but the range includes few or common in the upper part in some pedons. Structure commonly is subangular blocky but the range includes granular or massive in some pedons. Consistence is friable or very friable.

Some pedons have a friable BC or C horizon above the Cd horizon. They have hue of 10YR through 5Y, value of 4 or 5, and chroma of 2 through 4. Texture is similar to the Cd horizon.

The Cd horizon has hue of 10YR through 5Y, value of 4 or 6, and chroma of 2 through 4. It is silt loam, very fine sandy loam, or loam in the fine-earth fraction. It is firm through extremely firm. The horizon is normally massive, but may have weak plate-like divisions.

COMPETING SERIES: These are the [Chautauqua](#), [Pompton](#), [Rainbow](#), [Sutton](#), [Wapping](#), [Wilbraham](#), and [Woodbridge](#) series. Chautauqua, Pompton, Sutton, and Wapping soils do not have densic materials in the substratum. [Ludlow](#) soils have hue of 5YR or redder in the Bw horizon. Rainbow soils have a lithologic discontinuity. Woodbridge soils have less than 65 percent silt and very fine sand in the B horizon. Wilbraham soils are poorly drained, but formed in reddish parent material so that they do not exhibit the low chroma matrix colors required for Aquepts.

GEOGRAPHIC SETTING: Pittstown soils are nearly level through moderately steep soils on glaciated uplands. Slope ranges from 0 through 25 percent. The soils developed in loamy till derived principally from dark phyllite, slate, or schist. Mean annual air temperature ranges from 45 through 52 degrees F. (7 through 11 degrees C.), and mean annual precipitation ranges from 40 through 50 inches (1016 through 1270 millimeters). The frost-free period ranges from 120 to 180 days.

GEOGRAPHICALLY ASSOCIATED SOILS: The well drained [Bernardston](#), poorly drained [Stissing](#), and very poorly drained [Mansfield](#) soils are associated in a drainage sequence. The excessively drained [Quonset](#) and the somewhat excessively drained [Warwick](#) soils are on nearby outwash plains, terraces, eskers, and kames. The well drained [Dutchess](#) soils, which do not have a dense substratum, the shallow to bedrock [Nassau](#) and [Kearsarge](#) soils and the moderately deep to bedrock [Cardigan](#) soils are closely associated on the uplands.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Surface runoff is medium. Saturated hydraulic conductivity is moderately high or high in the mineral solum and moderately low or moderately high in the substratum.

USE AND VEGETATION: Mostly forested. Cleared areas are used for growing hay and pasture in support of dairy farming. Principal trees are northern red, white and scarlet oak, red and sugar maple, gray and yellow birch, white ash, eastern white pine, and eastern hemlock.

DISTRIBUTION AND EXTENT: Glaciated uplands in Massachusetts, New Hampshire, Rhode Island, Vermont, and eastern New York. MLRA 144A. The series is of moderate extent, estimated to be about 96,000 acres.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Sullivan County, New York, 1938.

REMARKS: This revision reflects changes to the range in characteristics as well as general updating to metric units. In the past, the Pittstown series was mapped in areas that are now considered frigid. These areas require investigation are not included in the modern range of the series.

Diagnostic horizons and features recognized in this pedon are:

1. Ochric epipedon - the zone from 0 to 10 inches (0 to 25 centimeters) (Ap horizon).
2. Cambic horizon - the zone from 10 to 29 inches (25 to 74 centimeters) (Bw horizons).
3. Densic material- the zone from 29 through 65 inches (74 through 165 centimeters) (Cd horizon).
4. Aquic subgroup - presence of low chroma iron depletions at 18 inches (46 centimeters) (Bw1 horizon).
- 5) Particle-size control section - the zone from 10 through 29 inches (25 through 74 centimeters) (Bw horizons).

ADDITIONAL DATA: Full characterization data for sample no. 78NH005025 and 78NH019010. Pedons analyzed by the NSSL, Lincoln, NE.

National Cooperative Soil Survey
U.S.A.

LOCATION RAYPOL

CT+MA NY RI

Established Series
Rev. MFF-SMF
05/1999

RAYPOL SERIES

The Raypol series consists of very deep, poorly drained soils formed in loamy over sandy and gravelly outwash. They are nearly level to gently sloping soils in shallow drainageways and low-lying positions on terraces and plains. Slope ranges from 0 to 5 percent. The soils have a water table at or near the surface much of the year. Permeability of the Raypol soils is moderate in the surface layer and subsoil and rapid or very rapid in the substratum. Mean annual temperature is about 50 degrees F., and mean annual precipitation is about 47 inches.

TAXONOMIC CLASS: Coarse-loamy over sandy or sandy-skeletal, mixed, active, acid, mesic Aeric Endoaquepts

TYPICAL PEDON: Raypol silt loam - grass field, 2 percent slope. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 8 inches; very dark brown (10YR 2/2) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common very fine, fine and medium roots; strongly acid; clear smooth boundary (6 to 10 inches thick)

Bg1--8 to 12 inches; grayish brown (10YR 5/2) very fine sandy loam; weak medium subangular blocky structure; friable; common very fine, fine and medium roots; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; strongly acid; clear wavy boundary.

Bg2--12 to 20 inches; grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; strongly acid; clear wavy boundary.

Bw1--20 to 26 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; common medium prominent yellowish brown (10YR 5/8) and common medium distinct light brownish gray (10YR 6/2) masses of iron accumulation; strongly acid; gradual wavy boundary.

Bw2--26 to 29 inches; olive brown (2.5Y 4/4) very fine sandy loam; massive; friable; 5 percent gravel; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common medium distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; clear wavy boundary. (Combined thickness of the B horizons is 12 to 32 inches)

2C1--29 to 52 inches; light olive brown (2.5Y 5/4) gravelly sand; single grain; loose; 25 percent gravel; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; strongly acid.

2C2--52 to 65 inches; dark grayish brown (2.5Y 4/2) very gravelly sand; single grain; loose; 35 percent gravel and 5 percent cobbles; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid.

TYPE LOCATION: New Haven County, Connecticut; town of Orange, 0.4 mile north of the Derby-Milford Road and the Wilbur Cross Parkway overpass, 800 feet east of Derby-Milford Road near the edge of a field.

USGS Ansonia topographic quadrangle; latitude 41 degrees 16 minutes 56 seconds N., longitude 73 degrees 02 minutes 56 seconds W., NAD 27

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 18 to 36 inches. Depth to the contrasting substratum ranges from 18 to 40 inches. Rock fragments range from 0 to 10 percent in the solum and from 0 to 60 percent in individual layers of the substratum. Typically, 70 percent or more of the rock fragments are rounded pebbles. Unless limed, the soil is very strongly acid or strongly acid above a depth of 40 inches and very strongly acid to slightly acid below 40 inches.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 4 and chroma of 2 or 3. Undisturbed pedons have a 3 to 8 inch thick A horizon with value of 2 or 3 and chroma of 1 or 2. The Ap or A horizon is silt loam, very fine sandy loam or loam. It has weak or moderate granular structure and is friable or very friable.

The B horizon has hue of 5YR to 2.5Y, value of 4 to 6 and chroma of 1 to 4. Chroma of 3 and 4 is limited to subhorizons and chroma of 1 or 2 is in some subhorizon within a 20 inch depth. Texture is silt loam, very fine sandy loam or loam. Structure is weak subangular blocky or the horizon is massive. Consistency is friable or very friable and nonsticky or slightly sticky.

The 2C horizon has hue of 5YR to 5Y, value of 4 to 6 and chroma of 1 to 4. Texture of individual layers ranges from loamy fine sand to coarse sand in the fine earth.

Some pedons have a thin C or BC horizon that is silt loam, very fine sandy loam, loam or fine sandy loam.

COMPETING SERIES: There are no other series currently in the same family.

The [Fredon](#), [Halsey](#), [Lamson](#), [Leicester](#), [Massena](#), [Newstead](#), [Ninigret](#), [Norwell](#), [Raynham](#), [Red Hook](#), [Ridgebury](#), [Stissing](#), [Sun](#), [Tisbury](#) and [Walpole](#) series are similar soils in related families. Fredon soils are nonacid. Halsey soils are nonacid and lack a subhorizon with chroma of 3 or more within a 30 inch depth. Lamson, Massena, Newstead, Red Hook, Ridgebury and Sun soils are nonacid and coarse-loamy. Leicester and Stissing soils are coarse-loamy and Stissing soils have a dense substratum. Ninigret and Tisbury soils have matrix chroma of 3 or more in the B horizon to a depth of 20 inches. Norwell and Walpole soils have a sandy particle-size control section. In addition, Norwell soils have a dense substratum. Raynham soils are nonacid and coarse-silty.

GEOGRAPHIC SETTING: Raypol soils are nearly level to gently sloping soils in drainageways and low-lying areas on terraces and plains. Slope ranges from 0 to 5 percent. The soils formed in loamy over sandy and gravelly glaciofluvial materials derived mainly from acid crystalline and sedimentary rocks. Mean annual temperature is 45 to 54 degrees F., mean annual precipitation is 37 to 50 inches and the growing season is 130 to 195 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Agawam](#), [Branford](#), [Deerfield](#), [Ellington](#), [Enfield](#), [Hartford](#), [Haven](#), [Hinckley](#), [Leicester](#), [Manchester](#), [Merrimac](#), [Ninigret](#), [Occum](#), [Pootatuck](#), [Raynham](#), [Ridgebury](#), [Rippowam](#), [Stissing](#), [Sudbury](#), [Tisbury](#), [Walpole](#), and [Windsor](#) soils on nearby landscapes. The well drained Enfield and Haven soils and the moderately well drained Tisbury soils are common drainage associates. Agawam, Branford and Ellington soils are better drained loamy over sandy and gravelly soils. Deerfield, Hartford, Hinckley, Manchester, Merrimac, Sudbury and Windsor soils are moderately well drained to excessively drained coarse-textured soils on nearby glaciofluvial landforms. Occum, Pootatuck and Rippowam soils are on flood plains.

DRAINAGE AND PERMEABILITY: Poorly drained. Surface runoff is slow. Permeability is moderate in the solum and rapid or very rapid in the coarse-textured substratum. Raypol soils have a watertable at or near the surface much of the year.

USE AND VEGETATION: Most areas are wooded. Cleared areas are used for hay and pasture. Drained areas are used for silage corn, hay or vegetables. Common trees are red maple, white oak, white ash, aspen, elm,

white pine and hemlock.

DISTRIBUTION AND EXTENT: Glaciofluvial landforms in Connecticut, Rhode Island and New York; MLRAs 140, 144A and 145. The series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: New Haven County, Connecticut, 1976.

REMARKS: This revision reflects change in taxonomy from Aerice Haplaquepts and general updating. Cation exchange activity class placement determined from a review of limited lab data and similar or associated soils.

The horizons and features diagnostic for the typical pedon are:

1. Ochric epipedon from 0 to 8 inches (Ap horizon).
2. Cambic horizon from 8 to 29 inches (Bg and Bw horizons).
3. Aquic moisture regime as indicated by dominant chroma of 2 in the Bg horizon but with chroma too high within 30 inches (chroma 4 in the Bw horizon) to qualify for Typic Endoaquepts.
4. Endoaquepts subgroup based on saturation in all layers from the upper boundary of saturation to a depth of 200 cm. from the mineral soil surface.
5. Aerice great group based on matrix color and chroma of 3 or more in one subhorizon between the Ap and 75 cm. (Bw2).
6. Particle-size class: control section from 10 to 40 inches that is coarse-loamy from 10 to 29 inches and contrasting sandy or sandy-skeletal from 29 to 60 inches.
7. Acid reaction class and mesic temperature regime.

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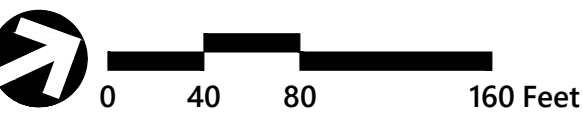


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SITE-SPECIFIC SOIL CLASSIFICATIONS

Soil symbol	Soil series: Slope class
540B/P	Rayprot, 2-8% slope
540A/P	Rayprot, 25-25% slope
511A	Wingpet, 0-3% slope
513B	Wingpet, 3-8% slope
917A	Wingpet Variant, 0-3% slope
917C	Wingpet Variant, 0-3% slope
917D	Wingpet Variant, 15-25% slope
299A/cbaaa	Smoothed Udonterms, 0-3% slope
410A	Agnes, 0-3% slope
540B/cabb	Smoothed Udonterms, 3-8% slope
540C/cabb	Smoothed Udonterms, 8-15% slope
540D/cabb	Smoothed Udonterms, 15-25% slope
299A/caabb	Smoothed Udonterms, 0-3% slope
299A/daabb	Smoothed Udonterms, 0-3% slope
540B/caabb	Smoothed Udonterms, 3-8% slope
540C/caabb	Smoothed Udonterms, 8-15% slope
299D/caabb	Smoothed Udonterms, 15-25% slope
540C/cabb	Smoothed Udonterms, 8-15% slope
540D/cabb	Smoothed Udonterms, 15-25% slope
540E/cabb	Smoothed Udonterms, 25-50% slope
600C/fccbb/P	Subaqueous, 8-15% slope
600A/fccbb/P	Subaqueous, 0-3% slope
513B	Holston, very stony, 3-8% slope
511A	Barnardston, very stony, 0-3% slope
513B	Barnardston, very stony, 3-8% slope
513C	Barnardston, very stony, 8-15% slope
41B	Montauk, very stony, 3-8% slope
41C	Montauk, very stony, 8-15% slope
41D	Montauk, very stony, 15-25% slope
141B	Holts-rock outcrop - Chaffield complex, 3-8% slope
141C	Holts-rock outcrop - Chaffield complex, 8-15% slope
141D	Holts-rock outcrop - Chaffield complex, 15-25% slope
141E	Holts-rock outcrop - Chaffield complex, 25-50% slope
540B	Chaffield - Holts - Montauk complex, very stony, 3-8% slope
540C	Chaffield - Holts - Montauk complex, very stony, 8-15% slope
540D	Chaffield - Holts - Montauk complex, very stony, 15-25% slope
600B/cabb	Udonterms, loamy, 3-8% slope
600C/cabb	Udonterms, loamy, 8-15% slope
600E/cabb	Udonterms, loamy, 25-50% slope
RO	Rock outcrop

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for providing soils information for development of the property. 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.



Lebanon Brickyard Development

Hanover Street
Lebanon, New Hampshire

No.	Revision	Date	Appvd.

Designed by	DJB	Checked by	TMD
Issued for		Date	
Permitting		January 2024	

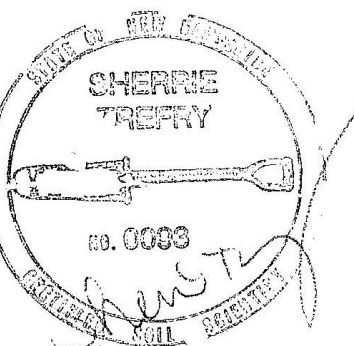
Site Specific
Soil Map

Drawing Number

SSSM

Sheet 1 of 1

Project Number
52933.00



Appendix E: Inspection & Maintenance Manual

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The Brickyard Residential Development

Lebanon, New Hampshire

PREPARED FOR

Brickyard One Nominee Trust
P.O. Box 720
Middleton, MA 01949

PREPARED BY



2 Bedford Farms Drive
Suite 200
Bedford, NH 03110
603.391.3900

05/10/2024

Revised: 12/3/2024

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Introduction

VHB has prepared the following Stormwater Management System Inspection & Maintenance Manual for the Brickyard Residential Development located on Hanover Street in Lebanon, New Hampshire. The intent of this plan is to provide the applicant/owner with a list of procedures that document the inspection and maintenance requirements of the Stormwater Management System for this development.

The following inspection and maintenance program is necessary in order to keep the Stormwater Management System functioning properly. By following the enclosed procedures, the applicant 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.

Responsible Party

The oversight of the inspection and maintenance program will be provided by:

Brickyard One Nominee Trust

P.O. Box 720

Middleton, MA 01949

Contact: Gil Aleixo

Email: gilaleixo@gmail.com

Phone: (617) 834-4441

Stormwater Management System Components

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, its design includes the following elements:

Non-Structural BMP's

Non-structural best management practices (BMP's) are designed to minimize and/or remove contaminants before they enter the stormwater collection system. Several of these BMP's have been incorporated into the Stormwater Management System including reduced use of road deicing agents, and litter/trash removal. These types of BMP's are a highly effective initial treatment measure for reducing stormwater pollutant loading.

Structural BMP's

Structural BMP's have been incorporated into the overall stormwater management plan. Structural BMP's include deep sump catch basins and subsurface detention basins.

Inspection & Maintenance Plan

By implementing the following procedures, the applicant will be able to maintain the functional design of the Stormwater Management System and maximize the system's ability to remove sediment and other contaminants from site generated stormwater runoff.

Source Control

- Routinely empty all outside waste receptacles provided for public use.
- Clearing litter from substation and perimeter landscape areas.

Vegetated Areas Maintenance

Although not a specific component of the drainage system, the maintenance of vegetated areas may affect the functioning of stormwater management practices. This includes the health/density of vegetative cover and activities such as the application and disposal of lawn and garden care products, disposal of leaves and yard trimmings.

- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.
- Re-seed bare areas; install appropriate erosion control measures when native soil is exposed or erosion channels are forming.
- Plant alternative mixture of grass species in the event of unsuccessful establishment.
- The grass vegetation should be cut to a height between three and four inches.
- Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application.
- Fertilizer usage should be avoided. If deemed necessary, slow release fertilizer should be used. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas, but should not be applied on a regular basis unless necessary.

Deicing Agents

Deicing agents should be used in accordance with the following:

- Use sand as the primary agent for parking lot safety during ice and snow conditions.
- Use de-icing or anti-caking agents, added to enhance performance and application characteristics of sand mixtures, only as necessary and at minimum application rates.
- Maintain a Deicing Log to track the amount and type of deicing materials applied to the site.

Snow Management

Snow storage areas shall be maintained as follows:

- Snow storage areas will be managed to prevent blockage of storm drain catch basins or runoff flow paths. Snow combined with sand and debris may block a storm drainage system, diminishing the infiltration capacity of the system and causing localized flooding.
- Sand and debris deposited on vegetated or paved areas shall be cleared from the site and properly disposed of at the end of the snow season, no later than May 15.
- Snow shall not be dumped into any water body, pond, wetland resource area or stormwater detention basin.

Stormwater Outfalls

- Inspect outfall locations monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect outfalls annually after initial three-month period.
- Annual inspections should be supplemented after large storms, when washouts may occur.
- Maintain/ cut vegetation around outfalls to prevent blockages at the outfall.
- Maintain rip rap pad below each outfall and repair any washouts or other damage immediately.
- Remove and dispose of any trash or debris at the outfall.

Infiltration Basin

- Remove debris from inlet and outlet structures
- Remove accumulated sediments
- Inspect and repair outlet structures and appurtenances
- Inspect infiltration components 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.
- Inspect pretreatment measures at least twice annually, and remove accumulated sediment as warranted by inspection, but no less than once annually.
- Mow embankments periodically.
- Remove woody vegetation from embankments.
- Inspect and repair embankments and spillways.
- If the infiltration basin does not drain down within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore infiltration function, including but not limited to, removing accumulated sediments or reconstructing the infiltration section.

Subsurface Detention System

- The subsurface detention systems will be inspected at least twice each year by removing the manhole/access port covers and determining the thickness, if any, of sediment that has accumulated.
- If sediment is more than six inches deep, it must be suspended via flushing with clean water and removed using a vactor truck.
- Refer to manufacturer's specifications and instructions for cleaning the system.
- Outlet control manholes will be examined at each inspection to verify that no blockage has occurred.
- System will be observed after rainfalls to see if it is properly draining.

Bioretention Ponds

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed at each inspection.
- At least once annually, system should be inspected for drawdown time. If a filtration system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.
- Remove debris from any inlet and outlet structures.
- Remove accumulated sediment.
- Inspected and repair (if needed) outlet structures and appurtenances.
- Remove woody vegetation from embankments. Inspect and repair embankments as needed.

Invasive Plant Species Control

- Invasive plant species are alien or non-native plants which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control or food crops; or arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some of these exotic plants become invasive and cause harm by:
 - becoming weedy and overgrown;
 - killing established shade trees;
 - obstructing pipes and drainage systems;
 - forming dense beds in water;

- lowering water levels in lakes, streams and wetlands;
 - destroying natural communities;
 - promoting erosion on stream banks and hillsides; and
 - resisting control except by hazardous chemical.
- As part of the routine inspections of the drainage system and stormwater outfalls, the site should be checked for the presence of invasive plant species as defined by the New Hampshire Department of Agriculture, Markets & Food (a list is provide at the end of this manual).
- If invasive plant species are found to be present they should be controlled as described in the "Control of Invasive Plants" document prepared by the NH Department of Agriculture, Markets & Food. A copy is provided at the end of this manual.

Record Keeping

- Inspections of the stormwater management system shall be conducted in accordance with the Inspection & Maintenance Checklist provided in this Manual.
- An Inspection & Maintenance Log shall be completed for each inspection and maintenance activity.
- All record keeping required by the I&M manual shall be maintained by the Responsible Party.
- A deicing log shall be maintained that tracks the amount and type of deicing materials applied to the site.
- Any transfer of responsibility for the I&M activities or transfer of ownership shall be documented to the NHDES Water Division in writing.

Inspection & Maintenance Checklist/Log

The following pages contain an Inspectison & Maintenance Checklist, a blank copy of the Stormwater Management System's Inspection & Maintenance Log, and a reduced copy of the Grading and Utility Plans. These forms/plans are provided to assist the applicant with the inspection and maintenance of the Stormwater Management System.

Invasive Species Information

A copy of the New Hampshire Department of Agriculture, Markets & Food's document "Control of Invasive Plants" is provide at the end of this manual.

Stormwater Management System
Inspection & Maintenance Checklist

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Source Control	Routinely	Inspect any outdoor waste receptacles areas for spillage. Inspect and clear litter from crushed stone pad and perimeter landscape areas.	Clean as required.
Deicing Agents	N/A	N/A	Use sand as primary agent for site roadway and parking safety during winter.

Stormwater Management System Inspection & Maintenance Checklist

Closed Drainage System			
Drainage Pipes	1 time per 2 years	Check for sediment accumulation/clogging.	≥ 2 in. sediment depth.
Infiltration Basins	2 times per year	Check for sediment accumulation/clogging	Clean/repair as needed.
Subsurface Detention Basins	2 times per year	Check for sediment accumulation.	Refer to Manufacturers Requirements
Bioretention Pond	2 times per year	Check for sediment accumulation/clogging	Refer to Manufacturers Requirements
Outlet Control Structure	2 times per year	Check for sediment accumulation/clogging	Clean/repair as needed.
Outfalls	Monthly for first 3 months and 1 time per year thereafter	-Check for sediment, trash and debris accumulation. -Check for vegetation blocking outfall. Inspect rip rap for washout.	Clean/repair as needed.

Stormwater Management System
Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed (List Items/Comments)	Date of Cleaning/Repair	Performed By

Stormwater Management System
Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed <i>(List Items/Comments)</i>	Date of Cleaning/Repair	Performed By

Notes:

Stormwater Management System
Deicing Log

Date	Type	Location/Amount	Name(s) of Maintenance Personnel

Control of Invasive Plants

New Hampshire Department of Agriculture, Markets & Food

Douglas Cygan

603-271-3488

doug.cygan@agr.nh.gov

This guide lists garden plants and weeds which are already causing significant changes to natural areas in the Mid-Atlantic. Measures for controlling each species are indicated by number, e.g., (3), in the text with a full explanation at the end of this article. Click on the word Control: to jump to that section. Then click your "back" button to return to the text. Following each section suggested alternative plants are given. These alternatives are native plants, well adapted and needing little care, attractive to birds and butterflies, and an important part of the food web for our indigenous species.

INVASIVE TREES

NORWAY MAPLE (*Acer platanoides*) has large leaves similar to sugar maple. To easily confirm that the plant is Norway maple, break off a leaf and if it's truly Norway maple it will exude milky white sap. Fall foliage is yellow. (Exception: cultivars such as 'Crimson King,' which have red leaves in spring or summer, may have red autumn leaves.) The leaves turn color late, usually in late October after native trees have dropped their foliage. This tree suppresses growth of grass, garden plants, and forest understory beneath it, at least as far as the drip-line. Its wind-borne seeds can germinate and grow in deep shade. The presence of young Norway maples in our woodlands is increasing.

Control: (1); (7), (8), (9), or (10); (11) in mid-October to early November, before the leaves turn color.

TREE OF HEAVEN (*Ailanthus altissima*), is incredibly tough and can grow in the poorest conditions. It produces huge quantities of wind-borne seeds, grows rapidly, and secretes a toxin that kills other plants. Its long compound leaves, with 11-25 lance-shaped leaflets, smell like peanut butter or burnt coffee when crushed. Once established, this tree cannot be removed by mechanical means alone.

Control: (1) - seedlings only. Herbicide - use Garlon 3a (9) with no more than a 1" gap between cuts, or (10); plus (11) on re-growth. Or paint bottom 12" of bark with Garlon 4 Ultra (in February or March to protect surrounding plants). USE MAXIMUM STRENGTH SPECIFIED ON LABEL for all herbicide applications on Ailanthus. Glyphosate is not effective against Ailanthus.

INVASIVE SHRUBS

AUTUMN OLIVE (*Eleagnus umbellata*): Formerly recommended for erosion control and wildlife value, these have proved highly invasive and diminish the overall quality of wildlife habitat.

Control: (1) - up to 4" diameter trunks; (7) or (10) or bury stump. Do not mow.

MULTIFLORA ROSE (*Rosa multiflora*), formerly recommended for erosion control, hedges, and wildlife habitat, becomes a huge shrub that chokes out all other vegetation and is too dense for many species of birds to nest in, though a few favor it. In shade, it grows up trees like a vine. It is covered with white flowers in June. (Our native roses have fewer flowers, mostly pink.) Distinguish multiflora by its size, and by the presence of very hard, curved thorns, and a fringed edge to the leaf stalk.

Control: (1) - pull seedlings, dig out larger plants at least 6" from the crown and 6" down; (4) on extensive infestations; (10) or (11). It may remain green in winter, so herbicide may applied when other plants are dormant. For foliar application, mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants.

BUSH HONEYSUCKLES (*Lonicera spp.*), including Belle, Amur, Morrow's, and Tatarian honeysuckle. (In our region, assume that any honeysuckle is exotic unless it is a scarlet-flowered vine). Bush honeysuckles create denser shade than native shrubs, reducing plant diversity and eliminating nest sites for many forest interior species.

Control: (2) on ornamentals; (1); on shady sites only, brush cut in early spring and again in early fall (3); (4) during the growing season; (7); or (10) late in the growing season.

BLUNT-LEAVED PRIVET (*Ligustrum obtusifolium*). Control: (1); (7) or (10); or trim off all flowers. Do not cut back or mow.

BURNING BUSH, WINGED EUONYMUS (*Euonymus alatus*), identified by wide, corky wings on the branches.

Control: (1); (7) or (10); or trim off all flowers.

JAPANESE BARBERRY (*Berberis thunbergii*), and all cultivars and varieties.

Control: (1); (7) or (10); or trim off all flowers.

INVASIVE WOODY VINES

All of these vines shade out the shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle. DO NOT PLANT NEXT TO OPEN SPACE.

JAPANESE HONEYSUCKLE (*Lonicera japonica*), including Hall's honeysuckle, has gold-and-white flowers with a heavenly scent and sweet nectar in June. This is probably the familiar honeysuckle of your childhood. It is a rampant grower that spirals around trees, often strangling them.

Control: (1); (3); (10); (11) in fall or early spring when native vegetation is dormant. Plan to re-treat repeatedly.

ORIENTAL BITTERSWEET (*Celastrus orbiculatus*) has almost completely displaced American bittersweet (*C. scandens*). The Asian plant has its flowers and bright orange seed capsules in clusters all along the stem, while the native species bears them only at the branch tips.

Control: (1); keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits; to eradicate use Garlon 3a (10).

JAPANESE KNOTWEED, MEXICAN BAMBOO (*Polygonum cuspidatum*) can grow in shade. The stems have knotty joints, reminiscent of bamboo. It grows 6-10' tall and has large pointed oval or triangular leaves.

Control: Cut at least 3 times each growing season and/or treat with Rodeo (10) or (11). In gardens, heavy mulch or dense shade may kill it.

INVASIVE HERBACEOUS PLANTS

GARLIC MUSTARD (*Alliaria petiolata*, *A. officinalis*), a white-flowered biennial with rough, scalloped leaves (kidney-, heart- or arrow-shaped), recognizable by the smell of garlic and taste of mustard when its leaves are crushed. (The odor fades by fall.)

Control: Pull before it flowers in spring (1), removing crown and roots. Tamp down soil afterwards. Once it has flowered, cut (2), being careful not to scatter seed, then bag and burn or send to the landfill. (11) may be appropriate in some settings.

JAPANESE STILT GRASS (*Microstegium vimineum*) can be identified by its lime-green color and a line of silvery hairs down the middle of the 2-3" long blade. It tolerates sun or dense shade and quickly invades areas left bare or disturbed by tilling or flooding. An annual grass, it builds up a large seed bank in the soil.

Control: Easily pulled in early to mid-summer (1) - be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to landfill. Mowing weekly or when it has just begun to flower may prevent it from setting seed (3). Use glyphosate (11) or herbicidal soap (less effective) on large infestations. Follow up with (5) in spring.

MILE-A-MINUTE VINE, DEVIL'S TAIL TEARTHUMB (*Polygonum perfoliatum*), a rapidly growing annual vine with triangular leaves, barbed stems, and turquoise berries in August which are spread by birds. It quickly covers and shades out herbaceous plants.

Control: same as for stilt grass.

SPOTTED KNAPWEED (*Centaurea maculosa*), a biennial with thistle-like flowers.

Control: Do NOT pull (1) unless the plant is young and the ground is very soft - the tap root will break off and produce several new plants. Wear sturdy gloves. (2); (6); (10) or (11).

CONTROL MEASURES

- (1) PULL seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs.
- (2) DEADHEAD to prevent spread of seeds of invasive plants. Cut off seeds or fruits before they ripen. Bag, and burn or send to a landfill.
- (3) MOW or CUTTING at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year.
- (4) CONTROLLED BURNING during the spring, repeated over several years, allows native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective.
- (5) Use a CORN-BASED PRE-EMERGENCE HERBICIDE on annual weeds. This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
- (6) In lawns, SPOT TREAT with BROAD-LEAF WEEDKILLER. Good lawn-care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations.
- (7) CUT DOWN the tree. Grind out the stump, or clip off re-growth.
- (8) GIRDLE tree: cut through the bark and growing layer (cambium) all around the trunk, about 6" above the ground. Girdling is most effective in spring when the sap is rising, and from middle to late summer when the tree is sending down food to the roots. Clip off sucker sprouts.
- (9) FRILL: Using a machete, hatchet or similar device, hack scars (several holes in larger trees) downward into the cambium layer, and squirt in glyphosate (or triclopyr if recommended in text above). Follow label directions for Injection and Frill Applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.
- (10) CUT STEM / CUT STUMP WITH GLYPHOSATE (or triclopyr if specified above). Follow label directions for Cut Stump Application. Clip off sucker sprouts or paint with glyphosate. See Note on Herbicides.
- (11) OLIAIR SPRAY WITH GLYPHOSATE herbicide (see Note on Herbicides). Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn't been entirely killed.

NOTE ON HERBICIDES: It is highly recommended that small populations try to be controlled using non-chemical methods wherever feasible. However, for large infestations, and for a few plants specified above, herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some plants; for these, triclopyr (Garlon) may be indicated. When using herbicides, read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

Appendix F: Infiltration Feasibility Report

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INFILTRATION FEASIBILITY REPORT WILL BE FINALIZED ONCE TEST PITS AND INFILTRATION RATE TESTING HAS BEEN COMPLETED FOR THE SUBJECT SITE.

Appendix G: Remediation Site Report

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Remediation Site Report

PROJECT:

The Brickyard Residential Development
Lebanon, New Hampshire
August 2024

I. Project Overview

The subject property is listed on Lebanon's Tax Assessor's Map 48 Lots 1,2 and 4, and Map 63 Lot 1, located on Hanover Street, Lebanon, NH. The parcels are approximately 133.5 acres in area. The existing parcels are mostly undeveloped and consists primarily of woodlands. Limited areas of development exist where the former brick company operated.

The owner and applicant for this project is Brickyard One Nominee Trust.. The proposal entails the construction of up to 474 residential multifamily units throughout 11 buildings on site. A new paved driveway access is proposed, along with utilities and stormwater management systems. Some of the stormwater management practices on site utilize infiltration, including two underground chamber systems and one aboveground biofiltration basin. These stormwater best management practices will work to ensure that the post-development runoff is less than or equal to the pre-development runoff. Erosion control will be implemented to prevent sediment deposition and soil loss, both during and following construction activities. Methods of erosion control proposed for this site include silt fencing, erosion control blankets, and stone check dams.

Some of the aforementioned stormwater controls rely on infiltration and generate groundwater recharge for the property. Per Env-Wq 1507.02(c), infiltration is prohibited for stormwater in areas that have contaminants in groundwater at levels above the ambient groundwater quality standards (AGQS) established in Env-Or 603.03; or in soil with contaminants at levels above site-specific soil standards developed pursuant to Env-Or 606.119.

II. Remediation Sites

There are five remediation site locations within 500 ft of the subject property. These are the Former Muffler House, the Brousseau Residence, the Knights/Willey Property, Lane NH Holdings LLC., and a Motor Vehicle Accident site. Documentation for each remediation site has been attached, but it doesn't appear that any of the sites contain active contamination sites, as they are noted to be closed or inactive. The Motor Vehicle Accident site was not found on the NHDES OneStop system.



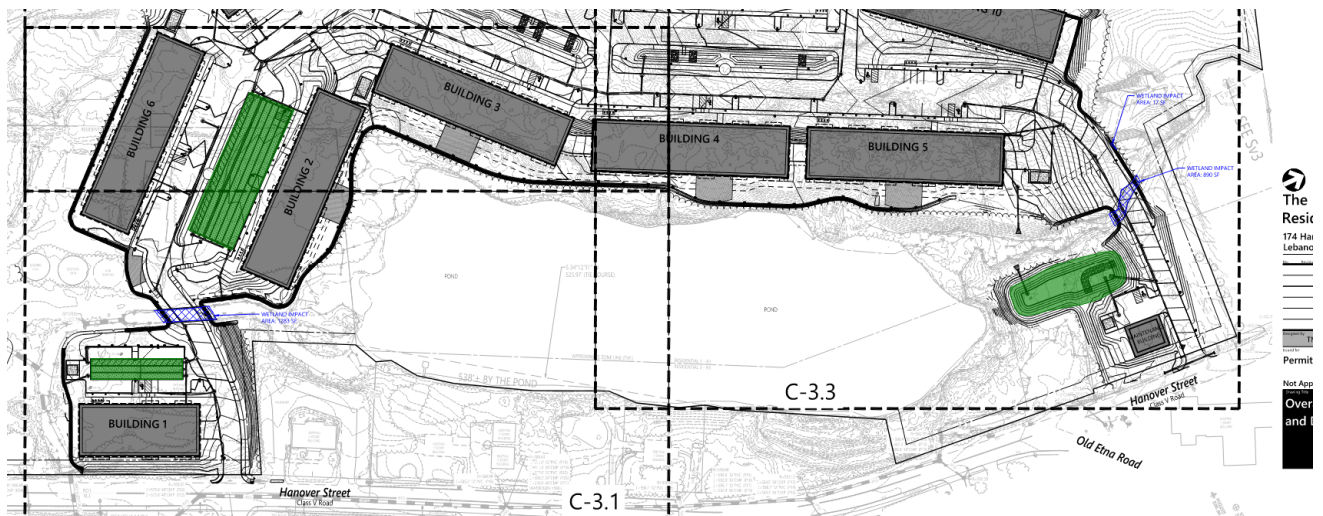
III. PFAS Sampling Data

There are no PFAS sampling sites located within 1,000 feet of the subject property. Additionally, the property is not located within the Consent Decree Boundary for the Saint-Gobain Performance Plastics site. Therefore, it can be assumed that PFAS contamination is not present on the site.



IV. Location of Infiltration Practice

Three infiltration practices are proposed, one near the south entrance at Building 1, one between Buildings 2 and 6, and one near the north driveway adjacent to the Maintenance Building. All 3 locations have pretreatment provided.





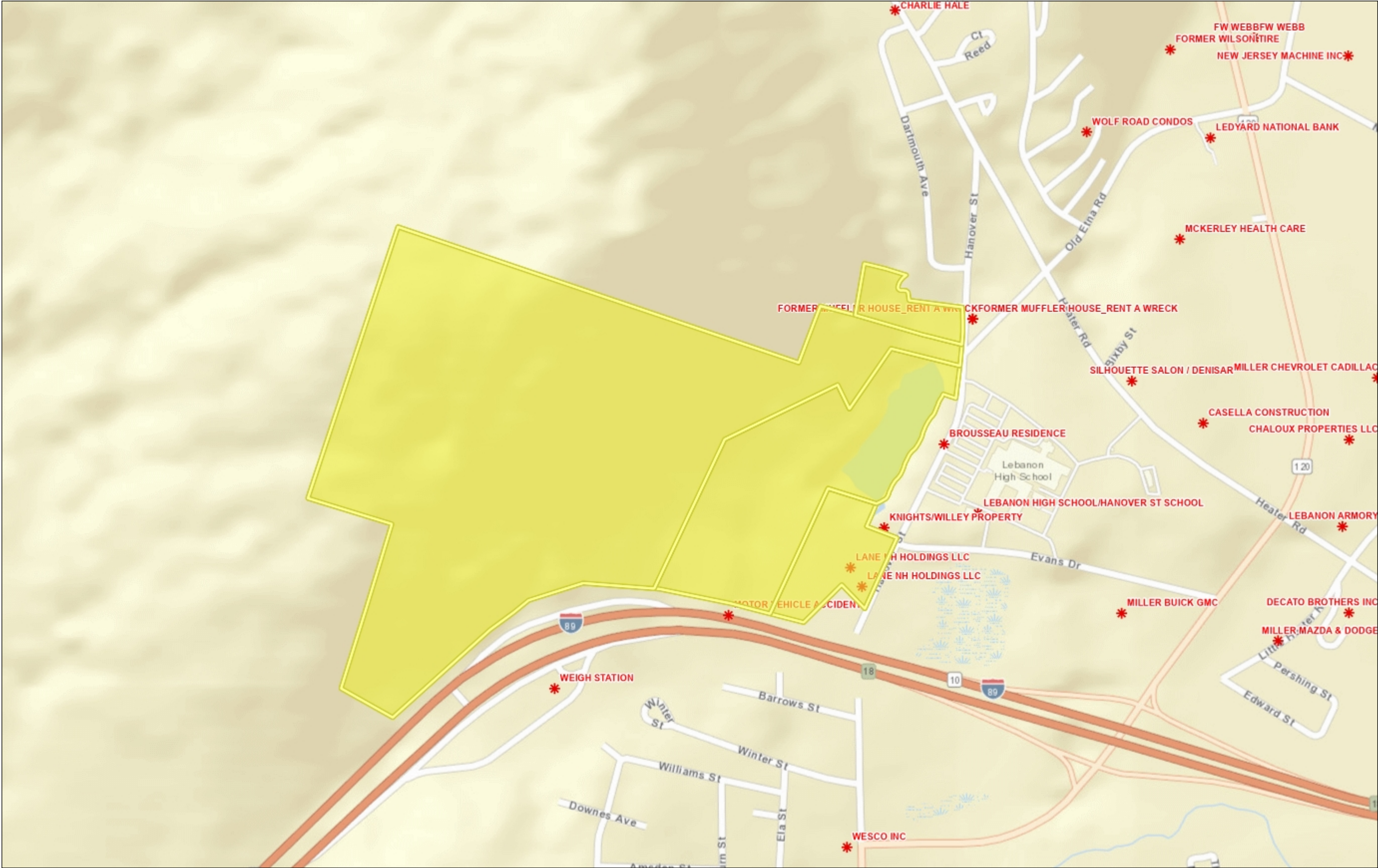
V. Potential Impacts

The evaluations from the Remediation Sites and the PFAS Sampling Data indicate that there are no potential impacts due to the existing remediation sites being closed or inactive in NHDES OneStop and no PFAS sampling sites located nearby.



VI. Summary

The purpose of the PFAS/Remediation site investigation is to ensure stormwater practices are not located on contaminated soils or contaminated groundwater. From the information collected, it is unlikely that the soils or groundwater from the site would be contaminated from either of the sources. In addition, there will be no anticipated soil or groundwater contamination from any of proposed stormwater management practices.



Legend

- * Remediation Sites
- Public Water Supply Wells

1: 9,028



Notes

This map was automatically generated using Geocortex Essentials.

0.3 0 0.14 0.3 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Latitude Geographics Group Ltd.

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

8/5/2024

On-premise Use Facility Containing Fuel Oil Project Report

1 of 5

Site Number: 199708025

Project Number: 0007212

Name and Address: Brousseau Residence
200 Hanover Street
Lebanon
[Mapit](#)

Responsible Party: Tim Brousseau
Lebanon NH 03766

Phone: 603-448-6503

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 08/23/1997

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 01/22/1998

MTBE: N

Brownfield: N

Project Related Documents (5)				
	Document Type	Name/Title	Date Submitted	File Size
4126917	NOTIFICATION	MILTON TAX MAP 42	07/02/2008	.21 MB
3799648	CORRESPONDENCE	CORRESPONDENCE DATED 3/23/04	03/23/2004	1.28 MB
4425190	CORRESPONDENCE	CORRESPONDENCE 12/11/97 TO 1/22/98	12/11/1997	.10 MB
4425188	PERMIT INFORMATION	TGP-970825-L-001 GROUNDWATER DISCHARGE PERMIT SAMPLING RESULTS 20-OCT-97	10/24/1997	.87 MB
4425189	REPORT TO DES	UST CLOSURE REPORT	10/09/1997	.31 MB

Site Number: **199708025**Project Number: **0007212**Name and Address: **BROUSSEAU RESIDENCE
200 HANOVER STREET
LEBANON**Responsible Party: **TIM BROUSSEAU
LEBANON NH 03766**[Mapit](#)

PHONE: 603-448-6503

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **08/23/1997**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/22/1998**MTBE: **N**Brownfield: **N**

Activities (9)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/14/2000	Fund Reimbursement Request Received	KIRN	06/22/2000	Fund Reimbursement Request Approved	
03/13/2000	Initial Response Report	KIRN	06/20/2000	Regulatory Action Compl.-DES File Closed	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4425179	CORRESPONDENCE-FROM	CERTIFICATE OF NO FURTHER ACTION & FILE CLOSE OUT MEMO	06/20/2000 .04 MB
4425180	REPORT TO DES	INITIAL RESPONSE ACTION REPORT 9-MAR-00	03/13/2000 .62 MB

12/21/1998	Initial Response Budget Received	CHWASCIK	12/22/1998	Initial Response Budget Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425181	WORKSCOPE/BUDGET	WORKSCOPE FOR INITIAL RESPONSE ACTION	12/21/1998 .15 MB

01/22/1998	Fund Reimbursement Request Received	LEVERGOOD	04/22/1998	Fund Reimbursement Request Approved	
11/04/1997	Initial Response Budget Received	CHWASCIK	11/05/1997	Initial Response Budget Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425182	WORKSCOPE/BUDGET	WORKSCOPE FOR CONTINUING PRODUCT RECOVERY AND ER WORK	11/05/1997 .09 MB

8/5/2024

On-premise Use Facility Containing Fuel Oil Project Report

3 of 5

Site Number: 199708025

Project Number: 0007212

Name and Address: BROUSSEAU RESIDENCE
200 HANOVER STREET
LEBANON

Responsible Party: TIM BROUSSEAU
LEBANON NH 03766

[Mapit](#)

PHONE: 603-448-6503

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 08/23/1997

Eligible: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 01/22/1998

MTBE: N

Brownfield: N

Activities (9)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/08/1997	Additional Information Received	LOCKER	09/12/1997	Groundwater Permit Issued	

Activity Documents (2)					
Document Type		Document Title	Document Date	File Size	
4425184	PERMIT INFORMATION	TGP-970825-L-001 TEMPORARY GROUNDWATER DISCHARGE PERMIT	09/12/1997	.06 MB	
4425183	PERMIT INFORMATION	TGP-970825-L-001 APPLICATION FOR TEMPORARY GROUNDWATER DISCHARGE PERMIT 8-SEP-97	09/10/1997	.36 MB	

09/08/1997		CHWASCIK	09/08/1997		
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Activity Documents (1)					
Document Type		Document Title	Document Date	File Size	
4425185	WORKSCOPE/BUDGET	WORKSCOPE FOR PUMP & TREAT	09/08/1999	.34 MB	

08/26/1997		CHWASCIK	08/26/1997		
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Activity Documents (1)					
Document Type		Document Title	Document Date	File Size	
4425186	WORKSCOPE/BUDGET	WORKSCOPE AUTHORIZATION FOR INITIAL RESPONSE ACTION	08/26/1997	.12 MB	

8/5/2024

On-premise Use Facility Containing Fuel Oil Project Report

4 of 5

Site Number: 199708025

Project Number: 0007212

Name and Address: Brousseau Residence
200 Hanover Street
Lebanon
[Mapit](#)

Responsible Party: Tim Brousseau
Lebanon NH 03766

Phone: 603-448-6503

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 08/23/1997

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 01/22/1998

MTBE: N

Brownfield: N

Activities (9)					
Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/23/1997	Discharge of a Regulated Substance	CHWASCIAK	09/08/1997	Emergency Response to Inland Water Spill	

Activity Documents (1)				
Document Type	Document Title	Document Date	File Size	
4425187	REPORT FROM DES PETROLEUM DISCHARGE INCIDENT REPORT & SITE INVESTIGATION SUMMARY REPORT	08/25/1997	.06 MB	

Site Number: 199708025

Project Number: 0007212

Name and Address: BROUSSEAU RESIDENCE
200 HANOVER STREET
LEBANON

Responsible Party: TIM BROUSSEAU
LEBANON NH 03766

[Mapit](#)

PHONE: 603-448-6503

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 08/23/1997

Eligibile: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 01/22/1998

MTBE: N

Brownfield: N

No Vapor Recovery Information

8/5/2024

Hazardous Waste Generator Report

1 of 2

EPA Id: NHD510081797

Current Name and Address: KNIGHTS WILLEY
190 HANOVER ST
LEBANON

[Mapit](#)

Effective Date: 03/06/1999

Generator Size: SQG(CESQG)

Handler Id: 0005997

Contact Information: ROY KNIGHT
190 HANOVER ST
LEBANON NH 03766
603-795-2400

Current Status: INACTIVE

Owner:

Manifests (1)													
Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids		Facility Id		Facility Signature			
00696	CTF149331	03/05/1999	09/29/1992	NHD986471597	09/29/1992			CTD021816889		11/09/1999			
Waste Streams (1)													
DOT Id	Waste Description			Waste Codes		# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Dates
NA1993	Refrigerating machine			1: CR02-CT - Waste Oil		1	TT	300	GALLONS	NON NH OR NON-HAZ	2501	0	03/05/1999 - 09/29/1992

8/5/2024

Hazardous Waste Generator Report

2 of 2

EPA Id: NHD510081797

Current Name and Address: KNIGHTS WILLEY
190 HANOVER ST
LEBANON

[Mapit](#)

Effective Date: 03/06/1999

Generator Size: SQG(CESQG)

Handler Id: 0005997

Contact Information: ROY KNIGHT
190 HANOVER ST
LEBANON NH 03766
603-795-2400

Current Status: INACTIVE

Owner:

Facilty
Signature
Date

.1/09/1992

iscrepancy

8/5/2024

On-premise Use Facility Containing Fuel Oil Project Report

1 of 4

Site Number: 199803053

Project Number: 0007794

Name and Address: KNIGHTS/WILLEY PROPERTY
190 HANOVER STREET
LEBANON

Responsible Party: C. ROY KNIGHTS JOSEPH B.WILLEY
LYME NH 03768

[Mapit](#)

PHONE: 603-448-1295

Wellhead Protection Area: No

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 01/22/1998

Eligibile: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 12/21/1998

MTBE: N

Brownfield: N

Project Related Documents (3)				
	Document Type	Name/Title	Date Submitted	File Size
3799649	CORRESPONDENCE	CORRESPONDENCE DATED 3/23/04	03/23/2004	1.28 MB
4425202	CORRESPONDENCE	CORRESPONDENCE 1/6/98 TO 11/25/98	01/06/1998	.15 MB
4425107	REGISTRATION	RECORD OF TELEPHONE CONVERSATION	09/29/1992	.03 MB

Site Number: 199803053

Project Number: 0007794

Name and Address: **KNIGHTS/WILLEY PROPERTY**
190 HANOVER STREET
LEBANON

Responsible Party: **C. ROY KNIGHTS JOSEPH B.WILLEY**
LYME NH 03768

[Mapit](#)

PHONE: 603-448-1295

Wellhead Protection Area: No

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 01/22/1998

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 12/21/1998

MTBE: N

Brownfield: N

Activities (6)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/21/1998	Fund Reimbursement Request Received	ESTABROOK	02/25/1999	Fund Reimbursement Request Approved	
10/27/1998	Initial Response Report	CHWASCIK	10/27/1998	Regulatory Action Compl.-DES File Closed	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4425197	CORRESPONDENCE-FROM	10/29/1998	.04 MB
4425198	REPORT TO DES	10/27/1998	.18 MB

05/11/1998	Initial Response Budget Received	CHWASCIK	05/12/1998	Initial Response Budget Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425106	WORKSCOPE/BUDGET	05/11/1998	.08 MB

04/10/1998	Initial Response Budget Received	CHWASCIK	04/10/1998	Initial Response Budget Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425199	WORKSCOPE/BUDGET	04/10/1998	.09 MB

Site Number: **199803053**Project Number: **0007794**Name and Address: **KNIGHTS/WILLEY PROPERTY
190 HANOVER STREET
LEBANON**Responsible Party: **C. ROY KNIGHTS JOSEPH B.WILLEY
LYME NH 03768**[Mapit](#)

PHONE: 603-448-1295

Wellhead Protection Area: **No**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **01/22/1998**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **12/21/1998**MTBE: **N**Brownfield: **N**

Activities (6)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/25/1998	Initial Response Budget Received	CHWASCIK	03/30/1998	Initial Response Budget Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425200	WORKSCOPE/BUDGET	WORKSCOPE FOR SOIL REMOVAL AND RESTORATION	03/25/1998 .11 MB

01/22/1998	Discharge of a Regulated Substance	CHWASCIK	01/22/1998	Additional Information Requested	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425201	REPORT TO DES	RESULTS OF TEST EXCAVATIONS 19-JAN-98	01/22/1998 .08 MB

Site Number:	199803053	Project Number:	0007794
Name and Address:	KNIGHTS/WILLEY PROPERTY 190 HANOVER STREET LEBANON	Responsible Party:	C. ROY KNIGHTS JOSEPH B.WILLEY LYME NH 03768
Mapit		PHONE:	603-448-1295
Wellhead Protection Area:	No	Risk Level:	NO SOURCES/NO AGQS VIO'S FROM ONSITE
Assigned To:	CLOSED	Discovery Date:	01/22/1998
Eligibile:	PERMANENTLY ELIGIBLE	Eligibilty Determined on:	12/21/1998
MTBE:	N	Brownfield:	N

No Vapor Recovery Information

Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y**

Project Related Documents (16)

	Document Type	Name/Title	Date Submitted	File Size
4029494	PERMIT INFORMATION	GWP-198805017-L-002 APRIL 2007 GROUNDWATER SAMPLING REPORT 30-MAY-2007	05/31/2007	1.07 MB
3976204	PERMIT INFORMATION	GWP-198805017-L-001 MAY 2006 GROUNDWATER SAMPLING REPORT 06-JUN-2006	06/06/2006	.74 MB
3976884	PERMIT INFORMATION	NOTIFICATION OF DEED RECORDATION 26-MAY-06	05/31/2006	.16 MB
3973248	PERMIT INFORMATION	GWP-198805017-L-001 DEED RECORDATION	05/31/2006	.13 MB
4768723	WORKSCOPE/BUDGET	COPIES OF WORK SCOPES FOR SOIL EXCAVATION 16-JUL-2003	07/16/2003	.26 MB
4768597	CORRESPONDENCE-FROM	LETTER OF NON COMPLIANCE RETURNED TO SENDER DES 21-MAY-1992	05/21/1992	.06 MB
4768596	PERMIT INFORMATION	NOTIFICATION OF NON COMPLIANCE WITH RSA 485-A 19-AUG-1991	08/19/1991	.05 MB
4768595	CORRESPONDENCE-FROM	TRANSFER OF OWNERSHIP OF GROUNDWATER PERMIT GWP # 8905- 1 3L 11-FEB-1991	02/11/1991	.04 MB
4768592	PERMIT INFORMATION	GWP 8905-13L PERMIT TRANSFER TO C.R.WILSON PROPERTIES, NH INC. 30-JUL-1989	08/01/1989	.03 MB
4768591	CORRESPONDENCE-TO	REQUEST FOR GWP TO BE TRANSFERED TO NEW OWNER 15-MAY-1989	05/18/1989	.02 MB
4768590	MONITORING NONPERMIT	RESULTS OF ANALYTICAL TESTS PERFORMED ON GROUNDWATER SAMPLES 7-NOV-1988	11/07/1988	.36 MB
4769055	REPORT TO DES	ENVIRONMENTAL SITE ASSESSMENT REPORT 09-DEC-1987	05/06/1988	2.27 MB
4768589	REPORT TO DES	REMEDIAL CLEANUP ACTIVITIES 22-APR-1988	04/22/1988	2.08 MB
4769890	MONITORING NONPERMIT	COPIES OF BORING LOGS, WELL LOGS #1 & #5 29-FEB-1988	03/10/1988	1.34 MB
4770956	CORRESPONDENCE	MISC CORRESPONDENCE 1/28/1988 TO 4/19/2004	01/28/1988	.58 MB
4768984	SITE PLAN	SITE PLAN 03-MAY-1988	05/11/0988	.88 MB

Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/24/2008	Cost Recovery Payment Received	BLEDSE	10/24/2008	No Action Necessary (Report filed)	
12/21/2007	Fund Reimbursement Request Received	ESTABROOK	03/26/2008	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4067427	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 14	03/26/2008 .02 MB

12/06/2007	Fund Reimbursement Request Received	BLEDSE	10/24/2008	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4143834	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 13	10/24/2008 .02 MB

11/16/2007	Annual Report Received	ESTABROOK	12/17/2007	Regulatory Action Compl.-DES File Closed	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4056238	CORRESPONDENCE-FROM	CERTIFICATE OF NO FURTHER ACTION & FILE CLOSE OUT MEMO IN RESPONSE TO ANNUAL 2007 GROUNDWATER SAMPLING REPORT PREPARED BY CORPORATE ENVIRONMENTAL ADVISORS DATED NOVEMBER 16 2007	12/10/2007 .06 MB
4053239	PERMIT INFORMATION	GWP-198805017-L-002 2007 ANNUAL GROUNDWATER SAMPLING REPORT 16-NOV-2007	11/16/2007 6.91 MB

Site Number: 198805017

Project Number: 0000551

Name and Address: LANE NH HOLDINGS LLC
 HANOVER ST EXT
 LEBANON

Responsible Party: LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
 276 KINGSBURY GRADE, STE 2000
 LAKE TAHOE NV 89449-3390

[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 05/06/1988

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 07/17/2002

MTBE: N

Brownfield: Y

Activities (42)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/28/2007	Fund Reimbursement Request Received	ESTABROOK	09/20/2007	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4046064	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 12	09/20/2007 .02 MB

05/31/2007	Permit Related GW Data Submittal	ESTABROOK	06/14/2007	Technical Report Approved	
11/22/2006	Fund Reimbursement Request Received	ESTABROOK	02/22/2007	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4015336	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 11	02/22/2007 .02 MB

11/15/2006	Annual Report Received	ESTABROOK	11/28/2006	Technical Report Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4003940	CORRESPONDENCE-FROM	RESPONSE TO ANNUAL GROUNDWATER SAMPLING REPORT PREPARED BY CORPORATE ENVIRONMENTAL ADVISORS DATED NOVEMBER 15 2006	11/28/2006 .09 MB
4002660	PERMIT INFORMATION	GWP-198805017-L-002 ANNUAL GROUNDWATER REPORT 15-NOV-2006	11/15/2006 1.13 MB

Site Number: 198805017

Project Number: 0000551

Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390

[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 05/06/1988

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 07/17/2002

MTBE: N

Brownfield: Y

Activities (42)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/10/2006	Fund Reimbursement Request Received	ESTABROOK	09/07/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3992068	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 10	09/06/2006 .02 MB

	BLED SOE	07/10/2006	Additional Information Requested	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4567528	CORRESPONDENCE-FROM	STATE FUND DEDUCTIBLE INVOICE	07/10/2006 .03 MB

06/19/2006	Fund Reimbursement Request Received	ESTABROOK	08/29/2006	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3989874	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 9	08/29/2006 .02 MB

06/06/2006	Permit Related GW Data Submittal	ESTABROOK	06/09/2006	Technical Report Approved	
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Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/02/2006	Fund Reimbursement Request Received	BLED SOE	07/08/2006	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3980795	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 8	07/08/2006 .02 MB

02/17/2006	Groundwater Permit Application Received	ESTABROOK	03/10/2006	Groundwater Permit Issued	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
3958675	PERMIT INFORMATION	GWP-198805017-L-001 GROUNDWATER MANAGEMENT PERMIT	03/10/2006 .13 MB
3956155	PERMIT INFORMATION	GWP-198805017-L-001 GROUNDWATER MANAGEMENT PERMIT APPLICATION 15-FEB-06	02/17/2006 3.28 MB

11/04/2005	Non-Permit GW Monitoring Result Received	ESTABROOK	12/05/2005	Groundwater Permit Requested	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
3947077	CORRESPONDENCE	RESPONSE TO SEPTEMBER 2005 GROUNDWATER SAMPLING REPORT PREPARED BY APPLIED GEOSYSTEMS DATED NOVEMBER 7 2005	12/05/2005 .22 MB
3943142	MONITORING NONPERMIT	APRIL (SEPTEMBER) 2005 GROUNDWATER SAMPLING REPORT 07-NOV-2005	11/04/2005 .73 MB

Site Number: 198805017

Project Number: 0000551

Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390

[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 05/06/1988

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 07/17/2002

MTBE: N

Brownfield: Y

Activities (42)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
		ESTABROOK	10/04/2005	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3939872	CORRESPONDENCE	RESPONSE TO: OVERDUE GROUNDWATER QUALITY DATA	10/04/2005 .22 MB

11/29/2004	Fund Reimbursement Request Received	ESTABROOK	12/22/2004	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3876300	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 7	12/22/2004 .02 MB

11/29/2004	Non-Permit GW Monitoring Result Received	ESTABROOK	12/07/2004	Technical Report Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
3871834	SITE PLAN	Site Plan From Groundwater Monitoring Results Dated 11/22/04	11/29/2004 1.31 MB
3871833	MONITORING NONPERMIT	Groundwater Monitoring Results Dated 11/22/04	11/29/2004 2.45 MB

Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/27/2004	Fund Reimbursement Request Received	ESTABROOK	10/14/2004	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3856868	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 6	10/14/2004 .03 MB

08/20/2004	Additional Information Received	ESTABROOK	09/10/2004	Technical Report Approved	
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Activity Documents (3)

Document Type	Document Title	Document Date	File Size
3854865	CORRESPONDENCE	RESPONSE TO: REMEDIAL PLAN IMPLEMENTATION AND GROUNDWATER MONITORING RESULTS PREPARED BY BRUNO ASSOC. INC. P.C. AND HARPER ENVIRONMENTAL ASSOC. DATED AUGUST 17 2004 AND GROUNDWATER MONITORING RESULTS	09/13/2004 .41 MB
3863874	CORRESPONDENCE	RESPONSE TO: REMEDIAL PLAN IMPLEMENTATION AND GROUNDWATER MONITORING RESULTS PREPARED BY BRUNO ASSOC. INC. P.C. AND HARPER ENVIRONMENTAL ASSOC. DATED AUGUST 17 2004 AND GROUNDWATER MONITORING RESULTS	09/13/2004 2.05 MB
3845958	REPORT	Remedial Plan Implementation and Groundwater Monitoring Results Dated 8/17/04	08/20/2004 46.65 MB

08/17/2004	Non-Permit GW Monitoring Result Received	ESTABROOK	09/10/2004	Technical Report Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3846005	MONITORING NONPERMIT	July 2004 Groundwater Monitoring Results Dated 8/10/04	08/17/2004 13.86 MB

Site Number: 198805017

Project Number: 0000551

Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390

[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 05/06/1988

Eligible: PERMANENTLY ELIGIBLE

Eligibility Determined on: 07/17/2002

MTBE: N

Brownfield: Y

Activities (42)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/13/2004	Fund Reimbursement Request Received	ESTABROOK	09/29/2004	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3852193	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 5	09/29/2004 .02 MB

01/08/2004	Fund Reimbursement Request Received	KIRBY	02/17/2004	Fund Reimbursement Request Approved	
01/05/2004	Non-Permit GW Monitoring Result Received	KIRBY	01/15/2004	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768727	MONITORING NONPERMIT	GROUNDWATER AND SOIL SAMPLING RESULTS 30-DEC-2003	01/05/2004 1.16 MB

12/30/2003	Additional Information Received	KIRBY	04/07/2004	Technical Report Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
3863875	CORRESPONDENCE	RESPONSE TO GROUNDWATER AND SOIL SAMPLING RESULTS BY T & M CONSULTANTS DATED 12/30/03 BY G KIRBY	04/07/2004 2.05 MB
3811694	CORRESPONDENCE	RESPONSE TO GROUNDWATER AND SOIL SAMPLING RESULTS BY T & M CONSULTANTS DATED 12/30/03	04/07/2004 .15 MB

09/26/2003	Fund Reimbursement Request Received	KIRBY	10/20/2003	Fund Reimbursement Request Approved	
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Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/22/2003	Non-Permit GW Monitoring Result Received	KIRBY	09/25/2003	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768562	MONITORING NONPERMIT	SEPTEMBER 2003 DATA SUBMITTAL 17-SEP-2003	09/22/2003 .80 MB

07/07/2003	Fund Reimbursement Request Received	KIRBY	09/05/2003	Fund Reimbursement Request Approved	
06/30/2003	Non-Permit GW Monitoring Result Received	KIRBY	07/03/2003	Technical Report Approved	
06/30/2003	Non-Permit GW Monitoring Result Received	KIRBY	07/03/2003	Technical Report Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768560	MONITORING NONPERMIT	JUNE 2003 DATA SUBMITTAL 25-JUN-2003	06/25/2003 1.31 MB

06/27/2003	Fund Reimbursement Request Received	KIRBY	09/05/2003	Fund Reimbursement Request Approved	
02/27/2003	Work Scope Submitted	MONGEON	07/21/2003	Work Scope Approved	
02/04/2003	Site Investigation Report Received	KIRBY	02/21/2003	Groundwater Permit Requested	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4757544	CORRESPONDENCE-FROM	RESPONSE TO SUPPLEMENTAL SITE INVESTIGATION REPORT	02/21/2003 .06 MB
4768722	REPORT TO DES	SUPPLEMENTAL SITE INVESTIGATION 30-JAN-2003	02/04/2003 3.17 MB

12/20/2002	Change Order	KIRBY	12/23/2002	Work Scope Approved	
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Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
08/05/2002	Change Order	CROCE	08/06/2002	Change Order Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768620	WORKSCOPE/BUDGET	CHANGE ORDER FOR THREE-MAN CREW TO LOCATE MONITORING WELLS 05-AUG-2002	08/05/2002 .10 MB

02/01/2002	Additional Information Received	KIRBY	02/08/2002	Notice of Intent of State Action (state-	
04/05/1999	Additional Information Received	KIRBY	05/08/2000	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4757551	CORRESPONDENCE-FROM	REQUEST FOR GROUNDWATER SAMPLING	05/08/2000 .09 MB

03/01/1995	OBS - No direct conversion to new code	ESTABROOK	12/20/1995	Additional Information Requested	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768608	CORRESPONDENCE-TO	ISSUES CONCERNING GROUNDWATER CONTAMINATION AT THE SITE 20-DEC-1995	12/20/1995 .07 MB

Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y****Activities (42)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
		REICHARD	08/11/1992	Monitor. Results Viol.(GMZ, GMD Breach)	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768598	CORRESPONDENCE-FROM	NOTICE OF MONITORING RESULTS VIOLATION 11-AUG-1992	08/11/1992 .04 MB

		CARLSON	02/11/1991	Groundwater Permit Requested	
08/01/1990	Groundwater Permit Application Received	CARLSON	01/28/1991	Groundwater Permit Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4768594	CORRESPONDENCE-FROM	GROUNDWATER PERMIT APPLICATION SENT 28-JAN-1991	01/28/1991 .04 MB

03/23/1989		CARLSON	05/16/1989	Groundwater Permit Issued	
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Activity Documents (3)

Document Type	Document Title	Document Date	File Size
4214072	PERMIT INFORMATION	GWP-8905-13L GROUNDWATER MANAGEMENT PERMIT	05/16/1989 .11 MB
4769892	PERMIT INFORMATION	APPLICATION FOR GROUNDWATER MANAGEMENT PERMIT 20-MAR-1989	03/21/1989 .22 MB
4769891	REPORT TO DES	COPIES OF RETURN RECEIPTS FROM ABUTTERS 3-APR-1989	03/07/1989 .62 MB

Site Number: **198805017**Project Number: **0000551**Name and Address: **LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON**Responsible Party: **LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390**[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: **Unknown**Risk Level: **NO SOURCES/NO AGQS VIO'S FROM ONSITE**Assigned To: **CLOSED**Discovery Date: **05/06/1988**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **07/17/2002**MTBE: **N**Brownfield: **Y**

Permits (20)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permittee
GWP-198805017-L-002	MANAGEMENT	01/31/2006	03/10/2006	03/09/2011		LANE HOLDINGS LLC 1660 BRADY CIRCLE CARLSBAD CA 92008

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
12/30/2006	11/15/2006		ANNUAL GROUNDWATER REPORT	
12/30/2010			LAST ROUND THIS PERMIT	
06/15/2010				
12/09/2010			PERMIT RENEWAL DUE	
06/15/2009				
12/30/2008				
06/15/2008				
06/10/2006	05/31/2006		RECORDATION BK3283 PG0586	
06/15/2006	06/06/2006		MAY 2006 GW SAMPLING REPORT	
12/30/2009				
06/15/2007	05/31/2007		APRIL 2007 GW SAMPLING REPORT	
12/30/2007	11/16/2007		2007 ANNUAL GW SAMPLING REPORT	

8/5/2024

Leaking Underground Storage Tank Project Report

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Site Number: 198805017

Project Number: 0000551

Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS LLC ATTN: M. GEHRET ESQ
276 KINGSBURY GRADE, STE 2000
LAKE TAHOE NV 89449-3390

[Mapit](#)

PHONE: 603-228-1387

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 05/06/1988

Eligibile: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 07/17/2002

MTBE: N

Brownfield: Y

Permits (20)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
8905-13L		05/08/1989	05/08/1989	05/07/1994		

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
11/30/1993	11/11/2011		request current H2O data 12/20/95	
05/30/1993	01/01/2001			
11/30/1992	01/01/2001			
05/30/1992	01/01/2001			
11/30/1991	01/01/2001			
05/30/1991	01/01/2001		Black Hole Site - To Lombardo 8/94	
			B-1,B-5 Semi-ann. BTEX & Tot Petro Hydro	

No Vapor Recovery Information

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Unsolicited Site Assessment (HWRB reviewed) Project Report

1 of 2

Site Number: 198805017

Project Number: 0039223

Name and Address: **FORMER DENSMORE BRICKYARD SITE**
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS, LLC

[Mapit](#)

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 06/26/2019

Eligible:

Eligibility Determined on:

MTBE: N

Brownfield: Y

Activities (2)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/02/2021	Additional Information Received	MCCLUSKEY	04/19/2023	Regulatory Action Compl.-DES File Closed	RECOMMENDATIONS LIMITED TO KEEPING AN EYE ON AN OFFSITE, UPGRADIENT PLUME, REVISTING AN AREA THAT WAS OVERGROWN AT THE TIME OF THE SITE ASSESSMENT, AND ADDRESSING HAZARDOUS BUILDING MATERIALS.

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4912875	REPORT TO DES	04/02/2021	5.00 MB

06/26/2019	Additional Information Received	MCCLUSKEY	07/01/2019	TECHNICAL INFORMATION PROVIDED	ISSUED PETROLEUM BROWNFIELDS ELIGIBILITY DETERMINATION.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4785329	CORRESPONDENCE-FROM	07/01/2019	.50 MB

Site Number: 198805017

Project Number: 0039223

Name and Address: FORMER DENSMORE BRICKYARD SITE
HANOVER ST EXT
LEBANON

Responsible Party: LANE NH HOLDINGS, LLC

[Mapit](#)

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 06/26/2019

Eligible:

Eligibility Determined on:

MTBE: N

Brownfield: Y

No Vapor Recovery Information

8/5/2024

Underground Storage Tank Facility Report

1 of 2

Site Number: 198805017

Facility Id: 0114000

System Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Facility Owner: LANE NH HOLDINGS LLC
1660 BRADY CIRCLE
CARLSBAD CA 92008

[Mapit](#)

Registration Date: 04/16/2006

Facility Type: COMMERCIAL

Tanks (3)											
Active: 0 Closed: 3											
Tank #	Substance Stored	Capacity	Installed Date	Temporarily Closed Date	Permanently Closed Date	Assessment Received Date	Construction Material	Piping Material	System Type	Overfill Install Date	Spill Install Date
1	GASOLINE	1000	11/11/1911		03/11/1988		STEEL - BARE/GALV	STEEL - BARE/GALV			
2	GASOLINE	1000	11/11/1911		03/11/1988		STEEL - BARE/GALV	STEEL - BARE/GALV			
3	DIESEL FUEL	1000	11/11/1911		03/11/1988		STEEL - BARE/GALV	STEEL - BARE/GALV			

Activity (1)						
Activity	Enforcement Number	Activity Date	Substantial Compliance	Deadline	Response	Response Date
COMPLIANCE FILE REVIEW - COMPLIANT		07/17/2002	P			

Permits (1)		
Type	Renewal Date	Issue Date
UST Permit		

8/5/2024

Underground Storage Tank Facility Report

2 of 2

Site Number: 198805017

Facility Id: 0114000

System Name and Address: LANE NH HOLDINGS LLC
HANOVER ST EXT
LEBANON

Facility Owner: LANE NH HOLDINGS LLC
1660 BRADY CIRCLE
CARLSBAD CA 92008

[Mapit](#)

Registration Date: 04/16/2006

Facility Type: COMMERCIAL

Documents (5)				
	Document Type	Name/Title	Date Submitted	File Size
3968706	REGISTRATION	REGISTRATION FOR UNDERGROUND STORAGE TANKS	03/14/2006	.16 MB
3743512	REGISTRATION	Notification For USTs	02/15/2000	.96 MB
3743511	CORRESPONDENCE	Correspondence	07/18/1988	.12 MB
3743513	REPORT	UST Closure Report Dated 3/24/88	03/25/1988	.04 MB
4769087	REGISTRATION	REGISTRATION FORM	02/15/1988	.23 MB

8/5/2024

Underground Injection Control Project Report

1 of 2

Site Number: 199308002

Project Number: 0005702

Name and Address: FORMER MUFFLER HOUSE/RENT A WRECK
237 HANOVER ST
LEBANON

Responsible Party: BOISVERT PLUMBING & HEATING
WEST LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 03/15/1995

Eligibile:

Eligibilty Determined on:

MTBE: N

Brownfield: N

Activities (7)					
Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
		LOCKER	11/19/2001	Regulatory Action Compl.-DES File Closed	
		LOCKER	10/23/2001	Additional Information Requested	
		LOCKER	05/11/2000	Additional Information Requested	
		LOCKER	01/06/1999	Additional Information Requested	
		LOCKER	12/10/1998	Additional Information Requested	
08/17/1998	Additional Information Received	CARD	08/17/1998	Additional Information Requested	

Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
4632347	CORRESPONDENCE-FROM	REQUEST FOR STATUS OF FLOOR DRAINS	08/17/1998	.05 MB

03/15/1995	Additional Information Received	CARD	01/05/1998	Additional Information Requested	
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Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
4632346	CORRESPONDENCE-FROM	REQUEST FOR STATUS OF FLOOR DRAINS	01/06/1998	.05 MB

Site Number: 199308002

Project Number: 0005702

Name and Address: FORMER MUFFLER HOUSE/RENT A WRECK
237 HANOVER ST
LEBANON

Responsible Party: BOISVERT PLUMBING & HEATING
WEST LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: Unknown

Risk Level: NO SOURCES/NO AGQS VIO'S FROM ONSITE

Assigned To: CLOSED

Discovery Date: 03/15/1995

Eligibile:

Eligibilty Determined on:

MTBE: N

Brownfield: N

No Vapor Recovery Information

8/5/2024

Hazardous Waste Generator Report

1 of 3

EPA Id: NHD510107642

Current Name and Address: BOISVERT EUGENE
237 HANOVER ST
LEBANON

[Mapit](#)

Effective Date: 06/20/2006

Generator Size: NONE

Handler Id: 0006268

Contact Information: EUGENE BOISVERT
2 PASTURE LN
WEST LEBANON NH 03784
603-298-6888

Current Status: INACTIVE

Owner:

Notifications / Updates (2)					
Notification Date	Effective Date	Name	Generator Status	Generator Size	Generator Type
06/29/2006	06/20/2006	BOISVERT EUGENE	INACTIVE	NONE	STATE REGULATED
03/06/1999	03/06/1999	BOISVERT EUGENE	ACTIVE	SQG(CESQG)	STATE REGULATED

8/5/2024

Hazardous Waste Generator Report

2 of 3

EPA Id: NHD510107642

Current Name and Address: BOISVERT EUGENE
237 HANOVER ST
LEBANON

[Mapit](#)

Effective Date: 06/20/2006

Generator Size: NONE

Handler Id: 0006268

Contact Information: EUGENE BOISVERT
2 PASTURE LN
WEST LEBANON NH 03784
603-298-6888

Current Status: INACTIVE

Owner:

Documents (7)						
	Document Type	Manifest Number	Year	Quarter	Name/Title	File Size
4297812	Other		2005	1	SQG SELF-CERTIFICATION	3.69 MB
3981056	Notification Declass		2006			.21 MB
3911582	GIS Field Location Form		1995			.04 MB
3842236	Quarterly Reports		2003	4		.17 MB
3832339	Correspondence Out		2003	4	1ST DELINQUENT LETTER	.08 MB
3767249	Manifest Copy 7	MEE001399	2003	4		1.49 MB
3757780	Manifest Copy 2	MEE001399	2003	4		.68 MB

8/5/2024

Hazardous Waste Generator Report

3 of 3

EPA Id: **NHD510107642**Handler Id: **0006268**Current Name and Address: **BOISVERT EUGENE
237 HANOVER ST
LEBANON**Contact Information: **EUGENE BOISVERT
2 PASTURE LN
WEST LEBANON NH 03784**[Mapit](#)**603-298-6888**Effective Date: **06/20/2006**Current Status: **INACTIVE**Generator Size: **NONE**

Owner:

Manifests (3)

Ext.	Manifest No.	Manifest Date	Generator Signature Date	First Transporter Id	Transporter Signature Date	Other Transporter Ids	Facility Id	Facility Signature Date
04399	MEE001399	11/24/2003	10/01/2003	MAD980670004	10/01/2003		MED019051069	10/02/2003

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepancy
NONE	PET CONT SOLIDS	1: NH01-NH Used Oil (T)	1	DM	100	POUNDS	ASSESSED FEE	100	100	
44495	MEA144495	03/05/1999	10/24/1996	NHD980521843	10/24/1996	2nd: NHD980521843		MED019051069	10/30/1996	

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepancy
UN1203	Gasoline	1: D001-Ignitability	1	TT	2500	GALLONS	ASSESSED FEE	20842.5	843	
01287	CTC119190	03/05/1999	03/07/1988	VAD980831580	03/07/1988			CTD072138969	03/09/1988	

Waste Streams (1)

DOT Id	Waste Description	Waste Codes	# of Cont.	Cont. Type	Total Qty	Reported Units	Fee Status	Weight In lbs.	Assessed Weight	Discrepancy
NA1263	WST PAINT FLAM LIQ	1: F003-Spent non-halogenated solvents (I)	1	TT	80	GALLONS	RECYCLING-EXEMPT	574	0	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Project Related Documents (11)

	Document Type	Name/Title	Date Submitted	File Size
4150998	PERMIT INFORMATION	GWP-199308002-L-002 OCTOBER 2008 GROUNDWATER MONITORING RESULTS 10-DEC-2008	12/10/2008	1.07 MB
4129772	PERMIT INFORMATION	GWP-199308002-L-002 MAY 2008 GROUNDWATER MONITORING RESULTS 26-AUG-2008	08/26/2008	.62 MB
4033140	PERMIT INFORMATION	GWP-199308002-L-001 MAY 2007 GROUNDWATER MONITORING RESULTS 29-JUN-2007	06/29/2007	.62 MB
3990268	PERMIT INFORMATION	GWP-199308002-L-001 JUNE 2006 GROUNDWATER MONITORING RESULTS 24-AUG-2006	08/25/2006	3.63 MB
3911205	PERMIT INFORMATION	GWP-199308002-L-001 MAY 2005 GROUNDWATER MONITORING RESULTS BY PATHWAYS 15-JUN-2005	06/22/2005	3.58 MB
4632384	REPORT TO DES	18-AUG-2004 SOIL SAMPLING RESULTS	09/09/2004	.75 MB
3822118	PERMIT INFORMATION	GWP-199308002-L-001 Groundwater Monitoring Results Dated 6/2/04	06/07/2004	5.43 MB
3799650	CORRESPONDENCE	CORRESPONDENCE DATED 3/23/04	03/23/2004	1.28 MB
4632381	PERMIT INFORMATION	GWP-199308002-L-001 MAY 2003 DATA SUBMITTAL 28-MAY-2003	05/30/2003	1.07 MB
4632082	CORRESPONDENCE	CORRESPONDENCE 07/23/1993 - 03/18/2004	07/23/1993	.89 MB
4632074	SITE PLAN	SOIL VAPOR SURVEY & GROUNDWATER TABLE CONTOURS MAPS	06/17/1993	.11 MB

8/5/2024

Leaking Underground Storage Tank Project Report

2 of 50

Site Number: 199308002

Project Number: 0004405

Name and Address: FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON

Responsible Party: EUGENE BOISVERT
LEBANON NH 03784

PHONE: 603-298-8482

[Mapit](#)

Wellhead Protection Area: Unknown

Risk Level: HIGH GW CONC./ALTER. WATER AVAILABLE

Assigned To: OAKES

Discovery Date: 07/29/1993

Eligible: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 01/09/1998

MTBE: Y

Brownfield: N

Activities (144)					
Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/17/2024	Additional Information Received	MARTS-JENNIFER	07/17/2024	Cost Recovery Bill Sent	SITE # 199308002004405 237 HANOVER ST, LEBANON COST RECOVERY FOR PERIOD 01/01/2024 - 03/31/2024

Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
5211828	REIMBURSEMENT	INTERIM COST RECOVERY 01/01/2024 - 03/31/2024 INVOICE #: ORCB-CR-007957	07/17/2024	.07 MB

06/26/2024	Fund Reimbursement Request Received	OAKES			
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Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
5205178	REIMBURSEMENT	REQ. NO. 52	06/26/2024	1.51 MB

06/26/2024	Fund Reimbursement Request Received	OAKES			
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Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
5203933	REIMBURSEMENT	REQ. NO. 51	06/26/2024	1.51 MB

8/5/2024

Leaking Underground Storage Tank Project Report

3 of 50

Site Number: 199308002

Project Number: 0004405

Name and Address: FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON

Responsible Party: EUGENE BOISVERT
LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: Unknown

Risk Level: HIGH GW CONC./ALTER. WATER AVAILABLE

Assigned To: OAKES

Discovery Date: 07/29/1993

Eligibile: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 01/09/1998

MTBE: Y

Brownfield: N

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/30/2024	Permit Related GW Data Submittal	OAKES			

Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
5186573	PERMIT INFORMATION	GWP-199308002-L-004 APRIL 2024 DATA SUBMITTAL	30-APR-2021	04/30/2024 .97 MB

04/26/2024	Permit Related GW Data Submittal	OAKES			
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Activity Documents (1)				
Document Type		Document Title	Document Date	File Size
5186067	PERMIT INFORMATION	GWP-199308002-L-004 APRIL 2024 DATA SUBMITTAL	26-APR-2024	04/26/2024 1.38 MB

04/16/2024	Fund Reimbursement Request Received	MARTS-JENNIFER	05/08/2024	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)				
Document Type		Document Title	Document Date	File Size
5188495	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 50	05/08/2024	.01 MB
5181285	REIMBURSEMENT	INTERIM COST RECOVERY 10/01/2023 - 12/31/2023 INVOICE #: ORCB-CR-006373	04/16/2024	.14 MB

8/5/2024

Leaking Underground Storage Tank Project Report

4 of 50

Site Number: 199308002

Project Number: 0004405

Name and Address: FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON
[Mapit](#)

Responsible Party: EUGENE BOISVERT
LEBANON NH 03784

PHONE: 603-298-8482

Wellhead Protection Area: Unknown

Risk Level: HIGH GW CONC./ALTER. WATER AVAILABLE

Assigned To: OAKES

Discovery Date: 07/29/1993

Eligibile: PERMANENTLY ELIGIBLE

Eligibilty Determined on: 01/09/1998

MTBE: Y

Brownfield: N

Activities (144)					
Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/20/2024	Permit Related GW Data Submittal	OAKES	04/03/2024		CONTINUE MONITORING PER GMP. NEXT EVENT APRIL 2024. GPA OVERUDE.

Activity Documents (1)					
Document Type		Document Title		Document Date	File Size
5170169	PERMIT INFORMATION	GWP-199308002-L-004 OCT 2023 DATA SUBMITTAL 20-MAR-2024			03/20/2024 1.18 MB

01/29/2024	Fund Reimbursement Request Received	MARTS-JENNIFER	02/13/2024	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)				
Document Type		Document Title	Document Date	File Size
5155096	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 49	02/13/2024	.01 MB
5152089	REIMBURSEMENT	INTERIM COST RECOVERY 07/01/2023 - 09/30/2023 INVOICE #: ORCB-CR-004821	01/29/2024	.14 MB

12/27/2023	Fund Reimbursement Request Received	OAKES	01/24/2024	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)				
Document Type		Document Title	Document Date	File Size
5148436	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 48	01/24/2024	.01 MB
5144334	REIMBURSEMENT	REQ. NO. 48	12/27/2023	1.47 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/27/2023	Fund Reimbursement Request Received	OAKES	01/24/2024	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5148428	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 47	01/24/2024 .01 MB
5144261	REIMBURSEMENT	REQ. NO. 47	12/27/2023 2.19 MB

11/09/2023	Additional Information Received	MARTS-JENNIFER	11/09/2023	Cost Recovery Bill Sent	SITE # 199308002004405 237 HANOVER ST, LEBANON COST RECOVERY FOR PERIOD 04/01/2023 - 06/30/2023
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
5130913	REIMBURSEMENT	INTERIM COST RECOVERY 04/01/2023 - 06/30/2023 INVOICE #: ORCB-CR-003317	11/09/2023 .07 MB

10/23/2023	Permit Related GW Data Submittal	OAKES	11/13/2023	Technical Report Approved	CONTINUE MONITORING. GPA DUE. OCT 2023 DT DUE.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
5127103	PERMIT INFORMATION	GWP-199308002-L-004 APRIL 2023 DATA SUBMITTAL 23-OCT-2023	10/23/2023 1.02 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/06/2023	Fund Reimbursement Request Received	MARTS-JENNIFER	09/05/2023	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5113585	REIMBURSEMENT	INTERIM COST RECOVERY 01/01/2023 - 03/31/2023 INVOICE #: ORCB-CR-001828	09/06/2023 .14 MB
5114081	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 46	09/05/2023 .01 MB

06/05/2023	Permit Related GW Data Submittal	OAKES	11/13/2023	Additional Information Requested	REQUESTED INSTALLATION OF NEW MW AND WORK PLAN FOR SOIL REMOVAL. GPA OVERDUE.
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5133085	CORRESPONDENCE-FROM	RESPONSE TO 2021 DATA GAP INVESTIGATION AND NOVEMBER 2021 DATA SUBMITTAL 14-NOV-2023	11/14/2023 .34 MB
5090049	PERMIT INFORMATION	GWP-199308002-L-004 2021 DATA GAP INVESTIGATION REPORT & NOV 2021 DATA SUBMITTAL 05-JUN-2023	06/05/2023 5.00 MB

05/05/2023	Fund Reimbursement Request Received	MARTS-JENNIFER	06/16/2023	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5092769	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 45	06/16/2023 .01 MB
5080762	REIMBURSEMENT	INTERIM COST RECOVERY 10/01/2022 - 12/31/2022 INVOICE #: ORCB-CR-000388	05/05/2023 .07 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/04/2023	Fund Reimbursement Request Received	OAKES	05/17/2023	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5083777	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 44	05/17/2023 .01 MB
5072923	REIMBURSEMENT	REQ. NO. 44	04/06/2023 3.44 MB

02/22/2023	Change Order	OAKES	02/22/2023	Change Order Approved	APPROVED. REPORT OVERDUE.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
5063016	WORKSCOPE/BUDGET	CO FOR ADDITIONAL REPORTING AND WELL SURVEY 22-FEB-2023	02/22/2023 .22 MB

01/04/2023	Permit Related GW Data Submittal	OAKES	03/20/2023	Technical Report Approved	CONTINUE MONITORING PER GMP.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
5052163	PERMIT INFORMATION	GWP-199308002-L-004 NOV 2022 DATA SUBMITTAL 3-JAN-2023	01/04/2023 1.38 MB

Site Number: 199308002

Project Number: 0004405

Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK**
237 HANOVER ST
LEBANON

Responsible Party: **EUGENE BOISVERT**
LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/29/2022	Fund Reimbursement Request Received	OAKES	02/08/2023	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5060836	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 43	02/08/2023 .01 MB
5054922	REIMBURSEMENT	REQ. NO. 43	01/13/2023 1.26 MB

12/29/2022	Fund Reimbursement Request Received	OAKES	02/08/2023	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5060832	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 42	02/08/2023 .01 MB
5054921	REIMBURSEMENT	REQ. NO. 42	01/13/2023 1.26 MB

06/22/2022	Permit Related GW Data Submittal	OAKES	07/12/2022	Technical Report Approved	COCS HIGHEST IN RECENT HISTORY AT MW-13. STILL AWAITING DATA GAP ANALYSIS AND 2022 PSR. CONTINUE MONITORING PER GMP.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
5006910	PERMIT INFORMATION	GWP-199308002-L-004 APRIL 2022 DATA SUBMITTAL 22-JUN-2022	06/22/2022 1.55 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/28/2022	Permit Related GW Data Submittal	OAKES	03/18/2022	Technical Report Approved	BENZENE/ETHYLBENZENE INCREASING AT MW-9 AND MW-13. REVIEW RECOMMENDATIONS IN DATA GAP ASSESSMENT - PENDING SUBMITTAL.

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4975663	PERMIT INFORMATION	GWP-199308002-L-004 NOV 2021 DATA SUBMITTAL 28-FEB-2022	02/28/2022 2.43 MB

11/22/2021	Fund Reimbursement Request Received	OAKES	12/15/2021	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4964799	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 41	12/15/2021 .01 MB
4963351	REIMBURSEMENT	REQ. NO. 41	12/02/2021 1.78 MB

09/29/2021	Work Scope Submitted	OAKES	09/29/2021	Work Scope Approved	APPROVED
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4949506	WORKSCOPE/BUDGET	WORK SCOPE AUTHORIZATION FOR DATA GAP INVESTIGATION 27-SEP-2021	09/29/2021 .29 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/21/2021	Annual Report Received	OAKES	08/12/2021	Technical Report Approved	REQUESTED WORK SCOPE FOR SSI FOR DATA GAP ANALYSIS. NEXT SAMPLING OCT 2021.

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4939372	CORRESPONDENCE-FROM RESPONSE TO 2021 PERIODIC SUMMARY REPORT AND PROPOSED DATA GAP INVESTIGATION 12-AUG-2021	08/12/2021	.18 MB
4935645	PERMIT INFORMATION GWP-199308002-L-004 2021 PERIODIC SUMMARY REPORT & PROPOSED DATA GAP INVESTIGATION 21-JUN-2021	07/21/2021	5.00 MB

06/10/2021	Change Order	OAKES	06/10/2021	Change Order Approved	APPROVED
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4926735	WORKSCOPE/BUDGET CHANGE ORDER AUTHORIZATION - RESURVEYING SITE WELLS. FEATURES AND UPDATING FIGURES 10-JUN-2021	06/10/2021	.13 MB

05/10/2021	Fund Reimbursement Request Received	OAKES	06/11/2021	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4927236	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 40	06/11/2021	.01 MB
4923008	REIMBURSEMENT REQ. NO. 40	05/20/2021	3.71 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/18/2021	Change Order	OAKES	03/18/2021	Change Order Approved	APPROVED.

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4909610	WORKSCOPE/BUDGET	CHANGE ORDER AUTHORIZATION FOR DATA GAP ANALYSIS 18-MAR-2021	03/18/2021 .20 MB

12/01/2020	Permit Related GW Data Submittal	PISKOVITZ	12/10/2020	Technical Report Approved	MNA HAS NOT BEEN EFFECTIVE. NEED TO EVALUATE OTHER ALTERNATIVES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4891791	CORRESPONDENCE-FROM	RESPONSE TO OCTOBER 2020 DATA SUBMITTAL AND MONITORING WELL REPAIRS 15-DEC-2020	12/15/2020 .18 MB
4888830	PERMIT INFORMATION	GWP-199308002-L-004 OCT 2020 GW MONITORING DATA SUBMITTAL & MW REPAIRS 01-DEC-2020	12/01/2020 2.80 MB

07/01/2020	Work Scope Submitted	FOPIANO	07/01/2020	Work Scope Approved	NHDES APPROVED
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4856114	WORKSCOPE/BUDGET	WORK SCOPE AUTHORIZATION FOR WELL REPAIRS 01-JUL-2020	07/01/2020 .10 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/30/2020	Fund Reimbursement Request Received	FOPIANO	08/11/2020	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4865582	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 39	08/11/2020 .01 MB
4856336	REIMBURSEMENT	REQ. NO. 39	07/06/2020 1.24 MB

05/27/2020	Permit Related GW Data Submittal	FOPIANO	06/16/2020	Technical Report Approved	CONTINUE TO MONITOR IN ACCORDANCE WITH GMP
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4847943	PERMIT INFORMATION	GWP-199308002-L-004 APRIL 2020 GROUNDWATER MONITORING DATA SUBMITTAL 27-MAY-2020	05/27/2020 2.75 MB

02/13/2020	Fund Reimbursement Request Received	FOPIANO	03/05/2020	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4830626	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 38	03/05/2020 .01 MB
4828485	REIMBURSEMENT	REQ. NO. 38	02/19/2020 1.19 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/13/2019	Permit Related GW Data Submittal	FOPIANO	12/23/2019	Technical Report Approved	LETTER SENT; CONTINUE TO MONITOR IN ACCORDANCE WITH GMP

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4824298	CORRESPONDENCE-FROM RESPONSE TO OCTOBER 2019 DATA SUBMITTAL 26-DEC-2019	12/26/2019	.17 MB
4821167	PERMIT INFORMATION GWP-199308002-L-004 OCTOBER 2019 GROUNDWATER MONITORING DATA SUBMITTAL 13-DEC-2019	12/13/2019	3.86 MB

11/21/2019	Fund Reimbursement Request Received	FOPIANO	12/11/2019	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4820853	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 37	12/11/2019	.01 MB
4818582	REIMBURSEMENT REQ. NO. 37	11/22/2019	1.18 MB

06/24/2019	Annual Report Received	FOPIANO	07/08/2019	Technical Report Approved	STABLE BTEX PLUME; PSR SUBMITTED ONE YEAR EARLY; CONTINUE TO MONITOR IN ACCORDANCE WITH GMP
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4781827	PERMIT INFORMATION GWP-199308002-L-004 2019 PERIODIC SUMMARY W/APRIL 2019 GW MONITORING DATA 14-JUN-2019	06/24/2019	4.54 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/06/2019	Fund Reimbursement Request Received	FOPIANO	04/23/2019	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4770267	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 36	04/23/2019 .01 MB
4762779	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 36	03/08/2019 1.56 MB

03/06/2019	Fund Reimbursement Request Received	FOPIANO	03/21/2019	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4764766	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 35	03/21/2019 .01 MB
4762778	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 35	03/08/2019 1.21 MB

03/06/2019	Fund Reimbursement Request Received	FOPIANO	03/21/2019	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4764767	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 34	03/21/2019 .01 MB
4762777	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 34	03/08/2019 1.26 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/15/2018	Additional Information Received	FOPIANO	12/24/2018	Technical Report Approved	LETTER SENT; CONTINUE TO MONITOR IN ACCORDANCE WITH GMP

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4757134	CORRESPONDENCE-FROM	RESPONSE TO SEPTEMBE 2018 SPECIAL SAMPLING ROUND DATA SUBMITTAL	01/03/2019 .11 MB
4747033	REPORT TO DES	SEPTEMBER 2018 SPECIAL SAMPLING DATA SUBMITTAL + WELL MW-17 INSTALLATION REPORT 15-NOV-2018	11/15/2018 4.41 MB

08/06/2018	Work Scope Submitted	FOPIANO	08/15/2018	Work Scope Approved	NHDES APPROVED
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4732548	WORKSCOPE/BUDGET	APPROVED WORK SCOPE AUTHORIZATION FOR MW-17 INSTALLATION + SAMPLING & ANALYSIS + REPORTING	08/15/2018 .10 MB

07/31/2018	Work Scope Submitted	FOPIANO	08/15/2018	Work Scope Approved	NHDES APPROVED
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
5040742	CORRESPONDENCE	EMAIL INCLUDING CONSULTANT LABOR RATE ADJUSTMENTS	10/28/2022 .16 MB
4732552	WORKSCOPE/BUDGET	APPROVED WORK SCOPE AUTHORIZATION FOR 2018 - 2023 PERMIT SAMPLING & ANALYSIS + REPORTING + PERMIT RENEWAL APPLICATION	08/15/2018 .04 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/31/2018	Permit Related GW Data Submittal	CONNELLY	06/04/2018	Technical Report Approved	REPORT REVIEWED, CONCENTRATIONS CONSISTENT WITH HISTORICAL TRENDS, RESPONSE WILL BE SENT FOLLOWING REPORT REVIEW FROM REQUESTS LISTED IN PERMIT RENEWAL DATED 6/1/18

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4714224	PERMIT INFORMATION	GWP-199308002-L-003 APRIL 2018 DATA SUBMITTAL 31-MAY-2018	05/31/2018 1.86 MB

04/18/2018	Groundwater Permit Application Received	CONNELLY	06/01/2018	Groundwater Permit Issued	PERMIT RENEWAL TO INCLUDE INSTALLATION OF MW AT DENSMORE POND (MW-17. SAMPLING SCHEDULE OF MW-4, 6, 9, 13, 14, 15, 16, NEWLY INSTALLED MW-17 AND SURFACE WATER SW-2 FOR VOCs. STANDARD REPORTS TO FOLLOW
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4718854	PERMIT INFORMATION	GWP-199308002-L-004 GROUNDWATER MANAGEMENT PERMIT RENEWAL	06/18/2018 .20 MB
4708532	PERMIT INFORMATION	GWP-199308002-L-004 GMP RENEWAL APP	04/18/2018 3.66 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/18/2018	Fund Reimbursement Request Received	MUZZEY-WORTHEN	05/18/2018	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4712716	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 33	05/18/2018 .02 MB
4709366	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 33 02-APR-2018	04/18/2018 .02 MB

02/06/2018	Permit Related GW Data Submittal	CONNELLY	06/01/2018	Technical Report Approved	REPORT REVIEWED IN CONJUNCTION WITH THE PERMIT RENEWAL ISSUED 6/1/18.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4696863	PERMIT INFORMATION	GWP-199308002-L-003 OCTOBER 2017 DATA SUBMITTAL 30-NOV-2017	02/06/2018 1.91 MB

01/30/2018	Fund Reimbursement Request Received	CONNELLY	03/01/2018	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4700046	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 32	03/01/2018 .02 MB
4696144	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 32	02/01/2018 1.22 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/30/2018	Fund Reimbursement Request Received	CONNELLY	03/01/2018	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4700045	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 31	03/01/2018 .02 MB
4696143	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 31	02/01/2018 1.28 MB

01/30/2018	Fund Reimbursement Request Received	CONNELLY	03/01/2018	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4700047	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 30	03/01/2018 .02 MB
4696141	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 30	02/01/2018 1.36 MB

11/30/2017	Permit Related GW Data Submittal	CONNELLY	03/01/2018	Report Does Not Meet Or-600 Requirement	REPORT DOES NOT INCLUDE LAB DATA SHEETS. REQUEST SENT TO CONSULTANT TO SUBMIT DOCUMENTATION. DATA REPORT RESUBMITTED WITH LAB SHEETS ON 2/6/18.
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4700096	CORRESPONDENCE-FROM	EMAIL REQUEST FOR OCTOBER 2017 SAMPLING ANALYTICAL RESULTS	02/02/2018 .05 MB
4685829	PERMIT INFORMATION	GWP-199308002-L-003 OCTOBER 2017 DATA SUBMITTAL 30-NOV-2017	11/30/2017 .99 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/31/2017	Annual Report Received	CONNELLY	02/20/2018	Technical Report Approved	REPORT WILL BE REVIEWED IN CONJUNCTION WITH THE REVIEW OF THE NOVEMBER 2017 DATA REPORT.

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4667181	PERMIT INFORMATION	GWP-199308002-L-003 2017 PERIODIC SUMMARY REPORT 31-JUL-2017	07/31/2017 4.17 MB
4700088	CORRESPONDENCE	EMAIL EXCHANGE REGARDING APPROVAL OF APRIL 2017 SAMPLING EVENT	07/20/2017 .09 MB

07/18/2017	Work Scope Submitted	CONNELLY	07/20/2017	Work Scope Approved	INCLUDES SAMPLING OF 9 MWS AND 1 SURFACE WATER FOR VOCs ON OCT 2018 & APRIL 2018. ASSOCIATED DATA REPORTS TO FOLLOW AND THE GMP RENEWAL APPLICATION.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4665030	CORRESPONDENCE-FROM	APPROVED WORK SCOPE AUTHORIZATION FOR OCT 2017 & APR 2018 SAMPLING & ANALYSIS + REPORTING + PERMIT RENEWAL APPLICATION	07/20/2017 .12 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/01/2017	Annual Report Received	CONNELLY	07/19/2017	Additional Information Requested	LOCATE MW-14 AND INCL IT IN OCT 2017 SAMPLING EVENT, COLLECT SURFACE WATER FROM DENSMORE POND, PROVIDE FEASIBILITY STUDY FOR DOWNGRADIENT MONITORING WELL, AND SUBMIT ASSOC. REPORT TO FOLLOW THE EVENT

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4665107	CORRESPONDENCE-FROM RESPONSE TO 2016 PERIODIC SUMMARY REPORT	07/21/2017	.19 MB
4641837	PERMIT INFORMATION GWP-199308002-L-003 2016 PERIODOC SUMMARY REPORT 31-JAN-2017	02/01/2017	2.42 MB

06/30/2016	Fund Reimbursement Request Received	CONNELLY	07/21/2016	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4614172	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 29	07/21/2016	.02 MB
4612058	REIMBURSEMENT REIMBURSEMENT REQ. NO. 29	07/01/2016	1.35 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/29/2016	Fund Reimbursement Request Received	CONNELLY	07/21/2016	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4614170	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 28	07/21/2016 .02 MB
4611842	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 28	06/30/2016 1.43 MB

01/29/2016	Permit Related GW Data Submittal	CONNELLY	07/20/2016	Additional Information Requested	CONTINUE MONITORING PER GM PERMIT, INCLUDE MW-14 IN OCT 2016 AND APRIL 2017 SAMPLING ROUNDS, REPORT GW ELEVATION SURVEY, AND RESULTING SAMPLE REPORT.
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Activity Documents (3)

Document Type	Document Title	Document Date	File Size
4700086	CORRESPONDENCE	EMAIL EXCHANGE REGARDING APPROVAL OF 2016 PERMIT SAMPLING & ANALYSIS	01/13/2017 .08 MB
4617208	CORRESPONDENCE-FROM	RESPONSE TO NOVEMBER 2015 DATA SUBMITTAL	07/20/2016 .21 MB
4590447	PERMIT INFORMATION	GWP-199308002-L-003 NOVEMBER 2015 DATA SUBMITTAL 29-JAN-2016	01/29/2016 .99 MB

Site Number: 199308002

Project Number: 0004405

Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK**
237 HANOVER ST
LEBANON

Responsible Party: **EUGENE BOISVERT**
LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/18/2015	Fund Reimbursement Request Received	WARR	12/24/2015	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4583168	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 27	12/24/2015 .02 MB
4579389	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 27	11/20/2015 1.47 MB

11/18/2015	Fund Reimbursement Request Received	WARR	12/24/2015	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4583167	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 26	12/24/2015 .02 MB
4579300	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 26	11/19/2015 1.47 MB

06/30/2015	Annual Report Received	WARR	07/17/2015	Technical Report Approved	DATA TRENDING APPEARS TO SHOW THE SLUG OF THE BENZENE PLUME CONTINUING TO MOVE DOWNGRADIENT OF THE SITE. MW-9 CONC 9,100 UG/L BENZENE. MW-16 NEAR THE POND IS BELOW AGQS. CONTINUE GMP. MONITORING.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4559550	PERMIT INFORMATION	GWP-199308002-L-003 2015 PERIODIC SUMMARY REPORT 26-DEC-2015	06/30/2015 1.49 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/25/2015	Fund Reimbursement Request Received	WARR	08/13/2015	Fund Reimbursement Request Approved	APPROVED BY DES

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4564869	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 25	08/13/2015 .02 MB
4560049	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 25	07/09/2015 1.39 MB

03/27/2015	Work Scope Submitted	WARR	04/08/2015	Work Scope Approved	APPROVED
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4542569	WORKSCOPE/BUDGET	APPROVED WORK SCOPE AUTHORIZATION FOR 2015 SAMPLING & ANALYSIS + REPORTING	04/08/2015 .06 MB

03/18/2015	Fund Reimbursement Request Received	WARR	04/23/2015	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4544545	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 24	04/23/2015 .02 MB
4540523	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 24	03/18/2015 1.43 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/15/2014	Permit Related GW Data Submittal	WARR	12/31/2014	Technical Report Approved	NO LETTER SENT - CONTINUE MONITORING ACTIVITIES.

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4525813	PERMIT INFORMATION	GWP-199308002-L-003 OCTOBER 2014 DATA SUBMITTAL 15-DEC-2014	12/15/2014 3.51 MB

11/21/2014	Permit Related GW Data Submittal	WARR	12/31/2014	Technical Report Approved	NO LETTER SENT - CONTINUE MONITORING ACTIVITIES.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4522208	PERMIT INFORMATION	GWP-199308002-L-003 OCTOBER 2013 DATA SUBMITTAL 24-FEB-2014	11/21/2014 3.29 MB

06/30/2014	Permit Related GW Data Submittal	WHIPPLE	10/24/2014	Technical Report Approved	NO LTR SENT - CONTINUE SAMPLING IN ACCORDANCE W/ PERMIT
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4505443	PERMIT INFORMATION	GWP-199308002-L-003 APRIL 2014 DATA SUBMITTAL 27-JUN-2014	06/30/2014 4.15 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
04/26/2014	Work Scope Submitted	WARR	05/14/2015	Work Scope Approved	APPROVED

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4665066	CORRESPONDENCE	EMAIL EXCHANGE REGARDING APRIL 2017 SAMPLING EVENT	07/20/2017 .11 MB
4549416	WORKSCOPE/BUDGET	APPROVED WORK SCOPE AUTHORIZATION FOR JAN - DEC 2014 SAMPLING & ANALYSIS + REPORTING	05/14/2015 .09 MB

11/19/2013	Permit Related GW Data Submittal	WHIPPLE	02/07/2014	Technical Report Approved	NO LTR SENT - CONTINUE SAMPLING IN ACCORDANCE W/ PERMIT
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4477173	PERMIT INFORMATION	GWP-199308002-L-003 APRIL 2013 DATA SUBMITTAL 18-NOV-2013	11/19/2013 4.76 MB

06/28/2013	Fund Reimbursement Request Received	KIRN	07/15/2013	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4454598	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 23	07/15/2013 .02 MB
4452672	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 23	06/27/2013 .01 MB

Site Number: 199308002

Project Number: 0004405

Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK**
237 HANOVER ST
LEBANON

Responsible Party: **EUGENE BOISVERT**
LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/03/2013	Groundwater Permit Application Received	KIRN	07/03/2013	Groundwater Permit Issued	GW MONITORING IN APR & OCT

Activity Documents (4)

Document Type	Document Title	Document Date	File Size
4458052	CORRESPONDENCE-FROM GWP-199308002-L-003 GROUNDWATER MANAGEMENT PERMIT RENEWAL	07/03/2013	.08 MB
4452605	CORRESPONDENCE-FROM SECOND EMAIL REQUESTING PERMIT FEE	06/27/2013	.04 MB
4450843	CORRESPONDENCE-FROM EMAIL REQUEST FOR GROUNDWATER MANAGEMENT PERMIT RENEWAL APPLICATION FEE	06/18/2013	.02 MB
4441222	PERMIT INFORMATION GWP-199308002-L-003 GROUNDWATER MANAGEMENT PERMIT RENEW. APP. 19-MAR-2013	05/03/2013	3.66 MB

04/15/2013	Work Scope Submitted	WHIPPLE	04/15/2013	Work Scope Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4438661	WORKSCOPE/BUDGET APPROVED WORK SCOPE AUTHORIZATION FOR 2013 SAMPLING & ANALYSIS + REPORTING	04/15/2013	.44 MB

12/24/2012	Permit Related GW Data Submittal	WHIPPLE	03/13/2013	Technical Report Approved	NO LTR SENT - CONTINUE SAMPLING IN ACCORDANCE W/ PERMIT
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4425836	PERMIT INFORMATION GWP-199308002-L-002 NOVEMBER 2012 DATA SUBMITTAL 24-DEC-2012	12/24/2012	3.10 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
06/29/2012	Permit Related GW Data Submittal	WHIPPLE	09/27/2012	Technical Report Approved	NO LTR SENT - CONTINUE SAMPLING IN ACCORDANCE W/ PERMIT

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4389892	PERMIT INFORMATION	GWP-199308002-L-002 MAY 2012 DATA SUBMITTAL 29-JUN-2012	06/29/2012 3.16 MB

03/20/2012	Additional Information Received	WHIPPLE	06/18/2012	No Action Necessary (Report filed)	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4356241	PERMIT INFORMATION	RECORDED GROUNDWATER MANAGEMENT PERMIT 19-MAR-2012	03/20/2012 .67 MB

02/21/2012	Permit Related GW Data Submittal	WHIPPLE	06/18/2012	Technical Report Approved	NO LTR SENT - CONTINUE SAMPLING IN ACCORDANCE W/ PERMIT
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4349342	PERMIT INFORMATION	GWP-199308002-L-002 NOVEMBER 2011 DATA SUBMITTAL 30-NOV-2011	02/21/2012 3.23 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
10/03/2011	Annual Report Received	WHIPPLE	01/23/2012	Groundwater Permit Modified	REVISED PERMIT TO REMOVE WELL MW-12 AND SW-1 AND INCLUDE WELLS MW-13, MW-15, AND MW-16. CORRECT RECORDATION REQUIRED. SUBMIT RECORDED NOTICE BY 4/23/12

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4346925	CORRESPONDENCE-FROM GWP-199308002-L-002 REVISED GROUNDWATER MANAGEMENT PERMIT	01/23/2012	.14 MB
4324753	PERMIT INFORMATION GWP-199308002-L-002 2011 PERIODIC SUMMARY REPORT 29-SEP-2011	10/03/2011	3.59 MB

08/31/2011	Fund Reimbursement Request Received	WHIPPLE	10/11/2011	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4326417	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 22	10/11/2011	.03 MB
4319029	REIMBURSEMENT REIMBURSEMENT REQ. NO. 22	08/31/2011	1.59 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/02/2010	Permit Related GW Data Submittal	WHIPPLE	01/28/2011	Technical Report Approved	EMAIL TO PATHWAYS - INCLUDE NEW WELLS IN MAY 2011 PERMIT MONITORING EVENT.

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4274815	CORRESPONDENCE-FROM	EMAIL RESPONSE TO OCT 2010 SAMPLING	01/28/2011 .02 MB
4265860	PERMIT INFORMATION	GWP-199308002-L-002 OCTOBER 2010 GROUNDWATER MONITORING RESULTS 02-DEC-2010	12/02/2010 3.13 MB

11/03/2010	Fund Reimbursement Request Received	WHIPPLE	03/21/2011	Fund Reimbursement Request Approved	APPROVED BY DES
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4282753	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 21	03/21/2011 .02 MB
4261552	REIMBURSEMENT	REIMBURSEMENT REQ. NO. 21	11/03/2010 1.28 MB

09/16/2010	Permit Related GW Data Submittal	WHIPPLE	01/28/2011	Technical Report Approved	NO LTR SENT - CONTINUE MONITORING IN ACCORDANCE W/ PERMIT.
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4253331	PERMIT INFORMATION	GWP-199308002-L-002 JULY 2010 GROUNDWATER MONITORING AND MONITORING WELL INSTALL 16-SEP-2010	09/16/2010 2.93 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/19/2010	Work Scope Submitted	WHIPPLE	03/22/2010	Work Scope Approved	INCLUDE WELL INSTALLATION SUMMARY WITH MAY 2010 SAMPLING RESULTS

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4222603	WORKSCOPE/BUDGET	WORK SCOPE AUTHORIZATION FOR OFF-SITE WELL INSTALLATION	03/22/2010 .17 MB

03/01/2010	Additional Information Received	WHIPPLE	03/04/2010	Additional Information Requested	EMAIL RESPONSE APPROVING WELL LOCATIONS AND REQUESTING SCOPE & BUDGET FOR INSTALLATION
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4220884	CORRESPONDENCE	EMAIL REGARDING PROPOSED WELL LOCATIONS	03/04/2010 .04 MB
4220885	FIGURES	SITE PLAN DEPICTING PROPOSED WELL LOCATIONS	03/01/2010 .60 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/25/2009	Permit Related GW Data Submittal	WHIPPLE	01/13/2010	Additional Information Requested	REQUESTED WS&B FOR ADDITIONAL WELLS TO DETERMINE DOWNGRADIENT EXTENT & CURRENT GW QUALITY IN FORMER UST AREA. WS&B DUE 2/28/10.

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4213014	CORRESPONDENCE-FROM RESPONSE TO OCTOBER 2009 GROUNDWATER MONITORING RESULTS PREPARED BY PATHWAYS CONSULTING LLC DATED NOVEMBER 25 2009	01/13/2010	.05 MB
4201108	PERMIT INFORMATION GWP-199308002-L-002 OCTOBER 2009 GROUNDWATER MONITORING RESULTS 25-NOV-2009	11/25/2009	2.97 MB

09/29/2009	Fund Reimbursement Request Received	WHIPPLE	12/09/2009	Fund Reimbursement Request Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4202434	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 20	12/09/2009	.02 MB
4193701	REIMBURSEMENT REQ. NO. 20 25-SEP-09	09/29/2009	.12 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/29/2009	Annual Report Received	WHIPPLE	11/17/2009	Technical Report Approved	

Activity Documents (3)

Document Type	Document Title	Document Date	File Size
4206639	CORRESPONDENCE EMAIL REGARDING ANNUAL REPORT APPROVAL AND PLUME DELINEATION REQUIREMENTS	11/20/2010	.05 MB
4198685	CORRESPONDENCE EMAIL AUTHORIZING WELL REPAIR	11/02/2009	.04 MB
4185017	PERMIT INFORMATION GWP-199308002-L-002 2009 ANNUAL SUMMARY REPORT 23-JUN-2009	07/29/2009	.68 MB

03/02/2009	Fund Reimbursement Request Received	WHIPPLE	05/08/2009	Fund Reimbursement Request Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4175573	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 19	05/08/2009	.02 MB
4204327	REIMBURSEMENT REQ. NO. 19 24-FEB-09	03/02/2009	.17 MB

12/10/2008	Permit Related GW Data Submittal	WHIPPLE	04/09/2009	Technical Report Approved	
08/26/2008	Permit Related GW Data Submittal	WHIPPLE	12/15/2008	Technical Report Approved	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
07/28/2008	Fund Reimbursement Request Received	KIRBY	10/17/2008	Fund Reimbursement Request Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4142781	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 18	10/17/2008 .03 MB
4222028	REIMBURSEMENT	REQ. NO. 18 24-JUL-08	07/28/2008 .20 MB

		LEDGARD	04/08/2008	Additional Information Requested	
04/07/2008	Fund Reimbursement Request Received	BLEDSON	08/07/2008	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4120399	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 17	08/07/2008 .02 MB

04/07/2008	Groundwater Permit Application Received	LEDGARD	04/21/2008	Groundwater Permit Issued	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4075488	PERMIT INFORMATION	GWP-199308002-L-002 GROUNDWATER MANAGEMENT PERMIT	04/21/2008 .06 MB
4068595	PERMIT INFORMATION	GWP-199308002-L-002 GROUNDWATER MANAGEMENT PERMIT RENEWAL APPLICATION 07-APR-2008	04/07/2008 1.42 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/16/2008	Annual Report Received	LEDGARD	03/13/2008	Technical Report Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4065593	CORRESPONDENCE-FROM E-MAIL RESPONSE TO 2007 ANNUAL SUMMARY REPORT; REQUEST FOR EDB ANALYSIS	03/13/2008	.02 MB
4058559	PERMIT INFORMATION GWP-199308002-L-001 2007 ANNUAL SUMMARY REPORT 16-JAN-2008	01/16/2008	1.02 MB

12/11/2007	Fund Reimbursement Request Received	ESTABROOK	03/25/2008	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4067182	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 16	03/25/2008	.03 MB

09/24/2007	Additional Information Received	LEDGARD	10/01/2007	Technical Report Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4046416	REPORT TO DES MONITORING WELL MW-8 REPLACEMENT REPORT 24-SEP-2007	09/24/2007	.41 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
		LEDGARD	08/31/2007	Work Scope Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4043709	WORKSCOPE/BUDGET	WORK SCOPE FOR MONITORING WELL INSTALLATION; APPROVAL	08/31/2007 .06 MB
4043635	CORRESPONDENCE-FROM	E-MAIL COVERSHEET FOR SUBMITTAL AND RESPONSE TO WORK SCOPE; APPROVAL	08/31/2007 .01 MB

06/29/2007	Permit Related GW Data Submittal	LEDGARD	08/20/2007	Technical Report Approved	
03/28/2007	Annual Report Received	LEDGARD	04/04/2007	Additional Information Requested	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4019022	CORRESPONDENCE-FROM	E-MAIL RESPONSE TO 2006 ANNUAL SUMMARY REPORT; APPROVAL FOR MONITORING WELL MW-8 REPLACEMENT	04/04/2007 .00 MB
4018554	PERMIT INFORMATION	GWP-199308002-L-001 2006 ANNUAL SUMMARY REPORT 23-MAR-2007	03/28/2007 3.68 MB

03/07/2007	Fund Reimbursement Request Received	LEDGARD	07/03/2007	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4033201	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 15	07/03/2007 .02 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
02/27/2007	Additional Information Received	LEDGARD	04/04/2007	Technical Report Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4020870	CORRESPONDENCE-FROM RESPONSE TO PETROLEUM IMPACTED SOIL REMOVAL REPORT PREPARED BY GOLDER ASSOCIATES INC. DATED FEBRUARY 22 2007	04/04/2007	.04 MB
4016084	REPORT TO DES PETROLEUM-IMPACTED SOIL REMOVAL REPORT 22-FEB-2007	02/27/2007	128.28 MB

11/07/2006	Fund Reimbursement Request Received	BERUBE	02/01/2007	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4013561	REIMBURSEMENT NOTICE OF REIMBURSEMENT NO. 14	02/01/2007	.03 MB

08/25/2006	Permit Related GW Data Submittal	BERUBE	09/20/2006	Technical Report Approved	
03/02/2006	Work Scope Submitted	BERUBE	05/02/2006	Work Scope Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3968558	WORKSCOPE/BUDGET WORKSCOPE TO REPLACE MW-4	03/02/2006	.09 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
03/02/2006	Annual Report Received	BERUBE	04/11/2006	Technical Report Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3957280	PERMIT INFORMATION	GWP-199308002-L-001 2005 ANNUAL SUMMARY REPORT 28-FEB-2006	02/28/2006 4.23 MB

06/20/2005	Permit Related GW Data Submittal	BERUBE	07/20/2005	Technical Report Approved	
04/04/2005	Fund Reimbursement Request Received	BERUBE	05/18/2005	Fund Reimbursement Request Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3905634	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 13	05/18/2005 .02 MB

01/27/2005	Annual Report Received	BERUBE	04/11/2005	Technical Report Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3891706	PERMIT INFORMATION	GWP-199308002-L-001 Annual Groundwater Monitoring Results Report Dated 1/17/05	01/27/2005 4.79 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/01/2004	Work Scope Submitted	LEDGARD	09/09/2004	Work Scope Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632383	WORKSCOPE/BUDGET	APPROVED WORK SCOPE AUTHORIZATION FOR SOIL REMOVAL & DISPOSAL + REPORT	09/09/2004 .41 MB

06/07/2004	Fund Reimbursement Request Received	BERUBE	07/19/2004	Fund Reimbursement Request Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
3830588	REIMBURSEMENT	NOTICE OF REIMBURSEMENT NO. 12	07/19/2004 .02 MB

01/26/2004	Fund Reimbursement Request Received	BERUBE	03/08/2004	Fund Reimbursement Request Approved	
01/26/2004	Additional Information Received	BERUBE	01/29/2004	Technical Report Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632382	PERMIT INFORMATION	GWP-199308002-L-001 2003 ANNUAL SUMMARY REPORT & DRUM REMOVAL 05-JAN-2004	01/26/2004 3.97 MB

09/19/2003	Work Scope Submitted	KIRBY	09/19/2003	Work Scope Approved	
05/30/2003	Fund Reimbursement Request Received	HOPKINS	07/18/2003	Fund Reimbursement Request Approved	
04/14/2003	Fund Reimbursement Request Received	PESHKA	06/25/2003	Fund Reimbursement Request Approved	
02/13/2003	Fund Reimbursement Request Received	KIRBY	03/20/2003	Fund Reimbursement Request Approved	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/29/2003	Groundwater Permit Application Received	KIRBY	02/21/2003	Groundwater Permit Issued	

Activity Documents (3)

Document Type	Document Title	Document Date	File Size
4632096	PERMIT INFORMATION	RECORDATION OF GROUNDWATER MANAGEMENT PERMIT	04/07/2003 .19 MB
4194188	PERMIT INFORMATION	GWP-199308002-L-001 GROUNDWATER MANAGEMENT PERMIT	02/21/2003 .24 MB
4632380	PERMIT INFORMATION	GROUNDWATER MANAGEMENT PERMIT APPLICATION 24-JAN-2003	01/29/2003 .83 MB

01/29/2003	Fund Reimbursement Request Received	KIRBY	02/19/2003	Fund Reimbursement Request Approved	
11/26/2002	Fund Reimbursement Request Received	KIRBY	01/14/2003	Fund Reimbursement Request Approved	
11/26/2002	Non-Permit GW Monitoring Result Received	KIRBY	12/11/2002	Groundwater Permit Requested	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632378	CORRESPONDENCE-FROM	RESPONSE TO 2002 ANNUAL SUMMARY REPORT	12/11/2002 .10 MB
4632377	MONITORING NONPERMIT	2002 ANNUAL SUMMARY REPORT 22-NOV-2002	11/26/2002 2.91 MB

10/04/2002	Fund Reimbursement Request Received	KIRBY	11/08/2002	Fund Reimbursement Request Approved	
10/04/2002	Non-Permit GW Monitoring Result Received	CARLSON	10/10/2002	Additional Information Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632376	MONITORING NONPERMIT	SEPTEMBER 2002 GROUNDWATER MONITORING RESULTS 30-SEP-2002	10/04/2002 1.19 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
09/20/2002	Fund Reimbursement Request Received	KIRBY	10/23/2002	Fund Reimbursement Request Approved	
07/19/2002	Initial Response Report	KIRBY	08/14/2002	Additional Information Requested	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632094	CORRESPONDENCE-FROM	RESPONSE TO INITIAL RESPONSE ACTION REPORT	08/14/2002 .04 MB
4632374	REPORT TO DES	INITIAL RESPONSE ACTION REPORT 16-JUL-2002	07/19/2002 1.44 MB

06/13/2002	Non-Permit GW Monitoring Result Received	KIRBY	06/20/2002	Additional Information Requested	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632373	MONITORING NONPERMIT	MAY 2002 GROUNDWATER MONITORING RESULTS 10-JUN-2002	06/13/2002 1.26 MB

06/03/2002	Change Order	CROCE	06/06/2002	Change Order Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632371	WORKSCOPE/BUDGET	APPROVED CHANGE ORDER FOR TWO ROUNDS OF SAMPLING IN BROOK + ANALYSIS	06/06/2002 .10 MB

Site Number: 199308002

Project Number: 0004405

Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK**
237 HANOVER ST
LEBANON

Responsible Party: **EUGENE BOISVERT**
LEBANON NH 03784

[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/28/2002	Change Order	CROCE	06/06/2002	Change Order Approved	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632092	WORKSCOPE/BUDGET	APPROVED AUTHORIZATION FOR ROADBOX REPLACEMENT	06/06/2002 .10 MB

05/20/2002	Site Investigation Report Received	KIRBY	06/11/2002	Technical Report Approved	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632372	CORRESPONDENCE-FROM	RESPONSE TO SUPPLEMENTAL SITE INVESTIGATION REPORT	06/11/2002 .04 MB
4632370	REPORT TO DES	SUPPLEMENTAL SITE INVESTIGATION REPORT 15-MAY-2002	05/20/2002 2.17 MB

01/28/2002	Initial Response Budget Received	CROCE	01/29/2002	Initial Response Budget Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632091	WORKSCOPE/BUDGET	APPROVED AUTHORIZATION FOR SORBENT MATERIAL CHANGEOUTS + DISPOSAL OF USED SORBENT + SAMPLING & ANALYSIS + REPORT	01/29/2002 .75 MB

01/07/2002	Non-Permit GW Monitoring Result Received	CARLSON	01/08/2002	Additional Information Requested	
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Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
12/13/2001	Additional Information Received	KIRBY	12/16/2001	Report Does Not Meet Or-600 Requirement	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632090	SITE PLAN	12/17/2001	.08 MB
4632089	REPORT TO DES	12/07/2001	.17 MB

07/24/2001	Non-Permit GW Monitoring Result Received	KIRBY	10/03/2001	Additional Information Requested	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632367	CORRESPONDENCE-FROM	10/03/2001	.04 MB
4632364	MONITORING NONPERMIT	07/24/2001	.96 MB

10/20/2000	Additional Information Received	KARNAUKH-L	12/20/2000	Groundwater Permit Requested	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632356	CORRESPONDENCE-FROM	12/20/2000	.09 MB
4632355	REPORT TO DES	10/20/2000	1.32 MB

03/09/2000	Fund Reimbursement Request Received	HOPKINS	05/25/2000	Fund Reimbursement Request Approved	
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Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
01/26/2000	Remedial Action Plan Submitted	CARLSON	05/15/2000	Additional Information Requested	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632353	CORRESPONDENCE-FROM RESPONSE TO REMEDIAL IMPLEMENTATION + SEP & DEC 1999 GROUNDWATER SAMPLING RESULTS REPORT	05/15/2000	.05 MB
4632351	REPORT TO DES REMEDIAL IMPLEMENTATION + SEP & DEC 1999 GROUNDWATER SAMPLING RESULTS REPORT 24-JAN-2000	01/26/2000	3.24 MB

03/16/1999	Work Scope Submitted	MONGEON	04/13/1999	Work Scope Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632077	WORKSCOPE/BUDGET WORK SCOPE APPROVAL FOR SOIL EXCAVATION & DISPOSAL + BACKFILL & PAVING + ORC PLACEMENT + SAMPLING & ANALYSIS + REPORTING	04/13/1999	.35 MB

12/02/1998	Fund Reimbursement Request Received	LEVERGOOD	02/25/1999	Fund Reimbursement Request Approved	
10/22/1998	Additional Information Received	MONGEON	02/16/1999	Technical Report Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632076	CORRESPONDENCE-FROM RESPONSE TO SUPPLEMENTAL SITE INVESTIGATION REPORT	02/16/1999	.04 MB
4632348	REPORT TO DES SUPPLEMENTAL SITE INVESTIGATION REPORT 20-OCT-1998	10/22/1998	3.40 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N****Activities (144)**

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
05/18/1998	Additional Information Received	KARNAUKH-L	05/26/1998	Technical Report Approved	

Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632083	SITE PLAN	REVISED SITE PLAN 22-MAY-1998	05/22/1998 .23 MB
4632084	CORRESPONDENCE-FROM	RESPONSE SITE INVESTIGATION REPORT	03/26/1998 .08 MB

04/21/1998	Additional Information Received	ESTABROOK	05/18/1998	Additional Information Requested	
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Activity Documents (2)

Document Type	Document Title	Document Date	File Size
4632088	CORRESPONDENCE-FROM	RESPONSE TO REVISED SITE PLAN	05/18/1998 .03 MB
4632079	SITE PLAN	REVISED SITE PLAN 21-APR-1998	04/21/1998 .06 MB

04/20/1998	Work Scope Submitted	ESTABROOK	05/04/1998	Work Scope Approved	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632075	WORKSCOPE/BUDGET	WORK SCOPE APPROVAL FOR INSTALLATION OF 2 WELLS + SAMPLING & ANALYSIS + SUPPLEMENTAL SITE INVESTIGATION REPORT	05/04/1998 .25 MB

01/09/1998	Fund Reimbursement Request Received	LEVERGOOD	05/26/1998	Fund Reimbursement Request Approved	
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Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Activities (144)

Submittal Date	Submittal Description	Staff Assigned	Action Date	Action Description	Comments
11/24/1997	Site Investigation Report Received	KARNAUKH-L	03/26/1998	Report Does Not Meet Or-600 Requirement	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632345	REPORT TO DES	11/24/1997	5.00 MB

10/25/1996	Discharge of a Regulated Substance	CHWASCIK	02/19/1997	Site Investigation Report Requested	
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Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632093	CORRESPONDENCE-FROM	02/21/1997	.05 MB

03/15/1995	Site Investigation Report Received	KIRBY	04/20/1995	Additional Information Requested	
07/29/1993	Discharge of a Regulated Substance	HEROUX	08/04/1993	Site Investigation Report Requested	

Activity Documents (1)

Document Type	Document Title	Document Date	File Size
4632335	CORRESPONDENCE-FROM	08/04/1993	.05 MB

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Permits (47)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
GWP-199308002-L-004	MANAGEMENT	04/02/2018	06/01/2018	05/31/2023		EUGENE BOISVERT 105 NORTH MAIN ST WEST LEBANON NH 03784

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
06/15/2023	10/23/2023		APRIL 2023 DATA REPORT	
03/01/2023			GMP RENEWAL APPLICATION DUE	
12/15/2022			OCTOBER 2022 DATA REPORT	
06/15/2022			APRIL 2022 & PERIODIC SUMMARY REPORT	
12/15/2021			OCTOBER 2021 DATA REPORT	
12/15/2020	12/01/2020		OCTOBER 2020 DATA REPORT	
06/15/2020	05/27/2020		APRIL 2020 & PERIODIC SUMMARY REPORT	
10/15/2019	12/13/2019		OCTOBER 2019 DATA REPORT	
06/17/2019	06/24/2019		APRIL 2019 DATA REPORT	
12/17/2018			OCTOBER 2018 DATA REPORT	
06/15/2021			APRIL 2021 DATA REPORT	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Permits (47)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permittee
GWP-199308002-L-003	EXPIRED	05/03/2013	07/03/2013	07/02/2018		EUGENE E. BOISVERT 105 NORTH MAIN STREET WEST LEBANON NH 03784

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
04/03/2018			GMP RENEWAL APPLICATION DUE	
06/15/2018	05/31/2018	04/01/2013	DATA TRANSMITTAL	
12/15/2017		10/01/2013	DATA TRANSMITTAL	
06/15/2017	07/31/2017	04/01/2013	PERIODIC SUMMARY REPORT	
12/15/2016	01/29/2016	10/01/2013	NOVEMBER 2015 DATA SUBMITTAL	
06/15/2016		04/01/2013	DATA TRANSMITTAL	
12/15/2015	11/30/2017	10/01/2013	DATA TRANSMITTAL	
06/15/2015	06/30/2015	04/01/2013	2015 PERIODIC SUMMARY REPORT	
12/15/2014	12/15/2014	10/01/2013	OCTOBER 2014 DATA SUBMITTAL	
06/15/2014	06/30/2014	04/01/2013	APRIL 2014 DATA SUBMITTAL	
12/15/2013	11/19/2013	10/01/2013	APRIL 2013 DATA SUBMITTAL	
07/15/2013		05/01/2013	MAY DATA TRANSMITTAL UNDER GMP 002 DUE	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Permits (47)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permitee
GWP-199308002-L-002	EXPIRED	04/02/2008	04/21/2008	04/20/2013		MR. EUGENE E. BOISVERT 105 NORTH MAIN STREET LEBANON NH 03784

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
12/15/2008	12/10/2008	10/01/2008	OCTOBER 2008 GW MONITORING RESULTS	
07/15/2009	07/29/2009	05/01/2008	2009 ANNUAL SUMMARY REPORT	
12/15/2009	11/25/2009	10/01/2008	OCTOBER 2009 GW MONITORING RESULTS	
07/15/2010	09/16/2010	05/01/2008	JULY 2010 SAMPLING RESULTS	
07/15/2011	10/03/2011	05/01/2008	2011 PERIODIC SUMMARY REPORT	
07/15/2008	08/26/2008	05/01/2008	MAY 2008 GW MONITORING RESULTS	
01/20/2013	05/03/2013		PERMIT RENEWAL DUE	
12/15/2010	12/02/2010	10/01/2008	OCTOBER 2010 GROUNDWATER MONITORING RESULTS	
12/15/2011	02/21/2012	10/01/2008	NOVEMBER 2011 DATA SUBMITTAL	
07/15/2012	06/29/2012	05/01/2008	MAY 2012 - DATA SUBMITTAL	
12/15/2012	12/24/2012	10/01/2008	NOVEMBER 2012 - DATA SUBMITTAL	

Site Number: **199308002**Project Number: **0004405**Name and Address: **FORMER MUFFLER HOUSE_RENT A WRECK
237 HANOVER ST
LEBANON**Responsible Party: **EUGENE BOISVERT
LEBANON NH 03784**[Mapit](#)

PHONE: 603-298-8482

Wellhead Protection Area: **Unknown**Risk Level: **HIGH GW CONC./ALTER. WATER AVAILABLE**Assigned To: **OAKES**Discovery Date: **07/29/1993**Eligible: **PERMANENTLY ELIGIBLE**Eligibility Determined on: **01/09/1998**MTBE: **Y**Brownfield: **N**

Permits (47)

Permit Number	Permit Type	Application Date	Issue Date	Expiration Date	Revision Date(s)	Permittee
GWP-199308002-L-001	EXPIRED	01/27/2003	02/21/2003	02/20/2008	1) 01/23/2012	EUGENE BOISVERT 2 PASTURE LANE WEST LEBANON NH 03784

Permit Submittals

Due Date	Received Date	Sampling Date	Sample Description	Comments
07/15/2007	06/29/2007		MAY 2007 GW MONITORING RESULTS	
07/15/2003	05/30/2003		APR-03 RESULTS PER GWP, VOCS MW-4 & 8	
12/15/2003	01/26/2004		ANN. GW RESULTS & DRUM REMOVAL; ALKYL SOURCE OFF SITE.	
12/15/2004	01/27/2005		2004 ANNUAL REPORT	
07/15/2005	06/20/2005		MAY 2005 GW MONITORING RESULTS [FILENET]	
12/15/2005	03/02/2006		2005 ANNUAL SUMMARY REPORT	
07/15/2006	08/25/2006		JUNE 2006 GW RESULTS	
	04/15/2003		DEED RECORDATION BK2790 PGS0778-0781	
12/15/2007	04/07/2008		PERMIT RENEWAL APPLICATION	
07/15/2004	06/07/2004		GW MONITORING RESULTS FOR MAY 2004 (FILE NET)	
12/15/2007	01/16/2008		2007 ANNUAL SUMMARY REPORT	
12/15/2006	03/28/2007		2006 ANNUAL SUMMARY REPORT	

Site Number:	199308002	Project Number:	0004405
Name and Address:	FORMER MUFFLER HOUSE_RENT A WRECK 237 HANOVER ST LEBANON	Responsible Party:	EUGENE BOISVERT LEBANON NH 03784
Mapit		PHONE:	603-298-8482
Wellhead Protection Area:	Unknown	Risk Level:	HIGH GW CONC./ALTER. WATER AVAILABLE
Assigned To:	OAKES	Discovery Date:	07/29/1993
Eligibile:	PERMANENTLY ELIGIBLE	Eligibilty Determined on:	01/09/1998
MTBE:	Y	Brownfield:	N

No Vapor Recovery Information

8/5/2024

Underground Storage Tank Facility Report

1 of 2

Site Number: 199308002

Facility Id: 0114946

System Name and Address: FORMER MUFFLER HOUSE/RENT A WRECK
237 HANOVER ST
LEBANON

Facility Owner: EUGENE E BOISVERT
2 PASTURE LN
W LEBANON NH 03784

[Mapit](#)

Registration Date: 09/05/1996

Facility Type: COMMERCIAL

Tanks (3)											
Active: 0 Closed: 3											
Tank #	Substance Stored	Capacity	Installed Date	Temporarily Closed Date	Permanently Closed Date	Assessment Received Date	Construction Material	Piping Material	System Type	Overfill Install Date	Spill Install Date
1	UNKNOWN SUBSTANCE	1111	11/11/1911		10/25/1996	12/02/1996	UNKNOWN	UNKNOWN			
2	UNKNOWN SUBSTANCE	1111	11/11/1911		10/25/1996	12/02/1996	UNKNOWN	UNKNOWN			
3	UNKNOWN SUBSTANCE	1111	11/11/1911		10/25/1996	12/02/1996	UNKNOWN	UNKNOWN			

Activity (1)						
Activity	Enforcement Number	Activity Date	Substantial Compliance	Deadline	Response	Response Date
FILE REVIEW		01/09/1998			COMPLIANCE MET	12/18/1997

8/5/2024

Underground Storage Tank Facility Report

2 of 2

Site Number: 199308002

Facility Id: 0114946

System Name and Address: FORMER MUFFLER HOUSE/RENT A WRECK
237 HANOVER ST
LEBANON

Facility Owner: EUGENE E BOISVERT
2 PASTURE LN
W LEBANON NH 03784

[Mapit](#)

Registration Date: 09/05/1996

Facility Type: COMMERCIAL

Documents (4)				
	Document Type	Name/Title	Date Submitted	File Size
3743569	CORRESPONDENCE	Correspondence 10/14/96 to 1/9/98	10/15/2003	.65 MB
3743571	REPORT	UST Closure Report Review	12/02/1996	.07 MB
4632078	REPORT TO DES	CLOSURE REPORT FOR TANKS 1 - 3 22-NOV-1996	11/22/1996	3.75 MB
3743570	REGISTRATION	Registration For USTs	09/09/1996	.42 MB



CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

December 9, 2024 Meeting

Staff Memorandum – PB2024-41-SPR – *postponed from 11/12/24*

APPLICATION INFORMATION

Agenda Item: 3.B

Application ID: PB2024-41-SPR

Application Type:

Site Plan Review for a proposed accessory office building for the existing multi-family complex, together with associated site improvements

Property Location & Tax Map:

31 Romano Circle (Tax Map 101, Lot 20)

Applicant & Property Owner:

Lebanon Housing Authority

Property Size:

+/-7.88 acres (+/-343,253 sq. ft.)

Zoning District:

Residential Two (R-2) District

Overlay District(s):

- Riverbank Protection District
- Floodplain District

Future Land Use Map:

Residential - Medium

Existing Use & Improvements:

An eight (8)-building multi-family complex with 46 dwelling units and an accessory maintenance building/garage

Proposed Use & Improvements:

+/- 3,882 sq ft. two story accessory office building for the existing multi-family complex, together with associated site improvements

Staff Attachments:

ZBA Notice of Decision dated October 3, 2024 for ZB2024-15-SEVAR

LEGAL NOTICE

Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2: Request for Site Plan Review to construct a +/- 3,882 sq ft. two story accessory office building for the existing multi-family complex, together with associated site improvements, ~~including relocating a basketball court*~~ and new parking spaces. PB2024-41-SPR

**The proposed basketball court has been removed from the proposed project.*

APPLICATION MATERIALS

- ▶ Application form (1 page)
- ▶ Letter dated November 25, 2024, from Granite Engineering, LLC (response to staff comments; 9 pages)
- ▶ Property owner authorization (1 page)
- ▶ Application for Waivers with supporting narrative prepared by Granite Engineering, LLC (6 pages)
- ▶ Site Plan Review Regulations Technical Checklist dated August 12, 2024 (9 pages) (*note that at the time of the writing of this memo, page 10 of the technical checklist is missing from the application submission*) (*Note: page 10 added upon receipt on 12/9/2024*)
- ▶ Letter dated April 27, 2024 from Hurley Environmental and Land Planning, LLC (wetland delineation; 1 page)
- ▶ Application for Floodplain Development Permit, approved November 14, 2024 (3 pages)
- ▶ Project Narrative prepared by Granite Engineering, LLC (1 page)
- ▶ Certified Notification List (3 pages)
- ▶ Plan set titled, "Residential Site Plan – Lebanon Housing Authority," prepared by Granite Engineering, LLC, dated 10/14/24, revised 11/25/24 (15 sheets)
- ▶ Floor plans, building elevations, and architectural renderings prepared by Northern Architectural, dated 10/8/24 (4 sheets)

Available on-line only:

- ▶ Stormwater Management Report prepared by Granite Engineering, dated October 14, 2024, revised November 25, 2024, GE Project No. 23-0508-1 (87 pages)

COMPLETENESS REVIEW

In order to accept jurisdiction and commence review of the applicant's proposal, the Planning Board must first determine that the application is complete. See NH RSA 676:4, I(c)(1) and Section 4.7.C.2 ("Initial Completeness Determination") of the Site Plan Review Regulations. The Planning and Development Department has reviewed the application for compliance with the Site Plan Review Regulations in accordance with Section 4.7.C.2 and recommends that the Board find that the application is complete enough to accept jurisdiction and to commence review.

APPLICATION OVERVIEW

The property is improved with a multi-family housing complex containing 46 dwelling units within eight (8) buildings. The complex is owned and operated by the Lebanon Housing Authority, which also owns and operates several other multi-family properties in Lebanon. The multi-family use is non-conforming to the R-2 District regulations which only permit multi-family dwellings by conversion of an existing building (all buildings on the lot were constructed as multi-family dwellings).

Originally constructed in the mid-1970s with five (5) buildings containing 30 units, the Zoning Board granted a Variance in 2007 to construct an additional three (3) buildings containing 16 units. The property also includes a maintenance building which was constructed in 2019 pursuant to an approval by the Zoning Board (ZB2018-19-SEVAR) and Site Plan approval from the Planning Board (PB2018-26-SPR).

At this time, the applicant proposes to construct a +/- 3,882 sq ft. two-story accessory office building for the existing multi-family complex, together with associated site improvements including 12 new parking spaces, stormwater management, landscaping and lighting. The proposed office building obtained Zoning Board approval on October 3, 2024 (ZB2024-15-SEVAR). Background information on the proposed project as set forth in the applicant's Zoning Board application narrative is reproduced below to provide the Planning Board additional context for the proposed project:

The Property currently features two housing projects, including public housing along Romano Circle and a low-income housing tax credit project along Doc Place. The 30-units along Romano Circle existed prior to the R-2 zoning designation in 1978. In 2007, the Zoning Board granted the Applicant a variance from Article III, Section 309.2 in order to allow construction of the additional 16 units along Doc Place. The two projects together feature a total of 46 residential housing units. Five of those units are currently located inside a structure that features an attached office (the "Existing Office"). While the Applicant currently utilizes the Existing Office for purposes of its operations and in connection with the existing multi-family use, the office has become too small to effectively achieve the Applicant's purposes. Accordingly, the Applicant proposes to construct a new, larger office on the Property (the "New Office"), which is depicted on the plan submitted in connection with this application to the east of the Existing Office. The New Office will be situated near an existing maintenance garage at the entrance of Romano Circle. The building is a two-story wood structure with a flat roof and a small one-story entryway and lobby with opposing metal shed roofs. The New Office will include 7 office spaces, 2 interview rooms, a dedicated fingerprinting room, 1 conference room, a document storage room, a kitchenette, a small audio/visual equipment room, and a waiting area. The Applicant does not propose any additional housing units.

STAFF MEMORANDUM

PB2024-41-SPR
31 Romano Cir (Tax Map 101, Lot 20)
December 9, 2024 PB Mtg
Agenda Item 3.B
Page 3 of 9

It is staff's understanding that the existing office space located within one of the residential buildings will remain as office space for the Lebanon Housing Authority, and that the size of this existing building office space is 1,624 sq. ft. The applicant should be asked to confirm.

Because the proposed office building – which will be located towards the front of the property adjacent to the maintenance building - will displace a basketball court, a replacement basketball court was originally included as part of the applicant's proposal (the approximate location of the proposed building is depicted by a red star in Figure 1 and Figure 2 below). However, because the new basketball court requires a Variance, the applicant has chosen to remove it from their proposal at this time. As the Board is aware, the City Council is currently considering an amendment to the Zoning Map to rezone the subject property from R-2 to Residential Office (R-O), which would change the status of the development from a non-conforming use to a conforming use. If the property is rezoned as proposed, a Variance for the basketball court would no longer be required.

Figure 1. Aerial view of property.



©2018 Google, <https://lebanonnh.mapgeo.io/>

Figure 2. Bird's eye view of property (looking west).



Image ©2018 Pictometry (image taken 5/1/2018)

STAFF COMMENTS**PLANNING****I. SITE PLAN REVIEW REGULATIONS:****Jurisdiction**

The proposed office building construction and site improvements constitute a “major change” to the property (as that term is defined in Article II of the Site Plan Review Regulations) and, therefore, requires Site Plan Review by the Planning Board and demonstration of compliance with the Article V submission requirements and Article VI design requirements.

Waiver Requests

Pursuant to Section 7.1 (“Waiver of Regulations”), the applicant has requested waivers or partial waivers from certain provisions of Article V (“Submission Requirements”) and Article VI (“Design and Construction Requirements”) of the Site Plan Review Regulations, as set forth in the attached Application for Waivers and as listed below (in the order they appear on the Application for Waivers):

- **Section 6.2.B** – *perimeter landscaping requirements (see also page 1 of the attached “Supplemental Waiver Statement”)*
- **Section 6.2.D** – *landscaping around buildings requirements (see also page 3 of the attached “Supplemental Waiver Statement”)*
- **Article VI Design Requirements** – *The applicant is only proposing to redevelop a portion of the property. However, the Site Plan Review Regulations apply to the entire lot and not just the portion of the property that the applicant proposes to redevelop. Therefore, the applicant is requesting a general waiver from having to comply with the Article VI design requirements outside of the specific area of the lot proposed to be redeveloped (i.e. the “project area” delineated in red on Sheet 1 of the plan set). (see also page 4 of the attached “Supplemental Waiver Statement”)*

Pursuant to Section 7.1 of the Site Plan Review Regulations, the Board may grant a waiver of any part of the Regulations if it finds, by majority vote, that either:

- A. Strict conformity would pose an unnecessary hardship to the Applicant and waiver would not be contrary to the spirit and intent of the regulations; or
- B. Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations.

The applicant’s basis for each waiver request is described in the attached Application for Waivers. Note that the granting of a waiver from a design requirement does not relieve an applicant from making the improvements that are depicted on the approved site plan, even if the depicted improvement would have been covered by the waiver had it not been included on the approved site plan.

ARTICLE V – SUBMISSION REQUIREMENTS

5.1 (Drawings and Other Submittals): The applicant has provided the attached materials pursuant to the submission requirements of Section 5.1 of the Site Plan Review Regulations. Please see attached Project Narrative prepared by Granite Engineering, LLC for a discussion of the project, and the attached Application for Waivers for an explanation of the requested waivers from the Article V submission requirements and the Article VI design standards.

ARTICLE VI – DESIGN AND CONSTRUCTION REQUIREMENTS

6.2 (Landscaping Standards): The applicant has submitted a landscaping plan in accordance with Section 5.1.E.15 of the Site Plan Review Regulations and the landscaping design standards set forth in Section 6.2. See Sheet 15 of the plan set. As noted above, the applicant has requested partial waivers from the Section 6.2.B perimeter landscaping requirements and the Section 6.2.D landscaping around buildings requirements. The basis for the applicant's requests are set forth in the applicant's "Supplemental Waiver Statement", attached.

6.3 (Utilities & Fire Protection): As noted in the applicant's Project Narrative, the proposed building will tie into the City of Lebanon's water system. For wastewater, the proposed building will connect to the City's sewer system via pump station and force main.

6.4 (Fees and Assessments in Effect at time of Connection): The creation of new non-residential square footage will be subject to the City's Impact Fee Ordinance and fee schedule adopted by the Board on May 20, 2024. Section 213.7.A of the Zoning Ordinance requires that the amount of the impact fee is calculated at the time of the Planning Board's approval. Pursuant to Section 213.7.A, staff has determined that the proposed office building will require payment of impact fees in the amount of \$5,667.72.

6.5 (Coordination of Roads, Parking, Loading, Recreation, and Safety): The number of parking spaces is proposed to increase from 89 to 101. The parking spaces will be located along the south side of Romano Circle, mirroring the parking space arrangement along the north side of Romano Circle.

Romano Circle was a public street and was recently discontinued by the Lebanon City Council thereby reverting full ownership to the Lebanon Housing Authority. At the time of the writing of this memo, Planning staff has not confirmed whether the discontinuance has been fully completed. Staff also presumes that once the discontinuance has been completed that the former right-of-way will automatically "merge" with the subject lot.

Note that in removing the basketball court without providing a replacement recreational feature on-site, the proposal may implicate Section 6.5.H which requires multi-family developments to "make adequate provision for the on-site recreational facility needs of the residents". Assuming the multi-family development currently meets Section 6.5.H, the Board should consider whether the development will continue to comply Section 6.5.H without the basketball court.

6.6 (Stormwater Management): The proposed stormwater controls for the new office building include a bioretention pond which will ultimately discharge to the Connecticut River. The City Engineer has reviewed the applicant's stormwater management plans and calculations and has no concerns.

6.7 (Lighting): The applicant has submitted a lighting plan in accordance with Section 5.1.E.12 of the Site Plan Review Regulations and the lighting design standards set forth in Section 6.7. See Sheet 8 of the

plan set. As set forth on the lighting plan, the applicant proposes five (5) wall-mounted lighting fixtures and two (2) pole mounted fixtures along Romano Circle at either side of the proposed building.

6.8 (Off-Site Improvements): *Not applicable.*

6.9 (Premature and Scattered Development): This section provides that the Planning Board “may disapprove a site plan application that proposes development that is scattered or premature, so as to involve danger or injury to health, safety, or prosperity of the community. For purposes of this section, a development shall be considered scattered or premature if it will cause, or poses an undue risk of causing, a substantial or appreciable adverse impact upon any of the factors or parameters set forth in the General or Specific Purposes of Site Plan Review, as outlined in Sections 1.4 and 1.5 of these Regulations.” Staff does not recommend a finding that the proposed development is scattered and premature as such a finding would appear to be without basis.

6.10 (Additional Regulations for the Lebanon Downtown District): *Not applicable.*

II. ZONING ORDINANCE:

Use: The proposed accessory office building use obtained Zoning Board of Adjustment on October 3, 2024 (ZB2024-15-SEVAR). A copy of the Zoning Board's Notice of Action is attached for reference.

Parking: The applicant proposes to add 12 new parking spaces along Romano Circle adjacent to the new office building for a total of 101 on-site parking spaces for the entire property. The proposed parking is compliant with Section 607 of the Zoning Ordinance which requires a minimum of 75 parking spaces for the property and permits a maximum of 110 parking spaces.

CITY ASSESSOR

No comment at this time.

BUILDING INSPECTOR

No comment at this time.

ENGINEERING/PUBLIC WORKS

The City Engineer has reviewed the application and has no concerns or comments.

FIRE DEPARTMENT

The Lebanon Fire Department has reviewed the application and has no concerns or comments.

POLICE DEPARTMENT

No comment at this time.

OTHER COMMENTS

The following comments on the application were provided by the Lebanon Tree Advisory Board (TAB) as set forth in an e-mail from the TAB Chair received by Planning & Development Department staff on November 10, 2024:

"The Tree Advisory Board (TAB) understands that the project site is a limited part of the entire site and comments mostly on the waivers requested and their impact on the landscape at Romano Circle.

The TAB suggests that when there is a waiver request that the landscaping not be eliminated but redistributed on the property. For example significant shade trees are much needed along 12A and screening of the garage could be improved.

A survey of the trees around the building might indicate that many are small and won't provide much shade.

The waivers of the landscape regulations requested do not propose improvement elsewhere on the site compensating for the elimination of the landscaping. We suggest that they should."

STAFF RECOMMENDATIONS

If the Planning Board moves to approve this request, then based on the information reviewed by City staff, the Planning and Development Department recommends that the Planning Board approve the application with the conditions noted below:

General Conditions

1. It shall be the applicant's responsibility to be familiar with and aware of these conditions of approval, and it shall be the applicant's responsibility to satisfy these conditions of approval and to satisfy them within the relevant timeframes outlined below.
2. The development is subject to the Site Plan Review Regulations adopted May 13, 1991, last revised January 23, 2023, and the Zoning Ordinance adopted January 16, 2013, last amended April 3, 2024, which are the regulations in effect at the time the application was submitted.
3. A building permit must be applied for *and issued* within two (2) years of the date of this approval (4.10.A), subject to an extension if applied for by the applicant and if approved by the Planning Board per Section 4.10.B.
4. "Active and substantial development," as defined in Section 8.4.A.1 of the Site Plan Review Regulations, shall be achieved within two (2) years of the date of this approval (8.4.A.2), subject to an extension if applied for by the applicant and if approved by the Planning Board per Section 8.4.A.3. If active and substantial development is not achieved within two (2) years of the date of the Planning Board's approval, the development shall be subject to any changes in the City's land use regulations.
5. "Substantial completion," as defined in Section 8.4.B.1 of the Site Plan Review Regulations, shall be achieved within five (5) years of the date of this approval. If substantial completion is not achieved within five (5) years of the date of the Planning Board's approval, the development shall be subject to any changes in the City's land use regulations.
6. All required landscape plantings shall meet the minimum size requirements for such plantings set forth in Section 6.2.B of the Site Plan Review Regulations at the time of installation.

7. The applicant shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.
8. Prior to the start of any construction activities on the property, erosion control measures, including edge-of-disturbance fencing if applicable, shall be installed and maintained before and during any site work, to be verified by the City Engineer or City's third-party inspector on site.
9. The property owner is responsible for the maintenance and operation of the stormwater management system in accord with the O&M plan, and such responsibility shall run with the land. (Section 6.6.H.2.b of the Site Plan Review Regulations).
10. All service areas and facilities including garbage and waste disposal containers, recycling bins, electrical and mechanical equipment such as transformers and compressors, meter clusters, and other utility elements must be screened in accordance with Section 6.2.B.8 and Section 6.10.B.5 of the Site Plan Review Regulations.

Conditions to be Satisfied Prior to Application for a Building Permit and Prior to the Start of Any Construction Activities

11. The discontinuance of Romano Circle as a public right-of-way shall be finalized and completed and all relevant and associated documents recorded in the Grafton Registry County of Deeds and the City of Lebanon Clerk's office in accordance with state statute and the policies, procedures, and requirements of the City of Lebanon.
12. The Boundary Line Adjustment plat for Mark & Susan Rose Sr. and Lebanon Housing Authority approved by the Planning Board on October 14, 2024 (PB2024-39-BLA) shall be recorded in accordance with the Notice of Action for PB2024-39-BLA and the conditions of approval thereof.
13. The applicant shall provide a letter or certification from the engineer or record or other qualified design professional confirming that the approved plan set meets the accessibility standards of the State of New Hampshire Building Code.
14. The applicant shall obtain approval from the City Council or the City Manager's office for any additional water and/or sewer flows in accordance with the applicable Chapter 136 and 182 of the City Code.
15. All engineering review fees shall be paid in full as required by Section 4.7.E.1 of the Site Plan Review Regulations. (*Note: applicant can request an invoice from the Department of Public Works*).
16. If required by the Department of Public Works, the applicant shall apply for and obtain an Excavation Permit, Driveway Permit, and Stormwater Permit.

Conditions to be Satisfied Prior to the Issuance of a Building Permit

17. Prior to the start of any construction activities on the property, the applicant shall record in the Grafton County Registry of Deeds notice of the stormwater management and erosion and sediment control plans as required per Section 6.6.H.2.d of the Site Plan Review Regulations. Such notice shall be reviewed by the Planning & Development Department prior to recording.

18. Prior to the start of any construction activities on the property for which construction inspection is required pursuant to this decision or any applicable ordinance or code, the City shall retain the services of an independent third-party inspector, for which the applicant shall be responsible for all inspection fees related to (a) on-site work related to sewer, water, temporary sedimentation and erosion control, and drainage improvements, and (b) all off-site work within the City's right-of-way (including but not limited to water, sewer, driveways, drainage), in accordance with Section 8.2 of the Site Plan Review Regulations. The applicant shall provide funding for inspection services in a form and amount acceptable to the City and shall sign an Infrastructure Inspection Agreement.
19. Pursuant to Section 213 of the Zoning Ordinance and the Impact Fee Schedule adopted on May 20, 2024, the development shall be subject to City of Lebanon impact fees in the amount of \$5,667.72. In accordance with RSA 674:39, the approved site plan shall be exempt from any future changes in impact fees and methodology for five years from the date of approval; however, any building permits which are issued after the end of that five-year period shall be fully subject to whatever impact fees and methodology are in effect at the time of building permit issuance.
20. All water and sewer fees shall be paid as set forth in City Code Chapter 68.
21. If required by the Department of Public Works, the applicant shall obtain an Excavation Permit, Driveway Permit, and Stormwater Permit.
22. Prior to the start of any construction activities on the property, the applicant shall obtain or update (if appropriate) any required Federal or State approvals.

Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy

23. The impact fee calculated pursuant to Condition of Approval #18 shall be paid.
24. Third-party engineer or design engineer inspection reports and as-built drawings provided by the applicants (PDF format and CAD .dwg format, using the NH State Plane Coordinate System), including tie sheets, shall be reviewed and approved by the City Engineer.
25. All improvements depicted on the plan shall be completed, and shall be constructed as depicted on the approved plan, including any modifications to the plan as may be approved by the Planning Board in accordance with the Site Plan Review Regulations.

Attachments

cc: Lebanon Housing Authority, applicant (ditha@lebanonhousing.org)
Granite Engineering, LLC (jmerriitt@graniteeng.com)
File

**CITY OF LEBANON
APPLICATION FOR**

SPECIAL EXCEPTION	☐	☒	SITE PLAN REVIEW
VARIANCE	☐	☐	SUBDIVISION
MOTION FOR REHEARING	☐	☐	LOT LINE ADJUSTMENT
APPEAL OF AN ADMIN. DECISION	☐	☐	CONDITIONAL USE PERMIT

☐ OTHER _____

PROPERTY OWNER (APPLICANT):

NAME: Lebanon Housing Authority TEL.#: (603) 298-5753

MAILING ADDRESS: 31 Romano Circle, West Lebanon, NH 03784

E-MAIL ADDRESS: ditha@lebanonhousing.org

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Granite Engineering, LLC TEL.#: 603-518-8030

MAILING ADDRESS: 150 Dow Street, Tower 2, Suite 421, Manchester, NH 03101

E-MAIL ADDRESS: jmerritt@graniteeng.com

PROJECT LOCATION:

TAX MAP #: 101 LOT#: 20 PLOT #: ZONE: Residential Two (R-2)

STREET ADDRESS OF PROJECT: 31 Romano Circle, West Lebanon, NH 03784

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO
FLOOD PLAIN ☒ YES ☐ NO

SCOPE OF PROJECT:

Construct new office to support the work of the Lebanon Housing Authority

Additional site improvements include lighting, landscaping, and stormwater management.

TYPE OF OCCUPANCY:

EXISTING ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☒ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL
PROPOSED ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☒ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL
IF USE IS **COMMERCIAL** OR **INDUSTRIAL**, PLEASE NOTE **SPECIFIC**
USE: _____

SIGNATURE BLOCK:

FOR PLANNING BOARD APPLICATIONS ONLY: I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on _____, 20____, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: Ditha Alonso

DATE: 10/8/24

NOTE: IF, AS OWNER, YOU WISH TO DESIGNATE AN AGENT TO ACT ON YOUR BEHALF, PLEASE READ THE FOLLOWING AND SIGN BELOW: I hereby designate the person listed above as my agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

PROPERTY OWNER: Ditha Alonso

DATE: 10/8/24

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - \$ AMOUNT	DATE PAID	VOUCHER #



GRANITE ENGINEERING, LLC

civil engineering • land planning • municipal services

November 25, 2024

Tim Corwin, AICP
Deputy Planning and Development Director
City of Lebanon
51 North Park Street
Lebanon, New Hampshire 03766

RE: 31 Romano Cir_PB2024-41-SPR_Staff Comments
Lebanon Housing Authority
Tax Map 101 Lot 20
31 Romano Circle
West Lebanon, New Hampshire 03784
GE Project No. 2305081

Dear Mr. Corwin,

We are in receipt of your email dated October 24, 2024 regarding comments relative to the review of the site plan application for the proposed office building for Lebanon Housing Authority. In addition to responses to your comments, please find the following material in support of the referenced project:

- Five (5) copies of the executed Site Plan application with waivers;
- Five (5) copies of the completed and signed Technical Checklist;
- Five (5) copies of a letter from the project wetland scientist certifying that there are no wetlands on the subject property;
- Five (5) copies of the Floodplain Permit
- Five (5) copies of a written project description;
- Five (5) copies of the abutters list;
- One (1) full-sized copies of the plan set;
- One (1) full-sized copies of the Architectural Plans;
- Five (5) 11"x17" copies of the plan set;
- Five (5) 11"x17" copies of the Architectural Plans;
- Stormwater Management Report – digital copy only;
- One electronic copy of each document, saved as PDF;
- One electronic copy of each document, saved as PDF-A;

In response to your comments, we offer the following explanations and/or responses:

General

1. As previously discussed, the Site Plan Review Regulations apply to the entire property, and not just to the development site as it has been delineated by the applicant. As a result, staff recommends that the applicant request a general waiver from having to satisfy the Site Plan Review Regulations outside the portion of the property that is proposed to be redeveloped.

A waiver has been requested from all Articles and Appendix of the Site Plan Review Regulations as it relates to the areas outside of the project area.

2. As discussed at the staff review meeting, the basketball court should have obtained Zoning Board approval. However, the City Council is considering a zoning map amendment that would may make the basketball court allowed “by right”. We are still considering whether and how the Planning Board can conditionally approve the basketball court pending the proposed rezoning. Please note that we appreciate your willingness to move ahead without the basketball court if needed.

The basketball court has been removed from this site plan application.

3. A floodplain permit from the City’s Floodplain Administrator should be obtained prior to the Planning Board’s completeness review.

A floodplain permit has been approved by the City.

4. Identify how the project complies with Section 6.5.G (groundwater protection).

The project meets the City of Lebanon’s stormwater ordinance, and uses a stormwater filtration practice to treat stormwater.

5. Provide an estimated timetable for construction and completion of buildings, parking facilities, landscaping, and other required improvements. (5.1.G.1)

The project anticipates starting construction in March 2025 – with certification of occupancy in February 2026. This timing has been added to Note 13 in General Notes on the Overview Plan (Sheet 1).

6. Please address Section 6.5.E.3: “Provisions shall be made to assure that the proposal is consistent with the need to minimize flood damage. For example, sewer, gas, electrical, and water systems should be elevated and constructed to minimize or eliminate flood damage, and adequate drainage should be provided so as to reduce exposure to flood hazards.”

The project is proposing to raise the building, electrical services, and sewer manholes 1.55' above the 100 year flood elevation. The project has been issued a city floodplain permit.

7. Please address Section 6.5.E.4: "Design provisions shall also be made to minimize or eliminate infiltration of floodwaters into new or replacement water supply systems and/or sanitary sewer systems and, conversely, to minimize or eliminate discharges from these systems into floodwaters. On-site waste disposal systems shall be located so as to avoid impairment of them or contamination from them during flooding."

The project is proposing to raise the building, electrical services, and sewer manholes 1.55' above the 100 year flood elevation. The project has been issued a city floodplain permit.

8. Provide an updated Application for Waivers to incorporate any additional required or requested waivers.
 - a. Note that the Board must find either Criteria A or Criteria B (as identified on the Application for Waivers) is satisfied in order to grant the waiver. Each waiver request, therefore, should demonstrate how the request meets either Criteria A or B. It is not clear to staff that all of the necessary requested waivers can be justified, and recommends that the applicant try as much as possible to provide as much of the missing information as possible.

An updated application for waivers and corresponding written demonstration of the necessary criteria has been included with this revised submission. It should be noted that the blanket waiver of the Site Plan Review Regulations has been included for those areas outside the "project area".

9. Please The staff memo prepared for PB2018-26-SPR (site plan approval for the maintenance building/garage) included the following comment: "it has been brought to staff's attention that the Romano Place landscaping is substantially out of compliance with the 2007 approved site plan (#PB2007-21). Staff will work with the applicant to ensure that the 2007 approved landscaping is installed (or re-installed) as required." Staff will research whether this condition was satisfied and may recommend that it also be included as a condition of the office building approval.

No response is required.

10. Condition of approval #5 from the 9/20/18 Planning Board Notice of Action for PB2018-26-SPR included the following condition: "The applicant shall take all steps necessary to repair the bioretention areas and stormwater facilities

approved as part of the 2007 site plan approval (#PB2007-21), and develop an operation and maintenance plan, to the satisfaction of the Department of Public Works.” Staff will research whether this condition was satisfied and may recommend that it also be included as a condition of the office building approval.

No response is required.

11. Condition Please note that the applicant will need to grant the City a formal right to enter the property for purposes of accessing the water shut off valve.

The water shutoff for the proposed office building is located within an existing waterline easement granted to the City. Accordingly, no additional easements should be needed.

Plan Set Comments

General

12. Provide sheet number in the lower right hand corner of all plan sheets with a prominent font size.

The plan set sheet numbers have been added to the lower right hand corner for all sheets within the Plan Set.

13. Remove sheets A1.1, A1.2, and A9.0 from plan set and submit as separate exhibits, and update Table of Contents on cover page and the numbering on each plan sheet accordingly.

These sheets have been removed from the Plan Set. They shall be submitted as separate exhibits. The Table of Contents has been adjusted accordingly on the Cover.

14. Identify “the location of curb cuts and vehicle accesses within 200 feet of the site boundary.” (5.1.E.9)

All curb cuts and vehicle accesses located within 200 feet of the site have been included and labeled. See the Overview Plan, Sheet 1.

15. Depict “all existing and proposed surface and subsurface storm drainage facilities, including City storm drainage facilities located within 200 feet of the site.” (5.1.E.17)

All existing and proposed surface and subsurface storm drainage facilities, including City storm drainage facilities located within 200 feet of the site have been included. See the Overview Plan, Sheet 1.

16. It's not clear why the second sheet of the boundary survey has been included. If not needed, please consider removing from the plan set.

This plan illustrates the easements granted to the City with the Romano Drive discontinuance. We recommend keeping it within the plan set.

17. The footprint of the maintenance garage as it appears throughout the plan set is inconsistent with the approved site plan (see attached). Moreover, both the approved site plan and the proposed site plan are inconsistent with the building as actually constructed (see image below). Please address.

A small 5' x 10' temporary snow protection cover for the propane tanks is located in the back of the garage, and has been shown on the site plans. There is a small gravel area on the end of the garage that will be removed, loamed and seeded.

18. What do the dashed lines to the east of the maintenance garage that appear throughout the plan set represent? There is no identified use of or improvements to this area on the approved site plan other than loaming and seeding. Please address.

The dashed lines to the east of the maintenance garage represent the edge of existing gravel. The linetype has been changed to distinguish it more from other dashed linetypes throughout the plan, and this linetype has been added to the legend for further clarity. This gravel area will be removed, loamed and seeded.

Cover Sheet

19. Table of R2 Zoning Requirements (some – but not all - of the required information identified below is located on Sheet 1; however, such information must be included also or instead on the cover sheet):

The Zoning Requirements Table has been removed from the Overview Plan Sheet and can be found on the Cover Sheet.

- a. Building information required by 5.1.E.4 should be provided per building, not as a whole. At a minimum, the information for the new building needs to be identified separately from all of the other existing buildings.

This has been added to the cover sheet in table format.

- b. Identify minimum lot area calculation.

This comment was noted as being a typo, and to disregard. The minimum lot size is shown as 148,000 square feet in the table.

- c. Proposed side yard setback of 31.6 ft. is incorrect.

The side yard calculation has been corrected to 15.1'.

- d. Required maximum lot coverage is "NA".

The "Required" column has been renamed to "Allowed" to show the "Maximum Allowed Lot Coverage", which is 65%.

- e. There is no "maximum stories" requirement.

The "Required" column has been renamed to "Allowed" to show the "Maximum Allowed Stories", which is two.

- f. Change "Building Height" to "Maximum Building Height".

"Building Height" has been changed to "Maximum Building Height" on the Cover Sheet Table of R2 Zoning Requirements.

- g. Identify the amount of building coverage and impervious cover to be removed and to be added (in addition to providing the totals of each that are already included in the table).

This has been added to the cover sheet in table format.

- h. Identify gross floor area of the existing and proposed buildings.
(5.1.E.4.e.4)

This has been added to the cover sheet in table format.

- i. In table form, provide all information required by 5.1.E.4.e.5 for the site:
- the number of required (minimum) parking spaces and calculations
 - the permitted (maximum) number of parking spaces and calculations
 - future proposed
 - existing parking capacity

Parking tabulations and calculations have been added to the table on the Cover Sheet.

- j. Identify height of each existing building and the proposed building
(5.1.E.4.e.8)

This has been added to the cover sheet in table format.

- k. Identify the number of stories and gross square footage of each story of the existing and proposed buildings (5.1.E.4.e.9)

This has been added to the cover sheet in table format.

- l. Clarify existing use (i.e. 46 unit multi-family development) and proposed use (accessory office building) (5.1.E.4.e.10)

The proposed and existing uses have been clarified in the table.

- m. Indicate that the property is subject to the Riverbank Protection District and Floodplain District (5.1.E.4.e.13)

The Riverbank Protection District and the Floodplain District have been added to the listed overlay districts for the project.

Sheet 1 (Overview Plan)

- 20. Add floodplain delineation and elevation.

Floodplain delineation and elevation have been added to the Overview Plan (Sheet 1).

- 21. Remove General Note 2 (the discontinuance of Romano Circle will need to be finalized prior to final site plan approval/commencement of construction activities).

General Note 2 on Sheet 1 has been removed.

- 22. Remove Note 4 or ensure that the information matches the table on the cover sheet.

The note (Now Note 3) has been re-written to direct the reader to the cover sheet for the full Zoning/Project Requirement table.

- 23. Revise Note 11 to refer only to the Zoning Board approval for this particular project, and revise the verbiage as follows: "This project was granted the following:"

The note (now Note 9) on Sheet 1 has been revised to state "This project was granted the following:", and refers to the zoning approvals granted.

- 24. Review Note 12 to include a Floodplain Permit, Building Permit, and Excavation Permit. Confirm with the City Engineer whether a stormwater permit will also be needed.

The Floodplain Permit, Building Permit, Excavation Permit, and Stormwater Connection Permit have all been added to the note (now Note 10) on Sheet 1.

Sheet 5 (Site Plan)

25. Remove floodplain delineation and elevation (and add to Sheet 1).

Floodplain delineation and elevation have been removed from Sheet 5 and added to Sheet 1.

26. Remove the NHDES shoreland boundaries.

NHDES Shoreland boundaries have been removed from Sheet 5.

27. Regarding the following note: "SEE ARCHITECTURAL PLANS FOR HANDRAIL DETAILS," no such detail is included in the plan set.

A handrail detail has been included on sheet 13.

Sheet 8 (Lighting Plan)

28. For each luminaire type, identify the color correlated temperature (CCT) (5.1.E.13)

For all the lighting fixtures, the color correlated temperature is 3000K CCT.

29. Provide average and minimum foot-candle measurements (5.1.E.13)

The average and minimum foot-candle measurements have been provided on the Lighting Plans. These measurements have been broken out into two areas: the total project area and just the proposed parking area.

30. Please address the requirements of Section 6.7.C.1 (parking lot lighting levels and uniformity ratio)

The parking lot levels and uniformity ratio parameters have been met for the proposed parking area. See the Calculation Summary Table on the Lighting Plans (Sheet 8), "New Parking" section.

Sheet A2.0 (Elevations)

31. Revise architectural renderings to show the height and location of wall-mounted lighting fixtures. (5.1.E.13)

Revised Architectural renderings have been included to show the height and location of wall-mounted lighting fixtures.

We trust the noted plan revisions and/or explanations will adequately address the conditions listed above. Should you have any further questions or comments, please do not hesitate to contact this office.

Best Regards,

A handwritten signature in black ink, appearing to read "Justin Daigneault", with a stylized flourish at the end.

Justin Daigneault.
Project Manager

The Lebanon Housing Authority, owners of the property situated at 31 Romano Circle in Lebanon, NH and referenced on Lebanon Tax Assessor's Map 101, 20, hereby authorizes Granite Engineering LLC, to submit local, state, and federal land use applications on our behalf, as they relate to the development of the Lebanon Housing Authority property to accommodate a new office building. Further, I authorize those parties to aid in the representation of said permits, as required, before the City of Lebanon and the State of New Hampshire.



Ditha Alonso

Lebanon Housing Authority
31 Romano Circle
West Lebanon, NH 03784



City of Lebanon, New Hampshire APPLICATION FOR WAIVERS

Office Use Only

Date Received: _____

File No.: _____

PROJECT INFORMATION

Name of Applicant: Lebanon Housing Authority

Project Name: Lebanon Housing Authority, 31 Romano Circle

Project Address: 31 Romano Circle, West Lebanon, NH 03784

WAIVER REGULATIONS

In order to grant a Waiver from a requirement of the City of Lebanon Site Plan Review or Subdivision Regulations, the Planning Board must find that the Waiver is justified under one of the following criteria (See Article VII of the Site Plan Review Regulations and Section 7.15 of the Subdivision Regulations):

Criteria A. Strict conformity would pose an unnecessary hardship to the Applicant and waiver would not be contrary to the spirit and intent of the regulations;

OR

Criteria B. Specific circumstances relative to the site plan, or conditions of the land in such site plan, indicate that the waiver will properly carry out the spirit and intent of the regulations.

WAIVER REQUEST(S)

I (we) hereby request a Waiver from:

[You can respond in the space provided, or attach a separate statement. Please be prepared to address each request during your public hearing. You must show that you have justified granting the Waiver(s).]

6.2.B

1. Section ___ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

Waiver requested for a reduction in the perimeter landscaping within the "project area". See attached narrative for demonstration of waiver criteria.

6.2.D

2. Section ___ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

Waiver requested for a reduction in the required Landscaping Around Buildings within the "project area". See attached narrative for demonstration of waiver criteria.

3. All Articles/Appendix of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

Blanket waiver requested from all Articles/Appendix of the Site Plan Review Regulations as it relates to areas outside the defined "project area". See attached narrative for demonstration of waiver criteria.

4. _____
Section meets (circle one) Criteria A / Criteria B because _____

5. Section ____ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

6. Section ____ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

7. Section ____ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

8. Section ____ of the (circle one) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (circle one) Criteria A / Criteria B because _____

SIGNATURE

I (we) hereby submit this application to the Planning Board and attest that to the best of my (our) knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As the applicant or as the agent of the applicant, I attest that I am duly authorized to act in this capacity.

Signature of Applicant: Dina Alonso Date: 11/18/24



LEBANON HOUSING AUTHORITY

ROMANO CIRCLE

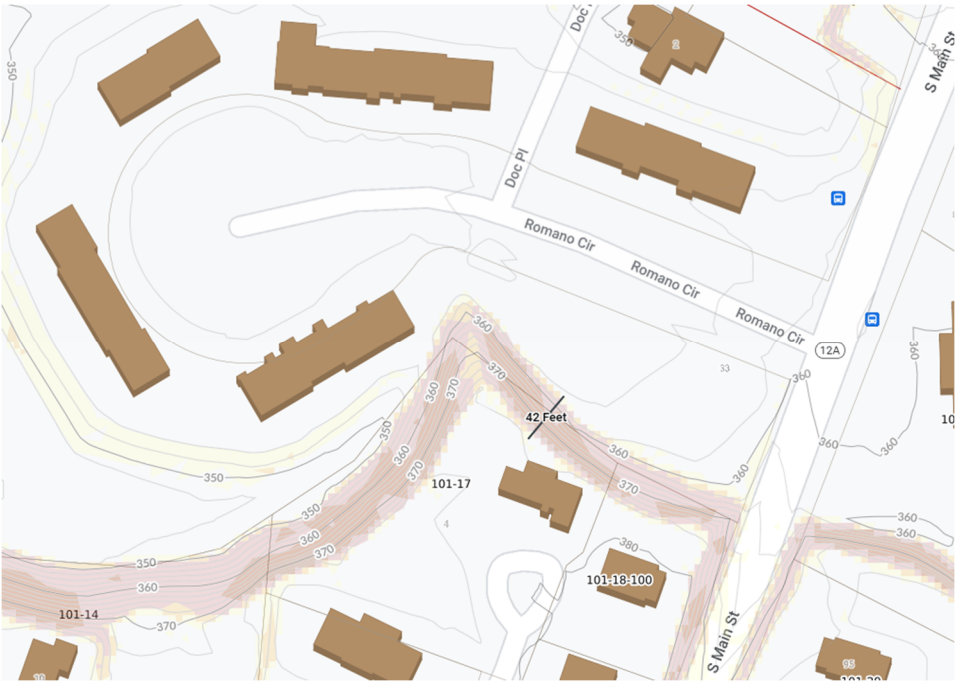
Supplemental Waiver Statement

On behalf of the applicant, Lebanon Housing Authority, please consider this supplemental waiver request statement for Sections 6.2.B, and 6.2.D of the Site Plan Review regulations for proposed work within the defined “Project Area”, and a blanket waiver from all Articles/Appendix of the Site Plan Review Regulations for those areas outside the limits of the “project Area”.

Site Plan Review Regulation 6.2.B – Perimeter Landscaping

The above-referenced regulation requires a 15-foot landscaped area along the front, side, and rear property lines. The Applicant is requesting a waiver for a portion of the perimeter landscaping within the project area. The area seeking relief from this requirement is located directly behind the proposed office. As part of this project it will be necessary to do some perimeter grading around the proposed office building. This perimeter grading requires some of the existing trees to be removed to facilitate construction of a drainage swale that will convey stormwater to the proposed bio retention pond. This swale will be located as close to the building to retain as much existing perimeter landscaping as possible. The area of perimeter landscaping in question is approximately 140 feet long, and located along the southern limits of the Project Area.

The Applicant maintains that the Board can grant this waiver as specific conditions of the land will ensure that the waiver will properly carry out the spirit and intent of the regulation. The property along the south property line, and the abutters property along that same property line is unique. The slope behind the proposed office rises approximately 42 vertical feet. This significant slope is heavily vegetated and is too steep for development. The unique topography coupled with the existing vegetation far exceeds the spirit and intent of the perimeter landscaping regulation for this specific area. Even absent vegetation, the topographic change in the adjacent slope will effectively screen the proposed project area. Below are screenshots of the Town’s GIS Maps showing the wooded and steep nature of the area in question.





Site Plan Review Regulation 6.2.D – Landscaping Around Buildings

The above-referenced regulation requires 10 feet of landscaping around the building perimeter.

The Applicant is requesting this waiver for a portion of the proposed buildings landscaping. The Applicant maintains that the Board can grant this waiver as strict conformance with the regulation would pose an unnecessary hardship to the Applicant and the waiver would not be contrary to the spirit and intent of the regulations.

A Lot Line Adjustment application was presented to the Planning Board on October 14th. The adjustment was between the subject property and Map 101, Lot 17, owned by Mark & Susan Rose. The lot line adjustment proposed an additional 1,370 square feet of land area to the subject property. This allowed the proposed office to be located further away from Romano Circle. This boundary adjustment resulted in the ability to provide a 4' landscape area along the front of the building, thereby meeting the regulation to the extent possible. The requirement of 10' landscaping would push the sidewalk out another 6 feet, and would require a narrower drive isle along Romano Circle.

Site Plan Review Regulation 6.2.D.2. states that as part of the landscape design, functional features (such as patios, entrance walks, and loading areas that cross through the landscaped area to the building) may be permitted if they are necessary for the normal functioning of the building.

The area between the adjacent garage and the proposed office building is approximately 15'. If the 10' landscape requirement was to be required, this would leave 5' for access to

the side doors of the garage. This landscape requirement would prohibit access to the garage. Even if the noted landscape area was installed, the location of the garage effectively screens or blocks view of the landscape area. The area along this side of the building will be landscaped with a riverstone drip edge and lawn.

The area located west of the proposed building includes a proposed bio retention area. This particular stormwater BMP utilizes plants and landscaping as part of the BMP's function. While the BMP is technically outside of the 10' landscape strip, the BMP and the associated landscaping in this BMP is in close proximity to the building and will contribute to maintaining the spirit and intent of the regulation.

Site Plan Review Regulation – All Articles/Appendix for areas outside the “Project Area”

The Applicant seeks a blanket waiver from all of the Articles/Appendix of the Regulations for those areas of the property/site outside of the defined “project area”. The subject property is quite large at approximately 9.5 acres in land area, while the proposed Project Area is small at approximately 0.5 acres in area. The applicant's project is limited to approximately 5% of the overall tract area.

Accordingly, the Applicant maintains that strict conformity with the regulations for those areas outside the project area would pose an unnecessary hardship as it would require surveying, detailing, analysis, design and construction within areas that are well beyond the limits of the Project Area. Granting of the waiver would not be contrary to the spirit of the regulations, as portions of the subject site have previously gone through site plan review/approval, and this site has existed for a considerable amount of time in harmony with the community and immediate neighborhood.

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	DATE: October 14, 2024
GENERAL SUBMISSION REQUIREMENTS:	

All applications to the Planning Board for Site Plan Review must be submitted by 12:00 Noon on the day of the filing cutoff. [§4.7.B] Submissions must be accompanied by the following information or review of the application may be delayed:

A properly completed and signed Application Form *(available at www.lebanonnh.gov)*. [§5.1.A]

The appropriate filing fees. [§5.1.B]

A written project description. [§5.1.C]

A list of the names and mailing addresses of all persons to be notified, by certified mail, of the public hearing. [§5.1.D]

A completed and signed Application for Waivers *(available at www.lebanonnh.gov)* [§5.1.G.3]

A completed and signed Technical Checklist *(available at www.lebanonnh.gov)*. [§4.7.B]
[Applicants must complete the entire checklist to ensure that all necessary information and materials have been provided with the application or that written requests for waivers have been properly provided in accordance with Article VII of the Site Plan Review Regulations, as appropriate.]

Two (2) full-size sets of the Site Plan set. [§5.1.E]

A digital copy of the Site Plan set in .PDF format. [§5.1.F]

NOTE: Applications shall contain sufficient information to enable the City Staff and the Planning Board to evaluate the proposed development for compliance with the Zoning Ordinance, the Planning Board's Regulations, and other applicable City Codes, and for the Planning Board to make an informed decision.

All required application materials shall be submitted as a single inclusive package, including any appropriate waiver requests as permitted by the Regulations. Submission of a complete application package ensures that the review process by City Staff is as efficient and effective as possible.

The purpose of the filing deadline is to provide adequate time for City review of the proposal. Submission of any altered, additional, or substitute application materials required by Article V of these Regulations, subsequent to the filing deadline, other than as directed by City Staff, shall cause the application to be deemed untimely filed, and such application shall not be heard until a subsequent month.

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

PLAN SUBMITTAL TECHNICAL CHECKLIST:

NOTE: Site plan drawings shall include the information described below pursuant to Article V of the Lebanon Site Plan Review Regulations. Plans shall be submitted on sheets no larger than 24" x 36". Plan sets with multiple sheets shall include sheets of uniform size and be bound on the left edge. When more than three (3) sheets are required, an additional cover sheet shall be attached including a table of contents. A scale of not smaller than one (1) inch equals 40 feet is suggested. All lettering shall be of a size and type that is legible.

In order to facilitate the use of the City's Geographic Information System (GIS) for planning purposes, all surveys and engineered plans submitted for Site Plan Review shall utilize the NH State Plane Coordinate system and shall reference the North American Vertical Datum of 1988 (NAVD 88), unless prior approval to use an alternate coordinate system and/or vertical datum is granted by the Planning & Development Department.

A written request for waiver shall be required, pursuant to Article VII of the Site Plan Review Regulations, for any submission requirement for which the information or data is not provided by the applicant. [§5.1.G(4)] NOTE: The submission requirements described in paragraphs 5.1.E(1) through 5.1.E(4) shall not be waivable under the procedures of Article VII of the Site Plan Review Regulations. [§5.1.E]

[Checklist begins on following page]

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

[illegible]

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

Plan Requirements (cont.)	Info. Provided	Waiver Sought
5.1.E(6) - Existing and proposed grades, including topographic contours, with spot elevations. Where the grade is less than 20%, the contours shall be at 2-foot intervals; otherwise they shall be at 5-foot intervals. All contours shall be referenced to USGS or FEMA Flood Insurance Rate Map (FIRM) datums, as appropriate. Existing topographic information shall be prepared by a professional engineer registered in New Hampshire or land surveyor licensed in New Hampshire.	☒	☐
5.1.E(7) - Shape, size, height, and location of all existing structures located on site and within 200 feet of site.	☒	☐
5.1.E(7) - Elevation views indicating shape, size, height, and location of all proposed structures, including expansions of or additions to existing buildings. Such elevation views shall provide sufficient detail to allow for review by the Board and City staff of the adequacy of proposed access and egress points, walkways, lighting, and other site-related improvements.	☒	☐
5.1.E(8) - Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures. Indicate those natural and man-made features that are to be removed, retained, or altered.	☒	☐
5.1.E(8) - Wetlands on the property shall be delineated by a NH Certified Wetlands Scientist, whose seal and signature shall appear on the plan. Documentation in the form of U.S. Army Corps of Engineers New England District Wetlands Delineation Data Sheets and/or other field notes and materials concerning the delineation shall be submitted.	☒	☐
5.1.E(9) - Zoning District, Tax Map and Lot number, and use of abutting properties within 200 feet of property.	☒	☐
5.1.E(9) - Location of streets, pedestrian paths/trails, and bicycle routes within 200 feet of the site boundary; and the location of curb cuts and vehicle accesses within 200 feet of the site boundary.	☒	☐
5.1.E(10) - Proposed streets, driveways, emergency vehicle accesses, parking spaces, and sidewalks, with indication of dimensions and direction of travel. Show required sight distances at curb cuts and dimensions for the inside radii of all curves.	☒	☐
5.1.E(10) - Vehicle and bicycle parking spaces shall be numbered.	☒	☐
5.1.E(10) - Loading spaces and facilities used in connection with any structures on the site shall be shown	☐	☐
5.1.E(10) - Total square footage and percentage of the lot covered by impervious cover shall be shown.	☒	☐
5.1.E(11) - Parking area safety measures including raised crosswalks/speed tables, signage, walkway lighting, striping and similar markings such as dedicated pedestrian/bicycle crossings and lanes through parking areas, fire lanes, compact and/or electric vehicle parking/charging, parking wayfinding, ADA signage and access aisles.	☒	☐
5.1.E(12) - Size and location of all existing and proposed public and private utilities. <i>(Note: the applicant is encouraged to submit a Sewer Use Permit Application and obtain a Notice of Permitted Allocation, and to obtain a Water Use Permit prior to submission of the Site Plan Review application.)</i>	☒	☐

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

Plan Requirements (cont.)	Info. Provided	Waiver Sought
5.1.E(13) - Plan for outdoor lighting showing proposed location, mounting height, fixture type, lamp type, color correlated temperature (CCT), and wattage of all exterior free-standing lighting or building-mounted fixtures.	☒	☐
5.1.E(13) - Analyses and illuminance-level diagrams, to include average and minimum foot-candle measurements, showing that proposed installation conforms to the lighting-level standards in Site Plan Review Regulations.	☒	☐
5.1.E(13) - Manufacturer's specification information for each proposed light fixture and lamp (NOTE: This information may be provided on the plan or as a separate attachment).	☒	☐
5.1.E(13) - Drawings of all relevant building elevations showing location and height of all building-mounted fixtures, the portions of any walls or architectural features to be illuminated, illumination levels of walls or architectural features, and aiming points for any remote light fixtures.	☒	☐
5.1.E(14) - Plan for location of free-standing or building-mounted signs, including location, mounting, aiming, and shielding of any remote light fixtures for externally-lit signs.	☐	☐
5.1.E(14) - For internally-lit signs, relevant information concerning the method of illumination and the opacity of the sign background, showing that the proposed installation conforms to the requirements of the Regulations.	☐	☐
5.1.E(15) - The location and boundaries of any Overlay Districts established pursuant to Article IV of the Zoning Ordinance (including but not limited to the Wetlands Conservation District, Riverbank Protection District, Steep Slopes District, and Floodplain District) and, if applicable, protected shorelands pursuant to the Shoreland Water Quality Protection Act (NH RSA 483-B).	☒	☐
5.1.E(15) - For properties located within the Floodplain District, the 100-year flood elevation, floodway, shoreland protection zone, and flood plain limits shall be identified.	☒	☐
5.1.E(16) - Landscaping plan showing proposed new plantings to be installed and existing natural vegetation to be retained. Plan shall show in detail the number, size (height and/or caliper), and species (botanical and common names) of all proposed shrubs and trees.	☐	☒
5.1.E(16) - Existing trees over 12 inches in diameter (measured 4.5 feet above ground surface) within 25 feet of the disturbed area, must be counted and shown on the plan, if included towards fulfilling landscaping requirements.	☐	☒
5.1.E(16) - Calculations for square footage of perimeter landscaping.	☐	☒
5.1.E(16) - Parking lot shading calculations shall be provided by depicting new trees and shrubs at 10-year crown size.	☒	☐
5.1.E(17) - Existing and proposed surface and subsurface storm drainage facilities, including City storm drainage facilities located within 200' of site.	☒	☐
5.1.E(17) - Plans for retention, detention, slow release, and treatment of storm water shall be provided shall be provided in accordance with the requirements of Section 6.6.	☒	☐
5.1.E(18) - Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☒	☐

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

Plan Requirements (cont.)	Info. Provided	Waiver Sought
5.1.E(20) - A plan for the development showing provisions for automobile, transit, bicyclist, and pedestrian access and circulation. Such plan shall show both existing and proposed means of access to the site including connections with, public streets, sidewalks, transit stops, and formal paths/trails. Plans shall include any traffic calming and traffic control devices necessary in conjunction with the site development, as well as the location of all existing transit routes and transit stops located or passing within 1/4 mile (1,320 feet) of the property.	☐	☐
5.1.E(21) - Construction detail drawings including, but not limited to, pavements, walks, steps, curbing, drainage structures, water and/or sewer utilities, ground-mounted signage (e.g., fire lanes, ADA parking, commercial), surface treatments, transit shelters, energy generation units (e.g., solar), bike rack style, electric vehicle charging, outdoor lighting, outdoor furniture, retaining walls, tree boxes and other site systems or structures. Accompanying specifications and cutsheets may be required.	☒	☐
5.1.E(21) - Where applicable, roadway, drainage, water and sewer utility profile drawings shall be provided at a scale of 1"=40 feet (horizontal) and 1"=4 feet (vertical) and typical cross-section drawings shall be provided at a scale of 1"=5 feet (horizontal and vertical), unless prior approval to use an alternate scale is granted by the Reviewing Engineer. (NOTE: Ordinarily, only two (2) sets of such construction drawings shall be provided to the Planning and Development Department with the application submission.)	☒	☐
5.1.E(22) - Depict any current and proposed easements, rights-of-way, and deed restrictions including those related to sewer, electrical utility, shared access, etc.	☒	☐
5.1.E(23) - For multi-family structures, plans for on-site recreational facilities.	☐	☐
5.1.E(24) - Where a fire, emergency equipment, or similar vehicle turnaround area is provided, it must have an adequate turn radius. Provide CAD Autoturn data or a similar basis of design for the turn radius, if requested by Lebanon Fire or Engineering staff. City staff may also ask for this information at any time.	☐	☐
Supporting Documents and Information, Where Applicable	Info. Provided	Not Applicable
5.1.G(1) - An estimated timetable, to include phasing schedules, for construction and completion of buildings, parking, facilities, landscaping, and other required improvements.	☐	☐
5.1.G(2) - Any development estimated to generate a net increase of 100 peak hour trips or 1,000 average daily trips (based upon the most current edition of the ITE Trip Generation Manual) shall prepare and submit a Traffic Impact Study in accordance with standard traffic analysis conventions as set forth by the NHDOT. The Board may, at its discretion, require the submission of a Traffic Impact Study for developments estimated to generate less than 100 peak hour trips or 1,000 average daily trips if the Board has reason to believe such development could adversely affect levels of service or have other adverse impacts.	☐	☐
5.1.G(3) - Written requests for waivers from all applicable provisions of these Regulations shall be provided pursuant to Article VII - "Waiver Procedure". (note: use Application for Waivers form).	☒	☐
5.1.G(4) - For multi-family dwelling developments and mixed-use developments resulting in a net increase of 50 dwelling units or more, the application shall include the information and impact statements identified in Section 6.9.B.	☐	☐

NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE V OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Granite Engineering, LLC

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

CITY OF LEBANON, NH STORMWATER REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	DATE: October 14, 2024

NOTE: Stormwater plans shall include the information described below pursuant to Article VI of the Lebanon Site Plan Review Regulations. Plans shall be submitted on sheets no larger than 24" x 36". Plan sets with multiple sheets shall include sheets of uniform size and be bound on the left edge. When more than three (3) sheets are required, an additional cover sheet shall be attached including a table of contents. A scale of not smaller than one (1) inch equals 40 feet is suggested. All lettering shall be of a size and type that is legible.

In order to facilitate the use of the City's Geographic Information System (GIS) for planning purposes, all surveys and engineered plans submitted shall utilize the NH State Plane Coordinate system and shall reference the North American Vertical Datum of 1988 (NAVD 88), unless prior approval to use an alternate coordinate system and/or vertical datum is granted by the Planning Office.

A written request for waiver shall be required, pursuant to Article VII of the Site Plan Review Regulations, for any submission requirement for which the information or data is not provided by the applicant. [§6.6.I]

[Stormwater checklist begins on following page]

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

Plan Requirements	Info. Provided	Waiver Sought
<u>6.6.C.1 (1)</u> - An Existing Conditions S.M.P showing all pre-development: a. Surface water bodies and wetlands b. Drainage patterns c. Flood plains and floodways (with elevations) d. Watershed boundaries e. Buffer zones f. Topographic contours with minimum 2-foot intervals g. Buildings / structures h. Pavement i. Utilities j. Soils information with coding as HSG-A, B, C, or D (High Intensity Soil Survey (HISS) mapping may be required per request of the City Engineer). 1. The plan shall also include the following elements: a. scale bar b. north arrow c. title block with project name d. applicant's name e. map and parcel number f. designer's stamp g. soil and/or wetland scientist's stamp (if applicable) h. legend i. locus plan j. benchmarks k. notes with datum and other plan references l. instructions m. detail descriptions	☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☐ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
<u>6.6.C.1 (2)</u> - A Proposed Conditions SMP showing all proposed post-development temporary and permanent stormwater management system elements, erosion and sediment control Best Management Practices (BMP), and all important hydrologic features. The Proposed Conditions S.M.P must be at the same scale as the Existing Conditions SMP, with consistent title block, plan features, and descriptors including but not limited to the following: a. Existing and proposed topographic contours (2-foot minimum contour interval; 1-foot contour intervals may be required for sites with limited relief and/or where proposed stormwater outfalls are located adjacent to buffer zones. b. Proposed areas of disturbance with total area of disturbance clearly labeled in square feet c. Existing and proposed buildings and structures d. Stormwater discharge locations labeled and matched to the drainage analyses e. Wells and sanitary protective radii, if applicable f. Septic systems, if applicable	☒ ☒ ☒ ☒ ☒ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

Plan Requirements (cont.)	Info. Provided	Waiver Sought
2. A drainage analysis results summary tabulated (pre & post) for each proposed outfall or catchment outlet point including runoff rates and volumes for each storm event analyzed above.	☒	☐
3. An Erosion and Sediment Control Plan for all proposed construction activities in accordance with the NH Stormwater Management Manual Volume 3, (December 2008 or current revision; downloadable from the website) (see sheet 6 of the plan set)	☒	☐
4. A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and BMPs including the proposed schedule of inspections and anticipated maintenance (see section H.2 Operations & Maintenance Plan for detailed requirements).	☒	☐
<u>6.6.D</u> - Phased Development: For phased developments, the plans and calculation requirements under this section (6.6) shall apply as though the development of the entire parcel were being proposed in one single application. The review and approval process for phased development applications is provided in section 4.9 of the Lebanon Site Plan Regulations.	n/a ☐	☐

NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE VI OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Granite Engineering, LLC

(Last Revised 9/20/2021)

Planning office Use Only:

Date Received ___/___/___ Checklist Complete YES or NO Checked by: _____

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

Plan Requirements (cont.)	Info. Provided	Waiver Sought
g. Plan references and notes (including sequence of soil disturbance) (Construction sequence is located on sheet 12 of 13 in the project plan set)	☒	☐
h. Proposed and existing public and private utilities	☒	☐
i. Proposed project components to become property of or the responsibility of the City shall be labeled as such	n/a ☐	☐
j. Existing and proposed impervious cover, with areas used to calculate effective impervious cover (EIC, as defined herein) clearly identified and the square footage of each type identified and labeled. (table with this information is located within stormwater report)	☒	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate. (test pit log is located on sheet 13 of the plan set)	☒	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. (all stormwater and erosion control details are shown on sheets 9-13 of the plan set) The Existing Conditions SMP & the Proposed Conditions SMP shall be provided on sheets no larger than 24" x 36", at a scale of one (1) inch = 20 feet for urban areas, and one (1) inch = 40 feet for non-urban areas. The City Engineer will make the final determination as to the appropriate scale, ensuring that all important site and hydrologic features are easily recognized. If plan shall encompass more than two (2) sheets, at the required 1:40 or 1:20 scale, a separate large scale representation plan sheet (e.g. 1:100) is required to be provided, so as to show entirety of site, as well as off-site contributing areas.	☒	☐
6.6.C.2 - In addition to the above described SMP plan sheets, the following SMP supplemental information is required: 1. A drainage analysis that includes calculations comparing pre- and post-development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 25-year, 50-year, and 100-year, 24-hour frequency storms. Calculations shall include, but not be limited to, the sizing of all structures and BMPs, including sizing of emergency overflow structures based on the 50-year 24-hour frequency storm discharge rate, with 1-foot of free-board. Storm rates shall be based on current design depths from the Northeast Regional Climate Center - http://precip.eas.cornell.edu. <i>Any site that was primarily wooded in the last five years shall be considered undisturbed woods Any site from which wooded vegetation has been removed within 5 years prior to the first submission to the planning board with respect to a proposed development, or upon which, at some earlier time, clearing has occurred in anticipation of development, shall be treated as undisturbed woodland for purposes of calculating pre-development runoff volumes. For purposes of this paragraph any tree cutting which occurred without leaving stands of healthy, growing trees within areas near waters and highways, as required by RSA 227-J:9, I, shall be presumed to have occurred in anticipation of development</i>	☒	☐



Hurley Environmental

AND LAND PLANNING, LLC

April 27, 2024

Justin Daigneault
Project Manager
Granite Engineering, LLC
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101

Re: Romano Circle, Lebanon, Map 101, Lot 20
Subject: Wetland Delineation

Dear Mr. Daigneault:

Per your request I went out to the above-referenced parcel on April 16, 2024 to survey the entire property for wetlands. The presence for wetlands was based on the following:

1. The Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, January 1987 and the NH DES Wetlands Bureau Code of Administrative Rules.
2. Classification of Wetlands and Deepwater Habitats of the United States¹.
3. Field Indicators for Identifying Hydric Soils in New England².
4. National List of Plant Species That Occur in Wetlands: Northeast (Region 1)³.

Based on the above no wetlands were observed on the parcel.

Sincerely,

Luke D. Hurley, CWS, CSS, CESSWI
Principal/Owner
Hurley Environmental and Land Planning, LLC



¹ Cowardin, L. M., 1979. Classification of Wetlands and Deepwater Habitats in the United States. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service.

² New England Hydric Soils Technical Committee, Version 4. September 2019. "Field Indicators for Identifying Hydric Soils in New England."

³ Lichvar, R.W. & Kartesz, J.T. 2009. North American Digital Flora: National Wetland Plant List. 2.2.1.

CITY OF LEBANON - APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

The undersigned hereby makes application for a permit to develop in a Local Regulatory Floodplain or in a Local Regulatory Conveyance Zone. The work to be performed is as described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of all local, state, and federal regulations.

Lebanon Housing Authority	10/28/2024
Project Name Ditha Alonso	Date 603-298-5753
Contact Name	Contact Telephone
Lebanon Housing Authority	To be determined
Owner or Developer 31 Romano Circle, West Lebanon, NH 03784	Builder/Contractor
Address 603-298-5753	Address
Telephone Jeffrey D. Merritt 11778	Telephone
Engineer License Number Granite Engineering, LLC	Architect License Number David B. Johnson 01319
Address 150 Dow Street, Tower 2, Suite 421 Manchester, New Hampshire 03101	Address Northern Architectural, 14B Tatro Drive Goffstown, NH 03045
Telephone 603-518-8030	Telephone 603-384-2830

SITE DATA

- Property Location (Physical Address) 31 Romano Circle, West Lebanon, NH 03784
- City of Lebanon Tax Map 101 Lot 20
- FEMA Flood Map Panel Number 33009C0889E Effective Map Date FEB. 20, 2008
- Type of Development (Check All That Apply):
☒ New Construction ☐ Alteration or Repair of Existing Structure ☒ Site Grading
☒ Filling ☒ Excavation ☐ Other—Please describe: _____
- Type of Facility (Check All That Apply):
☒ Residential ☐ Functionally Dependent Facility ☐ Critical Facility
☐ Manufactured Home ☐ Other—Please describe: _____
- Description of Development Accessory Office building and 13 parking spaces as an accessory use to the primary multi-unit residential development.
- Structure:
New Structure sq ft 2,231 + Existing Structure sq ft _____ + Improvement sq ft _____ = Total sq ft _____
Principal Use Residential Housing Accessory Uses Office
- Value of Improvement (Fair Market) \$ 1.4 Million Pre-improvement Value of Structure \$ 0
- Is the development located within the Local Regulatory Conveyance Zone? ☐ Yes ☒ No
- Other Permits Required (Check All That Apply):
☐ NHDES Shoreland Permit ☐ NHDES Wetland Permit ☐ NHDES Alteration of Terrain
☒ Other—Please describe: Local Site Plan approval

CITY OF LEBANON - APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

ELEVATIONS

1. Elevation of 100-Year Base Flood Elevation (BFE) at development site: 352.1 feet
2. Elevation of lowest floor of structure (at or above BFE): 353.65 feet
3. Elevation of all attendant utilities, including all heating and electrical equipment, servicing the structure for floodproofing (minimum one foot above BFE): 353.65 feet
4. Type of flood protection method? ☐ Flood Proofing ☒ Elevating the development
5. Elevation Datum used for determination of BFE: ☐ NGVD 1929 ☒ NAVD 1988

I certify that the information on this form is true and correct. I understand that false or inaccurate information submitted to the City of Lebanon on which a permit for proceeding with construction work is issued by the City of Lebanon may be the basis for revocation of the permit or assessment of a civil fine or other penalties. I also understand that construction plans submitted to and approved by the City of Lebanon in the form of a permit issued must be followed and adhered to and any deviance there from not approved by the City of Lebanon may also be the basis for a notice of violation, notice of citation and revocation of the of the permit or assessment of a penalty by the City of Lebanon.

Ditha Alonso
Signature of Owner or Developer

10/31/24
Date

Ditha Alonso
Printed Name of Owner or Developer

OFFICIAL USE ONLY

PERMIT APPLICATION IS HEREBY:

☒ APPROVED ☐ DENIED

Comments: COORDINATE WITH THE BUILDING INSPECTOR FOR
BUILDING CODE REQUIREMENTS.

[Signature]
Signature of Authorizing City Official

NOVEMBER 14, 2024
Date

RODRICK J. FULEY, P.E.
Printed Name of Authorizing City Official

CITY ENGINEER
Title of Authorizing City Official

FLOODPLAIN PERMIT CHECKLIST

Lebanon Housing Authority

10/28/2024

Project Name

Date

- ☒ 1. A Completed and Signed Permit Form.
- ☒ 2. The Permit Fee (\$250.00)
- ☒ 3. Current survey certified by a land surveyor licensed in NH that shows the following information:
 - ☒ A. North Arrow
 - ☒ B. Scale of the plan
 - ☒ C. Date of the plan and any revisions
 - ☒ D. Perimeter boundaries of the lot(s), including compass bearings, distances, and lot areas
 - ☒ E. Location of existing improvements on the property
 - ☒ F. Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures.
 - ☒ G. Width and location of rights-of-way and/or easements on property
 - ☒ H. Existing grades, including topographic contours with spot elevations, prepared by a professional engineer or land surveyor licensed in NH. (Contours shall be at 2 ft. intervals)
- ☒ 4. Proposed development plans showing the following information:
 - ☒ A. Vicinity Sketch (suggested scale: 1"=500')
 - ☒ B. Names and mailing addresses of Owner of record of site, holders of any easements, rights-of-way, or other restrictions
 - ☒ C. Names and business addresses of preparer(s) of the plan, and every surveyor, engineer, architect, soil scientist, or wetlands scientist whose professional seal appears on any plan or document submitted.
 - ☒ D. North Arrow
 - ☒ E. Scale of the plan
 - ☒ F. Date of the plan and any revisions
 - ☒ G. Zoning designation
 - ☒ H. Tax Map and Lot number(s) for the subject property
 - ☒ I. Area of the lot
 - ☒ J. Gross floor area of existing and proposed buildings/additions
 - ☒ K. A legend that clearly indicates all symbols, line types, and shading
 - ☒ L. Perimeter boundaries of the lot(s), including compass bearings, distances, and lot areas
 - ☒ M. Location of existing and proposed improvements on the property
 - ☒ N. Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures. Indicate those natural and man-made features that are to be removed, retained, or altered
 - ☒ O. Width and location of rights-of-way and/or easements on property
 - ☒ P. Existing and proposed grades, including topographic contours with spot elevations, prepared by a professional engineer or land surveyor licensed in NH. (Contours shall be at 2 ft. intervals)
 - ☒ Q. Wetlands on the property, if any, shall be delineated by a NH Certified Wetlands Scientist, whose seal and signature shall appear on the plan
 - ☒ R. The 100-year flood elevation, floodway, and floodplain limits
 - ☒ S. The NHDES Shoreland setback lines, if applicable
 - ☒ T. Size and location of all existing and proposed public and private utilities
- ☒ 5. Completed Floodplain Permit Checklist



GRANITE ENGINEERING, LLC

civil engineering • land planning • municipal services

Project Narrative

Lebanon Housing Authority: Romano Circle
Tax Map 101 Lot 20
31 Romano Circle 03784
West Lebanon, NH

The Lebanon Housing Authority is the owner of the property located at 31 Romano Circle in Lebanon, NH. This lot is identified as Tax Map 101 Lot 20. The area of this lot is 9.53 acres and is currently developed with the Romano Circle Apartments managed by the Lebanon Housing Authority. The lot is located within the Residential Two (R-2) Zoning District and has frontage along South Main Street and the Connecticut River.

The proposed site improvements for the project include the construction of a new accessory office building for the Lebanon Housing Authority's Romano Circle Residences. The proposed office has a footprint of 2,235-sf. Additional improvements include 12 new parking spaces, stormwater management, landscaping, and lighting. The proposed building will tie into the City of Lebanon's water system. For wastewater, the proposed building will connect to the City's sewer system via pump station and force main.

Proposed stormwater controls on the site include a bioretention pond which will ultimately discharge to the Connecticut River.

A Right of Way Discontinuance for Romano Circle has been granted by the Lebanon City Council on August 21, 2024.

A Lot Line Adjustment application was presented to the Planning Board on October 14th. The adjustment was between the subject property and Map 101, Lot 17, owned by Mark & Susan Rose. The lot line adjustment proposed an additional 1,370 square feet of land area to the subject property. The plans in this application show the proposed adjustment.

The proposed project requires the following land use permits from the City of Lebanon and the State of New Hampshire:

- City of Lebanon Site Plan Approval

CERTIFIED NOTIFICATION LIST

Notice shall be sent by certified mail to the Owner; Applicant, if different from Owner; Abutters; Holders of conservation, preservation, or agricultural preservation restrictions (as defined under RSA 477:45) on the subject property; the holders of easements, rights-of-way, and other restrictions; and every engineer, architect, land surveyor, or soil or wetlands scientist whose seal appears on any plan submitted to the Board; and any other persons required by RSA 676:4, I(d). The names and mailing addresses shall be furnished by the Applicant.

672:3 Abutter. – "Abutter" means any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the local land use board. For purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a condominium or other collective form of ownership, the term abutter means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a manufactured housing park form of ownership as defined in RSA 205-A:1, II, the term "abutter" includes the manufactured housing park owner and the tenants who own manufactured housing which adjoins or is directly across the street or stream from the land under consideration by the local land use board.

Source. 1983, 447:1. 1986, 33:2. 2002, 216:1, eff. July 15, 2002.

PLEASE PROVIDE NAMES & MAILING ADDRESSES FOR ALL PERSONS LISTED ABOVE.

Map & Lot Number: Map 101 Lot 20	Map & Lot Number:
Property Owner: Romano Place LLC 31 Romano Circle West Lebanon, NH 03784	Applicant, Co-Applicant, Agent, or Lessee: Lebanon Housing Authority 31 Romano Circle West Lebanon, NH 03784
Map & Lot Number: Map 86 Lot 1	Map & Lot Number: Map 101 Lot 2
70-72-78 South Main St LLC 32 Lebanon Street, Suite A Hanover, NH 03755	City of Lebanon 51 North Park Street Lebanon, NH 03766
Map & Lot Number: Map 101 Lot 14	Map & Lot Number: Map 101 Lot 17
Christopher Morse 10 Waterman Ave West Lebanon, NH 03784	Mark W. & Susan L. Rose 4 Waterman Ave West Lebanon, NH 03784

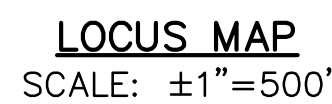
Map & Lot Number: Map 101 Lot 18	Map & Lot Number: Map 101 Lot 21
Martin Jeffries 6 Waterman Ave West Lebanon, NH 03784	Kyoto LLC 288 Plainfield Road West Lebanon, NH 03784
Map & Lot Number: Map 101 Lot 22	Map & Lot Number: Map 101 Lot 23
Michael S Devers 84 South Main Street West Lebanon, NH 03784	Bhavnesk Kaushik 82 South Main Street West Lebanon, NH 03784
Map & Lot Number: Map 101 Lot 27	Map & Lot Number: Map 101 Lot 28
DEJSS, LLC 89 South Main Street West Lebanon, NH 03784	Soodsma Holdings LLC PO Box 111 Hanover, NH 03755
Map & Lot Number: Map 101 Lot 29	Map & Lot Number:
Amir F Papa 95 South Main Street West Lebanon, NH 03784	
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
SEE NEXT SHEET	

(Revised 2/8/2024)

Map & Lot Number: Civil Engineer	Map & Lot Number: Architect
Granite Engineering, LLC 150 Dow Street Tower 2, Suite 421 Manchester, NH 03101	Right-Trak Design Inc 14 B Tatro Drive Goffstown, NH 03045
Map & Lot Number: Surveyor	Map & Lot Number: Landscape Architect
Rockwood Land Services, LLC PO Box 347 Hartland, Vermont 05048	Design Works Landscaping 125 Watson Road Hudson, NH 03051
Map & Lot Number: Wetland Scientist	Map & Lot Number:
Hurley Environmental and Land Planning, LLC PO Box 356 Epsom, NH 03234	
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:

(Revised 2/8/2024)

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
GRAFTON COUNTY



OWNER & APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784
(603) 298-5753



CIVIL ENGINEER:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, STE 421
MANCHESTER, NH 03101
(603) 518-8030



LANDSCAPE ARCHITECT:
DESIGN WORKS LANDSCAPING
125 WATSON RD
HUDSON, NH 03051
(603) 864-8646

WETLAND / SOIL SCIENTIST:
HURLEY ENVIRONMENTAL AND
LAND PLANNING, LLC
PO BOX 356
EPSOM, NH 03234
(603) 583-1745

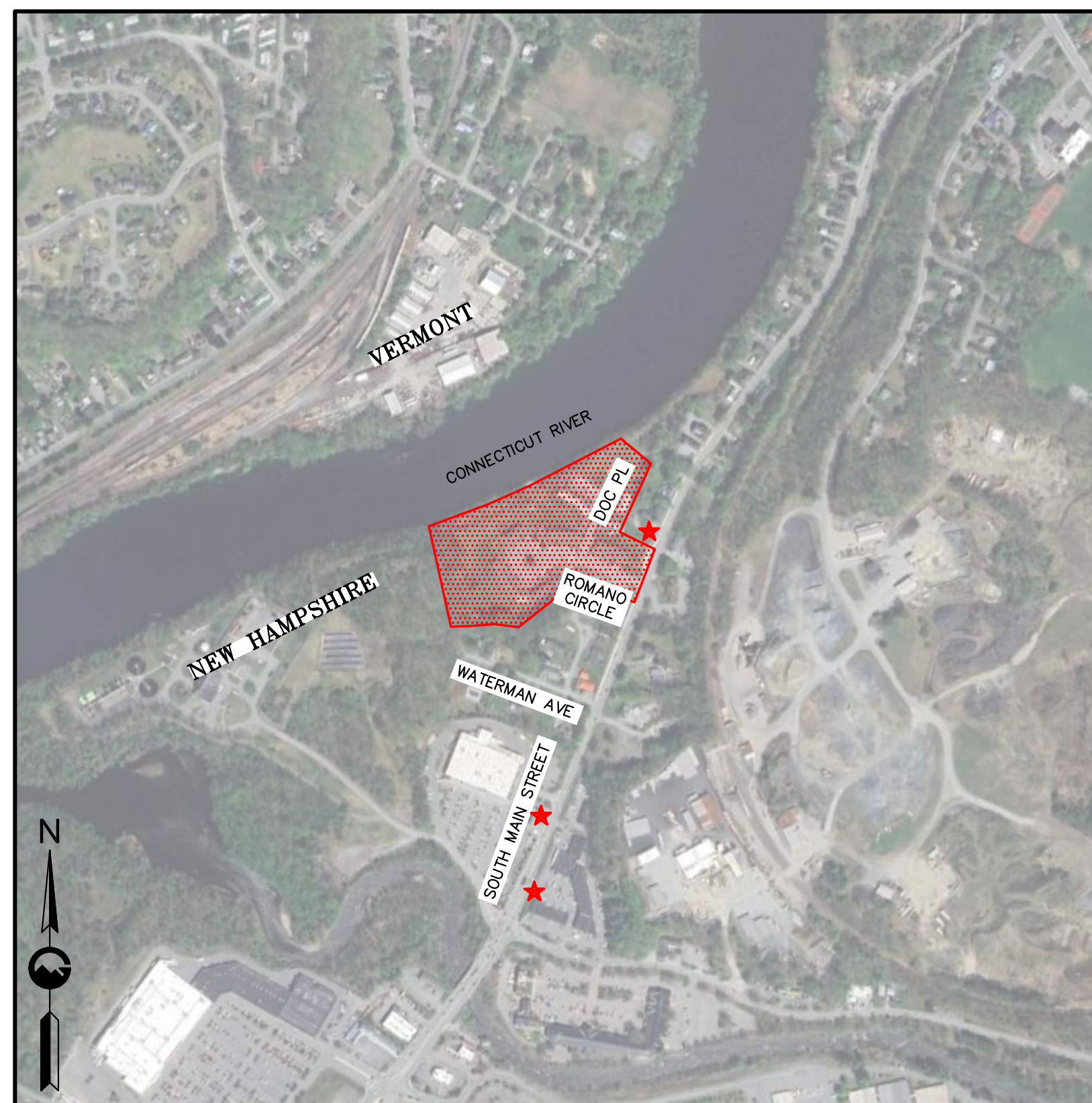


ARCHITECT:
RIGHT TRAK DESIGN
14 B TATRO DR
GOFFSTOWN, NH 03045
(603) 384-2830

SURVEYOR:
ROCKWOOD LAND SERVICES, LLC
24 COBB HILL RD
HARTLAND, VT 05048
(802) 436-1039

TABLE OF R2 ZONING REQUIREMENTS			
DESCRIPTION	ALLOWED	EXISTING MAP 101 LOT 20	PROPOSED MAP 101 LOT 20
MINIMUM LOT AREA	148,000 SF*	415,120 SF	415,120 SF
MINIMUM LOT FRONTAGE	100 FT	328.46 FT	328.46 FT
MINIMUM LOT WIDTH	75 FT	328.46 FT	328.46 FT
FRONT YARD SETBACK	20 FT	47.3 FT	47.3 FT
SIDE YARD SETBACK	15 FT	15.1 FT	15.1 FT
REAR YARD SETBACK	20 FT	40.7 FT	40.7 FT
MAXIMUM LOT COVERAGE	65%	25.3%	25.9%
MAXIMUM BUILDING HEIGHT	45 FT	25 FT	25 FT
ALLOWED STORIES	2.5	2	2
BUILDING COVERAGE REMOVED	N/A	N/A	306 SF
BUILDING COVERAGE ADDED	N/A	N/A	2,231 SF
BUILDING COVERAGE TOTALS	25%	7.41%	7.87%
IMPERVIOUS COVER REMOVED	N/A	N/A	3,259 SF
IMPERVIOUS COVER ADDED	N/A	N/A	6,007 SF
IMPERVIOUS COVER TOTAL	N/A	104,828 SF	107,576 SF
LOADING SPACES	0	0	0
USE	N/A	46-UNIT MULTI-FAMILY DEVELOPMENT	RESIDENTIAL /ACCESSORY OFFICE
BICYCLE STORAGE SPACES	2	4	4
PARKING REQUIRED (RESIDENTIAL)	1.5 SPACES/UNIT	1.5 X 46 = 69	1.5 X 46 = 69
PARKING REQUIRED (OFFICE)	1/250 SF OF GFA	1,624 SF/250 = 6	1,624 SF/250 = 6 3,882 SF/250 = 16
TOTAL PARKING REQUIRED	N/A	75	91
TOTAL PARKING PROVIDED	N/A	89	101
TOTAL MAX PARKING PERMITTED	120% OF MIN.	90	110
OVERLAY DISTRICT	RIVERBANK PROTECTION DISTRICT AND FLOODPLAIN DISTRICT		

BUILDING	STORIES	HEIGHT	GROSS FLOOR AREA	
EXISTING GARAGE	1	22 FT	STORY 1	2,160 SF
			STORY 2	N/A
			BASEMENT	1,998 SF
EXISTING BUILDING #1	2	25 FT	STORY 1	3,680 SF
			STORY 2	2,146 SF
			BASEMENT	3,888 SF
EXISTING BUILDING #2	2	25 FT	STORY 1	3,888 SF
			STORY 2	4,176 SF
EXISTING BUILDING #3	2	25 FT	STORY 1	2,376 SF
			STORY 2	2,552 SF
			BASEMENT	3,402 SF
EXISTING BUILDING #4	2	25 FT	STORY 1	4,838 SF
			STORY 2	3,654 SF
EXISTING BUILDING #5	2	25 FT	STORY 1	3,564 SF
			STORY 2	3,872 SF
EXISTING BUILDING #6	2	25 FT	STORY 1	3,564 SF
			STORY 2	3,828 SF
EXISTING BUILDING #7	2	25 FT	STORY 1	2,516 SF
			STORY 2	2,226 SF
EXISTING BUILDING #8	2	25 FT	STORY 1	4,373 SF
			STORY 2	2,937 SF
PROPOSED OFFICE	2	22.5 FT	STORY 1	2,231 SF
			STORY 2	2,451 SF



LOCATION PLAN
SCALE: 1"=500'

★ DENOTES TRANSIT STOP WITHIN ¼ MILE OF SITE

SHEET NO.	TABLE OF CONTENTS
1	OVERVIEW PLAN
2 – 3	BOUNDARY SURVEY
4	REMOVALS/DEMOLITION PLAN
5	SITE PLAN
6	GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
7	UTILITY PROFILES
8	LIGHTING PLAN
9 – 13	DETAILS
14 – 15	LANDSCAPE PLANS

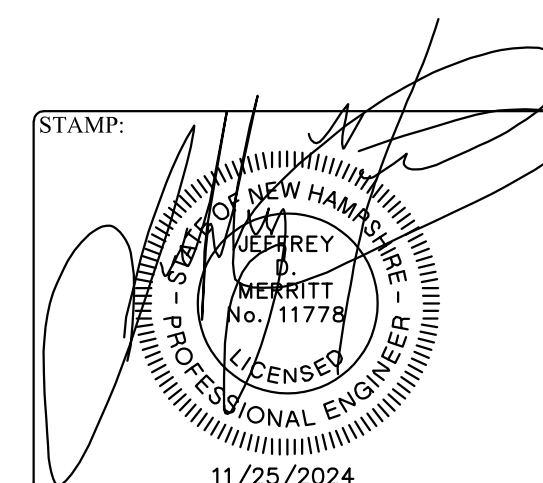
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[illegible]



-

VICINITY MAP
SCALE: 1"=500'

[illegible]

LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING

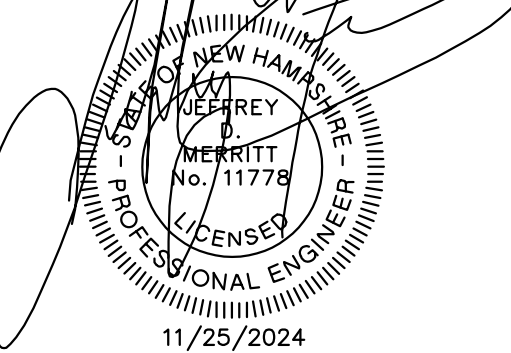
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TAMP:



LOCATION:

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

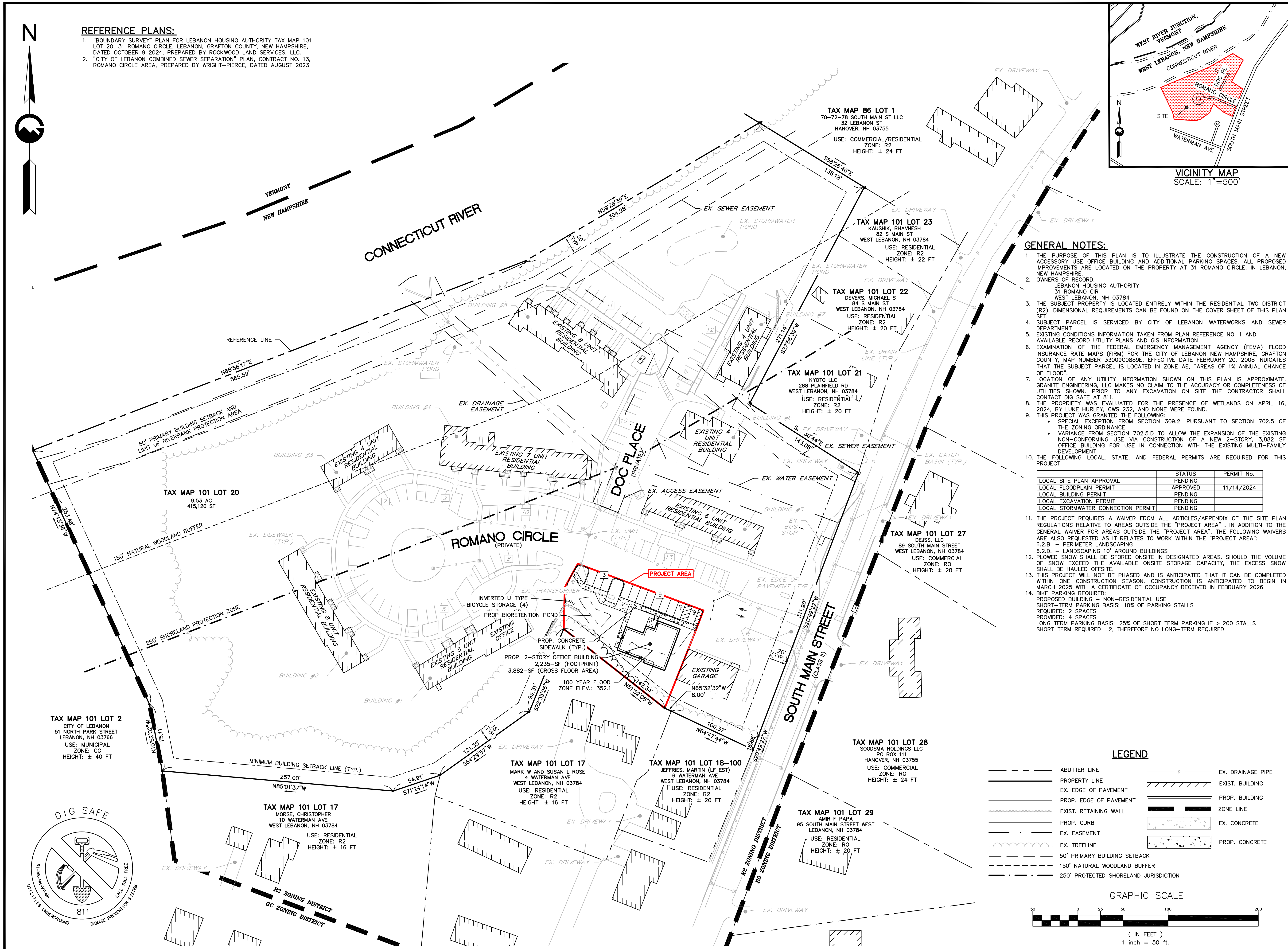
PROJECT: **LEBANON
HOUSING AUTHORITY**

TITLE:

OVERVIEW PLAN

PROJECT No.	DATE:	SCALE
13-05081-1	SEPT 25, 2024	HORIZ.
SHEET:	1 OF 15	1"=50'

Page 478 of 66



all dimension are outside diameter

all dimension are outside diameter

No.1 FOUND, in 2018, a Capped Rebar stamped by Hathorn No. 560 with 4" of reveal, firm, straight and in good condition, in 2024 found a 5/8" rebar with no cap flush and 0.07 difference in position. Yield the 2018 position. Recent construction of retaining wall likely altered this rebar.

No.2 FOUND a Capped Rebar stamped by Hathorn No. 560 with 3" of reveal, firm, straight and in good condition,

No. 3 FOUND a 2" Iron Pipe rusted off on top with 4" of reveal , straight, firm and flush to the ground and placed a wooden witness stake

No.4 FOUND, in 2018, a Capped Rebar by CMLS LLS 848 with 3" of reveal, firm, straight and in good condition, not found in 2024 and SET a 5/8"x36" blue rebar with an orange plastic cap and 6" of reveal.

No. 5 FOUND a Capped Rebar stamped by Bruno NH 575 with 7" of reveal, firm, straight and in good condition midway up the steep slope

No.7 FOUND a 1" Iron Pipe buried 12" on the southwesterly side of a very large Silver Maple of reveal, firm, straight and in good condition

No.8 FOUND a 3/4" yellow Iron Pipe with 5" of reveal firm, straight and in good condition at the base of a large Ash Tree

No. 9 FOUND a 1-1/4" yellow Iron Pipe with 12" of reveal bent southerly, located at the ground, firm, and in fair condition, on top of the steep slope

No. 10 FOUND a 2" yellow Iron Pipe with 7" of reveal firm, straight and in good condition on rthe eastely side of large Oak Tree on the top of the steep sope

No. 11 FOUND a 4"x6" granite bound with 16" of reveal firm, straight and in good condition 3" from Top of the bank and 20" to the corner on 6' chain link fence

No. 12 FOUND a 6"x8" granite bound broken off with 8" of reveal, located in the center, firm, straight and in good condition, 33" from to the corner on 4' chain link fence

No.13 FOUND a Capped Rebar stamped by Bruno NH 575 with 8" of reveal
firm, straight and in good condition midway up the steep slope

No. 14 FOUND a Capped Rebar stamped by Bruno NH 575 flush, firm, straight and in good condition at the edge of the sewer line clearing and at the top of the river slope

Map 101, Lot 2
City of Lebanon
(treatment plant)
51 North Park Street
Lebanon, NH 03766
ed: Book 1239, Page 225

Found Granite Bound
 Found Iron Pipe or Rebar
 Set Capped Rebar
 Boundary Line
 Stone Retaining
 Water Main
 Drainage Line
 Sewer Line
 Electric line buried
 Edge of Pavement
 Utility Pole
 Sewer Manhole
 Communication Manhole
 Telephone Manhole
 Catch Basin
 Water Gate Valve
 Light
 Hydrant
 Sign
 GCRD Deed Reference
 GCRD Plan Reference

as described

as described

as described

_____ W _____

SS _____

S _____

(Book, Page)
Plan No.

Map 101, Lot 14
Christopher Morse
10 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4624, Page 676

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO N.H.R.S.A. TITLE LXIV 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 RSA 676:18, III

DATE: _____

LICENSED LAND SURVEYOR NO 618: _____

I hereby certify to the best of my belief and knowledge this boundary survey for Lebanon Parcel Map 101, Lot 20 meets the New Hampshire Urban Survey Standard. The boundary lines and corner monuments shown are consistent with the referenced deeds and plan unless otherwise noted and are the basis for this Surveyor's opinion of the boundary lines locations.

Map 86, Lot 1
70-72-78 South Main St. LLC
(78 South Main Street)
32 Lebanon Street. Ste A
Hanover, NH 03755
Deed: Book 4237, Page 195

Map 101, Lot 23
Bhavnesk Kaushik
82 South Main Street
West Lebanon, NH 03784
eed: Book 3190, Page 747

Map 101, Lot 22
Nichaels Devers
 84 South Main Street
 West Lebanon, NH 03784
 Deed: Book 4189, Page 518

Map 101, Lot 21
Kyoto, LLC
(86 South Main Street)
288 Plainfield Road
West Lebanon, NH 03784
Deed: Book 3435, Page 243

Map 101, Lot 27
Dejss, LLC
89 South Main Street
West Lebanon, NH 03784

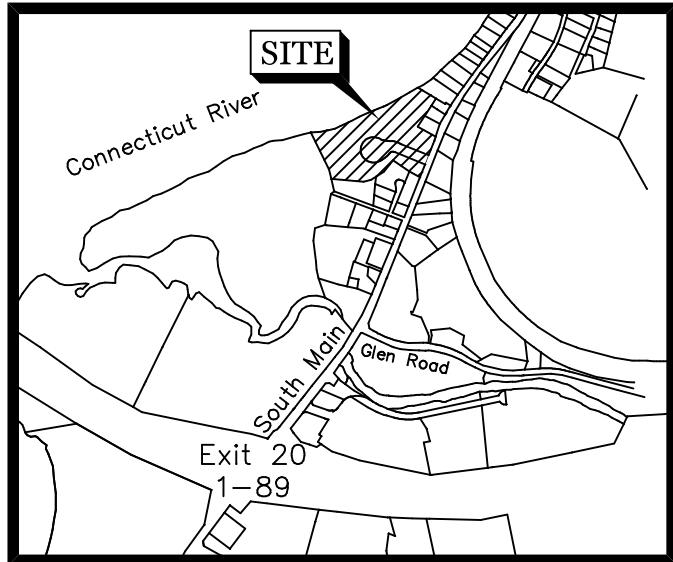
Map 101, Lot 28
Soodsma Holdings, LLC
Ninety Three South Main, LLC
PO Box 111
Hanover, NH 03755

g Wall Easement to the City
book 4636, page 1
Plan No. 16415

Map 101, Lot 17
Mark & Susan Rose
4 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4111, Page 78
Survey Plan 11030

Map 101, Lot 18
Kim Morse
6 Waterman Avenue
West Lebanon, NH 03784
ed: Book 4531, Page 18
Survey Plan 11029

Timothy W. Rockwood
LLS No. 618



BOUNDARY SURVEY NOTES

3. The purpose of this Survey Plat is to identify and monument the Boundary Lines for Lebanon Parcel Map 101, Lot 20, the Subject Parcel.
2. Surveyor's Report: The deed description for the Subject Parcel is generally consistent within the deed chain and also the abutting deeds. The subject parcel's deed describes two Parcels. The deed in book 1208, page 145 included 8.1 acres. The deed in book 3402, page 283 added 1.4 acres on the northerly side. The Subject Lands include the recently approved annexation from Rose's Lot 101-17. Boundary lines are consistent with abutting deeds and plans excepting for the cross hatched lands between the Subject Parcel and Lots 101/18 and 101/17. The Subject Parcel's deed chain does not specifically describe this boundary line. The abutting deeds describe the line along the base of a bank. Lot 101/18's survey recorded as Plan No. 11029 identifies this boundary line as a straight line between monuments No. 1 and No. 3 generally following the meandering base of the bank. The Subject Parcel's 1971 survey recorded in Plan file 3, Folder 2 as No. 44 identifies this boundary line on the northerly side of the cross hatched area. The 2009 survey recorded as Plan 13513 identifies this cross hatched area. No correlative action was found. This cross hatched area should be included as lands of the Subject Parcel. The intent of this plan is to include these lands with the Subject Parcel. I recommend a corrective deed be recorded. Several easements burden the Subject Parcel. These easement are shown on sheet 2 of this plan set.
3. The Limits of South Main Street or Route 12A are computed based on previous surveys as 25 ft from centerline.
4. The subject lands are Class One and currently located in Lebanon's R2, Residential Two, Zoning District. The setback limits are Front 20', Side 15' and Rear 20'.
5. The field survey commenced on April 2, 2024 was completed on April 16, 2024. The survey will be complete when corner monuments are placed. Corner monuments noted as SET are not yet placed. All monument dimensions are outside diameters.
6. The subsurface utility connections shown are from Lebanon's Combined Sewer Separation Contract 13 for Romano Circle Area. Visible structures were located. Underground utilities were not verified.
7. Romano Circle is to be discontinued and is shown as a part of the Subject Lands. The deed to Romano Circle is found in book 1208, page 126.
8. See Sheet 2 of 2 for Easement data.
9. The Property has been checked for areas of wetlands by Luke Hurley, CWS 232, on April 16, 2024. No wetlands are present on the property.

Easement to City for
access and utilities in
book 3630, page 943

Record Owner
Lebanon Parcel Map 101, Lot 20
Lebanon Housing Authority
Deed References : Book 1208, Page 145
Book 3402, Page 283
Plan References: GCRD Plan Pck 3, Flt 2, No. 44
GCRD Plan No. 13513

Boundary Survey
Map 101, Lot 20

Lebanon Housing Authority

31 Romano Circle, City of Lebanon, Grafton County, New Hampshire

Project No. 1424 Date: October 9, 2024



Rockwood Land Services, LLC
24 Cobb Hill Road, Hartland, Vt 05048
802.299.0042 rockls@vermontel.net

2 OF 15

New Hampshire State Plain Grid North
Derived with GPS Static Observation
and OPUS Processing



Map 101, Lot 2
City of Lebanon
(treatment plant)
51 North Park Street
Lebanon, NH 03766
Deed: Book 1239, Page 225

Legend

Found Granite Bound	□	as described
Found Iron Pipe or Rebar	○	as described
Set Capped Rebar	⊗	as described
Boundary Line	—	
Stone Retaining	—	
Water Main	—	
Drainage Line	—	
Sewer Line	—	
Electric line buried	—	
Edge of Pavement	—	
Utility Pole	⊙	
Sewer Manhole	⊙	
Communication Manhole	⊙	
Telephone Manhole	⊙	
Catch Basin	⊙	
Water Gate Valve	⊙	
Light	⊙	
Hydrant	⊙	
Sign	⊙	
GCRD Deed Reference	(Book, Page)	
GCRD Plan Reference	Plan No.	

Map 101, Lot 14
Christopher Morse
10 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4624, Page 676

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO N.H.R.S.A. TITLE LXIV 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 RSA 676:18, III

DATE: _____

LICENSED LAND SURVEYOR NO 618: _____

I hereby certify to the best of my belief and knowledge this boundary survey for Lebanon Parcel Map 101, Lot 20 meets the New Hampshire Urban Survey Standard. The boundary lines and corner monuments shown are consistent with the referenced deeds and plan unless otherwise noted and are the basis for this Surveyor's opinion of the boundary lines locations.

Map 86, Lot 1
70-72-78 South Main St. LLC
(78 South Main Street)
32 Lebanon Street, Ste A
Hanover, NH 03755
Deed: Book 4237, Page 195
Plan No. 1347

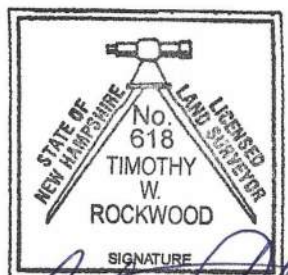
Map 101, Lot 23
Bhavnes Kaushik
82 South Main Street
West Lebanon, NH 03784
Deed: Book 3190, Page 747

Map 101, Lot 22
Nichols Devers
84 South Main Street
West Lebanon, NH 03784
Deed: Book 4189, Page 518

Map 101, Lot 21
Kyoto, LLC
(86 South Main Street)
288 Plainfield Road
West Lebanon, NH 03784
Deed: Book 3435, Page 243
Plan No. 3578

Map 101, Lot 17
Mark & Susan Rose
22 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4111, Page 789
Survey Plan 11030

Map 101, Lot 18
Kim Morse
6 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4531, Page 180
Survey Plan 11029



Timothy W. Rockwood
LLS No. 618

Water Line Easement

Book 3839, Page 167

LINE	BEARING	DISTANCE
L1	S20°49'00"W	20.00'
L2	N69°41'40"W	212.90'
L3	N24°41'40"W	72.92'
L4	N26°15'00"E	104.13'
L5	S83°45'00"E	20.00'
L6	S26°15'00"W	94.60'
L7	S24°41'40"E	55.11'
L8	S69°41'40"E	204.79'

Sewer Line Easement

Book 3839, Page 167

LINE	BEARING	DISTANCE
L9	S20°42'40"W	20.14'
L10	N62°34'20"W	73.02'
L11	N49°09'40"W	149.04'
L12	N65°17'40"W	195.09'
L13	N59°22'20"E	22.16'
L14	S56°17'40"E	186.77'
L15	S49°09'20"E	147.87'
L16	S62°34'20"E	68.33'

Drainage Line Easement

Book 4636, Page 4
Plan 16416

This 20 ft wide easement is to be replaced with a 30 ft wide easement.

LINE	BEARING	DISTANCE
L17	N23°19'40"E	37.87'
L18	N49°03'40"W	241.72'
L19	N48°09'40"W	67.74'
L20	N53°31'20"E	17.90'
L21	N69°30'20"E	26.50'
L22	S26°48'40"E	57.60'
L23	S49°03'40"E	254.21'
L24	S23°19'40"W	51.63'
L25	N69°11'20"W	20.02'

Retaining Wall Easement

Book 4636, Page 1
Plan No. 16415

LINE	BEARING	DISTANCE
L26	N64°49'00"W	8.59'
L27	N21°16'40"E	12.91'
L28	S68°43'20"E	8.46'
L29	S20°49'20"W	13.50'

Proposed Easements over Romano Circle

Water Easement

30 ft wide

LINE	BEARING	DISTANCE
L40	N15°04'20"E	30.00'
L41	S74°55'40"E	35.83'
L42	S78°55'40"E	178.23'
L43	S76°52'00"E	67.83'
L44	S87°57'00"E	251.30'
L30	N20°49'20"E	13.37'
L31	S20°49'20"W	16.63'
L32	N67°57'00"W	249.61'
L33	N76°52'00"W	31.20'
L34	S12°30'40"W	11.89'
L35	N77°29'20"W	30.00'
L36	N12°30'40"E	12.22'
L37	N76°52'00"W	3.85'
L38	N78°55'40"W	178.74'
L39	N74°55'40"W	36.88'

Drainage Drain Easement

30 ft wide

LINE	BEARING	DISTANCE
L45	S20°49'20"W	16.69'
L30	S20°49'20"W	13.37'
L47	N65°32'20"W	50.80'
L48	N66°31'40"W	219.91'
L49	N22°59'40"E	83.38'
L50	N49°03'40"W	238.61'
L51	N43°54'00"W	67.52'
L52	N53°31'20"E	17.90'
L53	N69°30'20"E	26.50'
L54	S31°42'40"E	56.37'
L55	S49°03'40"E	257.30'
L56	S23°08'40"W	75.41'
L57	S66°31'40"E	190.52'
L58	S65°32'20"E	48.95'

Record Owner
Lebanon Parcel Map 101, Lot 20
Lebanon Housing Authority
Deed References : Book 1208, Page 145
Book 3402, Page 283
Plan References: GCRD Plan Pck 3, Fld 2, No. 44
GCRD Plan No. 13513

EASEMENTS

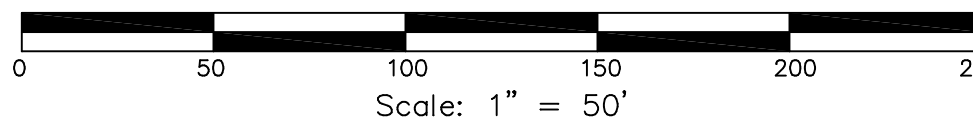
Boundary Survey
Map 101, Lot 20

Lebanon Housing Authority

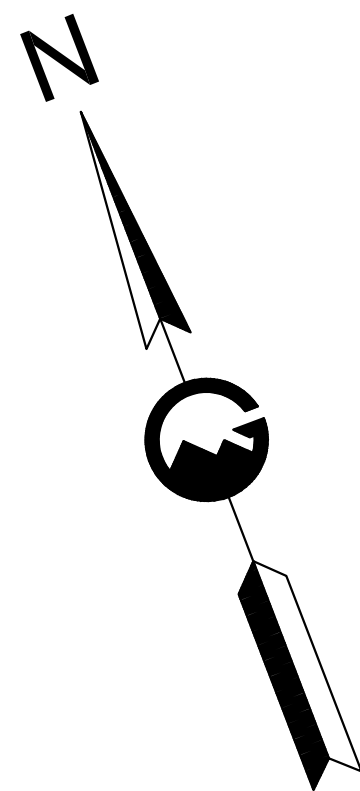
31 Romano Circle, City of Lebanon, Grafton County, New Hampshire

Project No. 1424

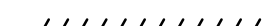
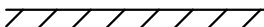
Date October 9, 2024



Rockwood Land Services, LLC
24 Cobb Hill Road, Hartland, VT 05048
802.299.0042 rockls@vermontel.net

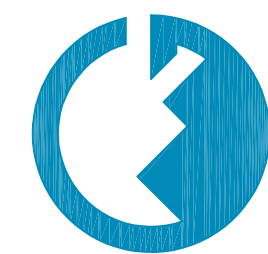
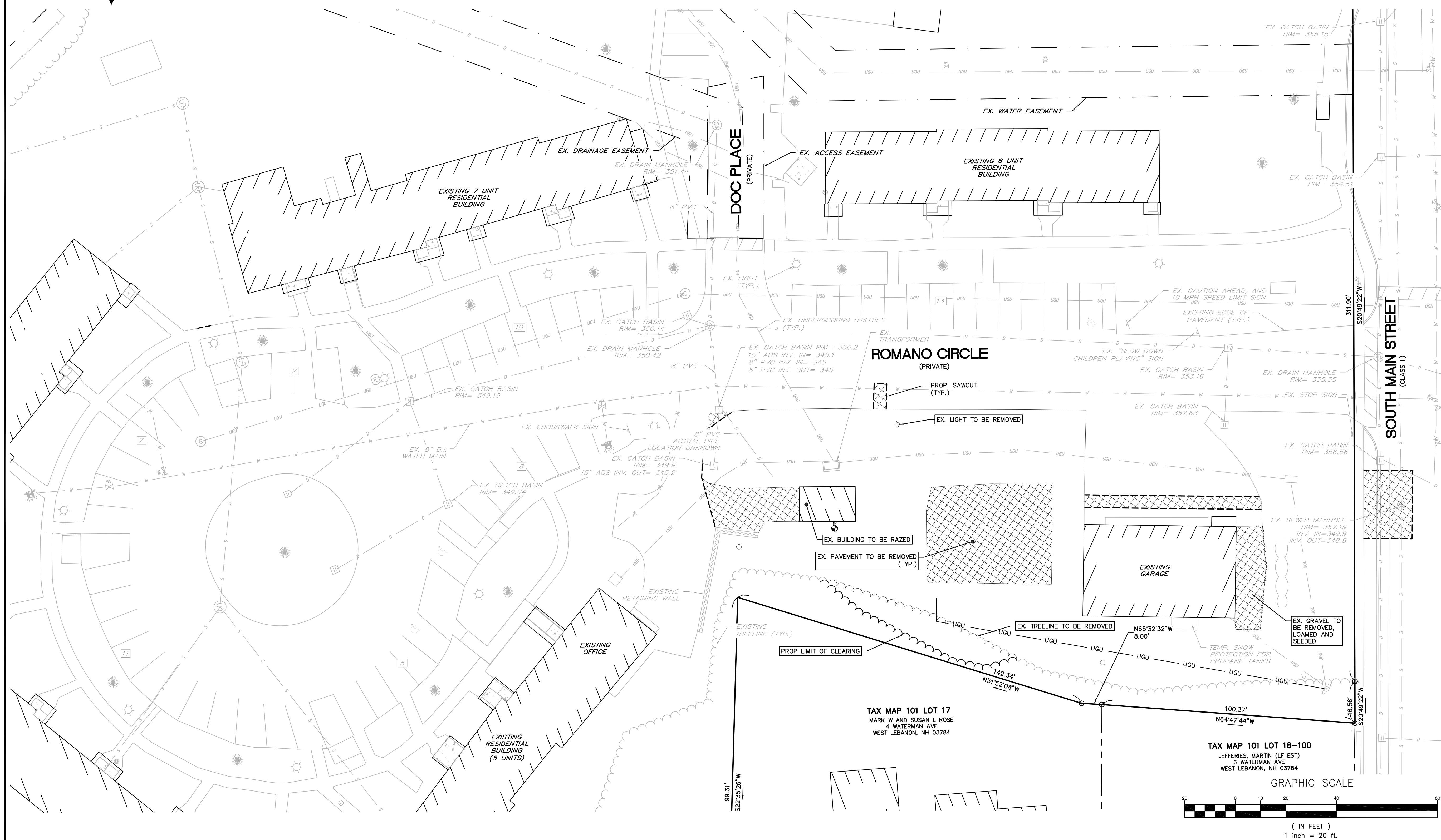


LEGEND

	EX. LANDSCAPING	 _____	EX. WATER LINE
	EX. HYDRANT	 _____	EX. SEWER LINE
	EX. LIGHT POLE	 _____	EX. DRAIN LINE
	EX. UTILITY POLE	 _____	EX. UNDERGROUND UTILITIES
	EX. WATER VALVE		EX. EDGE OF PAVEMENT
	EX. SIGN		EX. GRAVEL
	EX. LIGHT		ITEM TO BE REMOVED
	EX. SEWER MANHOLE		EX. TREELINE
	EX. TELEPHONE MANHOLE		EXIST. RETAINING WALL
	EX. CATCH BASIN		EX. EASEMENT
	ABUTTER LINE		EXIST. BUILDING
	PROPERTY LINE		PROP. SAWCUT
			EX. PAVEMENT TO BE REMOVED

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING FEATURES ON SITE TO BE REMOVED, SALVAGED, OR REPLACED.
2. THE CONTRACTOR SHALL CONTROL ALL DUST GENERATED DURING THE REMOVAL PHASE AND CONSTRUCTION PHASE SO THAT NO DUST LEAVES THE SITE.
3. ANY MONUMENTS DISTURBED DURING THE SITE CONTRACTOR'S WORK, WHICH AREN'T CALLED OUT FOR REMOVAL, SHALL BE RESET BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR AT THE SITE CONTRACTOR'S EXPENSE.
4. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DISGASE AT 811.
5. ALL STUMPS, ROOTS, BRANCHES, BRUSH, WOODS, AND OTHER PERISHABLE MATERIAL RESULTING FROM THE CLEARING AND GRUBBING OPERATIONS SHALL BE DISPOSED OF BY AN APPROVED METHOD.
6. STRIP, STOCKPILE, AND REUSE ONSITE GRAVEL AND FILL AREAS WHERE APPROPRIATE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE DESIGN ENGINEER.
7. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
8. ALL WORK ON OR SUBJECT PROPERTY AND WITHIN THE CITY OF LEBANON RIGHT-OF-WAY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LEBANON CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
9. SITE CONTRACTOR SHALL ESTABLISH TEMPORARY PERIMETER CONTROLS PRIOR TO THE START OF SITE EXCAVATION.
10. PRIOR TO ANY WORK WITHIN THE RIGHT-OF-WAY, UTILITY PROTECTION AND REMOVAL EFFORTS SHALL BE COMPLETED.
11. PRIOR TO ANY WORK WITHIN THE RIGHT-OF-WAY, DEVELOPER OR DESIGNEE SHALL OBTAIN ALL REQUIRED APPROVALS FROM THE CITY OF LEBANON INCLUDING WITHOUT LIMITATIONS ANY SUCH APPROVALS AS MAY BE REQUIRED THROUGH THE PLANNING & DEVELOPMENT DEPARTMENT, DEPARTMENT OF PUBLIC WORKS, POLICE DEPARTMENTS, AND FIRE DEPARTMENT.
12. EXISTING ASPHALT REMOVED FROM THE SITE AS PART OF THIS SITE PLAN SHALL BE GROUND AND REUSED AS FILL OR TRUCKED OFF SITE AND DISPOSED OF BY AN APPROVED METHOD.
13. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.



**GRANITE
ENGINEERING**

civil engineering
land planning
municipal services

[illegible]

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
51 ROMANO CIRCLE
WEST LEBANON, NH 03784

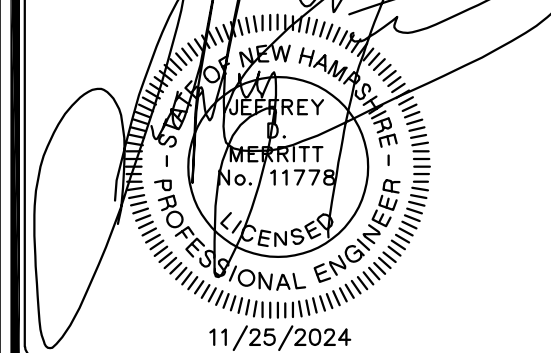
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603.518.8030

www.GraniteEng.com/

STAMP:



LOCATION:

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:

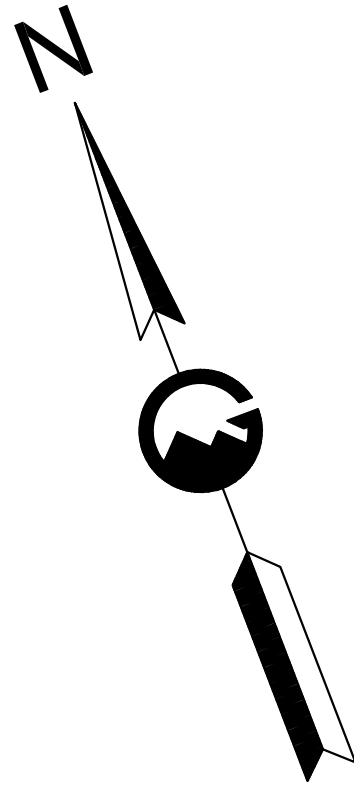
**LEBANON
HOUSING AUTHORITY**

TITLE:

REMOVALS PLAN

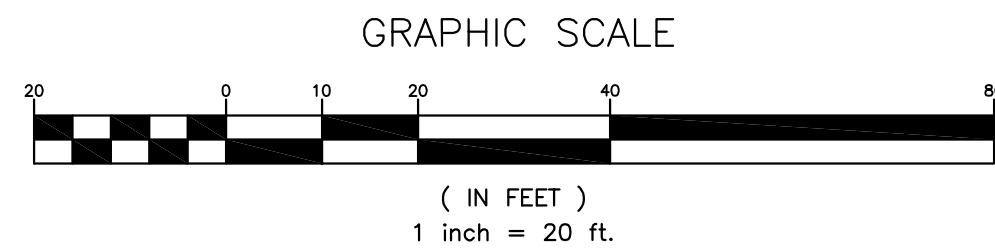
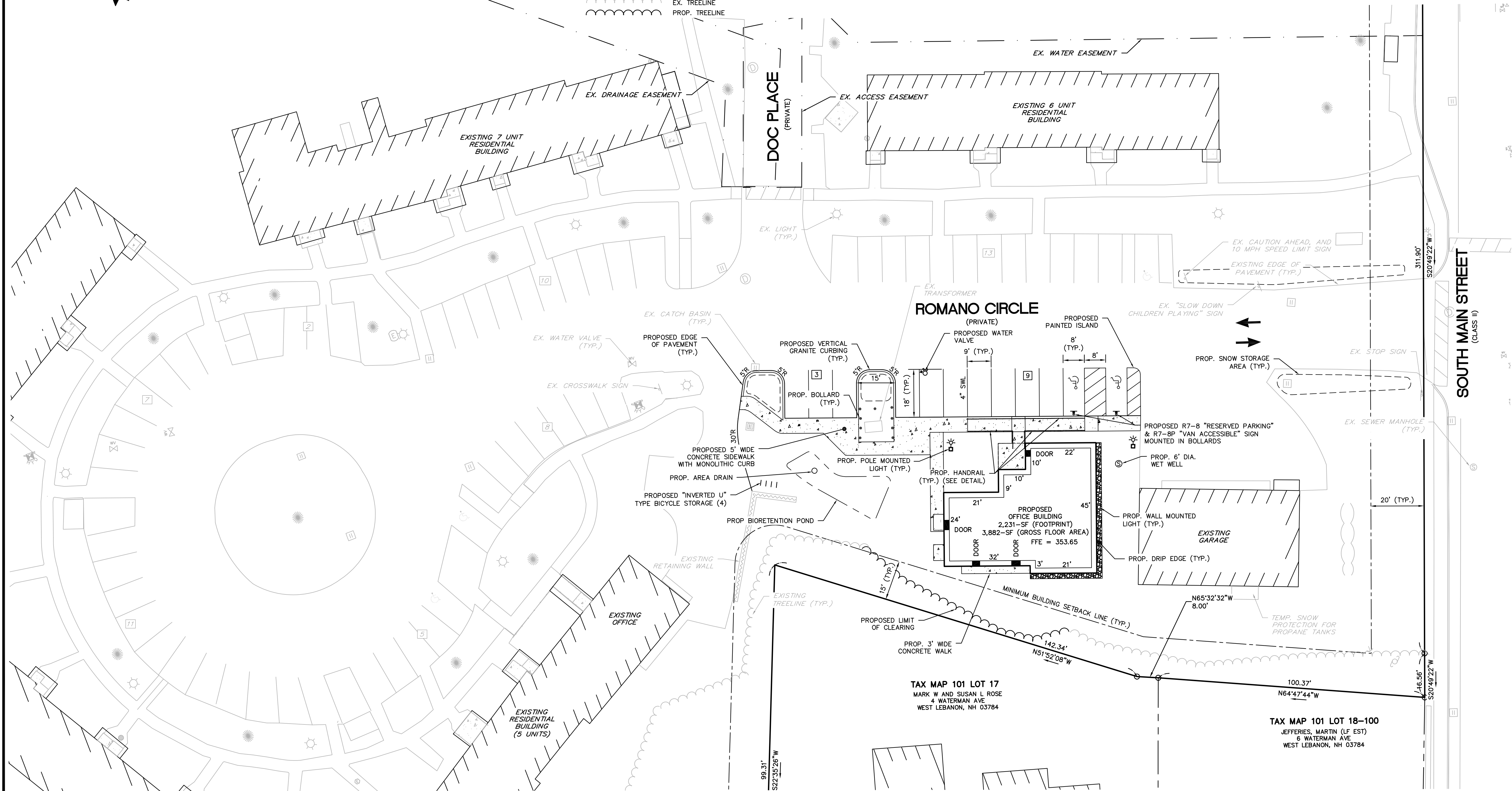
PROJECT No. 23-05081-1	DATE: SEPT 25, 2024
SHEET: 1 OF 15	

SCALE
HORIZ
1"=20'



SEE SHEET 1 FOR REFERENCE
PLANS AND NOTES

LEGEND	
EX. LANDSCAPING	PROP. EDGE OF PAVEMENT
EX. HYDRANT	EX. MINIMUM BUILDING SETBACK
EX./PROP. LIGHT POLE	EXIST. RETAINING WALL
PROP. WALL MOUNTED LIGHT	PROP. CURB
EX. UTILITY POLE	EX. EASEMENT
EX. WATER VALVE	EXIST. BUILDING
EX./PROP. SIGN	PROP. BUILDING
EX. LIGHT	PROP. STORMWATER AREA
EX./PROP. SEWER MANHOLE	100-YEAR FLOOD ZONE
PROP. WATER SHUT OFF	EX. CONCRETE
EX. CATCH BASIN	PROP. CONCRETE
ABUTTER LINE	PROP. DRIP EDGE
PROPERTY LINE	
EX. EDGE OF PAVEMENT	
EX. GRAVEL	
EX. TREELINE	
PROP. TREELINE	



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REVISIONS	
No.	DATE
1	10/14/24
2	11/25/24

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

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STAMP:

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
**LEBANON
HOUSING AUTHORITY**

TITLE:
SITE PLAN

PROJECT No. 23-05081-1 | DATE: SEPT 25, 2024 | SHEET: 5 OF 15 | SCALE: HORIZ. 1"=20'

GRADING AND DRAINAGE CONSTRUCTION NOTES:

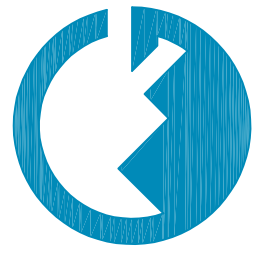
1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE SYSTEMS FOR THIS PROJECT.
2. ALL WORK ON THE SUBJECT PROPERTY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRAFTON COUNTY'S CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC COUNTY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEED.
6. SEE THE EROSION CONTROL PLAN FOR THE LOCATION OF THE TEMPORARY EROSION CONTROL DEVICES.
7. SEE DETAILS FOR DRAINAGE SPECIFICATIONS.
8. MATERIAL STOCKPILES SHALL BE ON LEVEL SITES WITH SILT FENCE INSTALLED AROUND THE PILE. STOCKPILES MUST BE SEED AND MULCHED IF STORED MORE THAN 14 DAYS.
9. THIS PROJECT DISTURBS MORE THAN 1-ACRE OF LAND, THEREFORE, IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

UTILITY CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITIES FOR THIS PROJECT.
2. ALL WORK SHALL CONFORM TO THE CITY OF LEBANON DESIGN AND CONSTRUCTION STANDARDS. IN THE ABSENCE OF A SPECIFIC CITY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2020.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE WATER LINES SHALL CONFORM TO ALL THE LOCAL PRECINCT'S STANDARDS, SPECIFICATIONS, RULES, AND REGULATIONS.
5. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE ELECTRIC AND TELEPHONE LINES SHALL CONFORM WITH THE STANDARDS OF THE LOCAL PROVIDER.
6. CONTRACTOR SHALL COORDINATE WITH LOCAL PROVIDER RELATIVE TO FINAL LAYOUT OF UNDERGROUND UTILITIES.
7. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. CONTRACTOR TO VERIFY SIZE OF WATER SERVICE LINES WITH ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
9. FINAL LAYOUT OF UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO VERIFY GAS REQUIREMENTS FOR THE PROPOSED BUILDING PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE WITH LOCAL GAS PROVIDER FOR SERVICE DETAILS.
11. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS.

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE TOWN OF LEBANON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
17. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED ON SLOPES WITH A RATION GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.
18. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL ALL AREAS ARE STABILIZED.
19. PONDS SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING OF THE SITE).
20. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
21. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
22. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES CONTROL.
23. SEE DETAILS FOR CONSTRUCTION SEQUENCE.

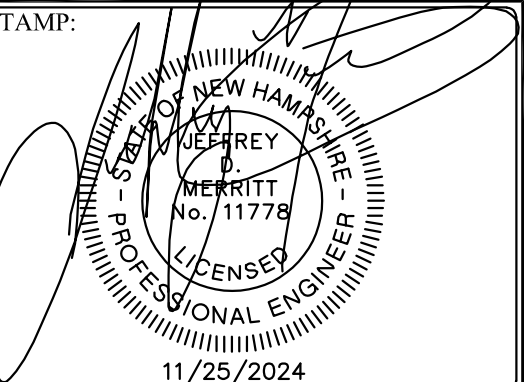


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REVISIONS	
BY	DATE
COMMENTS	
PROJECT SUBMITTAL	
REVISED PER CITY COMMENTS	
1	10/14/24
2	11/25/24

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

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150 Dow Street, Tower 2, Suite 424
Manchester,
New Hampshire 03101
603.518.8030
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STAMP:

11/25/2024

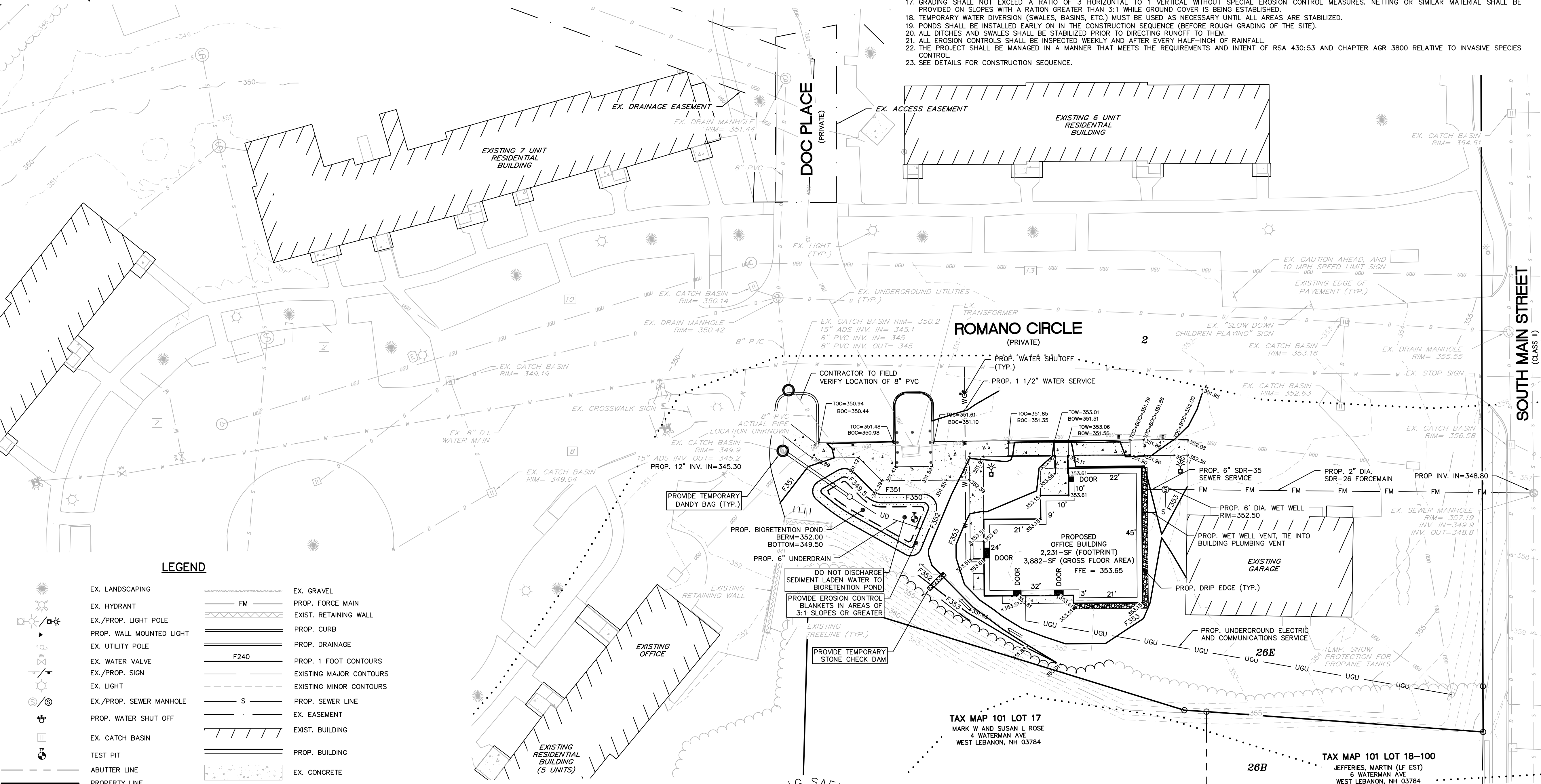
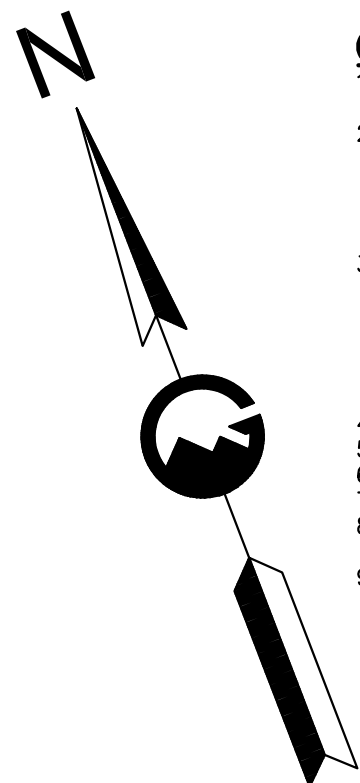
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PROJECT:
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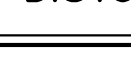
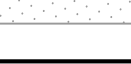
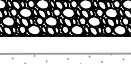
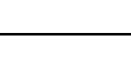
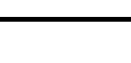
TITLE:
GRADING, DRAINAGE,
UTILITY &
EROSION PLAN

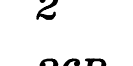
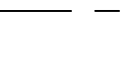
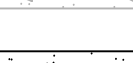
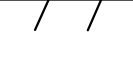
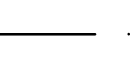
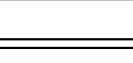
PROJECT No. DATE:
23-05081-1 SEPT 25, 2024
SHEET:
6 OF 15

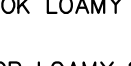
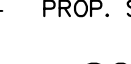
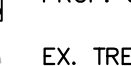
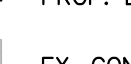
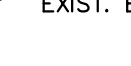
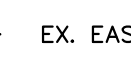
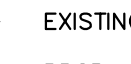
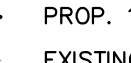
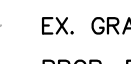
SCALE:
HORIZ.
1"=20'



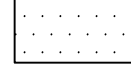
LEGEND







EROSION & SEDIMENT CONTROL LEGEND



TEMPORARY CATCH BASIN
FILTER BAG

TEMPORARY STONE CHECK DAM

EROSION BLANKET

LIMITS OF CLEARING



LOAM & SEED ALL
DISTURBED AREAS (TYP.)

2

26B

26E

SUNCOOK LOAMY FINE SAND, 8-15% SLOPES

WINDSOR LOAMY SAND, 3-8% SLOPES SLOPES

WINDSOR LOAMY SAND, 15-60% SLOPES

SCS LEGEND

2

26B

26E

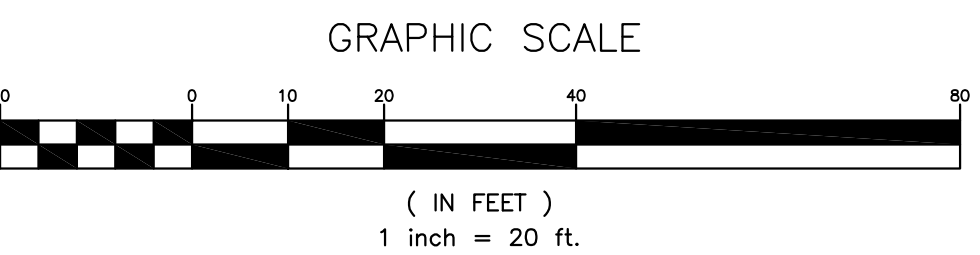
SUNCOOK LOAMY FINE SAND, 8-15% SLOPES

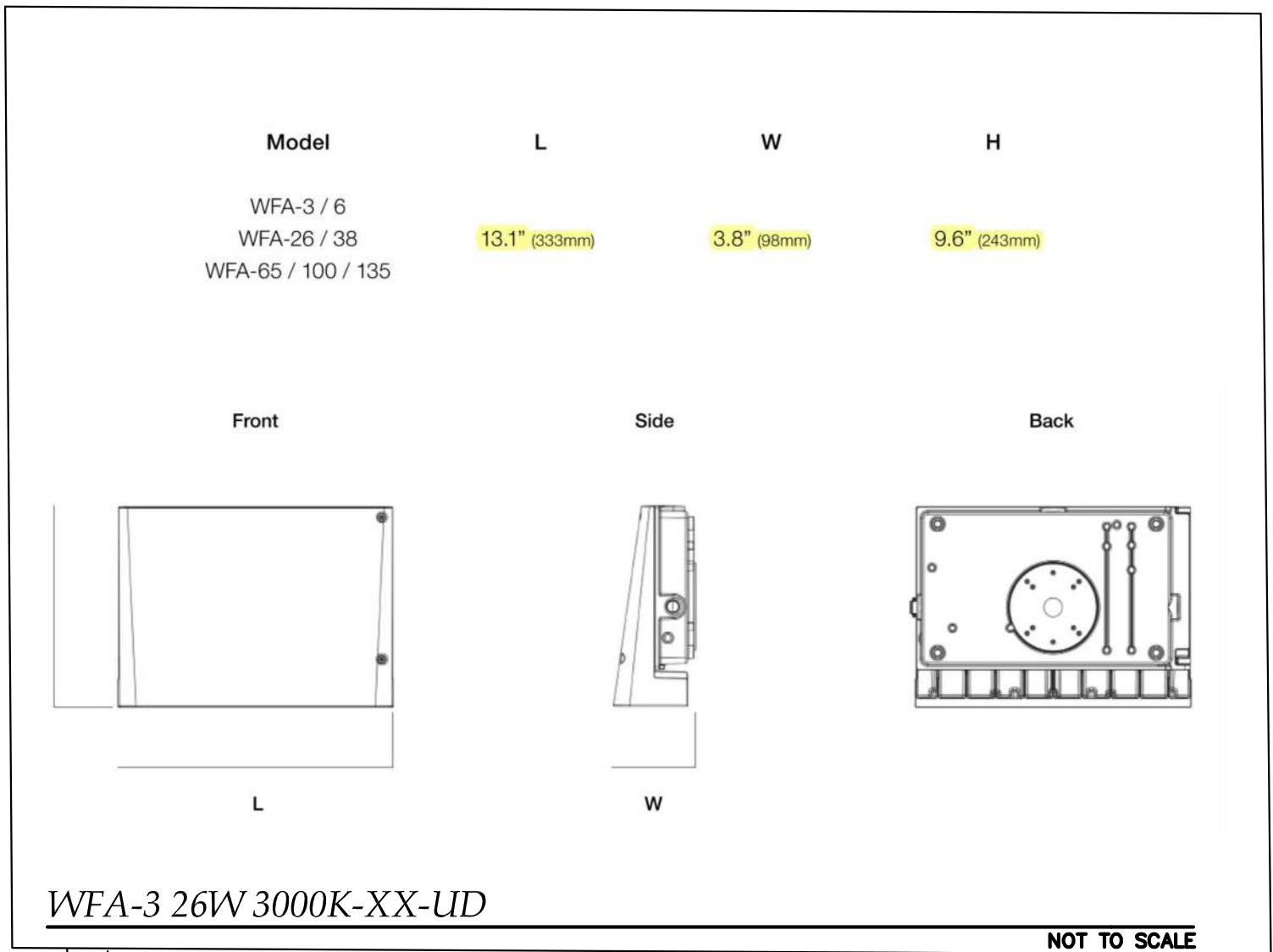
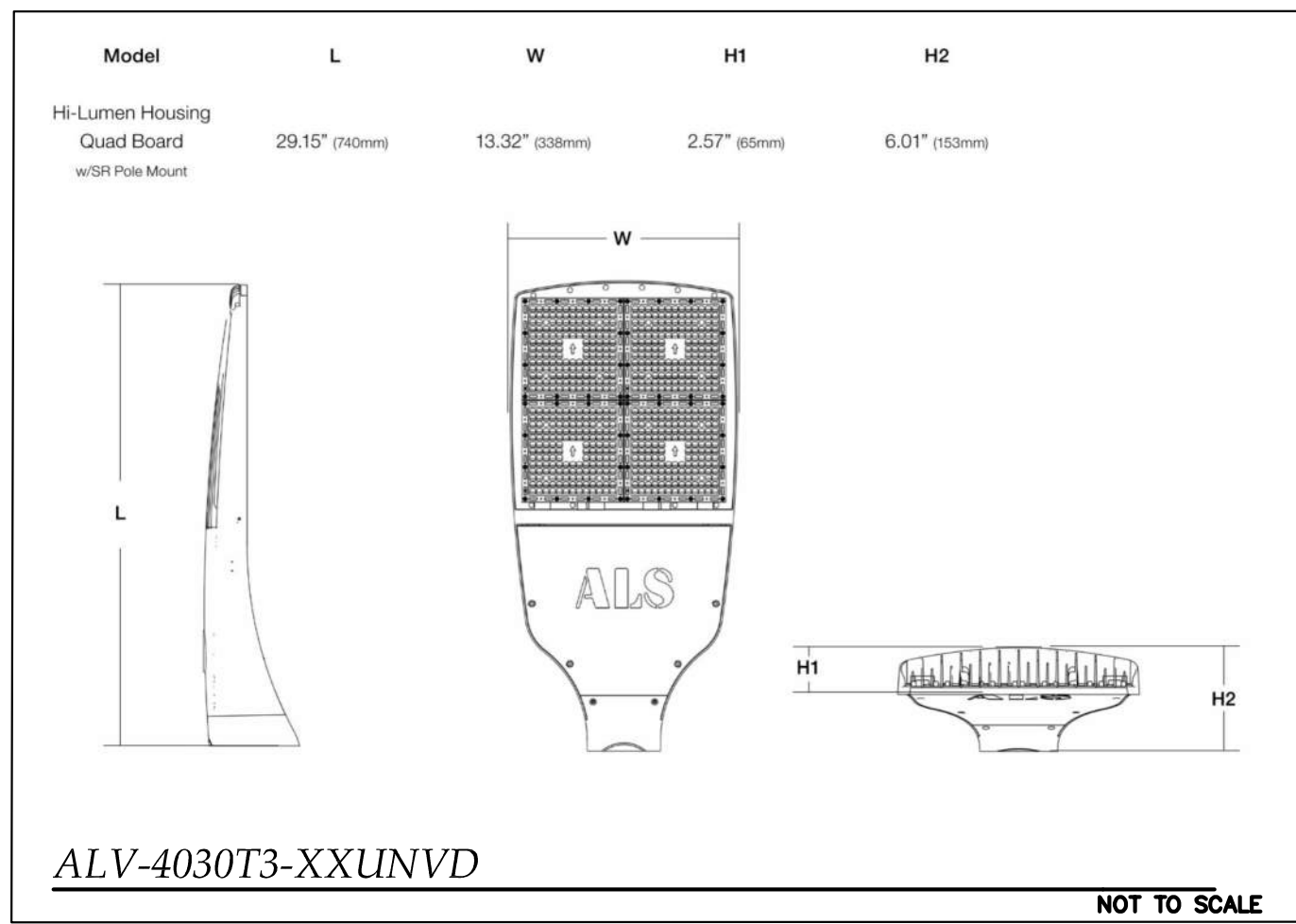
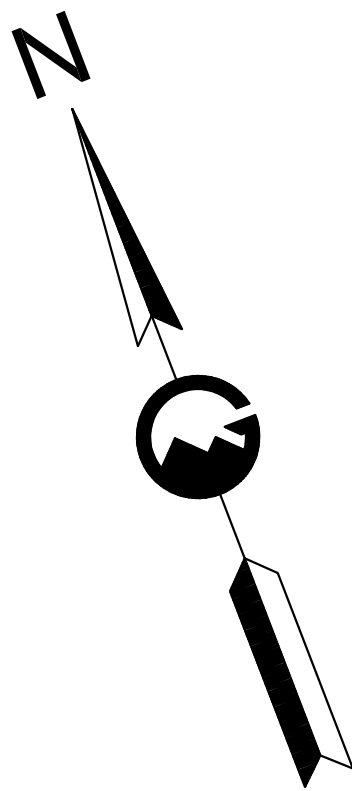
WINDSOR LOAMY SAND, 3-8% SLOPES SLOPES

WINDSOR LOAMY SAND, 15-60% SLOPES

WATER CONSTRUCTION NOTES:

1. ALL DISTRIBUTION MATERIALS, INCLUDING MAINS, FITTINGS AND VALVES, TO MEET APPLICABLE AMERICAN WATER WORKS ASSOCIATION (AWWA) AND NEW HAMPSHIRE DES-DRINKING WATER GROUNDWATER BUREAU STANDARDS, AS APPLICABLE.
2. ALL INSTALLATION AND TESTING OF MATERIALS TO CONFORM TO AWWA STANDARDS FOR POTABLE WATER SYSTEMS.
3. EXISTING WATER MAIN ALONG SOUTH MAIN STREET DRIVE IS OWNED AND SUPPLIED BY THE TOWN OF LEBANON WATER DEPARTMENT. ALL WORK INVOLVING THE PUBLIC WATER SUPPLY SHALL BE COMPLETED IN CONFORMANCE WITH THE LATEST EDITION OF THE STANDARDS OF THE MANCHESTER WATER DEPARTMENT AND THE LEBANON PUBLIC WORKS DEPARTMENT.





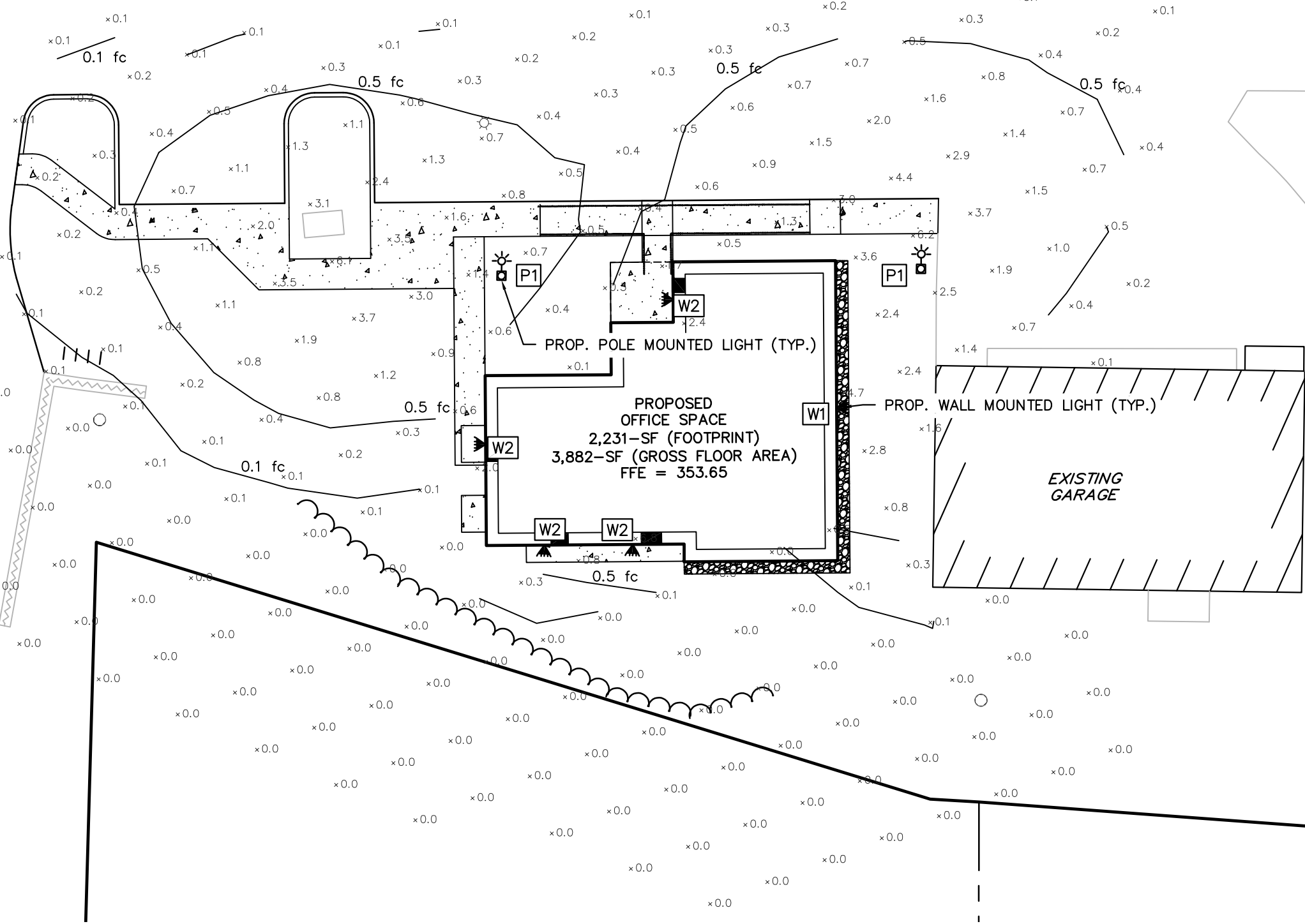
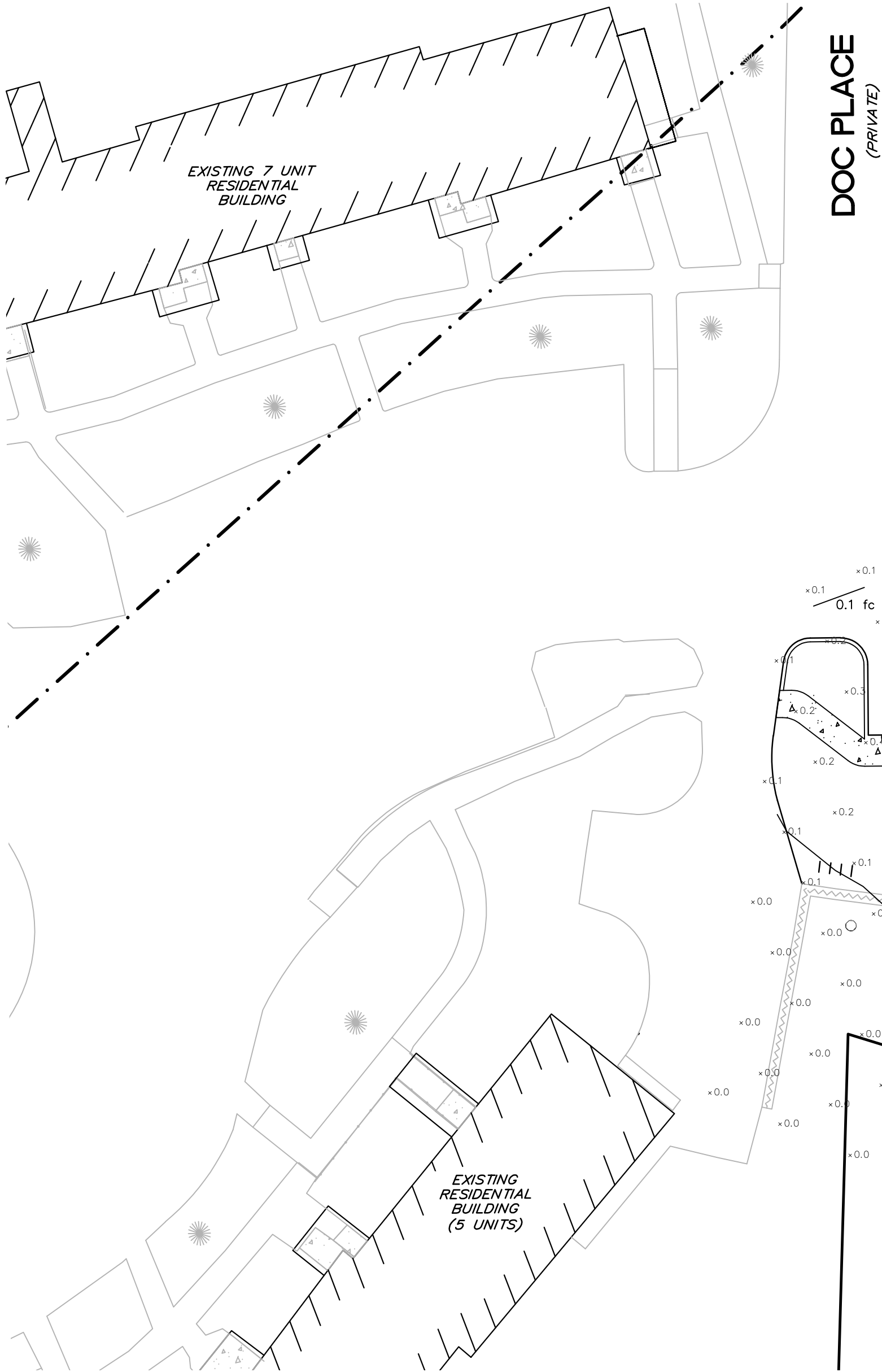
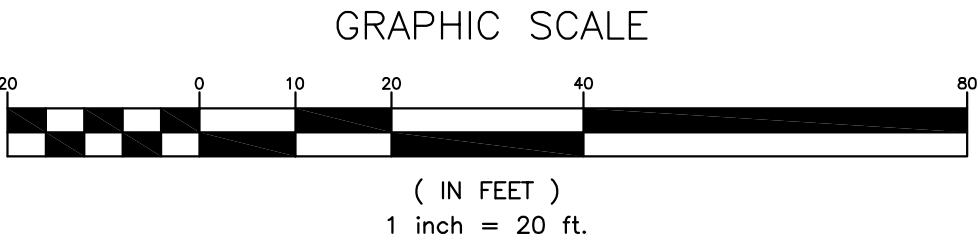
GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE PROPOSED LIGHTING FOR THE PROJECT.
2. ALL FIXTURES SHALL BE AS SPECIFIED BY SWANEY LIGHTING ASSOCIATES, INC.
3. ALL PROPOSED FIXTURES ARE FULL CUTOFF FIXTURES.
4. ALL LIGHTING INSTALLATIONS SHALL INCLUDE TIMERS, DIMMERS, SENSORS, AND/OR OTHER ENERGY-SAVING TECHNOLOGIES TO REDUCE THE OVERALL ENERGY CONSUMPTION. NON-ESSENTIAL LIGHTING SHALL BE TURNED OFF OR REDUCED AFTER NORMAL BUSINESS HOURS, LEAVING ONLY NECESSARY LIGHTING FOR SECURITY PURPOSES.
5. LIGHTING FIXTURES COLOR CORRELATED TEMPERATURE IS 3000K CCT.

LEGEND

- PROP. BUILDING LIGHT
- PROP. POLE LIGHT
- ABUTTER LINE
- PROPERTY LINE
- EX. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- EXIST. RETAINING WALL
- PROP. CURB
- EXIST. BUILDING
- PROP. BUILDING
- EX. CONCRETE
- PROP. CONCRETE

THIS PLAN WAS PREPARED IN ASSOCIATION WITH:



Luminaire Schedule								
Tag	Qty	Watts	Lumens	LLF	Description	Color	Watts	Mounting Height
P1	2	40.21	6758	0.900	ALV-4030T3-XXUNVD	3000K CCT	40	15
W1	1	26.4	3821	0.900	WFA-3 26W 3000K-XX-UD	3000K CCT	26	15
W2	4	18.6	511	0.900	P550101-031-30	3000K CCT	18	8

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
Site	0.64	6.8	0.0	N.A.	N.A.
New Parking	1.07	4.4	0.3	3.57	14.67

GRANITE ENGINEERING
civil engineering • land planning • municipal services

REVISIONS	BY	DATE	COMMENTS
	JCD	10/14/24	PROJECT SUBMITTAL
	JCD	11/25/24	REVISED PER CITY COMMENTS

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
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150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030

www.GraniteEng.com

STAMP:

SEAL OF NEW HAMPSHIRE PROFESSIONAL ENGINEER
D. MERRITT
No. 11778
11/25/2024

LOCATION:

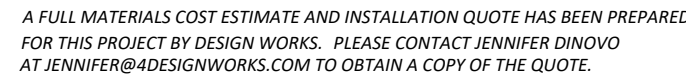
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE 03784
GRAFTON COUNTY

PROJECT: **LEBANON HOUSING AUTHORITY**

TITLE: **LIGHTING PLAN**

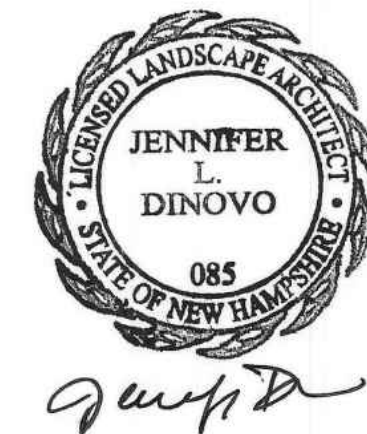
PROJECT No. 23-05081-1	DATE: SEPT 25, 2024	SCALE: HORIZ. 1"=20'
SHEET: 8 OF 15		

REVISIONS				BY
	DATE	COMMENTS		JCD
0	10/14/24	PROJECT SUBMITTAL		JCD
2	11/25/24	REVISED PER CITY COMMENTS		

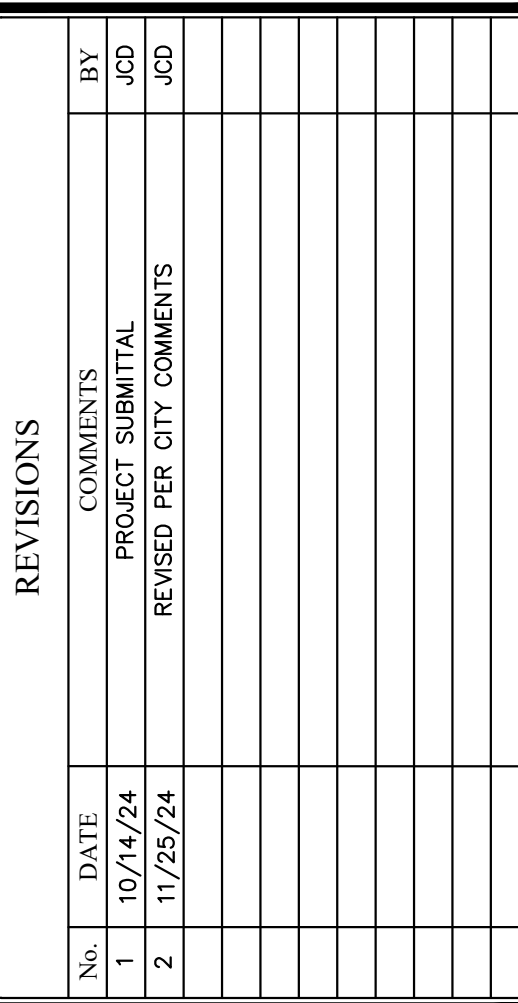


TREES				
QTY.	SYMBOL	LATIN NAME	COMMON NAME	SIZE
1	AMEL	AMELANCHIER CANADENSIS	SERVICEBERRY	5-6'BB
1	BET	BETULA NIGRA HERITAGE	HERITAGE RIVER BIRCH	8-10'BB
1	FAQ	FAGUS S. RED OBELISK	RED OBELISK BEECH	8-10'BB
2	SYR	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2.5-3" CAL
SHRUBS AND PERENNIALS				
2	BUX	BUXUS MICROPHYLLA WINTER GEM	WINTER GEM BOXWOOD	#5 GAL
6	CLE	CLETHRA ALNIFOLIA	SUMMERSWEET	#5 GAL
1	COR	CORNUS IVORY HALO	IVORY HALO DOGWOOD	#5 GAL
7	EUP	EUPATORIUM RUGOSUM 'CHOCOLATE'	CHOCOLATE JOE PYE WEED	#2 GAL
9	HEM	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 GAL
5	IRIS	IRIS VERSICOLOR 'PURPLE FLAME'	PURPLE FLAME IRIS	#2 GAL
3	NEP	NEPETA WALKER'S LOW	WALKER'S LOW CATMINT	#3 GAL
9	PEN	PENNISSETUM A. HAMELN	DWARF FOUNTAIN GRASS	#2 GAL
6	PAN	PANICUM VIRGATUM 'NORTHWIND'	NORTHWIND SWITCH GRASS	#3 GAL
3	ROSA	ROSA KNOCKOUT	KNOCKOUT ROSE	#3 GAL
5	RUD	RUDBECKIA HIRTA	BLACK EYED SUSAN	#2 GAL

PARKING LOT SHADE CALCULATION:
TOTAL PARKING LOT AREA = 2,052 SF
REQUIRED = 30% OF TOTAL PARKING LOT
= 2,052 x .30 = 615.6 SF
PROPOSED = 616 SF (30%)



(IN FEET)
1 inch = 10 ft.



PROJECT No. 23-05081-1	DATE: SEPT 25, 2024	SCALE HORIZ. 1"=10'
SHEET: 14 OF 15		

15) ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE COVERED WITH A MINIMUM THICKNESS OF 4-INCHES OF FRIABLE TOPSOIL AND BE SEEDED WITH GRASS SEED, COVERED WITH SOD OR PLANTED WITH GRASS COVER. IN GENERAL, ESTABLISHMENT OF TURF SHALL BE LIMITED TO THOSE AREAS THAT MAY BE REGULARLY MAINTAINED AS LAWN. GROUND COVERS, MULCH AND OTHER SUITABLE MATERIALS SHALL BE APPLIED TO AREAS WHICH ARE NOT INTENDED TO BE MAINTAINED AS LAWN. MULCH SHALL BE SPECIALLY SELECTED, MIXED AND LAYERED TO BED. MULCH SHALL BE PROPOSED AS TO MINIMIZE THE OCCURRENCE OF BARK MULCH WASHING INTO NEARBY STREET CATCH BASINS FROM AS THE RESULT OF HEAVY RAINS, WHEN POSSIBLE, LAWN AREAS SHALL SEPARATE THE MULCHED AREAS FROM ADJOINING PAVEMENT.

Diagram illustrating the correct method for planting a tree, showing the root ball, trunk, and surrounding soil/mulch layers.

Labels and Instructions:

- SET TOP OF TRUE ROOT BALL (EXPOSE ROOT FLARE) 1-2" ABOVE FINISHED GRADE OR SEVERAL INCHES HIGHER IN POORLY DRAINED SOILS.
- FORM EARTH WATERING SAUCER AROUND TREE AT EDGE OF ROOT BALL
- CUT AND REMOVE BURLAP AND WIRE FROM TOP 2/3 OF BALL IF NONBIODEGRADABLE MATERIAL, REMOVE ENTIRELY.
- TRIM BRANCHES TO RETAIN NATURAL FORM OF TREE. DO NOT TRIM OFF LEADER
- WHEN IRRIGATION IS NOT PROVIDED SPECIFICALLY FOR THE TREE, TREEGUARD BAGS ARE RECOMMENDED TO HELP FACILITATE PROPER WATERING DURING THE FIRST TWO GROWING SEASONS.
- 2"x4" WOOD STAKE
- 3" MULCH LAYER DO NOT PLACE MULCH WITHIN 6" OF TRUNK
- BACKFILL WITH PREPARED SOIL
- DIG WIDE SHALLOW HOLE 3X WIDER THAN ROOT BALL
- STAKE IN UNDISTURBED SUBGRADE.
- SET ROOT BALL ON UNDISTURBED SOIL PAD IN BOTTOM OF HOLE.

1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. THOROUGHLY SOAK TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING FIRST MONTH AFTER INSTALL AND REGULARLY FOR FIRST 2 YEARS.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.
4. FOR CONTAINER GROWN TREES, PULL THE ROOTS OUT OF THE OUTER LAYER AND CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.

NOT TO SCALE



CUT AND REMOVE BURLAP
FROM TOP 1/3 OF BALL.
IF NONBIODEGRADABLE
MATERIAL, REMOVE
ENTIRELY

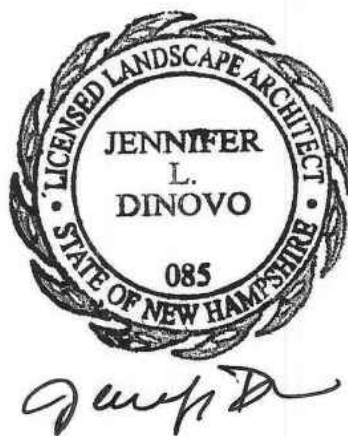
Diagram illustrating the planting method for a tree, showing the tree, mulch, and soil preparation steps.

Labels and instructions:

- SPACE PLANTS AS INDICATED ON DRAWINGS.
- MAXIMUM 2" MULCH. NOT PUT MULCH THIN 4" OF BASE PLANT.
- SET BASE OF TRUNK 1" HIGHER THAN FINISH GRADE.
- FINISH GRADE
- BACKFILL WITH PREPARED SOIL
- SCARIFY BOTTOM OF PLANTING HOLE
- BASIN SHAPED AREA
- MIN 2X AS WIDE AS ROOTBALL WITH SLOPED SIDES
- REMOVE EARTH COVERING SAUCER AROUND TREE
- EDGE OF ROOT BALL
- CUT AND REMOVE BURLAP FROM TOP 1/3 OF BALL.
- NONBIODEGRADABLE MATERIAL, REMOVE IMMEDIATELY.

1. FOR CONTAINER GROWN SHRUBS, PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING FIRST MONTH AFTER INSTALL AND REGULARLY THROUGHOUT THE FOLLOWING 2 SUMMERS.

NOT TO SCALE



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civil engineering
land planning
municipal services

[illegible]

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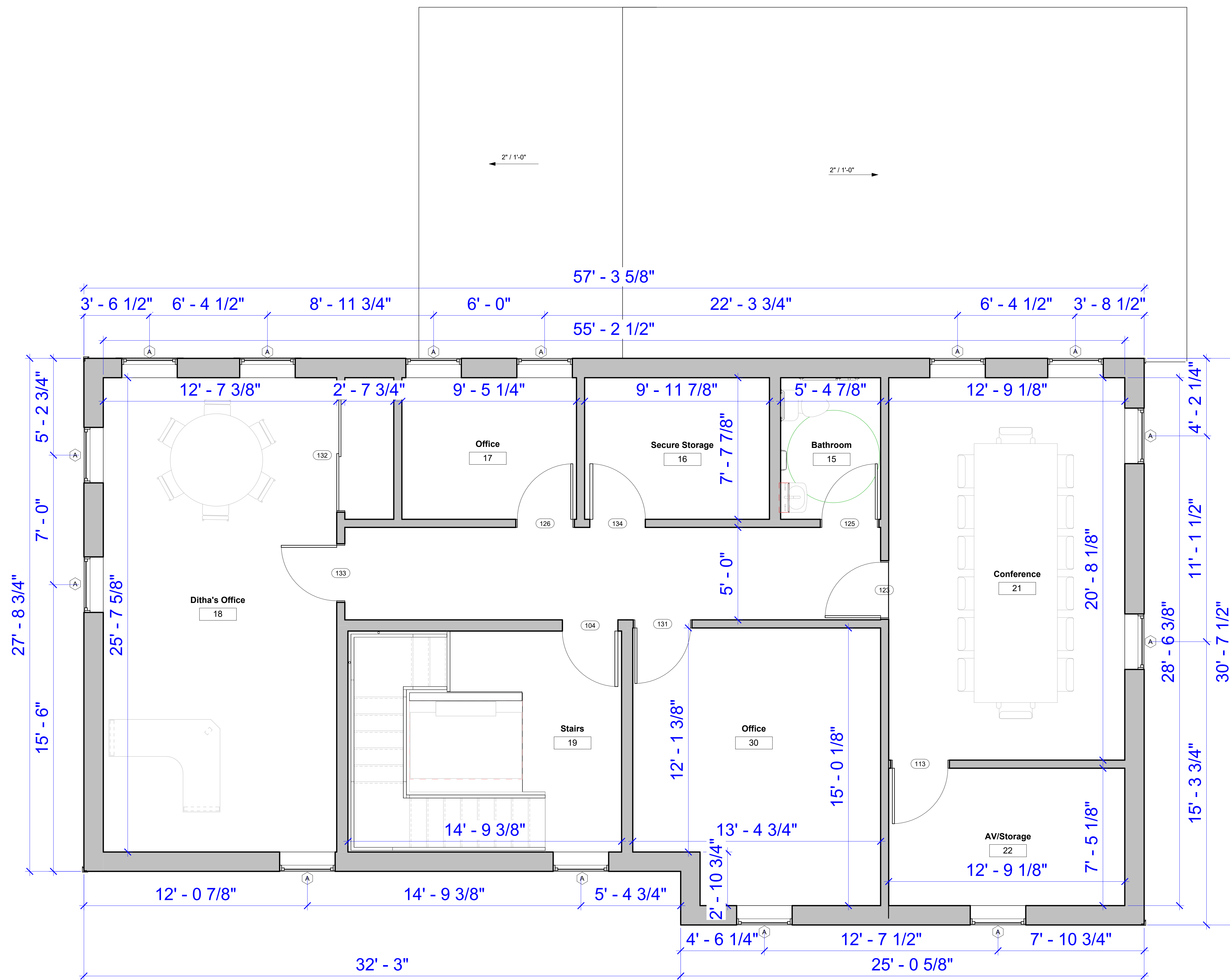
DESIGN WORK

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

**LEBANON
HOUSING AUTHORITY**

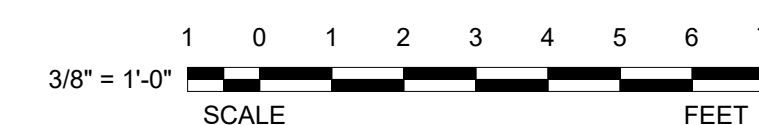
LANDSCAPE PLAN

SCALE
HORIZ.
1"=20'



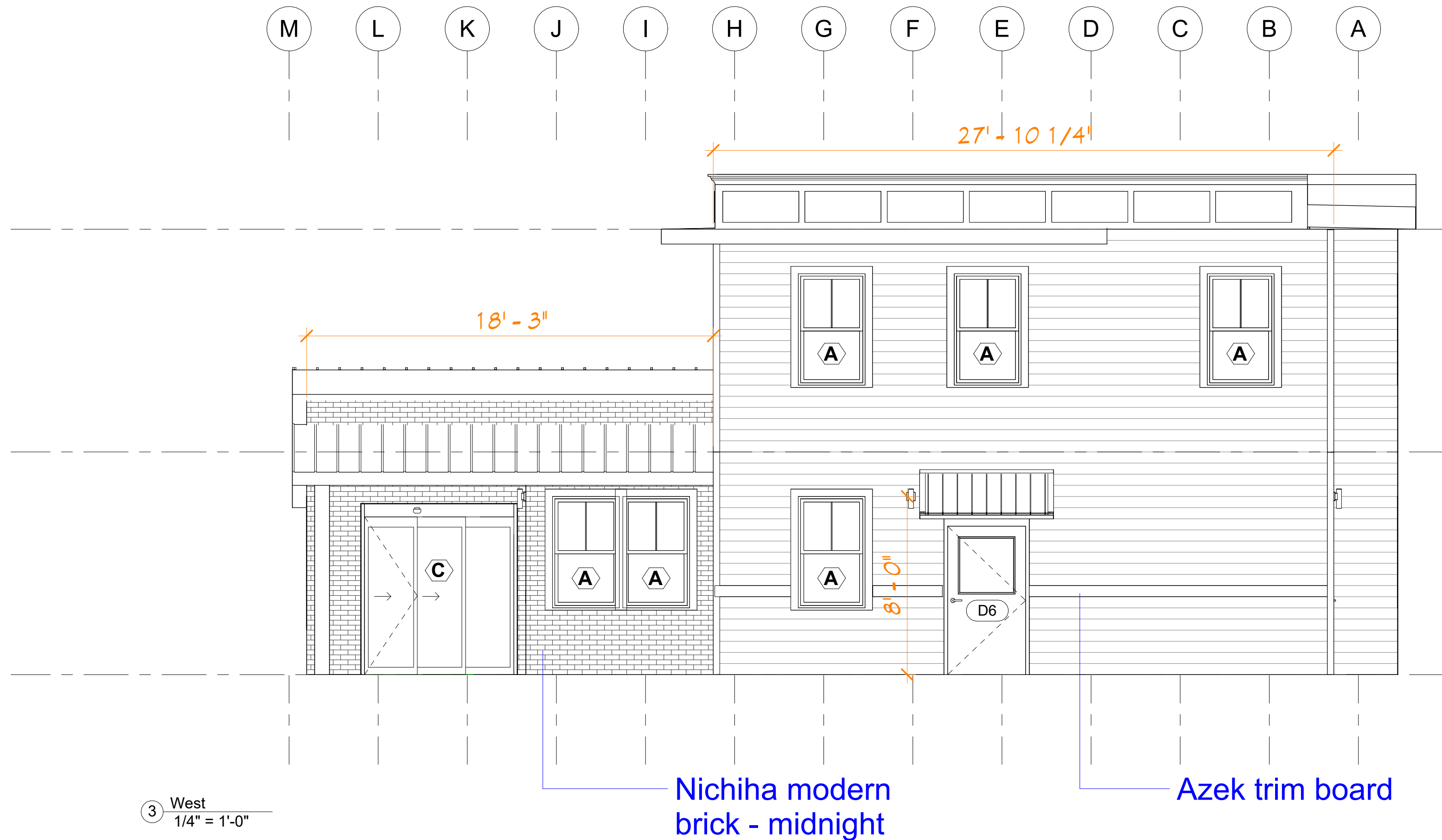
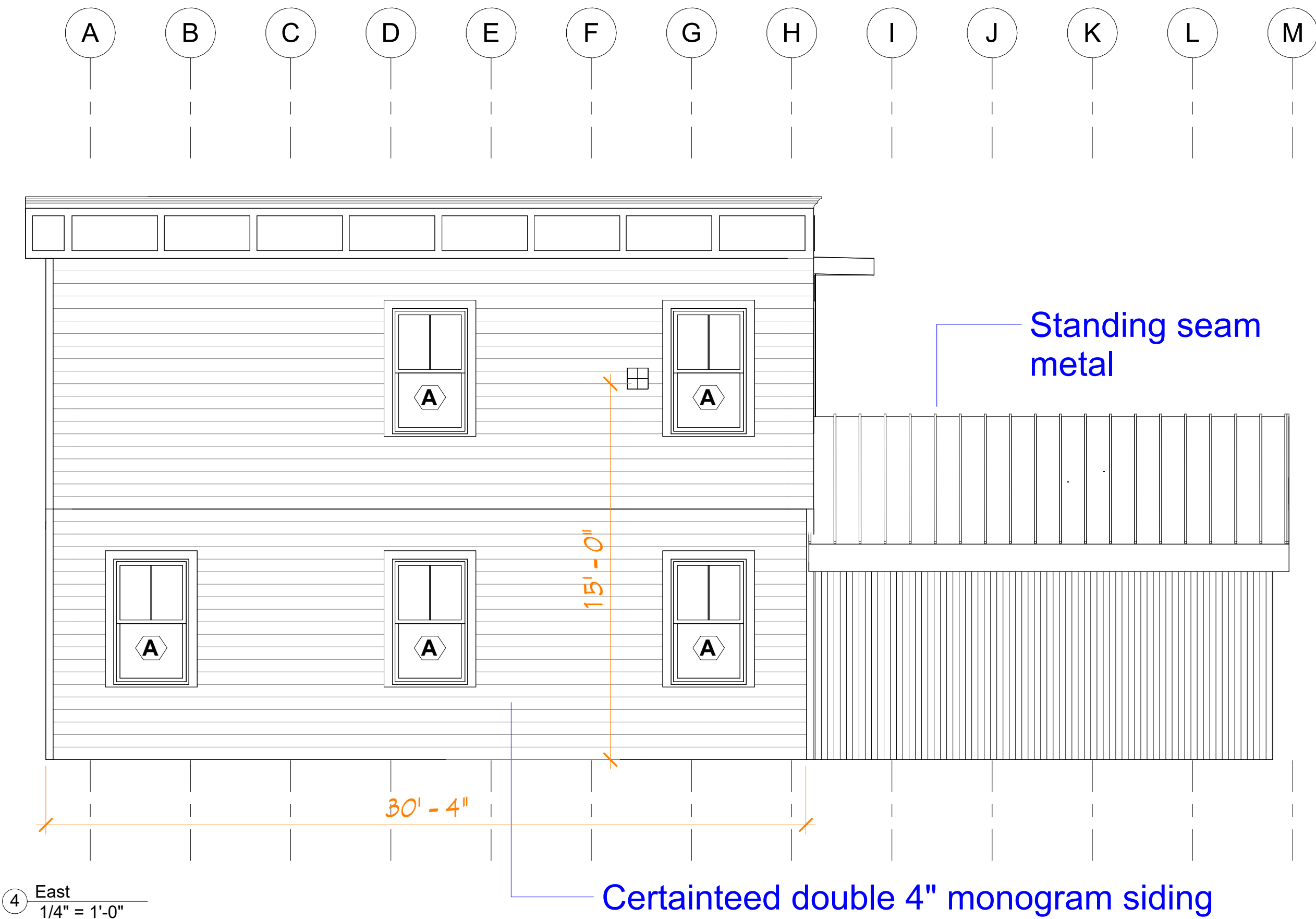
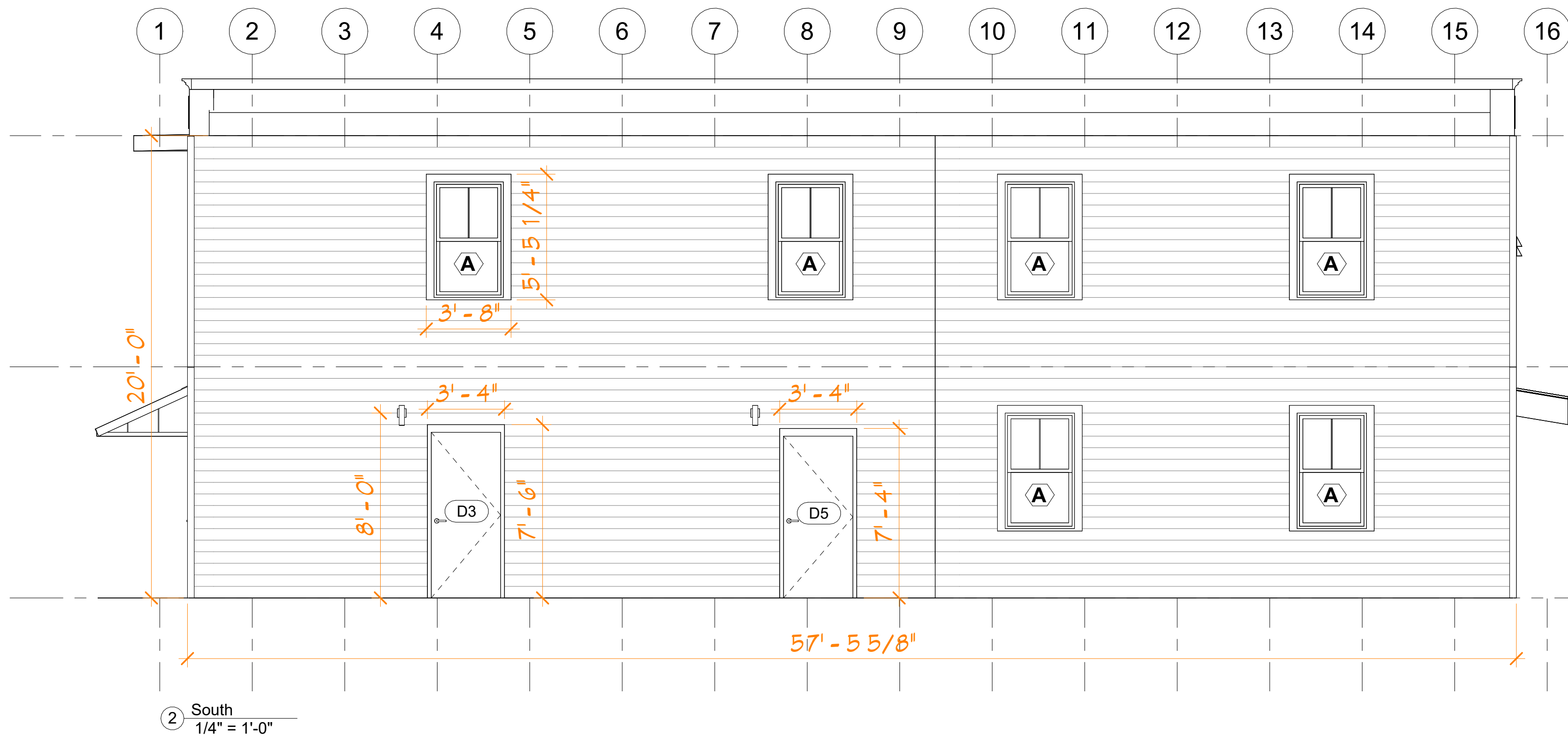
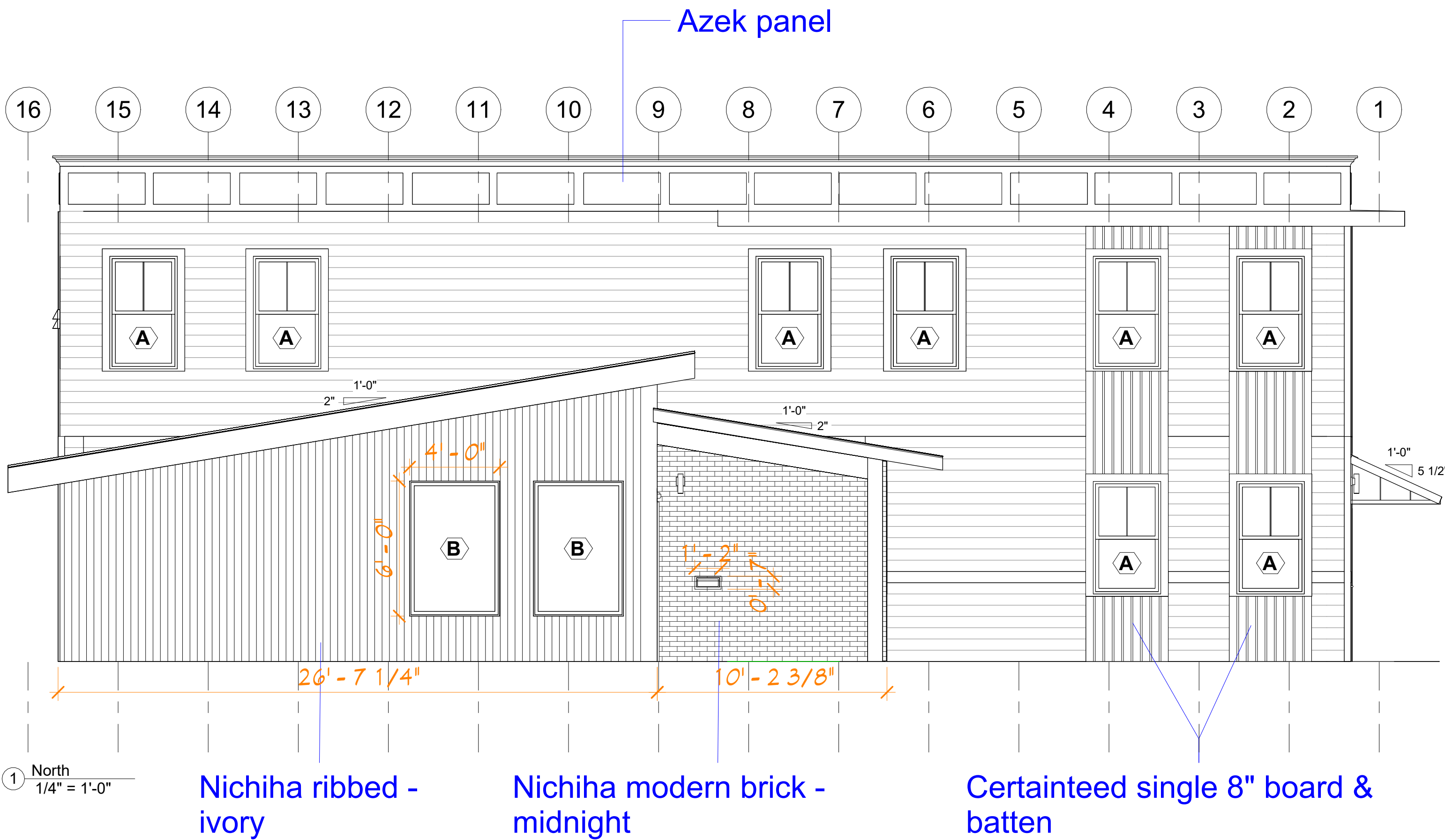
1 Level 2
3/8" = 1'-0"

Level 2
3/8" = 1'-0"

$$3/8'' = 1'-0''$$


SCALE

FEET





STORMWATER **MANAGEMENT REPORT**



GRANITE ENGINEERING

civil engineering • land planning • municipal services

LEBANON HOUSING AUTHORITY

Map 101; Lot 20
31 Romano Circle
West Lebanon, New Hampshire
October 14, 2024

Revised: November 25, 2024

PREPARED FOR:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

PREPARED BY:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030

GE Project No. 23-0508-1

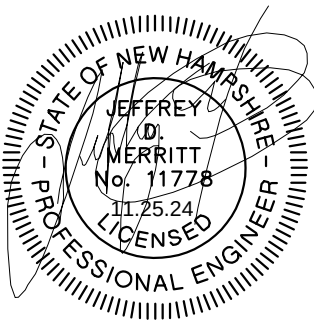


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5. BMP WORKSHEETS
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8. OPERATION AND MAINTENANCE PLAN WITH CHECKLISTS
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1. LEBANON NH STORMWATER CHECKLIST

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

CITY OF LEBANON, NH STORMWATER REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	DATE: October 14, 2024

NOTE: Stormwater plans shall include the information described below pursuant to Article VI of the Lebanon Site Plan Review Regulations. Plans shall be submitted on sheets no larger than 24" x 36". Plan sets with multiple sheets shall include sheets of uniform size and be bound on the left edge. When more than three (3) sheets are required, an additional cover sheet shall be attached including a table of contents. A scale of not smaller than one (1) inch equals 40 feet is suggested. All lettering shall be of a size and type that is legible.

In order to facilitate the use of the City's Geographic Information System (GIS) for planning purposes, all surveys and engineered plans submitted shall utilize the NH State Plane Coordinate system and shall reference the North American Vertical Datum of 1988 (NAVD 88), unless prior approval to use an alternate coordinate system and/or vertical datum is granted by the Planning Office.

A written request for waiver shall be required, pursuant to Article VII of the Site Plan Review Regulations, for any submission requirement for which the information or data is not provided by the applicant. [§6.6.I]

[Stormwater checklist begins on following page]

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

[illegible]

CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST

Plan Requirements (cont.)	Info. Provided	Waiver Sought
g. Plan references and notes (including sequence of soil disturbance) (Construction sequence is located on sheet 12 of 13 in the project plan set) h. Proposed and existing public and private utilities i. Proposed project components to become property of or the responsibility of the City shall be labeled as such j. Existing and proposed impervious cover, with areas used to calculate effective impervious cover (EIC, as defined herein) clearly identified and the square footage of each type identified and labeled. (table with this information is located within stormwater report) k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate. (test pit log is located on sheet 13 of the plan set) l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. (all stormwater and erosion control details are shown on sheets 9-13 of the plan set) The Existing Conditions SMP & the Proposed Conditions SMP shall be provided on sheets no larger than 24" x 36", at a scale of one (1) inch = 20 feet for urban areas, and one (1) inch = 40 feet for non-urban areas. The City Engineer will make the final determination as to the appropriate scale, ensuring that all important site and hydrologic features are easily recognized. If plan shall encompass more than two (2) sheets, at the required 1:40 or 1:20 scale, a separate large scale representation plan sheet (e.g. 1:100) is required to be provided, so as to show entirety of site, as well as off-site contributing areas.	☒ ☒ n/a ☐ ☒ ☒ ☒ ☒	☐ ☐ ☐ ☐ ☐ ☐ ☐
6.6.C.2 - In addition to the above described SMP plan sheets, the following SMP supplemental information is required: 1. A drainage analysis that includes calculations comparing pre- and post-development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 25-year, 50-year, and 100-year, 24-hour frequency storms. Calculations shall include, but not be limited to, the sizing of all structures and BMPs, including sizing of emergency overflow structures based on the 50-year 24-hour frequency storm discharge rate, with 1-foot of free-board. Storm rates shall be based on current design depths from the Northeast Regional Climate Center - http://precip.eas.cornell.edu. <i>Any site that was primarily wooded in the last five years shall be considered undisturbed woods Any site from which wooded vegetation has been removed within 5 years prior to the first submission to the planning board with respect to a proposed development, or upon which, at some earlier time, clearing has occurred in anticipation of development, shall be treated as undisturbed woodland for purposes of calculating pre-development runoff volumes. For purposes of this paragraph any tree cutting which occurred without leaving stands of healthy, growing trees within areas near waters and highways, as required by RSA 227-J:9, I, shall be presumed to have occurred in anticipation of development</i>	☒	☐

**CITY OF LEBANON, NH
SITE PLAN REVIEW REGULATIONS
TECHNICAL CHECKLIST & STORMWATER CHECKLIST**

Plan Requirements (cont.)	Info. Provided	Waiver Sought
2. A drainage analysis results summary tabulated (pre & post) for each proposed outfall or catchment outlet point including runoff rates and volumes for each storm event analyzed above.	☒	☐
3. An Erosion and Sediment Control Plan for all proposed construction activities in accordance with the NH Stormwater Management Manual Volume 3, (December 2008 or current revision; downloadable from the website) (see sheet 6 of the plan set)	☒	☐
4. A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and BMPs including the proposed schedule of inspections and anticipated maintenance (see section H.2 Operations & Maintenance Plan for detailed requirements).	☒	☐
<u>6.6.D</u> - Phased Development: For phased developments, the plans and calculation requirements under this section (6.6) shall apply as though the development of the entire parcel were being proposed in one single application. The review and approval process for phased development applications is provided in section 4.9 of the Lebanon Site Plan Regulations.	n/a ☐	☐

NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE VI OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Granite Engineering, LLC

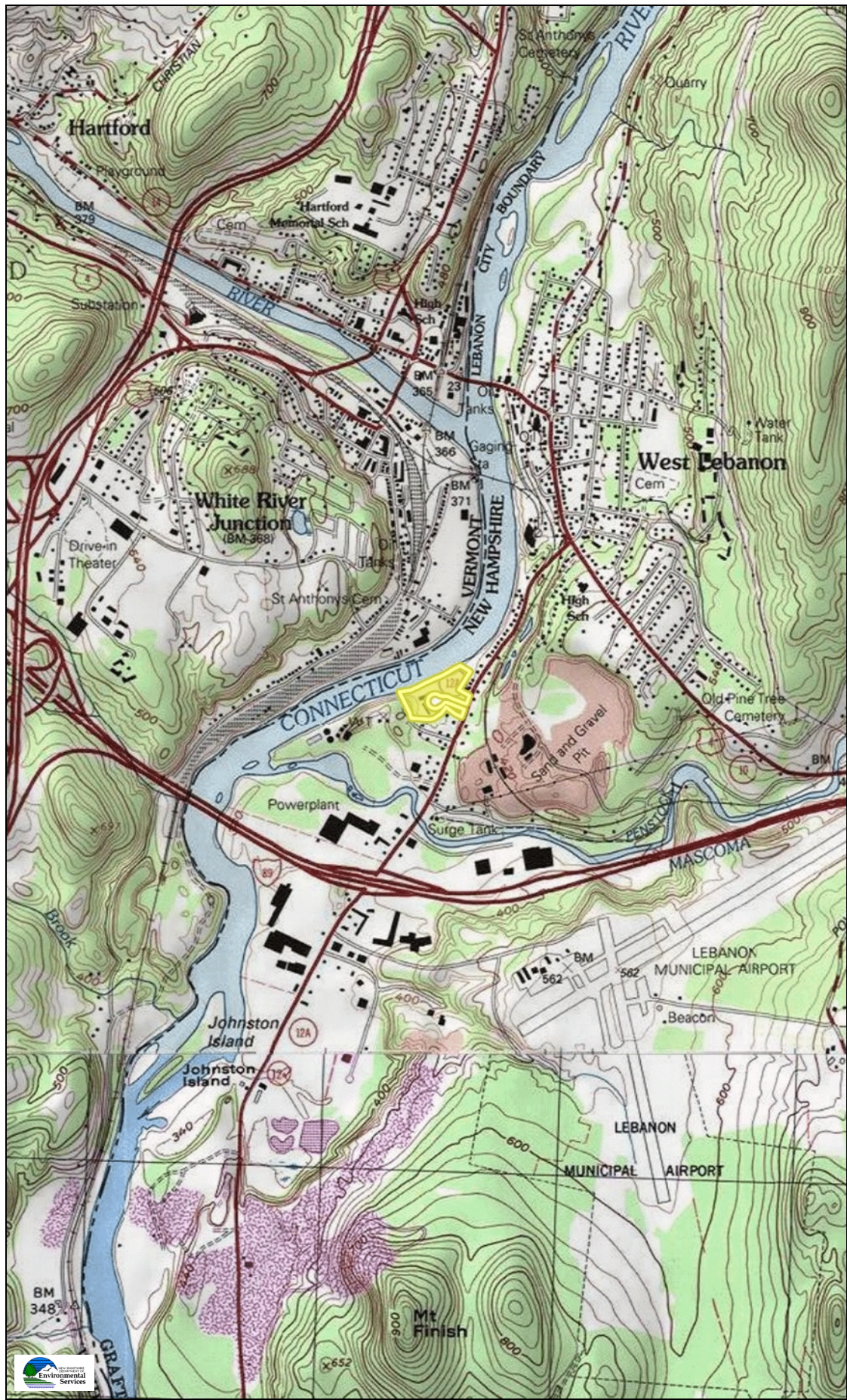
(Last Revised 9/20/2021)

Planning office Use Only:

Date Received ___/___/___ Checklist Complete YES or NO Checked by: _____

2. USGS MAP

USGS Topographic Map



Legend

Map Scale
1: 24,000

© NH DES, <http://des.nh.gov>
Map Generated: 9/25/2024



Notes

3. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

This project proposes the construction of a new accessory office building for the Lebanon Housing Authority's Romano Circle Residences. The project is located at 31 Romano Circle in Lebanon, New Hampshire. The proposed office is 2,235 square feet with 12 additional parking spaces. Access to the property will remain unchanged via Romano Circle. The additional impervious area as a result of this project will be treated by a bio-filtration pond, that will ultimately discharge clean stormwater to the Connecticut River.

B. Existing Site Conditions

Tax Map 101 Lot 20 is approximately 9.5 acres in area. The property is developed with multiple residential buildings for the Lebanon Housing Authority and a few accessory buildings, such as a shed and a garage. The property is adjacent to the Connecticut River, where stormwater from the site is discharged. Stormwater controls on the site include a closed drainage system with catch basins and drainage manholes, a stone drainage area, and porous pavement used in some of the parking areas.

According to the NRCS Site Web Soil Survey, the predominant onsite soil types are Suncook loamy fine sand and Windsor loamy sand.

Please refer to section five (5) of this stormwater report for project specific NRCS soils.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the City of Lebanon Stormwater Regulations and generally accepted engineering practice, the 1-inch, 2-year, 25-year, 50-year, and 100-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater-treatment provisions and all drainage facilities have been designed to be fully functional during a 100-year return frequency storm.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were

estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the “best management practice”, in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning’s “n” value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the “Pre/Post Development Drainage Area Plans” graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In order to evaluate the impact of the proposed development, one (1) Point of Analysis (POA) was analyzed to demonstrate that the peak rates of runoff would not increase from the site improvements.

The primary POA, Link A, is located at the catch basin that conveys the stormwater from the existing building and driveway to the closed drainage system.

Stormwater from these impervious areas enters the closed drainage system and is ultimately discharged to the Connecticut River. Other than sumps within the catch basins, this water is not treated before entering the river.

Pre-development peak rates of discharge are identified in Table 2. Further explanation of the post-condition hydrology will show a net decrease to the point of analysis.

For a more visual description of the information presented in this section, please refer to the attached “Pre-Development Drainage Areas Plan” attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA from the Pre-Development scenario was used in the Post-Development analysis.

Runoff generated from the entire project ultimately flows to the Connecticut River. Stormwater from the roofs and driveways will flow into a proposed bio-filtration pond based on the proposed site grading. This pond will be lined with an impermeable liner and include an underdrain, due to the shallow depth of seasonal high water on the property. This water, while unable to be infiltrated into the surrounding soils, will be properly treated before entering the closed drainage system via underdrain. This bio-filtration pond is represented in the HydroCAD model as BP1.

The proposed changes to the site will include the addition of 3,261-sf of impervious area. The proposed bio-filtration pond will treat 8,272-sf of impervious area, which will mitigate the effects of adding impervious area to the site (Table 3).

This pond will provide adequate storage to offset the peak rates of runoff for the design storms. Overall, the design complies with the requirements to provide treatment of developed areas and control of the peak rate of stormwater runoff and volume. According to the NHDES Stormwater Handbook Volume 2, "Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis", a bioretention system removes 90% of Total Suspended Solids (TSS), 65% of Total Nitrogen (TN), and 65% of Total Phosphorus (TP).

The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate and total storm volume for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1 & 2).

D. Summary:

The subject site complies with the City of Lebanon Stormwater Management Regulations in regards to stormwater treatment and groundwater recharge volume. Proposed stormwater best management practices (BMP) are designed in accordance with the New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design and BMP worksheets provided by the New Hampshire Department of Environmental Services. In addition, stormwater discharges, in terms of peak

rate of runoff and total volume, are consistent with the City of Lebanon Stormwater Regulations. The results are reported below in Table 1 and 2.

TABLE 1: CHANNEL PROTECTION REQUIREMENTS

Site Pre-Development vs. Post-Development (Storm Volume in Acre-Feet)											
Analysis Point	1-In		2-Year		25-Year		50-Year		100-Year		24-hr Rainfall
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
A	.025	.029	.072	.085	.135	.160	.165	.193	.202	.235	Post did not increase by more than 0.1, therefore OK

Channel Protection Requirements based on NHDES Alteration of Terrain Standards have been met (Env-Wq 1507.05). This includes the 2-year 24-hour post development peak flow rate generated from the proposed disturbance shall be equal to or less than the 2-year, 24-hour pre-development peak flow rate and:

- The 2-year, 24-hour post-development storm volume, directed to a channel, downstream receiving water, or wetland has not includes over the pre-development volume by more than 0.1 acre-feet; and
- The 2-year 24-hour post-development peak flow rate directed to a channel, downstream receiving water, or wetland is less than 2 cfs; and
- The area directly discharges into a fourth order or greater river, a pond or lake greater than 10 acres, or tidal water

TABLE 2: PEAK RUNOFF

Site Pre Development vs. Post Development (Peak Discharge Rate in cfs)										
Description	1-inch		2-Year		25-Year		50-Year		100-Year	
24-hr Rainfall	1.00"		2.49"		4.37"		5.11"		5.97"	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	0.48	0.43	1.28	1.21	2.28	1.95	2.67	2.25	3.22	2.61

TABLE 3: IMPERVIOUS AREA TREATMENT

Site Pre Development vs. Post Development (Treated Area)	
Pre-Development Impervious Area (HydroCAD)	16,605-sf
Post-Development Impervious Area (HydroCAD)	19,866-sf
Increase in Impervious Area	+3,261-sf
Post-Development Impervious Area Being Treated	8,272-sf
Effective Impervious Area (EIC)	11,594-sf
Site Post-Development Treated Impervious Area > Increase In Impervious Area, ∴ OK	

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

Temporary erosion and sediment control measures are indicated on the design plans, construction details, general notes and within the drainage report. Although not integral with this stormwater report, due to the size of the proposed development both temporary and permanent erosion control measures will also be specified within the project's Stormwater Pollution Prevention Plan (SWPPP). All erosion control measures specified are designed to reduce or eliminate potential soil migration and water quality degradation, both during and after the construction period.

The following temporary erosion control measures will be implemented;

- Silt Fence and/or Silt Logs
- Erosion Control Blankets on slopes 3:1 and steeper
- Riprap Aprons & Spillway Stabilization
- Turf Establishment - Hydroseeding with mulch and tackifiers
- Stone Check Dams

These temporary erosion control measures are also discussed in the projects. Operation and Maintenance plan contained in the appendices of this report.

In addition to the above-listed erosion control measures, references are made throughout the project documents to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction for additional measures, as necessary.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

Similar to temporary erosion control measures, all permanent erosion control measures are indicated on the design plans, construction details, general notes, drainage report, SWPPP and O & M project documents.

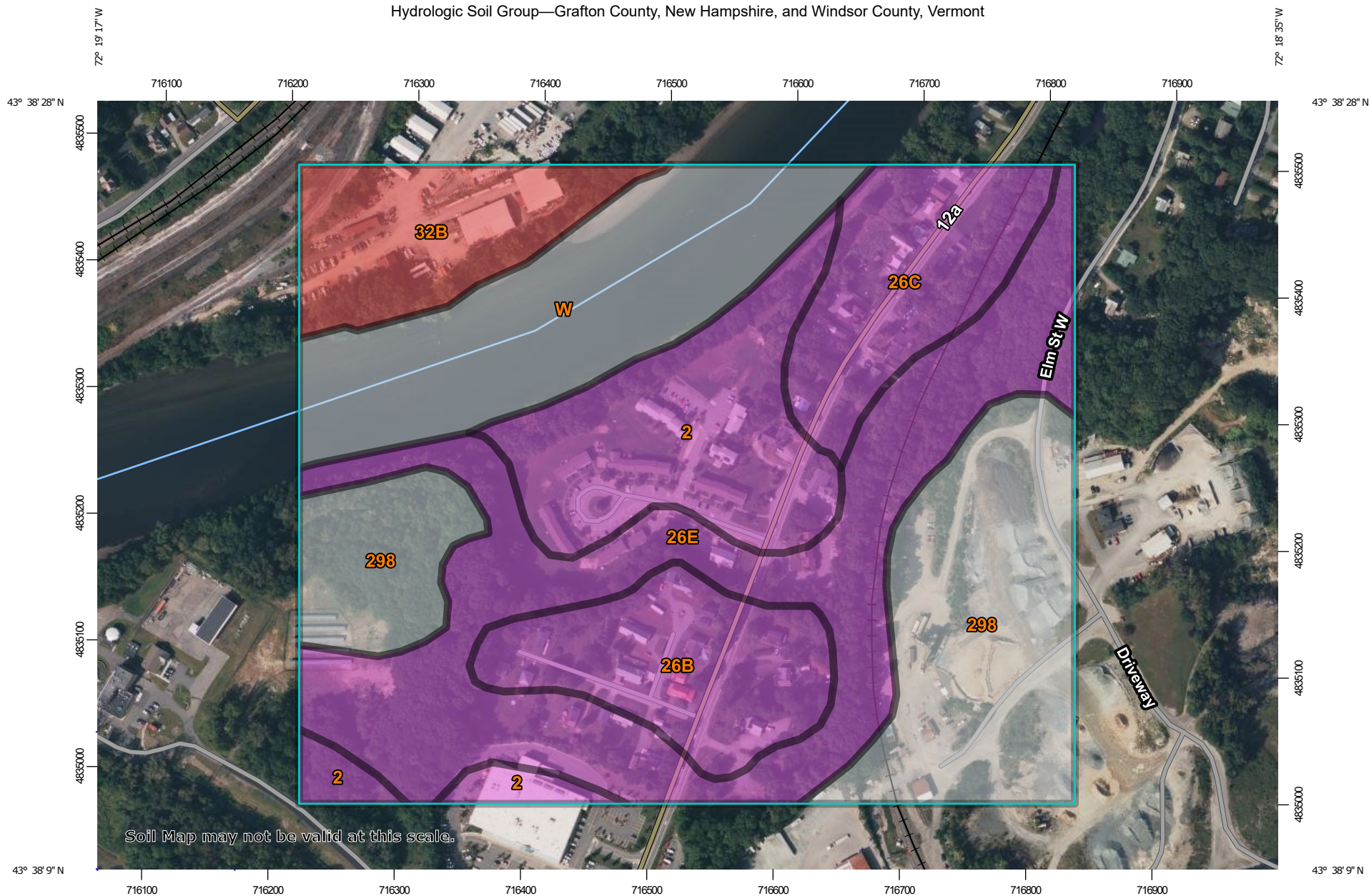
The following permanent erosion control measures will be implemented;

- Bituminous Paved Roadway and parking lots
- Inlet & Outlet Protection - Riprap Stabilization
- Stormwater Basins with multi-stage outlets
- Turf Establishment - Hydroseeding with mulch and tackifiers

Each of the above-mentioned permanent erosion control measures are designed in a project-specific manner within both state and local regulatory compliance standards.

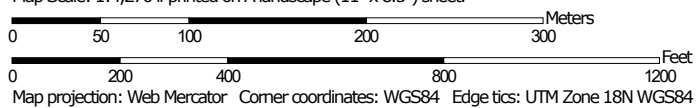
4. WEB SOIL SURVEY

Hydrologic Soil Group—Grafton County, New Hampshire, and Windsor County, Vermont



Soil Map may not be valid at this scale.

Map Scale: 1:4,270 if printed on A landscape (11" x 8.5") sheet.



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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 scales ranging from 1:20,000 to 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: Grafton County, New Hampshire
 Survey Area Data: Version 27, Aug 22, 2023

Soil Survey Area: Windsor County, Vermont
 Survey Area Data: Version 28, Sep 10, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

MAP LEGEND

MAP INFORMATION

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.



Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Suncook loamy fine sand	A	10.8	14.0%
26B	Windsor loamy sand, 3 to 8 percent slopes	A	6.9	9.0%
26C	Windsor loamy sand, 8 to 15 percent slopes	A	6.7	8.8%
26E	Windsor loamy sand, 15 to 60 percent slopes	A	19.5	25.3%
298	Pits, gravel		15.2	19.8%
W	Water		11.6	15.1%
Subtotals for Soil Survey Area			70.8	92.0%
Totals for Area of Interest			76.9	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32B	Urban land-Windsor-Agawam complex, 0 to 8 percent slopes	D	6.1	8.0%
Subtotals for Soil Survey Area			6.1	8.0%
Totals for Area of Interest			76.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

5. BMP WORKSHEETS



FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name:

BIO RETENTION POND BP1

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).				
0.76	ac	A = Area draining to the practice			
0.19	ac	A _I = Impervious area draining to the practice			
0.25	decimal	I = Percent impervious area draining to the practice, in decimal form			
0.27	unitless	R _v = Runoff coefficient = 0.05 + (0.9 x I)			
0.21	ac-in	WQV = 1" x R _v x A			
755	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")			
189	cf	25% x WQV (check calc for sediment forebay volume)			
566	cf	75% x WQV (check calc for surface sand filter volume)			
ROOF		Method of Pretreatment? (not required for clean or roof runoff)			
cf		V _{SED} = Sediment forebay volume, if used for pretreatment			≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:					
sf		A _{SA} = Surface area of the practice			
iph		K _{sat} _{DESIGN} = Design infiltration rate ¹			
		If K _{sat} (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:					
349.51	ft	E _{WQV} = Elevation of WQV (attach stage-storage table)			
0.32	cfs	Q _{WQV} = Discharge at the E _{WQV} (attach stage-discharge table)			
1.31	hours	T _{DRAIN} = Drain time = 2WQV/Q _{WQV}			≤ 72-hrs
	feet	E _{FC} = Elevation of the bottom of the filter course material ²			
	feet	E _{UD} = Invert elevation of the underdrain (UD), if applicable			
	feet	E _{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)			
	feet	E _{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)			
-	feet	D _{FC to UD} = Depth to UD from the bottom of the filter course			≥ 1'
-	feet	D _{FC to ROCK} = Depth to bedrock from the bottom of the filter course			≥ 1'
-	feet	D _{FC to SHWT} = Depth to SHWT from the bottom of the filter course			≥ 1'
349.91	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)			
351.00	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

YES	ac	Drainage Area no larger than 5 ac?	← yes
1,549	cf	V = Volume of storage ³ (attach a stage-storage table)	≥ WQV
24.0	inches	D _{FC} = Filter course thickness	18", or 24" if within GPA
Sheet	10	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	L1	Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A _{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D _{FC} = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil). K_{sat_design} includes factor of safety. 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 structure, 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.

[illegible]

POST-DEVELOPMENT

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Type II 24-hr 50-YR Rainfall=5.11"

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Stage-Area-Storage for Pond BP1: PROP. BIO POND

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
346.00	265	0	346.52	312	56
346.01	266	1	346.53	313	57
346.02	267	2	346.54	314	58
346.03	268	3	346.55	315	59
346.04	269	4	346.56	315	60
346.05	270	5	346.57	316	61
346.06	270	6	346.58	317	62
346.07	271	7	346.59	318	63
346.08	272	8	346.60	319	64
346.09	273	10	346.61	320	65
346.10	274	11	346.62	321	67
346.11	275	12	346.63	322	68
346.12	276	13	346.64	323	69
346.13	277	14	346.65	323	70
346.14	278	15	346.66	324	71
346.15	278	16	346.67	325	72
346.16	279	17	346.68	326	73
346.17	280	18	346.69	327	74
346.18	281	19	346.70	328	75
346.19	282	20	346.71	329	76
346.20	283	21	346.72	330	77
346.21	284	22	346.73	331	78
346.22	285	23	346.74	332	79
346.23	286	24	346.75	333	80
346.24	287	25	346.76	333	81
346.25	288	27	346.77	334	82
346.26	288	28	346.78	335	84
346.27	289	29	346.79	336	85
346.28	290	30	346.80	337	86
346.29	291	31	346.81	338	87
346.30	292	32	346.82	339	88
346.31	293	33	346.83	340	89
346.32	294	34	346.84	341	90
346.33	295	35	346.85	342	91
346.34	296	36	346.86	342	92
346.35	297	37	346.87	343	93
346.36	297	38	346.88	344	94
346.37	298	39	346.89	345	95
346.38	299	41	346.90	346	96
346.39	300	42	346.91	347	97
346.40	301	43	346.92	348	98
346.41	302	44	346.93	349	99
346.42	303	45	346.94	350	100
346.43	304	46	346.95	350	102
346.44	305	47	346.96	351	103
346.45	305	48	346.97	352	104
346.46	306	49	346.98	353	105
346.47	307	50	346.99	354	106
346.48	308	51	347.00	355	107
346.49	309	53	347.01	356	108
346.50	310	54	347.02	357	109
346.51	311	55	347.03	358	110

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Type II 24-hr 50-YR Rainfall=5.11"

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Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
347.04	359	111	347.56	1,147	178
347.05	360	112	347.57	1,148	181
347.06	360	113	347.58	1,150	184
347.07	361	114	347.59	1,151	186
347.08	362	115	347.60	1,152	189
347.09	363	116	347.61	1,153	192
347.10	364	117	347.62	1,154	195
347.11	365	118	347.63	1,156	198
347.12	366	120	347.64	1,157	201
347.13	367	121	347.65	1,158	204
347.14	368	122	347.66	1,159	207
347.15	368	123	347.67	1,160	210
347.16	369	124	347.68	1,162	213
347.17	370	125	347.69	1,163	216
347.18	371	126	347.70	1,164	219
347.19	372	127	347.71	1,165	222
347.20	373	128	347.72	1,166	225
347.21	374	129	347.73	1,168	228
347.22	375	130	347.74	1,169	231
347.23	376	131	347.75	1,170	234
347.24	377	132	347.76	1,171	237
347.25	378	133	347.77	1,172	240
347.26	378	134	347.78	1,174	243
347.27	379	135	347.79	1,175	246
347.28	380	137	347.80	1,176	249
347.29	381	138	347.81	1,177	252
347.30	382	139	347.82	1,178	255
347.31	383	140	347.83	1,180	258
347.32	384	141	347.84	1,181	260
347.33	385	142	347.85	1,182	263
347.34	386	143	347.86	1,183	266
347.35	387	144	347.87	1,184	269
347.36	387	145	347.88	1,186	272
347.37	388	146	347.89	1,187	275
347.38	389	147	347.90	1,188	278
347.39	390	148	347.91	1,189	281
347.40	391	149	347.92	1,190	284
347.41	392	150	347.93	1,192	287
347.42	393	151	347.94	1,193	290
347.43	394	152	347.95	1,194	293
347.44	395	153	347.96	1,195	296
347.45	395	155	347.97	1,196	299
347.46	396	156	347.98	1,198	302
347.47	397	157	347.99	1,199	305
347.48	398	158	348.00	1,200	308
347.49	399	159	348.01	1,201	311
347.50	1,140	160	348.02	1,202	314
347.51	1,141	163	348.03	1,204	317
347.52	1,142	166	348.04	1,205	320
347.53	1,144	169	348.05	1,206	323
347.54	1,145	172	348.06	1,207	326
347.55	1,146	175	348.07	1,208	329

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Type II 24-hr 50-YR Rainfall=5.11"

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Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
348.08	1,210	332	348.60	1,272	485
348.09	1,211	334	348.61	1,273	488
348.10	1,212	337	348.62	1,274	491
348.11	1,213	340	348.63	1,276	494
348.12	1,214	343	348.64	1,277	497
348.13	1,216	346	348.65	1,278	500
348.14	1,217	349	348.66	1,279	503
348.15	1,218	352	348.67	1,280	506
348.16	1,219	355	348.68	1,282	509
348.17	1,220	358	348.69	1,283	512
348.18	1,222	361	348.70	1,284	515
348.19	1,223	364	348.71	1,285	518
348.20	1,224	367	348.72	1,286	521
348.21	1,225	370	348.73	1,288	524
348.22	1,226	373	348.74	1,289	527
348.23	1,228	376	348.75	1,290	530
348.24	1,229	379	348.76	1,291	533
348.25	1,230	382	348.77	1,292	536
348.26	1,231	385	348.78	1,294	539
348.27	1,232	388	348.79	1,295	542
348.28	1,234	391	348.80	1,296	545
348.29	1,235	394	348.81	1,297	548
348.30	1,236	397	348.82	1,298	551
348.31	1,237	400	348.83	1,300	554
348.32	1,238	403	348.84	1,301	556
348.33	1,240	406	348.85	1,302	559
348.34	1,241	408	348.86	1,303	562
348.35	1,242	411	348.87	1,304	565
348.36	1,243	414	348.88	1,306	568
348.37	1,244	417	348.89	1,307	571
348.38	1,246	420	348.90	1,308	574
348.39	1,247	423	348.91	1,309	577
348.40	1,248	426	348.92	1,310	580
348.41	1,249	429	348.93	1,312	583
348.42	1,250	432	348.94	1,313	586
348.43	1,252	435	348.95	1,314	589
348.44	1,253	438	348.96	1,315	592
348.45	1,254	441	348.97	1,316	595
348.46	1,255	444	348.98	1,318	598
348.47	1,256	447	348.99	1,319	601
348.48	1,258	450	349.00	1,320	604
348.49	1,259	453	349.01	1,321	607
348.50	1,260	456	349.02	1,322	610
348.51	1,261	459	349.03	1,324	613
348.52	1,262	462	349.04	1,325	616
348.53	1,264	465	349.05	1,326	619
348.54	1,265	468	349.06	1,327	622
348.55	1,266	471	349.07	1,328	625
348.56	1,267	474	349.08	1,330	628
348.57	1,268	477	349.09	1,331	630
348.58	1,270	480	349.10	1,332	633
348.59	1,271	482	349.11	1,333	636

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Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
349.12	1,334	639	349.64	1,397	817
349.13	1,336	642	349.65	1,398	822
349.14	1,337	645	349.66	1,399	827
349.15	1,338	648	349.67	1,400	831
349.16	1,339	651	349.68	1,402	836
349.17	1,340	654	349.69	1,403	841
349.18	1,342	657	349.70	1,404	846
349.19	1,343	660	349.71	1,405	851
349.20	1,344	663	349.72	1,406	856
349.21	1,345	666	349.73	1,408	861
349.22	1,346	669	349.74	1,409	866
349.23	1,348	672	349.75	1,410	871
349.24	1,349	675	349.76	1,411	876
349.25	1,350	678	349.77	1,412	881
349.26	1,351	681	349.78	1,414	886
349.27	1,352	684	349.79	1,415	891
349.28	1,354	687	349.80	1,416	896
349.29	1,355	690	349.81	1,417	901
349.30	1,356	693	349.82	1,418	906
349.31	1,357	696	349.83	1,420	911
349.32	1,358	699	349.84	1,421	916
349.33	1,360	702	349.85	1,422	921
349.34	1,361	704	349.86	1,423	926
349.35	1,362	707	349.87	1,424	931
349.36	1,363	710	349.88	1,426	937
349.37	1,364	713	349.89	1,427	942
349.38	1,366	716	349.90	1,428	947
349.39	1,367	719	349.91	1,429	952
349.40	1,368	722	349.92	1,430	958
349.41	1,369	725	349.93	1,432	963
349.42	1,370	728	349.94	1,433	968
349.43	1,372	731	349.95	1,434	973
349.44	1,373	734	349.96	1,435	979
349.45	1,374	737	349.97	1,436	984
349.46	1,375	740	349.98	1,438	989
349.47	1,376	743	349.99	1,439	995
349.48	1,378	746	350.00	1,440	1,000
349.49	1,379	749	350.01	1,441	1,006
349.50	1,380	752	350.02	1,442	1,011
349.51	1,381	756	350.03	1,444	1,017
349.52	1,382	761	350.04	1,445	1,022
349.53	1,384	766	350.05	1,446	1,028
349.54	1,385	770	350.06	1,447	1,033
349.55	1,386	775	350.07	1,448	1,039
349.56	1,387	779	350.08	1,450	1,044
349.57	1,388	784	350.09	1,451	1,050
349.58	1,390	789	350.10	1,452	1,055
349.59	1,391	793	350.11	1,453	1,061
349.60	1,392	798	350.12	1,454	1,067
349.61	1,393	803	350.13	1,456	1,072
349.62	1,394	808	350.14	1,457	1,078
349.63	1,396	812	350.15	1,458	1,084

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Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Wetted (sq-ft)	Storage (cubic-feet)
350.16	1,459	1,089	350.68	1,522	1,411
350.17	1,460	1,095	350.69	1,523	1,418
350.18	1,462	1,101	350.70	1,524	1,424
350.19	1,463	1,106	350.71	1,525	1,431
350.20	1,464	1,112	350.72	1,526	1,438
350.21	1,465	1,118	350.73	1,528	1,445
350.22	1,466	1,124	350.74	1,529	1,452
350.23	1,468	1,130	350.75	1,530	1,458
350.24	1,469	1,135	350.76	1,531	1,465
350.25	1,470	1,141	350.77	1,532	1,472
350.26	1,471	1,147	350.78	1,534	1,479
350.27	1,472	1,153	350.79	1,535	1,486
350.28	1,474	1,159	350.80	1,536	1,493
350.29	1,475	1,165	350.81	1,537	1,500
350.30	1,476	1,171	350.82	1,538	1,507
350.31	1,477	1,177	350.83	1,540	1,514
350.32	1,478	1,183	350.84	1,541	1,521
350.33	1,480	1,189	350.85	1,542	1,528
350.34	1,481	1,195	350.86	1,543	1,535
350.35	1,482	1,201	350.87	1,544	1,542
350.36	1,483	1,207	350.88	1,546	1,549
350.37	1,484	1,213	350.89	1,547	1,556
350.38	1,486	1,219	350.90	1,548	1,564
350.39	1,487	1,225	350.91	1,549	1,571
350.40	1,488	1,231	350.92	1,550	1,578
350.41	1,489	1,237	350.93	1,552	1,585
350.42	1,490	1,244	350.94	1,553	1,592
350.43	1,492	1,250	350.95	1,554	1,600
350.44	1,493	1,256	350.96	1,555	1,607
350.45	1,494	1,262	350.97	1,556	1,614
350.46	1,495	1,268	350.98	1,558	1,622
350.47	1,496	1,275	350.99	1,559	1,629
350.48	1,498	1,281	351.00	1,560	1,636
350.49	1,499	1,287			
350.50	1,500	1,294			
350.51	1,501	1,300			
350.52	1,502	1,306			
350.53	1,504	1,313			
350.54	1,505	1,319			
350.55	1,506	1,326			
350.56	1,507	1,332			
350.57	1,508	1,338			
350.58	1,510	1,345			
350.59	1,511	1,351			
350.60	1,512	1,358			
350.61	1,513	1,365			
350.62	1,514	1,371			
350.63	1,516	1,378			
350.64	1,517	1,384			
350.65	1,518	1,391			
350.66	1,519	1,398			
350.67	1,520	1,404			

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Stage-Discharge for Pond BP1: PROP. BIO POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
346.00	0.00	346.52	0.06	347.04	0.08	347.56	0.27
346.01	0.00	346.53	0.07	347.05	0.08	347.57	0.27
346.02	0.00	346.54	0.07	347.06	0.08	347.58	0.27
346.03	0.00	346.55	0.07	347.07	0.08	347.59	0.27
346.04	0.00	346.56	0.07	347.08	0.08	347.60	0.27
346.05	0.00	346.57	0.07	347.09	0.08	347.61	0.27
346.06	0.00	346.58	0.07	347.10	0.08	347.62	0.27
346.07	0.00	346.59	0.07	347.11	0.08	347.63	0.27
346.08	0.00	346.60	0.07	347.12	0.08	347.64	0.27
346.09	0.00	346.61	0.07	347.13	0.08	347.65	0.27
346.10	0.00	346.62	0.07	347.14	0.09	347.66	0.27
346.11	0.00	346.63	0.07	347.15	0.09	347.67	0.27
346.12	0.00	346.64	0.07	347.16	0.09	347.68	0.27
346.13	0.00	346.65	0.07	347.17	0.09	347.69	0.27
346.14	0.00	346.66	0.08	347.18	0.09	347.70	0.27
346.15	0.00	346.67	0.08	347.19	0.09	347.71	0.27
346.16	0.00	346.68	0.08	347.20	0.09	347.72	0.27
346.17	0.00	346.69	0.08	347.21	0.09	347.73	0.27
346.18	0.00	346.70	0.08	347.22	0.09	347.74	0.27
346.19	0.00	346.71	0.08	347.23	0.09	347.75	0.27
346.20	0.00	346.72	0.08	347.24	0.09	347.76	0.27
346.21	0.00	346.73	0.08	347.25	0.09	347.77	0.27
346.22	0.00	346.74	0.08	347.26	0.09	347.78	0.27
346.23	0.00	346.75	0.08	347.27	0.09	347.79	0.27
346.24	0.00	346.76	0.08	347.28	0.09	347.80	0.27
346.25	0.00	346.77	0.08	347.29	0.09	347.81	0.27
346.26	0.00	346.78	0.08	347.30	0.09	347.82	0.27
346.27	0.00	346.79	0.08	347.31	0.09	347.83	0.27
346.28	0.00	346.80	0.08	347.32	0.09	347.84	0.27
346.29	0.00	346.81	0.08	347.33	0.09	347.85	0.27
346.30	0.00	346.82	0.08	347.34	0.09	347.86	0.27
346.31	0.00	346.83	0.08	347.35	0.09	347.87	0.27
346.32	0.00	346.84	0.08	347.36	0.09	347.88	0.27
346.33	0.00	346.85	0.08	347.37	0.09	347.89	0.27
346.34	0.01	346.86	0.08	347.38	0.09	347.90	0.27
346.35	0.01	346.87	0.08	347.39	0.09	347.91	0.28
346.36	0.01	346.88	0.08	347.40	0.09	347.92	0.28
346.37	0.01	346.89	0.08	347.41	0.09	347.93	0.28
346.38	0.01	346.90	0.08	347.42	0.09	347.94	0.28
346.39	0.02	346.91	0.08	347.43	0.09	347.95	0.28
346.40	0.02	346.92	0.08	347.44	0.09	347.96	0.28
346.41	0.02	346.93	0.08	347.45	0.09	347.97	0.28
346.42	0.02	346.94	0.08	347.46	0.09	347.98	0.28
346.43	0.03	346.95	0.08	347.47	0.09	347.99	0.28
346.44	0.03	346.96	0.08	347.48	0.09	348.00	0.28
346.45	0.03	346.97	0.08	347.49	0.09	348.01	0.28
346.46	0.04	346.98	0.08	347.50	0.26	348.02	0.28
346.47	0.04	346.99	0.08	347.51	0.26	348.03	0.28
346.48	0.04	347.00	0.08	347.52	0.26	348.04	0.28
346.49	0.05	347.01	0.08	347.53	0.26	348.05	0.28
346.50	0.05	347.02	0.08	347.54	0.27	348.06	0.28
346.51	0.06	347.03	0.08	347.55	0.27	348.07	0.28

POST-DEVELOPMENT

Prepared by Granite Engineering, LLC

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Type II 24-hr 50-YR Rainfall=5.11"

Printed 10/9/2024

Stage-Discharge for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
348.08	0.28	348.60	0.29	349.12	0.31	349.64	0.32
348.09	0.28	348.61	0.29	349.13	0.31	349.65	0.32
348.10	0.28	348.62	0.30	349.14	0.31	349.66	0.32
348.11	0.28	348.63	0.30	349.15	0.31	349.67	0.32
348.12	0.28	348.64	0.30	349.16	0.31	349.68	0.32
348.13	0.28	348.65	0.30	349.17	0.31	349.69	0.32
348.14	0.28	348.66	0.30	349.18	0.31	349.70	0.32
348.15	0.28	348.67	0.30	349.19	0.31	349.71	0.33
348.16	0.28	348.68	0.30	349.20	0.31	349.72	0.33
348.17	0.28	348.69	0.30	349.21	0.31	349.73	0.33
348.18	0.28	348.70	0.30	349.22	0.31	349.74	0.33
348.19	0.28	348.71	0.30	349.23	0.31	349.75	0.33
348.20	0.28	348.72	0.30	349.24	0.31	349.76	0.33
348.21	0.28	348.73	0.30	349.25	0.31	349.77	0.33
348.22	0.28	348.74	0.30	349.26	0.31	349.78	0.33
348.23	0.28	348.75	0.30	349.27	0.31	349.79	0.33
348.24	0.28	348.76	0.30	349.28	0.31	349.80	0.33
348.25	0.28	348.77	0.30	349.29	0.31	349.81	0.33
348.26	0.28	348.78	0.30	349.30	0.31	349.82	0.33
348.27	0.29	348.79	0.30	349.31	0.31	349.83	0.33
348.28	0.29	348.80	0.30	349.32	0.31	349.84	0.33
348.29	0.29	348.81	0.30	349.33	0.31	349.85	0.33
348.30	0.29	348.82	0.30	349.34	0.31	349.86	0.33
348.31	0.29	348.83	0.30	349.35	0.32	349.87	0.33
348.32	0.29	348.84	0.30	349.36	0.32	349.88	0.33
348.33	0.29	348.85	0.30	349.37	0.32	349.89	0.33
348.34	0.29	348.86	0.30	349.38	0.32	349.90	0.33
348.35	0.29	348.87	0.30	349.39	0.32	349.91	0.33
348.36	0.29	348.88	0.30	349.40	0.32	349.92	0.33
348.37	0.29	348.89	0.30	349.41	0.32	349.93	0.33
348.38	0.29	348.90	0.30	349.42	0.32	349.94	0.33
348.39	0.29	348.91	0.30	349.43	0.32	349.95	0.33
348.40	0.29	348.92	0.30	349.44	0.32	349.96	0.33
348.41	0.29	348.93	0.30	349.45	0.32	349.97	0.33
348.42	0.29	348.94	0.30	349.46	0.32	349.98	0.33
348.43	0.29	348.95	0.30	349.47	0.32	349.99	0.33
348.44	0.29	348.96	0.30	349.48	0.32	350.00	0.33
348.45	0.29	348.97	0.30	349.49	0.32	350.01	0.33
348.46	0.29	348.98	0.31	349.50	0.32	350.02	0.33
348.47	0.29	348.99	0.31	349.51	0.32	350.03	0.33
348.48	0.29	349.00	0.31	349.52	0.32	350.04	0.33
348.49	0.29	349.01	0.31	349.53	0.32	350.05	0.33
348.50	0.29	349.02	0.31	349.54	0.32	350.06	0.34
348.51	0.29	349.03	0.31	349.55	0.32	350.07	0.34
348.52	0.29	349.04	0.31	349.56	0.32	350.08	0.34
348.53	0.29	349.05	0.31	349.57	0.32	350.09	0.34
348.54	0.29	349.06	0.31	349.58	0.32	350.10	0.34
348.55	0.29	349.07	0.31	349.59	0.32	350.11	0.34
348.56	0.29	349.08	0.31	349.60	0.32	350.12	0.34
348.57	0.29	349.09	0.31	349.61	0.32	350.13	0.34
348.58	0.29	349.10	0.31	349.62	0.32	350.14	0.34
348.59	0.29	349.11	0.31	349.63	0.32	350.15	0.34

POST-DEVELOPMENT

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Type II 24-hr 50-YR Rainfall=5.11"

Printed 10/9/2024

Stage-Discharge for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
350.16	0.34	350.68	0.35
350.17	0.34	350.69	0.35
350.18	0.34	350.70	0.35
350.19	0.34	350.71	0.35
350.20	0.34	350.72	0.35
350.21	0.34	350.73	0.35
350.22	0.34	350.74	0.35
350.23	0.34	350.75	0.35
350.24	0.34	350.76	0.35
350.25	0.34	350.77	0.35
350.26	0.34	350.78	0.35
350.27	0.34	350.79	0.36
350.28	0.34	350.80	0.36
350.29	0.34	350.81	0.36
350.30	0.34	350.82	0.36
350.31	0.34	350.83	0.36
350.32	0.34	350.84	0.36
350.33	0.34	350.85	0.36
350.34	0.34	350.86	0.36
350.35	0.34	350.87	0.36
350.36	0.34	350.88	0.36
350.37	0.34	350.89	0.37
350.38	0.34	350.90	0.39
350.39	0.34	350.91	0.41
350.40	0.34	350.92	0.44
350.41	0.34	350.93	0.47
350.42	0.35	350.94	0.51
350.43	0.35	350.95	0.55
350.44	0.35	350.96	0.59
350.45	0.35	350.97	0.64
350.46	0.35	350.98	0.69
350.47	0.35	350.99	0.74
350.48	0.35	351.00	0.79
350.49	0.35		
350.50	0.35		
350.51	0.35		
350.52	0.35		
350.53	0.35		
350.54	0.35		
350.55	0.35		
350.56	0.35		
350.57	0.35		
350.58	0.35		
350.59	0.35		
350.60	0.35		
350.61	0.35		
350.62	0.35		
350.63	0.35		
350.64	0.35		
350.65	0.35		
350.66	0.35		
350.67	0.35		

6. EXTREME PRECIPITATION TABLES

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	43.639 degrees North
Longitude	72.316 degrees West
Elevation	100 feet
Date/Time	Wed Sep 04 2024 14:53:24 GMT-0400 (Eastern Daylight Time)

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	1.01	1yr	0.70	0.93	1.16	1.43	1.75	2.15	2.41	1yr	1.90	2.32	2.68	3.28	3.77	1yr
2yr	0.31	0.47	0.59	0.77	0.97	1.21	2yr	0.84	1.10	1.39	1.69	2.06	2.49	2.79	2yr	2.20	2.69	3.13	3.74	4.28	2yr
5yr	0.36	0.56	0.71	0.95	1.21	1.52	5yr	1.05	1.39	1.74	2.12	2.55	3.05	3.45	5yr	2.70	3.32	3.84	4.51	5.13	5yr
10yr	0.41	0.64	0.81	1.10	1.43	1.81	10yr	1.24	1.65	2.07	2.52	3.01	3.56	4.05	10yr	3.15	3.90	4.49	5.20	5.89	10yr
25yr	0.48	0.77	0.98	1.35	1.79	2.27	25yr	1.55	2.08	2.60	3.15	3.74	4.37	5.01	25yr	3.87	4.82	5.51	6.28	7.08	25yr
50yr	0.55	0.88	1.13	1.58	2.13	2.70	50yr	1.84	2.48	3.10	3.73	4.40	5.11	5.88	50yr	4.52	5.65	6.45	7.24	8.13	50yr
100yr	0.62	1.01	1.30	1.85	2.52	3.22	100yr	2.18	2.96	3.69	4.43	5.18	5.97	6.91	100yr	5.29	6.64	7.54	8.36	9.35	100yr
200yr	0.72	1.17	1.52	2.17	2.99	3.83	200yr	2.58	3.53	4.39	5.24	6.11	6.98	8.12	200yr	6.18	7.81	8.82	9.65	10.75	200yr
500yr	0.86	1.42	1.85	2.68	3.76	4.82	500yr	3.24	4.45	5.52	6.56	7.58	8.59	10.06	500yr	7.60	9.67	10.86	11.68	12.93	500yr

Lower Confidence Limits

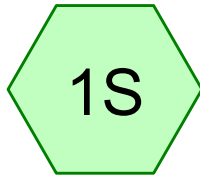
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.61	0.75	0.83	1yr	0.64	0.81	0.96	1.23	1.54	1.81	2.09	1yr	1.60	2.01	2.36	2.86	3.50	1yr
2yr	0.29	0.46	0.56	0.76	0.94	1.10	2yr	0.81	1.07	1.24	1.61	2.05	2.44	2.71	2yr	2.16	2.61	3.07	3.66	4.20	2yr
5yr	0.34	0.52	0.64	0.88	1.12	1.31	5yr	0.97	1.28	1.48	1.89	2.39	2.84	3.24	5yr	2.52	3.11	3.60	4.23	4.84	5yr
10yr	0.37	0.58	0.71	1.00	1.29	1.49	10yr	1.11	1.46	1.69	2.13	2.67	3.19	3.70	10yr	2.83	3.55	4.04	4.71	5.37	10yr
25yr	0.43	0.66	0.82	1.17	1.54	1.76	25yr	1.33	1.72	2.00	2.48	3.08	3.73	4.38	25yr	3.30	4.22	4.71	5.40	6.16	25yr
50yr	0.48	0.72	0.90	1.29	1.74	2.01	50yr	1.50	1.96	2.27	2.79	3.42	4.18	4.99	50yr	3.70	4.80	5.30	5.98	6.83	50yr
100yr	0.53	0.81	1.01	1.46	2.00	2.27	100yr	1.73	2.22	2.59	3.12	3.81	4.70	5.68	100yr	4.16	5.46	5.95	6.64	7.55	100yr
200yr	0.60	0.90	1.13	1.64	2.29	2.58	200yr	1.98	2.52	2.94	3.51	4.27	5.27	6.49	200yr	4.67	6.24	6.70	7.36	8.37	200yr
500yr	0.69	1.03	1.33	1.93	2.75	3.04	500yr	2.37	2.97	3.49	4.08	4.95	6.13	7.75	500yr	5.43	7.45	7.85	8.41	9.59	500yr

Upper Confidence Limits

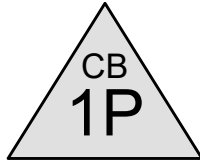
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.53	0.72	0.88	1.03	1yr	0.76	1.00	1.17	1.52	1.89	2.33	2.64	1yr	2.06	2.54	2.88	3.50	4.00	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.18	2yr	0.87	1.16	1.34	1.72	2.17	2.57	2.88	2yr	2.27	2.77	3.25	3.87	4.41	2yr
5yr	0.39	0.61	0.75	1.03	1.32	1.54	5yr	1.14	1.50	1.72	2.16	2.71	3.26	3.67	5yr	2.89	3.53	4.09	4.77	5.45	5yr
10yr	0.47	0.72	0.90	1.25	1.62	1.89	10yr	1.40	1.85	2.10	2.61	3.22	3.91	4.45	10yr	3.46	4.28	4.91	5.63	6.41	10yr
25yr	0.60	0.91	1.13	1.62	2.13	2.51	25yr	1.84	2.45	2.77	3.34	4.05	5.00	5.76	25yr	4.42	5.54	6.25	7.04	7.95	25yr
50yr	0.72	1.09	1.36	1.95	2.63	3.10	50yr	2.27	3.03	3.41	4.03	4.82	6.01	7.00	50yr	5.32	6.73	7.49	8.33	9.39	50yr
100yr	0.86	1.31	1.64	2.36	3.24	3.83	100yr	2.80	3.75	4.21	4.87	5.75	7.24	8.50	100yr	6.41	8.18	9.00	9.87	11.09	100yr
200yr	1.04	1.56	1.98	2.86	4.00	4.75	200yr	3.45	4.64	5.19	5.89	6.85	8.73	10.33	200yr	7.72	9.93	10.81	11.72	13.09	200yr
500yr	1.34	1.99	2.56	3.71	5.28	6.31	500yr	4.56	6.17	6.86	7.56	8.64	11.19	13.33	500yr	9.91	12.82	13.78	14.72	16.33	500yr



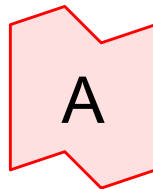
7. HYDROCAD DRAINAGE ANALYSIS



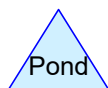
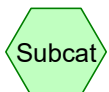
SITE



EX. CATCH BASIN



POA



Routing Diagram for PRE-DEVELOPMENT

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PRE-DEVELOPMENT

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-IN	Type II 24-hr		Default	24.00	1	1.00	2
2	2-YR	Type II 24-hr		Default	24.00	1	2.49	2
3	25-YR	Type II 24-hr		Default	24.00	1	4.37	2
4	50-YR	Type II 24-hr		Default	24.00	1	5.11	2
5	100-YR	Type II 24-hr		Default	24.00	1	5.97	2

PRE-DEVELOPMENT

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.517	39	>75% Grass cover, Good, HSG A (1S)
0.381	98	Paved parking and roofs (1S)
0.264	30	Woods, Good, HSG A (1S)
1.161	56	TOTAL AREA

PRE-DEVELOPMENT

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.780	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.381	Other	1S
1.161		TOTAL AREA

PRE-DEVELOPMENT

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Type II 24-hr 1-IN Rainfall=1.00"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=50,594 sf 32.82% Impervious Runoff Depth=0.26"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=0.48 cfs 0.025 af

Pond 1P: EX. CATCH BASIN

Peak Elev=345.59' Inflow=0.48 cfs 0.025 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 ' / ' Outflow=0.48 cfs 0.025 af

Link A: POA

Inflow=0.48 cfs 0.025 af
Primary=0.48 cfs 0.025 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.025 af Average Runoff Depth = 0.26"
67.18% Pervious = 0.780 ac 32.82% Impervious = 0.381 ac

PRE-DEVELOPMENT

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Type II 24-hr 2-YR Rainfall=2.49"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=50,594 sf 32.82% Impervious Runoff Depth=0.74"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=1.28 cfs 0.072 af

Pond 1P: EX. CATCH BASIN

Peak Elev=345.86' Inflow=1.28 cfs 0.072 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 ' / ' Outflow=1.28 cfs 0.072 af

Link A: POA

Inflow=1.28 cfs 0.072 af
Primary=1.28 cfs 0.072 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.072 af Average Runoff Depth = 0.74"
67.18% Pervious = 0.780 ac 32.82% Impervious = 0.381 ac

PRE-DEVELOPMENT

Type II 24-hr 25-YR Rainfall=4.37"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=50,594 sf 32.82% Impervious Runoff Depth=1.40"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.28 cfs 0.135 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.11' Inflow=2.28 cfs 0.135 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 ' Outflow=2.28 cfs 0.135 af

Link A: POA

Inflow=2.28 cfs 0.135 af
Primary=2.28 cfs 0.135 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.135 af Average Runoff Depth = 1.40"
67.18% Pervious = 0.780 ac 32.82% Impervious = 0.381 ac

PRE-DEVELOPMENT

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Type II 24-hr 50-YR Rainfall=5.11"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=50,594 sf 32.82% Impervious Runoff Depth=1.70"

Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.67 cfs 0.165 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.21' Inflow=2.67 cfs 0.165 af

15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.67 cfs 0.165 af

Link A: POA

Inflow=2.67 cfs 0.165 af

Primary=2.67 cfs 0.165 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.165 af Average Runoff Depth = 1.70"

67.18% Pervious = 0.780 ac 32.82% Impervious = 0.381 ac

PRE-DEVELOPMENT

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Type II 24-hr 100-YR Rainfall=5.97"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=50,594 sf 32.82% Impervious Runoff Depth=2.09"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=3.22 cfs 0.202 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.33' Inflow=3.22 cfs 0.202 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=3.22 cfs 0.202 af

Link A: POA

Inflow=3.22 cfs 0.202 af
Primary=3.22 cfs 0.202 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.202 af Average Runoff Depth = 2.09"
67.18% Pervious = 0.780 ac 32.82% Impervious = 0.381 ac

PRE-DEVELOPMENT

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Type II 24-hr 25-YR Rainfall=4.37"

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Summary for Subcatchment 1S: SITE

Runoff = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af, Depth= 1.40"
 Routed to Pond 1P : EX. CATCH BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
 Type II 24-hr 25-YR Rainfall=4.37"

Area (sf)	CN	Description
22,507	39	>75% Grass cover, Good, HSG A
* 16,605	98	Paved parking and roofs
11,482	30	Woods, Good, HSG A
50,594		Weighted Average
33,989		67.18% Pervious Area
16,605		32.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0400	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 2.49"
0.3	60	0.3600	3.00		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
2.0	110	0.0170	0.91		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

Summary for Pond 1P: EX. CATCH BASIN

Inflow Area = 1.161 ac, 32.82% Impervious, Inflow Depth = 1.40" for 25-YR event
 Inflow = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af
 Outflow = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af
 Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 3
 Peak Elev= 346.11' @ 11.98 hrs
 Flood Elev= 349.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.20'	15.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.20' / 345.10' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.28 cfs @ 11.98 hrs HW=346.11' TW=0.00' (Dynamic Tailwater)
 ↑ **1=Culvert** (Barrel Controls 2.28 cfs @ 3.31 fps)

PRE-DEVELOPMENT

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Type II 24-hr 25-YR Rainfall=4.37"

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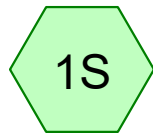
Summary for Link A: POA

Inflow Area = 1.161 ac, 32.82% Impervious, Inflow Depth = 1.40" for 25-YR event

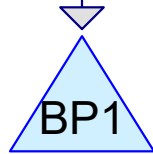
Inflow = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af

Primary = 2.28 cfs @ 11.98 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.0 min

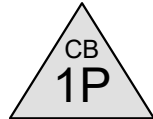
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs



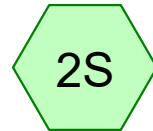
SITE



PROP. BIO POND



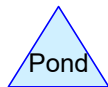
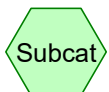
EX. CATCH BASIN



SITE



POA



Routing Diagram for POST-DEVELOPMENT

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-IN	Type II 24-hr		Default	24.00	1	1.00	2
2	2-YR	Type II 24-hr		Default	24.00	1	2.49	2
3	5-YR	Type II 24-hr		Default	24.00	1	3.56	2
4	50-YR	Type II 24-hr		Default	24.00	1	5.11	2
5	100-YR	Type II 24-hr		Default	24.00	1	5.97	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.442	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.456	98	Paved parking and roofs (1S, 2S)
0.264	30	Woods, Good, HSG A (1S)
1.161	60	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.705	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.456	Other	1S, 2S
1.161		TOTAL AREA

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Type II 24-hr 1-IN Rainfall=1.00"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=0.20"

Tc=6.0 min CN=WQ Runoff=0.25 cfs 0.013 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=0.52"

Tc=6.0 min CN=WQ Runoff=0.35 cfs 0.018 af

Pond 1P: EX. CATCH BASIN

Peak Elev=345.57' Inflow=0.43 cfs 0.029 af

15.0" Round Culvert n=0.013 L=20.0' S=0.0050 ' / ' Outflow=0.43 cfs 0.029 af

Pond BP1: PROP. BIO POND

Peak Elev=347.45' Storage=154 cf Inflow=0.25 cfs 0.013 af

Outflow=0.09 cfs 0.012 af

Link A: POA

Inflow=0.43 cfs 0.029 af

Primary=0.43 cfs 0.029 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.030 af Average Runoff Depth = 0.31"

60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

Type II 24-hr 2-YR Rainfall=2.49"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=0.57"

Tc=6.0 min CN=WQ Runoff=0.66 cfs 0.036 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=1.49"

Tc=6.0 min CN=WQ Runoff=0.93 cfs 0.050 af

Pond 1P: EX. CATCH BASIN

Peak Elev=345.83' Inflow=1.21 cfs 0.085 af

15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.21 cfs 0.085 af

Pond BP1: PROP. BIO POND

Peak Elev=348.18' Storage=362 cf Inflow=0.66 cfs 0.036 af

Outflow=0.28 cfs 0.035 af

Link A: POA

Inflow=1.21 cfs 0.085 af

Primary=1.21 cfs 0.085 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.086 af Average Runoff Depth = 0.89"
60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

Type II 24-hr 5-YR Rainfall=3.56"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=0.84"
Tc=6.0 min CN=WQ Runoff=0.96 cfs 0.053 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=2.20"
Tc=6.0 min CN=WQ Runoff=1.34 cfs 0.074 af

Pond 1P: EX. CATCH BASIN

Peak Elev=345.95' Inflow=1.63 cfs 0.126 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.63 cfs 0.126 af

Pond BP1: PROP. BIO POND

Peak Elev=348.92' Storage=581 cf Inflow=0.96 cfs 0.053 af
Outflow=0.30 cfs 0.052 af

Link A: POA

Inflow=1.63 cfs 0.126 af
Primary=1.63 cfs 0.126 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.127 af Average Runoff Depth = 1.31"
60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

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Type II 24-hr 50-YR Rainfall=5.11"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=1.31"

Tc=6.0 min CN=WQ Runoff=1.38 cfs 0.083 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=3.29"

Tc=6.0 min CN=WQ Runoff=1.94 cfs 0.111 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.11' Inflow=2.25 cfs 0.193 af

15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.25 cfs 0.193 af

Pond BP1: PROP. BIO POND

Peak Elev=349.91' Storage=950 cf Inflow=1.38 cfs 0.083 af

Outflow=0.33 cfs 0.082 af

Link A: POA

Inflow=2.25 cfs 0.193 af

Primary=2.25 cfs 0.193 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.194 af Average Runoff Depth = 2.00"
60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

Type II 24-hr 100-YR Rainfall=5.97"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=1.64"
Tc=6.0 min CN=WQ Runoff=1.67 cfs 0.103 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=3.93"
Tc=6.0 min CN=WQ Runoff=2.29 cfs 0.132 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.19' Inflow=2.61 cfs 0.235 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 ' / ' Outflow=2.61 cfs 0.235 af

Pond BP1: PROP. BIO POND

Peak Elev=350.36' Storage=1,208 cf Inflow=1.67 cfs 0.103 af
Outflow=0.34 cfs 0.103 af

Link A: POA

Inflow=2.61 cfs 0.235 af
Primary=2.61 cfs 0.235 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.235 af Average Runoff Depth = 2.43"
60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-YR	Type II 24-hr		Default	24.00	1	4.37	2

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Type II 24-hr 25-YR Rainfall=4.37"

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Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE

Runoff Area=33,004 sf 25.06% Impervious Runoff Depth=1.07"

Tc=6.0 min CN=WQ Runoff=1.18 cfs 0.068 af

Subcatchment2S: SITE

Runoff Area=17,590 sf 65.91% Impervious Runoff Depth=2.76"

Tc=6.0 min CN=WQ Runoff=1.65 cfs 0.093 af

Pond 1P: EX. CATCH BASIN

Peak Elev=346.03' Inflow=1.95 cfs 0.160 af

15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=1.95 cfs 0.160 af

Pond BP1: PROP. BIO POND

Peak Elev=349.53' Storage=764 cf Inflow=1.18 cfs 0.068 af

Outflow=0.32 cfs 0.067 af

Link A: POA

Inflow=1.95 cfs 0.160 af

Primary=1.95 cfs 0.160 af

Total Runoff Area = 1.161 ac Runoff Volume = 0.160 af Average Runoff Depth = 1.66"
60.73% Pervious = 0.705 ac 39.27% Impervious = 0.456 ac

POST-DEVELOPMENT

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Type II 24-hr 25-YR Rainfall=4.37"

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Summary for Subcatchment 1S: SITE

Runoff = 1.18 cfs @ 11.97 hrs, Volume= 0.068 af, Depth= 1.07"
 Routed to Pond BP1 : PROP. BIO POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-YR Rainfall=4.37"

Area (sf)	CN	Description
13,250	39	>75% Grass cover, Good, HSG A
* 8,272	98	Paved parking and roofs
11,482	30	Woods, Good, HSG A
33,004		Weighted Average
24,732		74.94% Pervious Area
8,272		25.06% Impervious Area

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

Summary for Subcatchment 2S: SITE

Runoff = 1.65 cfs @ 11.97 hrs, Volume= 0.093 af, Depth= 2.76"
 Routed to Pond 1P : EX. CATCH BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Type II 24-hr 25-YR Rainfall=4.37"

Area (sf)	CN	Description
5,996	39	>75% Grass cover, Good, HSG A
* 11,594	98	Paved parking and roofs
0	30	Woods, Good, HSG A
17,590		Weighted Average
5,996		34.09% Pervious Area
11,594		65.91% Impervious Area

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

Summary for Pond 1P: EX. CATCH BASIN

Inflow Area = 1.161 ac, 39.27% Impervious, Inflow Depth = 1.65" for 25-YR event
 Inflow = 1.95 cfs @ 11.97 hrs, Volume= 0.160 af
 Outflow = 1.95 cfs @ 11.97 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.95 cfs @ 11.97 hrs, Volume= 0.160 af
 Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

POST-DEVELOPMENT

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Type II 24-hr 25-YR Rainfall=4.37"

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Peak Elev= 346.03' @ 11.97 hrs

Flood Elev= 349.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.20'	15.0" Round Culvert L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.20' / 345.10' S= 0.0050 ' / S= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.95 cfs @ 11.97 hrs HW=346.03' TW=0.00' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 1.95 cfs @ 3.18 fps)

Summary for Pond BP1: PROP. BIO POND

Inflow Area = 0.758 ac, 25.06% Impervious, Inflow Depth = 1.07" for 25-YR event
Inflow = 1.18 cfs @ 11.97 hrs, Volume= 0.068 af
Outflow = 0.32 cfs @ 12.10 hrs, Volume= 0.067 af, Atten= 73%, Lag= 8.0 min
Primary = 0.32 cfs @ 12.10 hrs, Volume= 0.067 af
Routed to Pond 1P : EX. CATCH BASIN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 349.53' @ 12.10 hrs Surf.Area= 1,005 sf Storage= 764 cf

Flood Elev= 351.00' Surf.Area= 1,005 sf Storage= 1,636 cf

Plug-Flow detention time= 31.2 min calculated for 0.067 af (99% of inflow)

Center-of-Mass det. time= 25.0 min (782.7 - 757.7)

Volume	Invert	Avail.Storage	Storage Description
#1	346.00'	158 cf	6" Crushed Stone (Irregular) Listed below (Recalc) 398 cf Overall - 1 cf Embedded = 396 cf x 40.0% Voids
#2	346.25'	1 cf	4.0" Round Pipe Storage Inside #1 L= 16.0'
#3	347.50'	742 cf	Bioretention Media (Irregular) Listed below (Recalc) 2,590 cf Overall - 734 cf Embedded = 1,856 cf x 40.0% Voids
#4	349.50'	734 cf	Surface Storage (Irregular) Listed below (Recalc) Inside #3
		1,636 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
346.00	265	90.0	0	0	265
347.50	265	90.0	398	398	400

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
347.50	740	120.0	0	0	740
349.50	740	120.0	1,480	1,480	980
350.00	740	120.0	370	1,850	1,040
351.00	740	120.0	740	2,590	1,160

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Type II 24-hr 25-YR Rainfall=4.37"

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
349.50	265	90.0	0	0	265
350.00	410	100.0	167	167	423
351.00	740	120.0	567	734	790

Device	Routing	Invert	Outlet Devices
#1	Primary	346.25'	12.0" Round Outlet Pipe L= 29.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 346.25' / 345.30' S= 0.0328 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	346.25'	4.0" Round Underdrain L= 16.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 346.25' / 346.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#3	Device 2	346.00'	10.000 in/hr Exfiltration over Wetted area Phase-In= 0.01'
#4	Device 1	350.88'	12.0" Horiz. AD Circular Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.10 hrs HW=349.53' TW=345.69' (Dynamic Tailwater)

- 1=Outlet Pipe (Passes 0.32 cfs of 6.30 cfs potential flow)
- 2=Underdrain (Passes 0.32 cfs of 0.61 cfs potential flow)
- 3=Exfiltration (Exfiltration Controls 0.32 cfs)
- 4=AD Circular Grate (Controls 0.00 cfs)

Summary for Link A: POA

Inflow Area = 1.161 ac, 39.27% Impervious, Inflow Depth = 1.65" for 25-YR event
Inflow = 1.95 cfs @ 11.97 hrs, Volume= 0.160 af
Primary = 1.95 cfs @ 11.97 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

8. OPERATION AND MAINTENANCE PLAN WITH CHECKLISTS



Stormwater Management Operation and Maintenance (O&M) Manual

for:

Lebanon Housing Authority

Located at:

***Tax Map 101 Lot 20
31 Romano Circle
West Lebanon, NH 03784***

Prepared for:

***Lebanon Housing Authority
31 Romano Circle
West Lebanon, NH 03784***

Prepared by:

**GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030 | www.GraniteEng.com**

Stormwater Management Operation and Maintenance (O&M) Manual

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- Appendix D** – Invasive Species List
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Stormwater Management Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

The owner of the subject property is responsible for ensuring that stormwater facilities installed on the property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements, are included in this Stormwater Management Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; copies of the annual report should be documented on site for future reporting upon request.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix B and C. A standard annual reporting form is provided in Appendix A.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings
- Ensure the proper disposal of hazardous wastes and chemicals
- Plan lawn care to minimize the use of chemicals and pesticides
- Sweep paved surfaces and put the sweepings back on the lawn
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers, and outfalls
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff

IV. Access

All stormwater management facilities located on the site have a designated access location. Refer to the Stormwater Plan located in Appendix E for access locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local authority at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local authority immediately for response. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local authority immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Facility Maintenance Inspection Forms (See Appendix B)
- Manhole Lid Remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual. Inspections should follow the inspection guidance found in Appendix B of this manual.

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix B.

VIII. Maintenance Requirements

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

The Long-Term Inspection and Maintenance Log provides a record of maintenance activities. Maintenance Logs for each facility type are provided in Appendix C.

Bioretention Systems

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed at each inspection.
- At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function, including but not limited to removal of accumulated sediments or reconstruction of filter.
- Vegetation should be inspected at least once annually, and maintained in healthy condition, including pruning, removal and

replacement of dead or diseased vegetation, and removal of invasive species.

Catch Basins

- Catch basins may require frequent maintenance. Depending on the location, this may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually, once following snowmelt and once following leafdrop. And cleaned as indicated by inspection.
- Sediment should be removed when it approaches half the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other method, and disposed in conformance with applicable state and federal regulations.
- Cleaning may require vacuum-truck instead of “clam shell” to avoid damage to hood.
- Damaged hoods should be replaced when noted by inspection.

IX. Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described in Appendix D.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemicals.

Appendix A

Annual Inspection and Maintenance Reporting Form for Stormwater Facilities

Date: _____

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: Romano Circle – Lebanon Housing Authority

Property Address: Map 101 Lot 20, 31 Romano Circle, West Lebanon, NH03784

Contact Name: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operations and Maintenance Manual associated with the above-referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

Lebanon Housing Authority

Lebanon Housing Authority

Name of Party Responsible for Inspection
& Maintenance

Property Owner

Authorized Signature

Signature

Stormwater BMP Owner Inspection Form

Appendix B

Lebanon Housing Authority - Romano Cirlce

Address: Map 101 Lot 20, 31 Romano Circle, West Lebanon, NH 03784

Owner: Lebanon Housing Authority

Date: _____ E-mail: _____ Phone: _____

I. GENERAL INSPECTION RESULTS					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or other pollutants.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.
II. BMP SPECIFIC INSPECTION RESULTS – Bio-Retention Pond #1					
Item	Inspection Results				BMP's in General
1	☐	Sediment Accumulated	☐	No accumulated sediment	Sediment in bottom of infiltration basin?
2	☐	Erosion	☐	No erosion	Eroded damage leading to the system; potential for continued erosion; erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
3	☐	Insects	☐	No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
4	☐	Contaminated	☐	Uncontaminated	Prevalent and visible contaminants such as oil.

5	☐	Clogged	☐	Not clogged	Entry point for water is clogged or obstructed with sediment and/or debris.
6	☐	Pipes/structural repairs needed	☐	Pipes/structure are sound	Pipes and structures show signs of corrosion, spalls, leaks, deformation, crushing or other material failure.

1. Is maintenance needed at this time?

☐ Yes

☐ No

2. Maintenance items needed/completed:

Appendix C

Long-Term Inspection & Maintenance Log

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

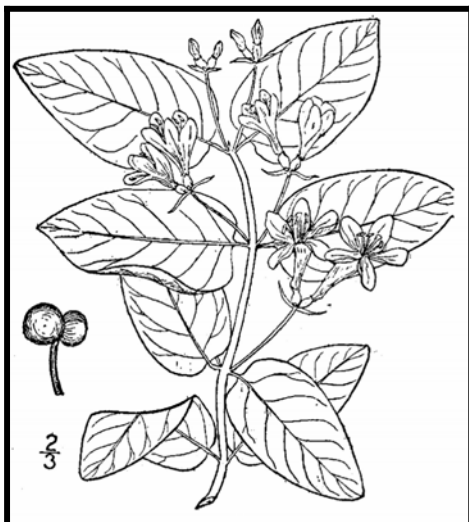
Appendix D



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)

Appendix D

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.

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.



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.

Be diligent looking for seedlings for years in areas where removal and disposal took place.

Appendix D

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.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple <i>(Acer platanoides)</i> European barberry <i>(Berberis vulgaris)</i> Japanese barberry <i>(Berberis thunbergii)</i> autumn olive <i>(Elaeagnus umbellata)</i> burning bush <i>(Euonymus alatus)</i> Morrow's honeysuckle <i>(Lonicera morrowii)</i> Tatarian honeysuckle <i>(Lonicera tatarica)</i> showy bush honeysuckle <i>(Lonicera x bella)</i> common buckthorn <i>(Rhamnus cathartica)</i> glossy buckthorn <i>(Frangula alnus)</i>	Fruit and Seeds 	Prior to fruit/seed ripening Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. After fruit/seed is ripe Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
oriental bittersweet <i>(Celastrus orbiculatus)</i> multiflora rose <i>(Rosa multiflora)</i>	Fruits, Seeds, Plant Fragments 	Prior to fruit/seed ripening Seedlings and small plants ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants ▪ Make a brush pile. ▪ Burn. After fruit/seed is ripe Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Appendix D

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard (<i>Alliaria petiolata</i>) spotted knapweed (<i>Centaurea maculosa</i>) ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort (<i>Cynanchum nigrum</i>) ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort (<i>Cynanchum rossicum</i>) giant hogweed (<i>Heracleum mantegazzianum</i>) ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket (<i>Hesperis matronalis</i>) perennial pepperweed (<i>Lepidium latifolium</i>) purple loosestrife (<i>Lythrum salicaria</i>) Japanese stilt grass (<i>Microstegium vimineum</i>) mile-a-minute weed (<i>Polygonum perfoliatum</i>)	Fruits and Seeds 	Prior to flowering Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. During and following flowering Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (<i>Phragmites australis</i>) Japanese knotweed (<i>Polygonum cuspidatum</i>) Bohemian knotweed (<i>Polygonum x bohemicum</i>)	Fruits, Seeds, Plant Fragments Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	Small infestation ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. Large infestation ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

UNH Cooperative Extension programs and policies are consistent with pertinent Federal and State laws and regulations, and prohibits discrimination in its programs, activities and employment on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sex, sexual orientation, or veteran's, marital or family status. College of Life Sciences and Agriculture, County Governments, NH Dept. of Resources and Economic Development, Division of Forests and Lands, NH Fish and Game, and U.S. Dept. of Agriculture cooperating.

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE SYSTEMS FOR THIS PROJECT.
2. ALL WORK ON THE SUBJECT PROPERTY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRAFTON COUNTY'S CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC COUNTY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND DEPTH OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEEDDED.
6. SEE THE EROSION CONTROL PLAN FOR THE LOCATION OF THE TEMPORARY EROSION CONTROL DEVICES.
7. SEE DETAILS FOR DRAINAGE SPECIFICATIONS.
8. MATERIAL STOCKPILES SHALL BE ON LEVEL SITES WITH SILT FENCE INSTALLED AROUND THE PILE. STOCKPILES SHALL BE COVERED WITH A GEOTEXTILE IF STOCKPILES ARE TO BE LAYED OUT.
9. THIS PROJECT DISTURBS MORE THAN 1-ACRE OF LAND, THEREFORE, IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

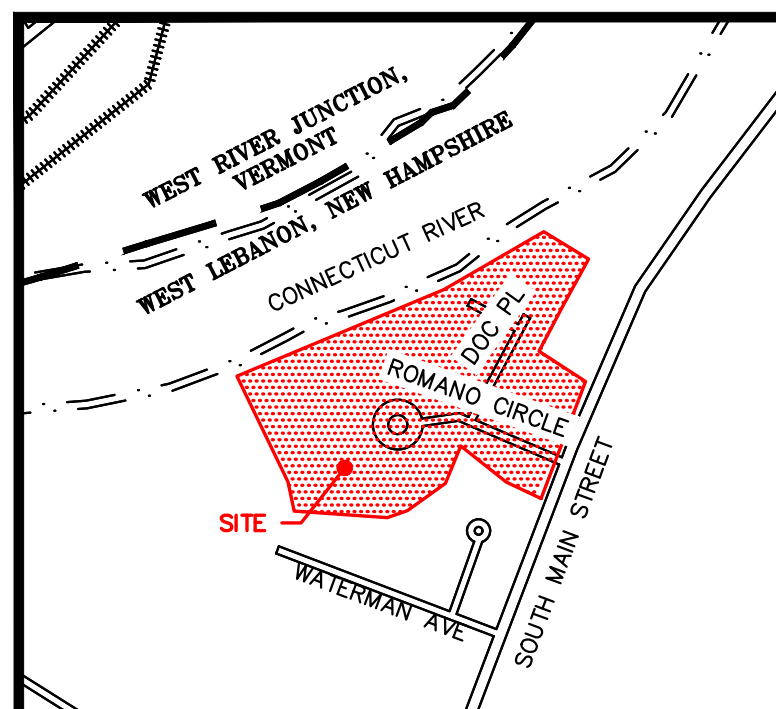
1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITIES FOR THIS PROJECT.
2. ALL WORK SHALL CONFORM TO THE CITY OF LEBANON DESIGN AND CONSTRUCTION STANDARDS. IN THE ABSENCE OF A SPECIFIC CITY SPECIFICATION, THE CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2020.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE WATER LINES SHALL CONFORM TO ALL THE LOCAL PRECINCT'S STANDARDS, SPECIFICATIONS, RULES, AND REGULATIONS.
5. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE ELECTRIC AND GAS LINES SHALL CONFORM WITH ALL APPROPRIATE STANDARDS AND REGULATIONS.
6. THE CONTRACTOR SHALL COORDINATE WITH LOCAL PROVIDER RELATIVE TO FINAL LAYOUT OF UNDERGROUND UTILITIES.
7. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. CONTRACTOR TO VERIFY SIZE OF WATER SERVICE LINES WITH ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
9. THE CONTRACTOR TO VERIFY UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO VERIFY GAS REQUIREMENTS FOR THE PROPOSED BUILDING PRIOR TO CONSTRUCTION.
11. CONTRACTOR TO COORDINATE WITH LOCAL GAS PROVIDER FOR SERVICE DETAILS.
12. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS.

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL.
3. EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
4. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
5. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
6. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
7. SEDIMENT SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL SHALL BE REMOVED FROM THE PROJECT AREA.
10. THE TOWN OF LEBANON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
11. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
12. EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
13. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
14. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
15. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV-A 1000.
16. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
17. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
18. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED FOR SLOPES WITH A RATIO GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.
19. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL ALL AREAS ARE STABILIZED.
20. PONDS SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING OF THE SITE).
21. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
22. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
23. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES CONTROL.
24. SEE DETAILS FOR CONSTRUCTION SEQUENCE.



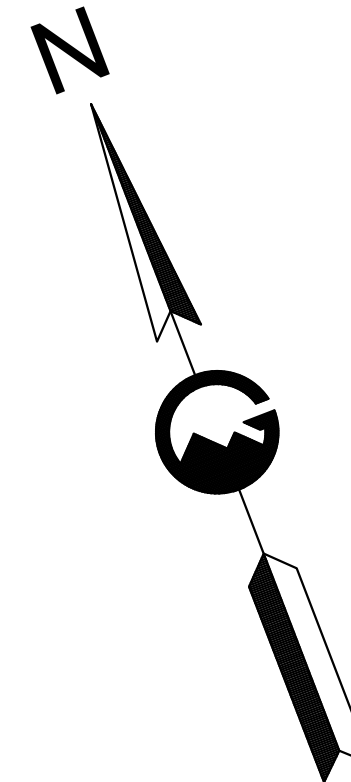
9. PLANS

- A. SITE PLAN SET (22" X 34")
 - B. PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22" X 34")
 - C. POST-DEVELOPMENT DRAINAGE AREAS PLANS (22" X 34")
-



REFERENCE PLAN:

1. EXISTING CONDITIONS PLAN FOR LEBANON HOUSING AUTHORITY TAX MAP 101 LOT 20, 31 ROMANO CIRCLE, LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE, DATED APRIL 2024, PREPARED BY ROCKWOOD LAND SERVICES, LLC.
2. "CITY OF LEBANON COMBINED SEWER SEPARATION" PLAN, CONTRACT NO. 13, ROMANO CIRCLE AREA, PREPARED BY WRIGHT-PIERCE, DATED AUGUST 2023



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL BEFORE DEVELOPMENT.
2. THE SUBJECT PLAN IS BASED ON THE NH STATE PLANE COORDINATE SYSTEM AND THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. ON APRIL 16, 2024, LUKE HURLEY, CWS#232 FROM HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC, FIELD VERIFIED THAT NO ONSITE WETLANDS ARE PRESENT ON THE SUBJECT PROPERTY.

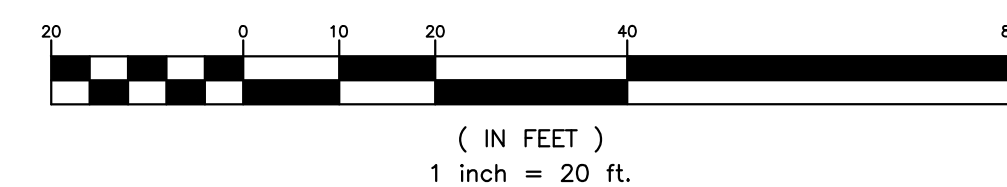
DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- | | |
|---|----------------------------|
| | SCS SOIL LINES |
| 140B | DENOTES SOIL TYPE |
|  | DENOTES POND |
|  | DENOTES SUBCATCHMENT AREA |
|  | DENOTES REACH |
|  | DENOTES POINT OF INTEREST |
|  | LIMIT OF SUBCATCHMENT AREA |
|  | TIME OF CONCENTRATION |

SCS LEGEND

- | | |
|------------|---|
| 2 | SUNCOOK LOAMY FINE SAND, 8-15% SLOPES, HSG A |
| 26B | WINDSOR LOAMY SAND, 3-8% SLOPES SLOPES, HSG A |
| 26E | WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A |

[illegible]

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
331 ROMANO CIRCLE
WEST LEBANON, NH 03784

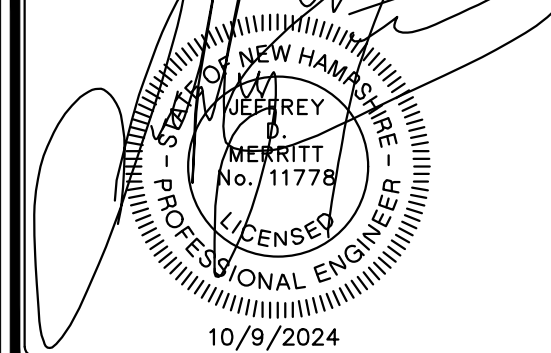
**GRANITE
ENGINEERING**

civil engineering • land planning •
municipal services

150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030

www.GraniteEng.com/

STAMP:



LOCATION:

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:

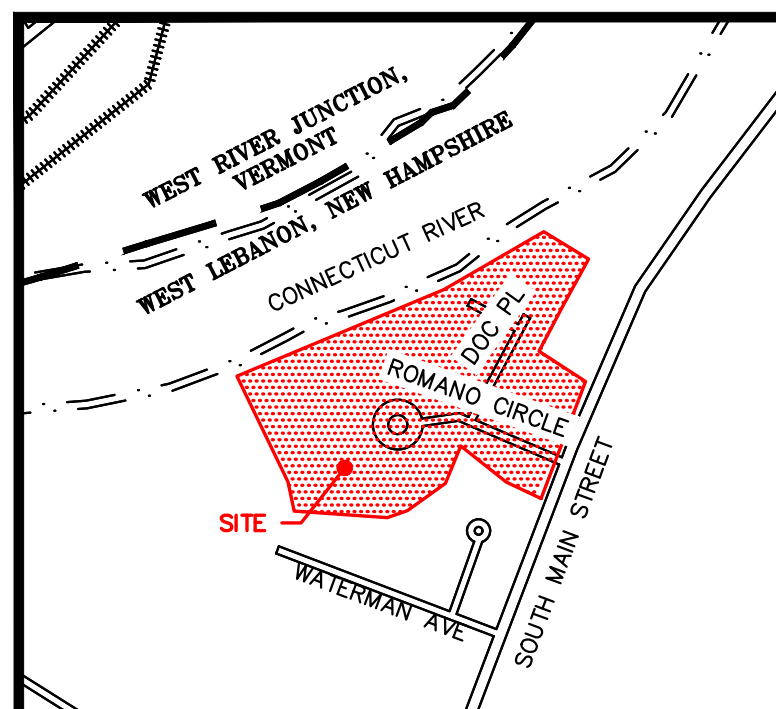
**LEBANON
HOUSING AUTHORITY**

TITLE:

PRE-DEVELOPMENT DRAIN AREAS PLAN

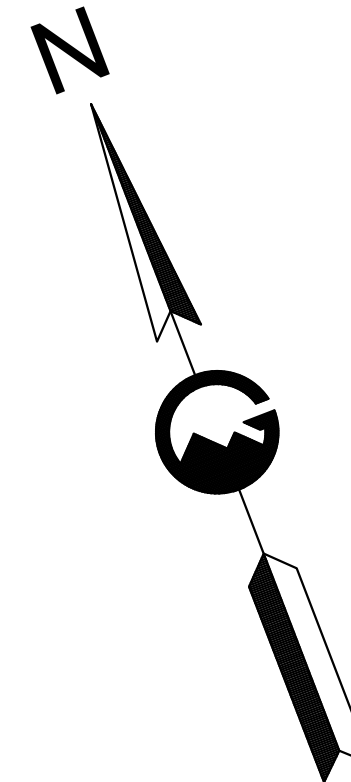
PROJECT No.	DATE:
23-05081-1	SEPT 25, 2024
SHEET:	
1 OF 3	

SCALE:
HORIZ.
1"=20'



REFERENCE PLAN:

1. EXISTING CONDITIONS PLAN FOR LEBANON HOUSING AUTHORITY TAX MAP 101 LOT 20, 31 ROMANO CIRCLE, LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE, DATED APRIL 2024, PREPARED BY ROCKWOOD LAND SERVICES, LLC.
2. "CITY OF LEBANON COMBINED SEWER SEPARATION" PLAN, CONTRACT NO. 13, ROMANO CIRCLE AREA, PREPARED BY WRIGHT-PIERCE, DATED AUGUST 2023



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
2. THE TOTAL AREA OF DISTURBANCE IS 20,778 SQ. FT.
3. THE SUBJECT PLAN IS BASED ON THE NH STATE PLANE COORDINATE SYSTEM AND THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. ON JULY 2, 2014, THE PROJECT WAS INSPECTED BY CURLEY ENVIRONMENTAL AND LAND PLANNING, LLC, FIELD VERIFIED THAT NO ONSITE WETLANDS ARE PRESENT ON THE SUBJECT PROPERTY.

DRAINAGE LEGEND:

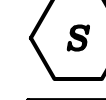
THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL
USED FOR DRAINAGE CALCULATIONS.

• • • • • SCS SOIL LINES

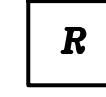
140B DENOTES SOIL TYPE



DENOTES POND



DENOTES SUBCATCHMENT AREA



DENOTES REACH



DENOTES POINT OF INTEREST

LIMIT OF SUBCATCHMENT AREA

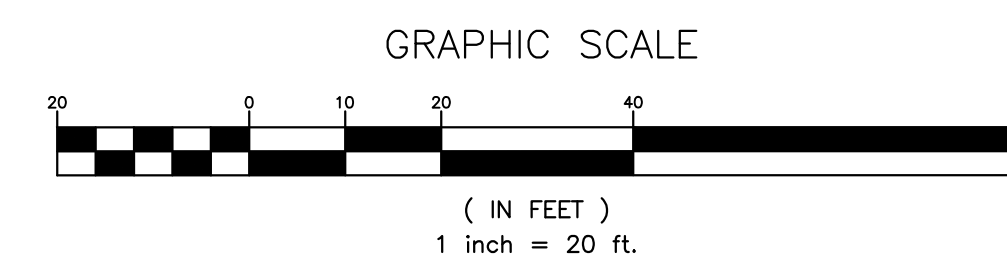
— < — < — TIME OF CONCENTRATION

SCS LEGEND

2 SUNCOOK LOAMY FINE SAND, 8-15% SLOPES, HSG A

26B WINDSOR LOAMY SAND, 3-8% SLOPES SLOPES, HSG A

26E WINDSOR LOAMY SAND, 15-60% SLOPES, HSG A

[illegible]

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
331 ROMANO CIRCLE
WEST LEBANON, NH 03784

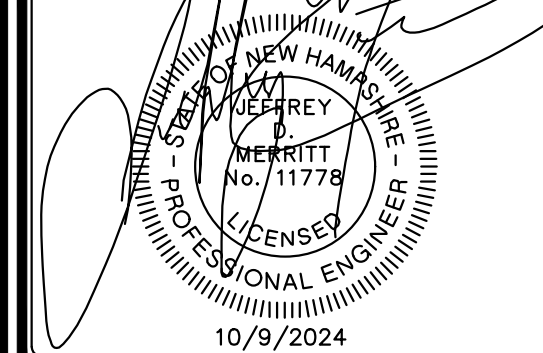
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Manchester,
New Hampshire 03101
603.518.8030

www.GraniteEng.com/

STAMP:



LOCATION:

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:

PROJECT: **LEBANON
HOUSING AUTHORITY**

TITLE:

POST-DEVELOPMENT DRAIN AREAS PLAN

PROJECT No. 23-05081-1	DATE: SEPT 25, 2024
SHEET:	

SCALE
HORIZ. 1"=20'

**CITY OF LEBANON
APPLICATION FOR**

SPECIAL EXCEPTION	☐	☐	SITE PLAN REVIEW
VARIANCE	☐	☐	SUBDIVISION
MOTION FOR REHEARING	☐	☒	LOT LINE ADJUSTMENT
APPEAL OF AN ADMIN. DECISION	☐	☐	CONDITIONAL USE PERMIT

☐ OTHER _____**PROPERTY OWNER (APPLICANT):**

NAME: City of Lebanon TEL.#: 603-448-4220

MAILING ADDRESS: 51 North Park Street, Lebanon, NH 03766

E-MAIL ADDRESS: David.Brooks@LebanonNH.gov

CO-APPLICANT, AGENT, OR LESSEE:NAME: Grafton County Senior Citizens Council, Inc.
Kathleen Vasconcelos, Executive Director TEL.#: 603-448-4897

MAILING ADDRESS: 10-12 Campbell Street, PO Box 433, Lebanon, NH 03766

E-MAIL ADDRESS: kvasconcelos@gcsccl.org

PROJECT LOCATION:

TAX MAP #: 91; 92 LOT#: 245; 17, 23 PLOT #: ZONE: LD

STREET ADDRESS OF PROJECT: 0 Flynn St; 0 Flynn St; 10-12 Campbell Street;

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO
FLOOD PLAIN ☐ YES ☒ NO**SCOPE OF PROJECT:**Transfer 2,220 SF (0.05 Ac.) from GCSCC parcel, M/L 92-23, to City of Lebanon parcels
M/L 91-245 and 92-17, which will be merged together at the same time.**TYPE OF OCCUPANCY:**EXISTING ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☒ COMMERCIAL ☐ INDUSTRIAL
PROPOSED ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☒ COMMERCIAL ☐ INDUSTRIALIF USE IS **COMMERCIAL** OR **INDUSTRIAL**, PLEASE NOTE **SPECIFIC**USE: City of Lebanon parcels are currently improved as public parking lots.**SIGNATURE BLOCK:****FOR PLANNING BOARD APPLICATIONS ONLY:** I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on December 9, 2024, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.PROPERTY Kathleen VasconcelosOWNER: Kathleen Vasconcelos (Oct 24, 2024 10:09 EDT)Shaun MulhollandShaun Mulholland (Oct 24, 2024 10:34 EDT)DATE: 10/24/2024**NOTE: IF, AS OWNER, YOU WISH TO DESIGNATE AN AGENT TO ACT ON YOUR BEHALF, PLEASE READ THE FOLLOWING AND SIGN BELOW:** I hereby designate the person listed above as my agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

PROPERTY

OWNER: _____

DATE: _____

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - \$ AMOUNT	DATE PAID	VOUCHER #



CITY MANAGER'S OFFICE

City of Lebanon, NH

51 North Park Street

Lebanon, NH 03766

ph: (603) 448-4220; fax: (603) 966-3122

TO: City of Lebanon Planning Board

FROM: David Brooks, Deputy City Manager

DATE: October 21, 2024

RE: Proposed Boundary Line Adjustment between City of Lebanon parcels (M/L 91-245 and 92-17) and Grafton County Senior Citizens Council, Inc. (M/L 92-23)

To the Lebanon Planning Board:

Over the last several years, the City has been evaluating the potential for redevelopment of the downtown parking lots situated between City Hall and the Mascoma River, as one of the opportunities identified in the 2016 Downtown Visioning Study. During the evaluation process, it has been noted that a portion of the Grafton County Senior Citizens Council (GCSCC) property at 10-12 Campbell Street (M/L 92-23) extends into the existing public parking area.

For several months, the City has been communicating with GCSCC about potentially conveying a portion of its property to the City in order to address the property boundary and title issues. GCSCC has agreed to convey the portion of its property to the City at no cost in exchange for the City preparing the survey and the applicable deeds for recording.

The City has contracted with a surveyor to prepare the boundary line adjustment plan, which has been agreed to by GCSCC. As depicted on the plan, the City would acquire approximately 2,220 SF (0.05 Ac.) of land from GCSCC, which would be merged with the City's parking lot parcels. For clarification, the City will also be merging two separate parking lot parcels, M/L 91-245 and 92-17, at the same time so all of the "upper" parking lot will be contained within a single contiguous parcel.

On October 2, 2024, the Lebanon City Council authorized the City Manager to pursue acquisition of a portion of the GCSCC parcel and to take all actions necessary to complete the transaction.

CITY OF LEBANON
51 NORTH PARK ST
LEBANON, NH 03766
M/L 91-230

CITY OF LEBANON
51 NORTH PARK STREET
LEBANON, NH 03766
M/L 91-237

LEDYARD CHARTER SCHOOL
PO BOX 327
LEBANON, NH 03766
M/L 91-239

LEDYARD CHARTER SCHOOL
PO BOX 327
LEBANON, NH 03766
M/L 91-239-E

DRAKE, WILLIAM E +
%HOSKIN PROPERTY MNGMT
ETNA, NH 03750
M/L 91-241

COMMUNITY COLLEGE SYST OF NH
26 COLLEGE DR
CONCORD, NH 03301
M/L 91-242

HSD, LLC
2 BUCK RD, STE 8
HANOVER, NH 03755
M/L 91-243

ONE COURT STREET ASSOC
1 COURT ST, STE 300
LEBANON, NH 03766
M/L 91-244

CITY OF LEBANON
51 NORTH PARK ST
LEBANON, NH 03766
M/L 91-246

MASCOMA BANK
% GLEN VALENTINE
LEBANON, NH 03766
M/L 91-247

LEBANON HOUSING AUTHORITY
31 ROMANO CIR
WEST LEBANON, NH 03784
M/L 92-12

NBKS, LLC
21 SCHOOL ST
LEBANON, NH 03766
M/L 92-19

MARTIN, TIMOTHY E
11 FLYNN ST
LEBANON, NH 03766
M/L 92-20

TEOMOR LLC
2 CAMPBELL ST
LEBANON, NH 03766
M/L 92-22

CARTER COMM BLDG ASSOC
1 TAYLOR ST
LEBANON, NH 03766
M/L 92-25

UPPER VALLEY SUPPORTIVE
226 HOLIDAY DR, STE 20
WHITE RIVER JCT, VT 05001
M/L 92-34

TWIN PINES HOUSING TRUST
226 HOLIDAY DR, STE 20
WHITE RIVER JCT, VT 05001
M/L 92-36

PARKHURST COMM HOUSING INC
226 HOLIDAY DR, STE 20
WHITE RIVER JCT, VT 05001
M/L 92-63

CARTER COMM BLDG ASSOC
1 TAYLOR ST
LEBANON, NH 03766
M/L 92-64

MASCOMA SAVINGS BANK
PO BOX 4399
WHITE RIVER JCT, VT 05001
M/L 91-246-100

OFFICER, THOMAS F
13 FLYNN ST
LEBANON, NH 03766
M/L 92-21



12 November 2024 (Revised 2Dec24)

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Planned Business Park Application
Lot 26-17, LaBombard Road

Dear Mr. Corwin:

We provide the following in support of the Planned Business Park application for Signal Hill/Choice Storage off LaBombard Road.

Planned Business Parks are created with a Conditional Use Permit and a Subdivision. Attached is the application for the CUP and an application for Sketch Plan review to start the subdivision process. The application is followed by the abutters list and professionals list. After that is the fee calculation sheet. At this time, the fee is for the CUP; I do not believe there is a fee for sketch plan review.

The Planned Business Park includes several parcels outside the Signal Hill parcel. The parcels are shown on the PBP plan. The parties to the PBP and a land use allocation is attached.

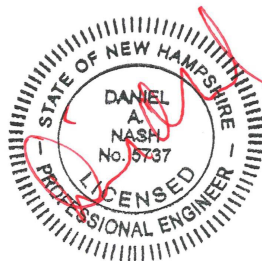
Next is the CUP application/Support Statement for the PBP. Following the PBP/CUP application is a separate impact statement, covering items not in the CUP application.

Please let me know if you need any further materials to support this application.

Sincerely,

Daniel A. Nash, PE
Principal

CC: Jay Campion, Choice Storage



0 Etna Road
City of Lebanon
12Nov24

Attachments:

- CUP application
- Abutters list
- Professionals list
- Application Fee
- PBP Agents
- CUP Support statement
- PBP Impact statement

- Planned Business Park, submitted separately
- Subdivision Plat (Sketch Plan)

M:\2018_projects\18-025\PBP\planning_board\col_signalhill_CUP_12Nov2024.docx

**CITY OF LEBANON
APPLICATION FOR**

SPECIAL EXCEPTION	☐	SITE PLAN REVIEW
VARIANCE	☐	☒ SUBDIVISION -sketch plan
MOTION FOR REHEARING	☐	☐ LOT LINE ADJUSTMENT
APPEAL OF AN ADMIN. DECISION	☐	☒ CONDITIONAL USE PERMIT

☐ OTHER _____

PROPERTY OWNER (APPLICANT):

NAME: James Campion/Choice Storage TEL.#: 603 643 6607

MAILING ADDRESS: 44 So. Main St. #14, Hanover, NH 03755

E-MAIL ADDRESS: jay.campion@gmail.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: _____ TEL.#: _____

MAILING ADDRESS: _____

E-MAIL ADDRESS: _____

PROJECT LOCATION:

TAX MAP #: 36 LOT#: 17 PLOT #: _____ ZONE: IND-L/RL-3

STREET ADDRESS OF PROJECT: 0 Etna Road

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☐ NO
FLOOD PLAIN ☐ YES ☐ NO

SCOPE OF PROJECT:

4 lot subdivision
Sketch plan for Planned Business Park

TYPE OF OCCUPANCY:

EXISTING ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☐ COMMERCIAL ☒ INDUSTRIAL
PROPOSED ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☐ COMMERCIAL ☒ INDUSTRIAL
IF USE IS **COMMERCIAL** OR **INDUSTRIAL**, PLEASE NOTE **SPECIFIC**
USE: Contractors yard / soccer field

SIGNATURE BLOCK:

FOR PLANNING BOARD APPLICATIONS ONLY: I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on _____, 20____, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY

OWNER: _____ DATE: 4/4/24

NOTE: IF, AS OWNER, YOU WISH TO DESIGNATE AN AGENT TO ACT ON YOUR BEHALF, PLEASE READ THE FOLLOWING AND SIGN BELOW: I hereby designate the person listed above as my agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

PROPERTY

OWNER: _____ DATE: _____

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #		
<u>4/8/2024</u>	<u>26-17</u>	<u>PB2024-15-FM7J</u>		

CERTIFIED NOTIFICATION LIST

Notice shall be sent by certified mail to the Owner; Applicant, if different from Owner; Abutters; Holders of conservation, preservation, or agricultural preservation restrictions (as defined under RSA 477:45) on the subject property; the holders of easements, rights-of-way, and other restrictions; and every engineer, architect, land surveyor, or soil or wetlands scientist whose seal appears on any plan submitted to the Board; and any other persons required by RSA 676:4, I(d). The names and mailing addresses shall be furnished by the Applicant.

672:3 Abutter. – "Abutter" means any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the local land use board. For purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a condominium or other collective form of ownership, the term abutter means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a manufactured housing park form of ownership as defined in RSA 205-A:1, II, the term "abutter" includes the manufactured housing park owner and the tenants who own manufactured housing which adjoins or is directly across the street or stream from the land under consideration by the local land use board.

Source. 1983, 447:1. 1986, 33:2. 2002, 216:1, eff. July 15, 2002.

PLEASE PROVIDE NAMES & MAILING ADDRESSES FOR ALL PERSONS LISTED ABOVE.

Map & Lot Number: 26-4	Map & Lot Number: 26-5
Property Owner: Chiron Springs Realty Corp PO Box 27 Windsor, VT 05089	Applicant, Co-Applicant, Agent, or Lessee: Unitfirst Corp. 68 Jonspin Rd. Wilmington, Ma 01887
Map & Lot Number: 26-6	Map & Lot Number: 26-9
Unitfirst Corp. 68 Jonspin Rd. Wilmington, Ma 01887	Richard D. Smarsik 145 Etna Rd. Lebanon, NH 03766
Map & Lot Number: 26-14	Map & Lot Number: 26-18
State of New Hampshire PO Box 483 Concord, NH 03302	Etna Road Associates 27 Green St. Newbury, MA 01951

Map & Lot Number: 26-19	Map & Lot Number: 26-20
Hypertherm Inc. P.O. Box 14 Hooksett, NH 03106	Pentfield Family Ltd Prtnr P.O. Box 14 Hooksett, NH 03106
Map & Lot Number: 26-22-100	Map & Lot Number: 26-22-200
Hypertherm Inc. P.O. Box 14 Hooksett, NH 03106	Dartmouth Transportation 7 Langdon St. Concord, NH 03301
Map & Lot Number: 26-23	Map & Lot Number: 26-24
Pentfield Family Ltd Prtnr P.O. Box 14 Hooksett, NH 03106	HyperTherm Inc. P.O. Box 14 Hooksett, NH 03106
Map & Lot Number: 28-2	Map & Lot Number: 50-26
City of Lebanon 51 North Park St. Lebanon, NH 03766	Bond Offices 76 Etna Rd Lebanon, NH 03766
Map & Lot Number: 51-3	Map & Lot Number: 51-10
Mary Hitchcock Mem. Hosp. 1 Medical Center Drive Lebanon, NH 03766	CWM All Waste LLC P.O. Box 4900 Scottsdale, AZ 85261
Map & Lot Number: 51-12	Map & Lot Number: 20-1
Frederick Hatch 24 La Bombard Rd. Lebanon, NH 03766	James Browning 91 Orion Drive Lebanon, NH 03766
Map & Lot Number: 26-7	Map & Lot Number: 26-8
Upper Valley Land Trvst Inc. 19 Buck Rd. Hanover, NH 03755	Upper Valley Land Trvst Inc. 19 Buck Rd. Hanover, NH 03755

(Revised 2/8/2024)

Map & Lot Number: 26-10 Robert G. Oakes 84 Hanover St. Letanon, NH 03766	Map & Lot Number: 26-13 Terry L & Karen L. Moodie 245 Skyline Dr. Newport, NH 03773
Map & Lot Number: 26-16 Choice Storage LLC 44 So. Main St. #14 Hanover, NH 03755	Map & Lot Number: 52-2 Denise B. MacLeod TTEE P.O. Box 134 Letanon, NH 03766
Map & Lot Number: 52-3 Ryan & Tiana Morse 100 Alden Rd. Letanon, NH 03766	Map & Lot Number: 26-26 Shawn L & Jamie Sarracco 160 Etna Rd. Letanon, NH 03766
Map & Lot Number: 26-25 Charles S & Rose Grenier 156 Etna Rd Letanon, NH 03766	Map & Lot Number: 26-15 Paul Dominic Leonardo 6 MASS ROW Hanover, NH 03755
Map & Lot Number: Advanced Geomatics & Design 105 Bank St. Letanon, NH 03766	Map & Lot Number: L & M Service Contractors 287 River Rd. Norwich, VT 05055
Map & Lot Number: Holden Engineering and Surveying 9 Constitution Dr. Bedford, NH 03110	Map & Lot Number: B.A.G. Engineering 43 Rockingham St. Concord, NH 03301
Map & Lot Number: Pathways Consulting 240 Mechanic St. #100 Letanon, NH 03766	Map & Lot Number: Paton Surveying 150 Southridge St. Springfield, VT 05156

(Revised 2/8/2024)

Map & Lot Number:	Map & Lot Number:
Ecosystem Management of New England, LLC 30 N. Sandwich Rd. Center Sandwich, NH 03227	Park Architecture 3 School House Lane Etha, NH 03750
Map & Lot Number:	Map & Lot Number:
Eastern Topographic P.O. Box 970-495 Center St. Wolfeboro, NH 03894	Tri-Mont Engineering 38 Resnik Rd. Suite 102 Plymouth, MA 02360
Map & Lot Number:	Map & Lot Number:
Schaver Environmental Consultants 722 Rt 3A Bow, NH 03304	
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:
Map & Lot Number:	Map & Lot Number:

(Revised 2/8/2024)

Signal Park Professionals list

Advanced Geomatics & Design

105 Bank Street
Lebanon, NH 03766

L&M Service Contractors

287 River Rd
Norwich, VT 05055

Holden Engineering and Surveying

9 Constitution Drive
Bedford, NH 03110

B.A.G Engineering @ Erosion control

43 Rockingham St,
Concord, NH 03301

Pathways Consulting

240 Mechanic St #100,
Lebanon, NH 03766

Paton Surveying

150 Southridge Street
Springfield, Vermont 05156

Ecosystem Management of New England, LLC

30 N. Sandwich Rd
Center Sandwich, NH 03227
Rick Van De Poll

Park Architecture

3 School House Ln
Etna, NH 03750

Eastern Topographic

PO 970 - 495 Center St.
Wolfeboro, NH 03894

Tri-Mont Engineering

38 Resnik Rd suite 102
Plymouth, MA 02360

Schauer Environmental Consultants

722 Rt 3A
Bow NH 03304

SITE PLAN REVIEW		
TOTAL DUE AT TIME OF FILING		\$ 250
**Engineering Review fees will also be required. See note on page 2.		

SITE PLAN REVIEW AMENDMENT (WITH STRUCTURAL CHANGES)		
		TOTALS
FILING FEE	\$250.00	\$250.00
SQUARE FOOTAGE	\$75.00 per 1,000 sq. ft. (gross floor area)	
ADVERTISING FEE	\$100.00	\$100.00
NOTIFICATION FEE (see note below)	\$5.00 + Current USPS rate per certified notice (see below) X _____ notices	\$5.00 \$ _____ (abutter certified)
TOTAL DUE AT TIME OF FILING		\$
**Engineering Review fees may also be required. See note below.		

OTHER		
-SITE PLAN REVIEW AMENDMENT (WITH NO STRUCTURAL CHANGES)		
-EXTENSION REQUESTS		
-CONDITIONAL USE PERMITS		
-sketch plan, major subdivision		
		TOTALS
FILING FEE	\$250.00	\$250.00
ADVERTISING FEE	\$100.00	\$100.00
NOTIFICATION FEE (see note below)	\$5.00 + Current USPS rate per certified notice (see below) X 50 notices	\$5.00 \$ 277.00 (abutter certified)
-39 abutters -11 professionals -50 notices * \$5.54= \$277.00		\$ 632.00
Engineering Review fees may also be required. See note below.		

MINOR SITE PLAN REVIEW		
		TOTALS
FILING FEE	\$150.00	\$150.00
NOTIFICATION FEE (see note below)	Current USPS rate per certified notice (see below) X _____ notices	\$ _____ (abutter certified)
TOTAL DUE		\$

ENGINEERING REVIEW FEES:

After an application to the Planning Board is submitted and the filing fees identified above have been paid, the Planning & Development Department will determine the scope of required engineering review and will obtain an estimated cost from the reviewing engineer. A cost estimate of the review fees will usually be generated within two (2) – three (3) business days. Once conveyed to the applicant, the estimated review fees shall be paid by the applicant within five (5) business days, and an escrow account shall be established by the Planning & Development Department. No plans will be reviewed unless and until the review fee estimate is paid, if required.

Please note that escrow fees are only an estimate of what services will cost and actual costs of review may be less or more than the amount initially estimated. Any unused portion of the escrow will be returned to the applicant at the end of the approval process if such a surplus remains. Additionally, in the event the escrow amount does not cover the full cost of services the Applicant shall pay any remaining costs as a condition of approval. See also Section 4.7 of the Site Plan Review Regulations and Section 7.7 of the Subdivision Regulations.

NOTIFICATION FEE: CURRENT FEE as of January 2024 is \$5.54 per certified notice

THE CERTIFIED NOTIFICATION FEE IN ALL SECTIONS ABOVE INCLUDES THE FOLLOWING: ALL ABUTTERS, THE APPLICANT, PROPERTY OWNER, HOLDER OF CONSERVATION, PRESERVATION, OR AGRICULTURAL PRESERVATION RESTRICTION(S); AND EVERY ENGINEER, ARCHITECT, LAND SURVEYOR OR SOIL SCIENTIST WHOSE PROFESSIONAL SEAL APPEARS ON ANY PLAT SUBMITTED TO THE BOARD AND ANY OTHER PERSONS REQUIRED BY RSA 676:4, I(d).

Signal Park Use Allocation Schedule

Total qualifying acreage	144.63	
Total allowed commercial	29.61	
Current Commercial	9.	
Planned additional	4	
Current Ind-L	24	
Recreation / gym	2.55	
RL-3 Open Space	132	
25% residential allocation	36.40	$\times 13/\text{acre} = 473$ units
RL-3 residential units (132 acres)		13.2
Total residential		486.4 units

ID	Site Address	Owner Name
50-29	0 NH ROUTE 120	DARTMOUTH COLLEGE TRUSTEE:
51-10	40 N LABOMBARD RD	CWM ALL WASTE LLC
51-11	32 LABOMBARD RD	CHALOUX PROP LLC
64-21	35 LABOMBARD RD	ROUTE 120 HOTEL LLC
64-25	25 LABOMBARD RD	CHALOUX PROP LLC
26-17	0 ETNA RD	CHOICE STORAGE, LLC
51-14	39 LABOMBARD RD	KLUBIO, LLC
51-1	41 LABOMBARD RD	TLL REALTY LLC
51-15	33 LABOMBARD RD	NOTCH CLIMBING REAL ESTATE L

Co-Owner N:	Owner Address	Owner City	Owner State	Owner Zip	Owner Count
	PO BOX 5188	HANOVER	NH	03755	
	PO BOX 4900	SCOTTSDAL	AZ	85261	
	PO BOX 4430	MANCHESTER	NH	03108	
	1359 HOOKSETT RD	HOOKSETT	NH	03106	
	PO BOX 4430	MANCHESTER	NH	03108	
	44 SOUTH MAIN ST	HANOVER	NH	03755	
	39 LABOMBARD RD	LEBANON	NH	03766	
	100 ALDEN RD	LEBANON	NH	03766	
	% NOAH LYND	MERIDEN	NH	03770	

AGREEMENT and AGENT DESIGNATION

This Agreement is made by and among the following parties:

- A. CWM All Waste LLC¹;
- B. Chaloux Properties LLC;
- C. Route 120 Hotel LLC;
- D. Choice Storage, LLC;
- E. Klubio, LLC;
- F. TLL Realty LLC; and
- G. Notch Climbing Real Estate LLC

Each of the foregoing is referred to individually as a “Party” and collectively as the “Parties”.

Preliminary Statement. The Parties have reviewed the benefits of establishing a Planned Business Park (the “Park”) within the meaning of Section 508 of the City of Lebanon Zoning Ordinance #2 for all of the properties owned by the Parties and identified on Exhibit A attached hereto. The Parties further wish to designate by this Agreement their agent for purpose of applying for approval of the Park by the Lebanon Planning Board.

Agreement. For good and valuable consideration, the mutual receipt of which is hereby acknowledged, the parties agree as follows:

1. Subject Properties. The Parties are the respective owners of the real properties identified on Exhibit A (collectively, the “Properties”).
2. Intent to Seek Park Designation. The Parties wish to have the Properties designated as a Planned Business Park within the meaning of Section 508 of the City of Lebanon Zoning Ordinance #2. The designation contained in Section 3 below is made solely for the purposes of obtaining designation as a Planned Business Park, and not for any construction or other purpose.
3. Designation of Agent for Planned Business Park Conditional Use Permit Application:

By signature below, each of the undersigned property owners hereby designate James W. (Jay) Campion, IV as its agent for the purpose of procuring the necessary local permits for the proposed work as described herein. Representations made by my agent may be accepted as though made by me personally, and I understand that I am bound by any official decision made on the basis of such representation.

¹ NH Secretary of State records shown as dissolved.

4. Representation; Costs. Each Party is entitled to participate in any hearings regarding establishment of the Park and is responsible for its own costs in doing so, including any legal fees.

5. General. This Agreement is binding on each of the Parties and their successors and assigns. This Agreement is and shall be deemed to be made under and pursuant to the laws of the State of New Hampshire and shall, in all respects, be governed, construed and enforced in accordance with the laws of that state, without resort to principles of conflicts of laws. This Agreement may not be amended, changed, modified, altered or terminated except by written instrument executed and delivered by the parties. This Agreement may be executed in any number of counterparts, each counterpart shall constitute an original agreement, and all counterparts taken together shall constitute a single agreement. Confirmation of execution of this Agreement by facsimile or electronic signature shall be binding upon any party so confirming.

[Signature pages follow]

Property Owner

Signature

Date

CWM All Waste LLC

By: _____,
Duly authorized agent

_____, 2024

Chaloux Properties LLC

By: _____,
Duly authorized agent

_____, 2024

Route 120 Hotel LLC

By: _____,
Duly authorized agent

_____, 2024

Choice Storage, LLC

By: _____,
Duly authorized agent

_____, 2024

Klubio, LLC

By: _____,
Duly authorized agent

_____, 2024

TLL Realty LLC

By: _____,
Duly authorized agent

_____, 2024

Notch Climbing Real
Estate LLC

By: _____,
Duly authorized agent

_____, 2024

EXHIBIT A

Parcel ID	Site Address	Owner Name	Address			
51-10	40 N LABOMBARD RD	CWM ALL WASTE LLC	PO BOX 4900	SCOTTSDALE, AZ	85261	
51-11	32 LABOMBARD RD	CHALOUX PROPERTIES LLC	PO BOX 4430	MANCHESTER, NH	03108	
64-21	35 LABOMBARD RD	ROUTE 120 HOTEL LLC	1359 HOOKSETT RD	HOOKSETT, NH	03106	
64-25	25 LABOMBARD RD	CHALOUX PROPERTIES LLC	PO BOX 4430	MANCHESTER, NH	03108	
26-17	0 ETNA RD	CHOICE STORAGE, LLC	44 SOUTH MAIN ST	HANOVER, NH	03755	
51-14	39 LABOMBARD RD	KLUBIO, LLC	39 LABOMBARD RD	LEBANON, NH	03766	
51-1	41 LABOMBARD RD	TLL REALTY LLC	100 ALDEN RD	LEBANON, NH	03766	
51-15	33 LABOMBARD RD	NOTCH CLIMBING REAL ESTATE LLC				
		c/o NOAH LYND	181 BEAN RD	MERIDEN, NH	03770	

22562554.2

official use only Date Received:

Application No:

51 NORTH PARK STREET, LEBANON, NEW HAMPSHIRE 03766 TEL: 603-448-1457 FAX: 603-442-6141 WWW.LEBANONNH.GOV

City of Lebanon, New Hampshire

**APPLICATION FOR CONDITIONAL USE PERMIT AND
SUPPORT STATEMENT**

I. APPLICATION CHECKLIST

X • Application form

X • Public Hearing Notification List

X • Filing fee

X • This form, including written responses to the Section 302.4.D requirements, outlined below

X A written narrative providing responses to the information required per sections II, III.A, and III.B below

X A scaled site plan identifying existing and proposed conditions and improvements including but not limited to buildings, structures, relevant setbacks and measurements, natural features, utilities, parking, access drives, landscaping, and lighting

Note: existing and proposed conditions shall normally be shown on separate plan sheets unless otherwise approved by Planning & Development Department staff, with the same orientation and scale (i.e. sheets should appear as if layered upon the same base drawing).

x • A site plan

• Optional: photos and any other materials in support of your application

II. PROJECT DESCRIPTION

The Applicant hereby requests a Conditional Use Permit as provided for in Article(s) V Subdivisions and Planned Developments, Section(s) 508.6 A., of the Lebanon Zoning Ordinance.

Please describe the proposed project and/or the proposed use with as much detail as possible. With respect to a proposed use, provide as much information as possible regarding the nature of the use as well as operational details (e.g. hours of operation, number of employees, etc.).

A Major Subdivision of 4 lots. One for Residential, one for commercial and two for construction debris recycling uses. Th is subdivision will be the first phase in a multi-phased buildout of a mixed use Planned Business Park.

III. CONDITIONAL USE PERMIT CRITERIA

In order to obtain a Conditional Use Permit, you must demonstrate to the Planning Board that the proposal satisfies the applicable criteria set forth in Sections A and B below.

A. General Criteria

A conditional use permit shall be granted only if the Planning Board determines that the proposal conforms to all of the Enhanced Performance Standards set forth in Section 302.4.D of the Lebanon Zoning Ordinance, as listed below. Applicants must specifically address each numbered and lettered criterion specifically. Applicants are advised that responses should be supported by evidence (in the form of data, engineering or environmental studies, annotated maps, etc.), or, in the absence of evidence, detailed explanations and reasoning.

NOTE: The Board may require supporting evidence for projects that will also require Site Plan Review. For such projects, applicants are consequently advised to apply to the Planning Board for the Conditional Use Permit and for Site Plan Review simultaneously.

The site is suitable for the proposal. This includes:

- a. Adequate vehicular and pedestrian access for the intended use.
- b. The availability of adequate public services to serve the intended use including emergency services, pedestrian facilities, safe access, and other municipal services.
- c. The absence of environmental constraints (floodplain, steep slope, etc.) proposed to be impacted by the intended use.
- d. The availability of appropriate utilities to serve the intended use including water, sewage disposal, stormwater treatment, electricity, and similar utilities.

2. External impacts: The external impacts of the proposed use on abutting properties and the neighborhood shall be commensurate with the impacts of adjacent existing uses or other uses permitted in the zoning district. This shall include, but not be limited to, water runoff, drainage, traffic, noise, odors, vibrations, dust, fumes, hours of operation, and exterior lighting and glare. In addition, the location, nature, design, and height of the structure and its appurtenances, its scale with reference to its surroundings, and the nature and intensity of the use, shall not have an adverse effect on the surrounding environment nor discourage the appropriate and orderly development and use of land and buildings in the neighborhood. The proportion of the site proposed to be occupied by impervious surfaces shall be minimized to the extent necessary to preclude unreasonable risk of runoff, erosion, sedimentation, and other potentially adverse on-site or off-site effects.

3. Character of the site development: The proposed layout and design of the site shall not be incompatible with the established character of the neighborhood and shall mitigate any external impacts on abutters, the neighborhood, and nearby public ways and infrastructure. This shall include, but not be limited to, the relationship of the building(s) to the street, the amount, location, and screening of off-street parking, the treatment of yards and setbacks, the buffering of adjacent properties, and provisions for vehicular and pedestrian access to and within the site.

4. Character of the buildings and structures: The design of any new buildings or structures and the modification of existing buildings or structures on the site shall not be incompatible with the established character of the neighborhood. This shall include, but not be limited to, the scale, height, and massing of the building or structure, the roof line, locations of access, and visual compatibility with the area. 5. Preservation of natural, cultural, historic, and scenic resources: The proposed use and layout of the site, including all related development activities, shall to the greatest extent practicable preserve identified natural, cultural, historic, and scenic

The Conditional Use Permit is authorized **by Article V, Section 508.4** of the Zoning Ordinance which requires the applicant to demonstrate that (please address any criteria set forth in the Zoning Ordinance that specifically apply to your proposed use or project):

A Planned Business Park subdivision is permitted in the Ind-L zone when subdivided into a minimum of 4 lots of a tract of more than 20 acres.

51 NORTH PARK STREET, LEBANON, NEW HAMPSHIRE 03766 TEL: 603-448-1457 FAX: 603-442-6141 WWW.LEBANONNH.GOV

Office Use Only Date Received: _____ Application No: _____
CONDITIONAL USE PERMIT APPLICATION Support Statement Last Revised
3/8/2022 Page 2 of 3 _____ 51 NORTH PARK STREET,
LEBANON, NEW HAMPSHIRE 03766 TEL: 603-448-1457 FAX: 603-442-6141
WWW.LEBANONNH.GOV

B. General Criteria per Section 302.4.D

A conditional use permit shall be granted only if the Planning Board determines that the proposal conforms to all of the following standards:

1. The site is suitable for the proposal. This includes:

a. Adequate vehicular and pedestrian access for the intended use.

Phase 1 will be serviced by a City DPW compliant roadway and sidewalk, extending from La Bombard Road.

b. The availability of adequate public services to serve the intended use including emergency services, pedestrian facilities, safe access, and other municipal services.

The site has access to full City services and utilities from three separate locations

c. The absence of environmental constraints (floodplain, steep slope, etc.) proposed to be impacted by the intended use.

The proposed subdivision is not in the floodplain nor is it on a steep slope, defined as 25 degrees or greater.

d. The availability of appropriate utilities to serve the intended use including water, sewage disposal, stormwater treatment, electricity, and similar utilities.

With the completion of the new Etna Road sewer connector and given the current size of the existing water service in the area, there will be ample resources available to provide for

the demand created by this development. The storm water discharge from the property will remain separate from the sewer line and the flow will be engineered to return to the aquifer on site. The site has access to full City services and utilities from three separate locations.

2. External impacts: The external impacts of the proposed use on abutting properties and the neighborhood shall be commensurate with the impacts of adjacent existing uses or other uses permitted in the zoning district. This shall include, but not be limited to, water runoff, drainage, traffic, noise, odors, vibrations, dust, fumes, hours of operation, and exterior lighting and glare. In addition, the location, nature, design, and height of the structure and its appurtenances, its scale with reference to its surroundings, and the nature and intensity of the use, shall not have an adverse effect on the surrounding environment nor discourage the appropriate and orderly development and use of land and buildings in the neighborhood. The proportion of the site proposed to be occupied by impervious surfaces shall be minimized to the extent necessary to preclude unreasonable risk of runoff, erosion, sedimentation, and other potentially adverse onsite or off-site effects.

Any impacts of the proposed uses will be minimal and in scale with its surroundings.

**51 NORTH PARK STREET, LEBANON, NEW HAMPSHIRE 03766 TEL:
603-448-1457 FAX: 603-442-6141 WWW.LEBANONNH.GOV**

CONDITIONAL USE PERMIT APPLICATION

Checklist and Support Statement

Last Revised 9/23/2024 Page 3 of 3

3. Character of the site development: The proposed layout and design of the site shall not be incompatible with the established character of the neighborhood and shall mitigate any external impacts on abutters, the neighborhood, and nearby public ways and infrastructure. This shall include, but not be limited to, the relationship of the building(s) to the street, the amount, location, and screening of off-street parking, the treatment of yards and setbacks, the buffering of adjacent properties, and provisions for vehicular and pedestrian access to and within the site. (see Site Plan Attached)

4. Character of the buildings and structures: The design of any new buildings or structures and the modification of existing buildings or structures on the site shall not be incompatible with the established character of the neighborhood. This shall include, but not be limited to, the scale, height, and massing of the building or structure, the roof line, locations of access, and visual compatibility with the area.

There is no established character of the neighborhood. What is planned will be a fully integrated, planned environment in scale and internally architecturally compatible.

5. Preservation of natural, cultural, historic, and scenic resources: The proposed use and layout of the site, including all related development activities, shall to the greatest extent practicable preserve identified natural, cultural, historic, and scenic resources on the site and shall not degrade such identified resources on abutting properties. This shall include, but not be limited to, identified wetlands, floodplains, significant wildlife habitat and documented wildlife corridors, stonewalls, mature tree lines, identified historic buildings or sites, scenic views, and viewsheds.

The impact of the proposed development on natural resources and environmental quality will be a positive one. The site work proposed is being engineered to capture and control runoff with extensive drainage. Particular attention is being paid to preserving the water quality in the wetlands on the property's western border. There are no agricultural lands on the site or bordering the site so there can be no adverse impact. There will be a substantial overall improvement in the local and regional air quality with the possible promulgation of Landfill gas as an energy source for heat and transportation. The established Wildlife Corridor will be maintained and protected.

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CONDITIONAL USE PERMIT APPLICATION

CHECK LIST AND SUPPORT STATEMENT

LAST REVISED 9/23/2024

B. Specific Criteria The Conditional Use Permit is authorized by Article ___V___, Section 508.6 A. of the Zoning Ordinance.

Please list and respond to any criteria set forth in the above article and section of the Zoning Ordinance that apply to the proposed use or project.

Applicants must address each criterion specifically. Applicants are advised that assertions should be supported by evidence (in the form of data, engineering or environmental studies, annotated maps, etc.), or, in the absence of evidence, detailed explanations and reasoning.

If the article and section of the Zoning Ordinance authorizing the Conditional Use lists no specific criteria, please check this box.

IV. ACCURACY AND COMPLETENESS

☒ By checking this box, the applicant(s) affirm that they have included in their application all of the relevant materials listed in the checklist and have responded to the Conditional Use Permit Criteria truthfully and to the best of their abilities.

Applicant's Name: JAMES W CANNON Date: 10/14/2024

Applicant's Signature: 

Applicant's Name: CHOICE STORAGE LLC Date: 10/14/24

Applicant's Signature: 

Form approved by the Lebanon Planning Board on 9/23/2024

**51 NORTH PARK STREET, LEBANON, NEW HAMPSHIRE 03766 TEL: 603-448-1457 FAX:
603-442-6141 WWW.LEBANONNH.GOV**

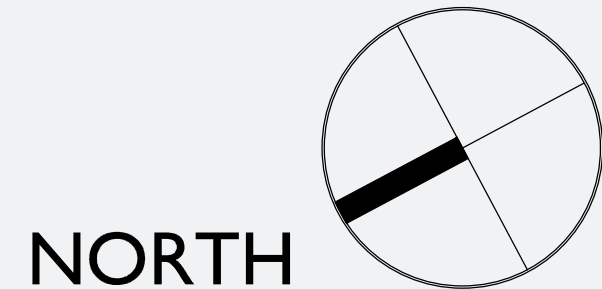
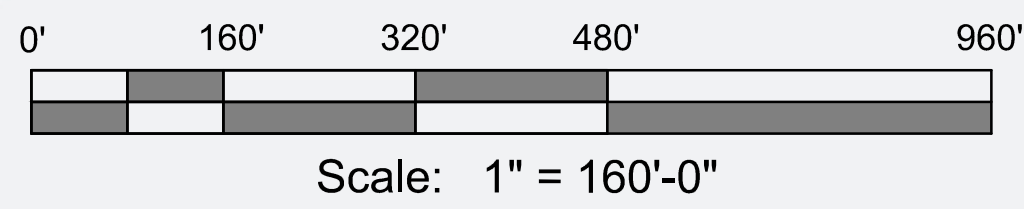
Impact Statement for Signal Park, Planned Business Park

- 1) The impact of the proposed development on natural resources and environmental quality will be a positive one. The site work proposed is being engineered to capture and control runoff with extensive drainage. Particular attention is being paid to preserving the water quality in the wetlands on the property's western boarder. There are no agricultural lands on the site or bordering the site so there can be no adverse impact. There will be a substantial overall improvement in the local and regional air quality with the promulgation of Landfill gas as an energy source for heat and transportation.
- 2) There will be no impact on abutters as a result of this development with the exception of CW Allwaste through which the property is accessed via a 50ft Right of Way. Extreme care is being taken to protect the substantial wetland that is the shared boundary with most of the abutters and there is no development proposed within 100 ft of any property line.
- 3) Parking is an integral part of the proposed Phase 1 subdivision facility. We expect to provide leased parking in addition to whatever additional parking is required for each proposed use. We have ample space to expand parking should a change of use require more to be made available.
- 4) The intended impact of the Signal Phase 1 subdivision is to a new housing alternative for Lebanon residents. This should have a significant positive impact on roadway use. While this will mean new traffic in and out of this location, this use will, in total, shorten commuter routes, thereby reducing road mileage and further cutting air pollution.
- 5) With the completion of the new Etna Road sewer connector and given the current size of the existing water service in the area, there will be ample resources available to provide for the demand created by this development. The storm water discharge from the property will remain separate from the sewer line and the flow will engineered to return to the aquifer on site.
- 6) The drainage system is engineered to eliminate the impacts of run-off from 25 year storm events and to slow the flow of storm water to prevent any rising water in the wetland that could impact abutters.

- 7) This property is sufficiently remote and in an industrial area. Noise control measures should not be necessary for the proposed uses.
- 8) There should be no effect on the public school system if there are units large enough to house a family. The cost to the school system should be more than covered by the new tax revenue generated by the real estate.
- 9) There are no structures or uses proposed that would generate substantial solid waste. MSW that is created will be taken to the Lebanon landfill.
- 10) In its first phase, this development will have the positive fiscal impact of generating higher property tax revenue. Because the development is a private condominium complex, there will be no added burden on the city or the state to maintain the private roadways. Similarly, new taxes will be generated to support the school system and the city's obligations to the county with limited increase in demand on either.
- 11) All permanent structures will be sprinkler protected and roadways maintained to promote easy access for the fire department. We will also consult with the police to design landscaping with ample site lines and lighting to promote public safety.

SIGNAL PARK
CONCEPTUAL
SUBDIVISION AND
USE ALLOCATION PLAN

DRAFT SUBDIVISION
BUSINESS PARK DISTRICT
PHASE I



DECEMBER 2024

KEY:

- LIMITS OF PROPOSED BUSINESS PARK DISTRICT
- LIMITS OF PROPOSED SUBDIVISION PARCEL

PLANNED 26-17 SUBDIVISION PARCELS

PARCEL ID	SITE ADDRESS	OWNER NAME / USE	ACRES
26 - 17	0 ETNA RD	CHOICE STORAGE, LLC (ENTIRE PARCEL)	± 182.00
26 - 17	0 ETNA RD	AREA OF PLANNED BUSINESS PARK DISTRICT	± 96.86
LOT #1	0 ETNA RD (LOT #1)	USE: RESIDENTIAL (WITHIN PBP)	± 5.56
LOT #3	0 ETNA RD (LOT #3)	USE: COMMERCIAL (WITHIN PBP)	± 6.22
LOT #2	(BETWEEN LOT 1 & 3)	PROPOSED ROW AREA (WITHIN PBP)	± 1.20
LOT #4	0 ETNA RD (LOT #4)	CHOICE STORAGE, LLC (WITHIN PBP)	± 84.00
LOT #4	0 ETNA RD (LOT #4)	CHOICE STORAGE, LLC (ENTIRE LOT)	± 165.00
LOT #5	0 ETNA RD (LOT #5)	USE: ATHLETIC FIELD (WITHIN RL3)	± 5.54
TOTAL ACREAGE OF 26-17 PARCELS:			± 182.00

PLANNED BUSINESS PARK PARCELS

PARCEL ID	SITE ADDRESS	OWNER NAME	ACRES	PBP USE
51 - 10	40 N LABOMBARD RD	CWM ALL WASTE LLC	± 18.61	N/A
51 - 10 A	40A N LABOMBARD RD	LOT #1C PROPOSED RECYCLING YARD:	± 9.61	
51 - 10 B	40B N LABOMBARD RD	LOT #2C PROPOSED RECYCLING YARD:	± 6.74	
	(BETWEEN LOT 1C & 2C)	PROPOSED ROW AREA	± 1.80	
51 - 11	32 LABOMBARD RD	CHALOUX PROPERTIES LLC	± 2.00	C: 2.00
64 - 21	35 LABOMBARD RD	ROUTE 120 HOTEL LLC	± 8.97	C: 8.97
64 - 25	25 LABOMBARD RD	CHALOUX PROPERTIES LLC	± 2.85	C: 2.85
26 - 17	0 ETNA RD	CHOICE STORAGE, LLC (WITHIN PBP DISTRICT)	± 1.20	
	(BETWEEN LOT 1 & 3)	PROPOSED ROW AREA (LOT #2)	± 5.56	
26 - 17A	0A ETNA RD	LOT #1 PROPOSED RESIDENTIAL USE:	± 6.22	C: 6.22
26 - 17B	0B ETNA RD	LOT #3 PROPOSED COMMERCIAL USE:	± 84.00	
26 - 17C	0C ETNA RD	LOT #4 PORTION WITHIN PBP DISTRICT:		
51 - 14	39 LABOMBARD RD	KLUBIO, LLC	± 2.31	N/A
51 - 1	41 LABOMBARD RD	TLL REALTY LLC	± 2.35	C: 2.35
51 - 15	33 LABOMBARD RD	NOTCH CLIMBING REAL ESTATE LLC	± 2.55	N/A
TOTAL ACREAGE FOR PROPOSED BUSINESS PARK:			± 136.16	N/A
TOTAL PBP COMMERCIAL USE (C):			22.39 ACRES	
TOTAL % COMMERCIAL (CAN NOT EXCEED 20%):			16.44 %	

PLANNED BUSINESS PARK REQUIREMENTS

- 508.2 GENERAL REQUIREMENT. A PLANNED BUSINESS PARK IS A USE PERMITTED IN THE LIGHT INDUSTRIAL DISTRICT AND THE INDUSTRIAL RAIL ACCESS DISTRICT.
- 508.3 LOT AREA. A PLANNED BUSINESS PARK SHALL INCLUDE A MINIMUM OF TWENTY (20) CONTIGUOUS ACRES WITH AT LEAST FOUR (4) LOTS. 508.4 SECTORS.
- ALLOWED USES. A. THE PLANNED BUSINESS PARK SHALL BE SHOWN ON AN APPROVED SUBDIVISION PLAN AND USE ALLOCATION PLAN. THE SUBDIVISION PLAN AND USE ALLOCATION PLAN APPROVED BY THE PLANNING BOARD SHALL DESIGNATE THE ALLOCATION OF THE INDUSTRIAL/OFFICE, COMMERCIAL, AND RESIDENTIAL USES WITHIN THE PARK.
- NO MORE THAN 20% OF THE NET LAND AREA NOT PLANNED FOR OPEN SPACE, ROADS, OR UTILITIES SHALL BE USED FOR THE COMMERCIAL SECTOR.
- C. UNLESS LIMITED BY THE PLANNING BOARD AT THE TIME OF SUBDIVISION APPROVAL, THE FOLLOWING USES SHALL BE PERMITTED.
1. THE FOLLOWING USES SHALL BE PERMITTED BY RIGHT FOR ANY PLANNED BUSINESS PARK INDUSTRIAL/OFFICE SECTOR: WAREHOUSE; TRUCKING TERMINAL; PUBLISHING/PRINTING; PLUMBING, ELECTRICAL, OR CARPENTRY SHOP; RESEARCH LABORATORY; LOCAL GOVERNMENT USE; ESSENTIAL SERVICE; OUTDOOR STORAGE PER SECTION 303.4 (LESS THAN 20%); GROUP DAY CARE FACILITY PER SECTION 604; GENERAL BUSINESS OFFICES; RESEARCH FACILITIES; MEDICAL OFFICE BUILDINGS; HEALTH CLUBS; EDUCATIONAL FACILITY; COLLEGE/UNIVERSITY; EDUCATIONAL FACILITY; VOCATIONAL SCHOOL; AND ACCESSORY USES TO A PERMITTED USE. RETAIL SHOWROOMS PER SECTIONS 303.5 AND 303.5 SHALL BE ALLOWED BY CONDITIONAL USE PERMIT.
2. THE FOLLOWING USES SHALL BE PERMITTED BY RIGHT FOR ANY PLANNED BUSINESS PARK COMMERCIAL SECTOR: RETAIL STORE(S) UP TO A CUMULATIVE MAXIMUM OF 30,000 SQ. FT. OF GROSS FLOOR AREA; PERSONAL SERVICE; BANK, BRANCH BANK; RESTAURANT; SANDWICH SHOP/DELL; REPRESENTATION STAND; OFFICE; MOTEL; HOTEL; MOVIE THEATER; MEMBERSHIP CLUB; AMUSEMENTS (INDOOR); PRINTING (I.E. RETAIL COPY STORE); RADIO OR TV STUDIO; GROUP DAY CARE FACILITY PER SECTION 604; LOCAL GOVERNMENT USE; AND HEALTH CLUBS.

PHASE I



CURRENT USE
LOT #4 (26-17)
± 165.00 ACRE
REMAINING PARCEL
WITH ± 83.34 ACRES
WITHIN PROPOSED
BUSINESS PARK DISTRICT

ID: 51-14
AC: ± 2.31

ID: 51-15
AC: ± 2.55

ID: 64-25
AC: ± 2.85

ID: 51-11
AC: ± 2.00

ID: 64-21
AC: ± 8.97

ID: 51-1
AC: ± 2.35

ID: 51-10
AC: ± 18.61

PROPOSED
50FT ROW 1.80 AC
BWT 1C & 2C

CHANGES
TO LOT 1C & 2C

LOT # 3
± 6.22 ACRE
COMMERCIAL USE

LOT 2
PROPOSED
50FT ROW
1.20 AC BWT 1&3

LOT # 5
± 5.54 ACRE
SOCCER FIELD

LOT # 1
± 5.56 ACRE
RESIDENTIAL USE

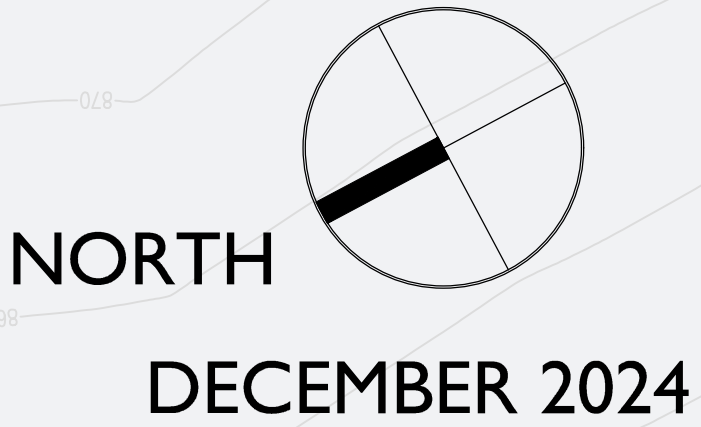
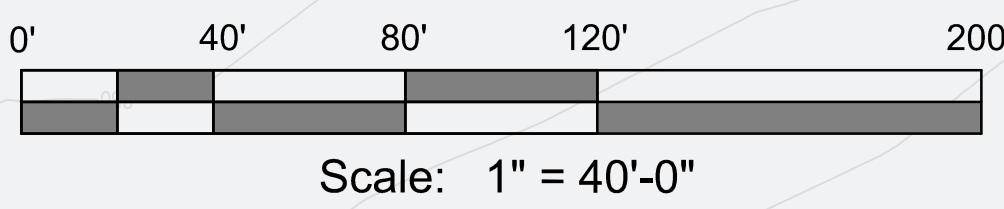
END PHASE 1A
50FT PAVED ROW

TEMPORARY
ACCESS ROAD

TEMPORARY
ACCESS ROAD

PROPOSED BUSINESS PARK DISTRICT LIMITS

SIGNAL PARK
CONCEPTUAL
PHASE I DESIGN
LOT 1, LOT 2, & LOT 3
DRAFT SUBDIVISION
BUSINESS PARK DISTRICT
PHASE I



PHASE I



LOT 4

LOT 1

LOT 2

LOT 3

PICKLEBALL
COURTS

POOL AREA

DOG RUN

PLAY
AREA

SIGN

46 - UNIT
BUILDING

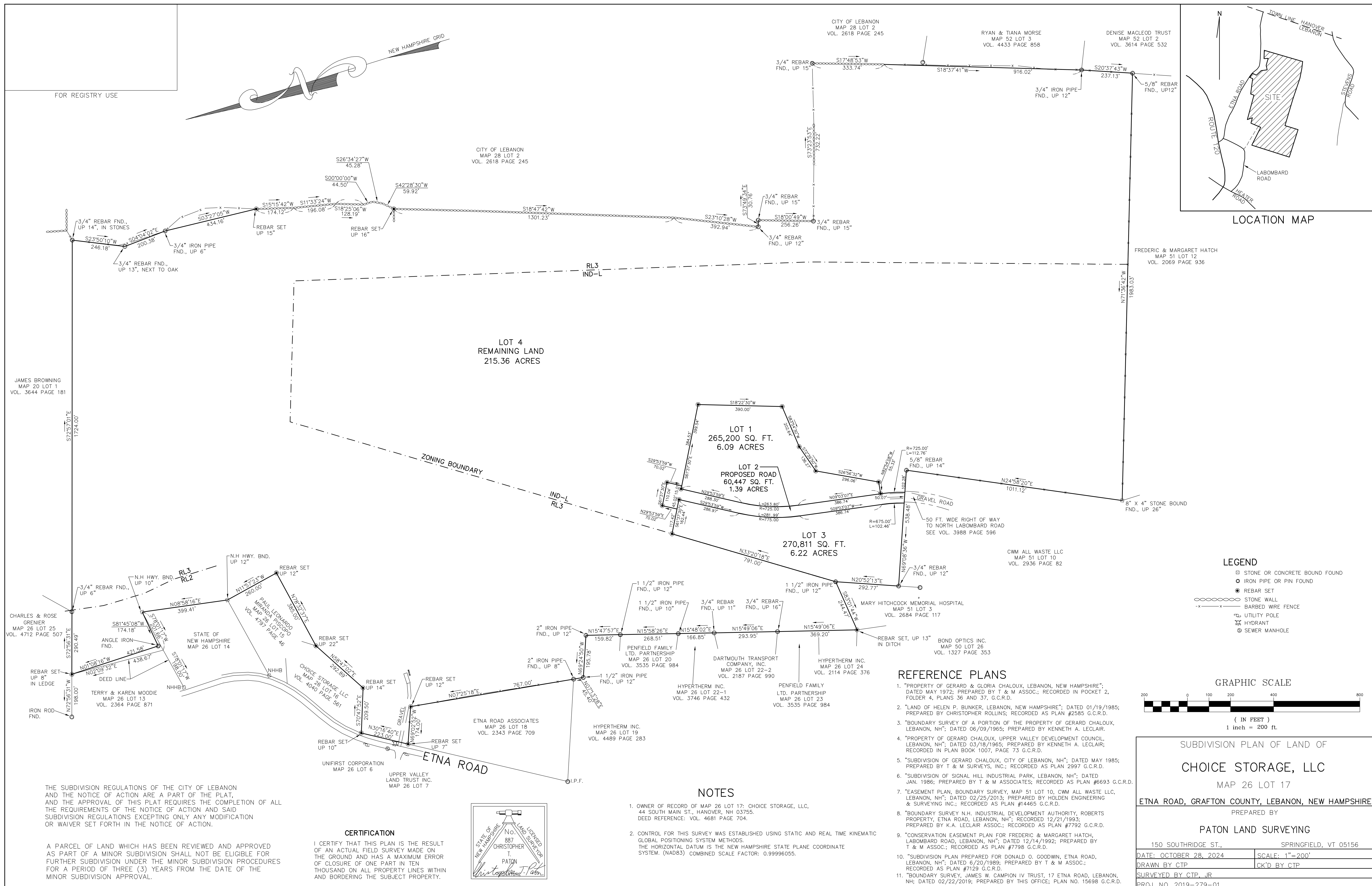
46 - UNIT
BUILDING

IND-L
RL-3

MEETING
ROOM

DAYCARE
USE

PLAY
AREA



LEBANON PLANNING BOARD 2025 MEETING & REVIEW SCHEDULE A

*for applications not requiring an escrow for engineering review fees
(see reverse side for more information)*

MEETING DATE* <i>(completeness review & commencement of public hearing)</i>	APPLICATION DEADLINE*	STAFF REVIEW*
JANUARY 13, 2025	DECEMBER 9, 2024	DECEMBER 16, 2024
FEBRUARY 10, 2025	JANUARY 13, 2025	JANUARY 21, 2025* (Tuesday)
MARCH 17, 2025**	FEBRUARY 10, 2025	FEBRUARY 18, 2025* (Tuesday)
APRIL 14, 2025	MARCH 10, 2025	MARCH 17, 2025
MAY 12, 2025	APRIL 14, 2025	APRIL 21, 2025
JUNE 9, 2025	MAY 12, 2025	MAY 19, 2025
JULY 14, 2025	JUNE 9, 2025	JUNE 16, 2025
AUGUST 11, 2025	JULY 14, 2025	JULY 21, 2025
SEPTEMBER 8, 2025	AUGUST 11, 2025	AUGUST 18, 2025
OCTOBER 13, 2025***	SEPTEMBER 8, 2025	SEPTEMBER 15, 2025
NOVEMBER 10, 2025	OCTOBER 13, 2025	OCTOBER 20, 2025
DECEMBER 8, 2025	NOVEMBER 10, 2025	NOVEMBER 17, 2025

*All dates are Mondays except where otherwise noted

**March 10th meeting room conflict for Election Day/meeting moved to March 17th

***Columbus Day – City Hall Open

Site Plan Review Regulations Section 4.7 & Subdivision Regulations Section 7.7

Upon submission of an application, the Planning Director will determine whether the application requires engineering review, and whether the fees shall be paid in advance and placed in an escrow account.

SCHEDULE A applies to (i) applications that do not require engineering review, and (ii) applications that require engineering review and will be billed. Schedule A applications will typically include:

- boundary line adjustments,
- minor subdivisions,
- small-scale site plans, and
- conditional use permits.

SCHEDULE B applies to applications that require engineering review and that require engineering review fees to be paid in advance and placed in escrow. Schedule B applications will typically include:

- preliminary major subdivisions,
- final major subdivisions, and
- large-scale site plans.

The Planning Department will endeavor to notify the applicant as to which Schedule applies and whether engineer fees will be billed or paid in advance by no later than the Friday following the application submission deadline. If applicable, staff will also notify the applicant at that time the amount required for engineering review fees to be placed in escrow.

PLANNING WORK SESSIONS

JANUARY 27, 2025	APRIL 28, 2025	JULY 28, 2025	OCTOBER 27, 2025
FEBRUARY 24, 2025	*MAY 27, 2025 (Tuesday)	*AUGUST 18, 2025 (3 rd Monday of the month)	NOVEMBER 24, 2025
MARCH 24, 2025	JUNE 23, 2025	SEPTEMBER 22, 2025	DECEMBER (Cancelled)

ALL MEETINGS BEGIN AT 6:30PM UNLESS OTHERWISE NOTED ON THE AGENDA

Planning Sessions are the 4th Monday of each month, unless a Monday holiday or other conflict * (see notes above)

NEW PLANNING BOARD RULES OF PROCEDURE
FOR ADOPTION AT NOVEMBER 25, 2024 WORK SESSION
with proposed edits by City of Lebanon Legal Counsel

RULES OF PROCEDURE
FOR THE PLANNING BOARD
CITY OF LEBANON, NEW HAMPSHIRE

ARTICLE I **GOVERNING RULES**

- 1.1 GOVERNANCE.** The Planning Board of the City of Lebanon shall be governed by the provisions of all applicable State statutes, City regulations, the Site Plan Review Regulations and Subdivision Regulations, and these Rules of Procedure adopted under the authority of RSA 676:1.
- 1.2 DEFINITION OF BOARD.** As used in these rules, the term "Board" shall mean the Planning Board duly appointed by the legislative body of the City of Lebanon under the authority of RSA 673.
- 1.3 DEFINITION OF STAFF.** Staff shall mean the Director and/or Deputy Director of the City of Lebanon Planning and Development Department.
- 1.4 DEFINITION OF MEETING.** As used in these rules, the term "meeting" shall have the meaning as set forth in RSA 91-A:2.
- 1.5 RULES OF DECORUM.** Meetings of the Planning Board shall be conducted in the spirit of the "Lebanon Boards, Committees, and Commissions Rules of Decorum and Commitment to Civil Behavior," which is appended hereto and made a part of these Rules of Procedure, and all Board members shall endeavor to adhere to the principles set forth therein.

ARTICLE II **MEMBERS AND ALTERNATES**

- 2.1 REGULAR MEMBERS.** The Planning Board shall consist of nine (9) regular members, namely eight persons who shall be appointed by the City Council, by majority vote, upon nomination by the City Manager, and one member of the City Council who shall be selected by it as a member ex-officio with voting privileges.
- 2.2 ALTERNATE MEMBERS.** Alternate members of the Board shall be appointed by the City Council, by majority vote, upon nomination by the City Manager. Alternate members shall join the regular members in all presentations, public hearings, and discussions except that such alternates may not vote on any proposal or motion before the Board unless so directed by the Chair and shall not participate in the Board's deliberations once the public hearing has closed. In the absence or recusal of any regular member, except the ex-officio member of the City Council, the Chair shall appoint an alternate member to fill such vacancy. Said alternate shall then act as a regular member for the matter(s) for which they are filling the vacancy. In the absence or recusal of the ex-officio member, the ex-officio alternate shall be seated in their place.

2.3 All members of the Planning Board shall be residents of the City of Lebanon and shall be sworn in and take an oath of office as required by RSA 42:1.

2.4 ATTENDANCE. A Board member may be excused for non-attendance at a meeting for valid reasons if he or she notifies the Chair and Staff at least 24 hours prior to the meeting. After three (3) unexcused absences within a given member's term, the Chair shall notify the City Council.

Any Board member may leave the Board chambers for pressing business while in regular session after notice to the Chair.

A Board member who needs to participate remotely per Section 2.5 shall provide the Chair and Staff with as much notice as possible.

A Board member who has a conflict of interest or needs to recuse themselves from hearing an application scheduled for a public hearing shall provide the Chair and Staff with as much notice as possible and in any case no less than 24 hours' notice.

2.5 REMOTE ATTENDANCE. At the discretion of the Chair, a Board member may participate remotely, if: it is technologically feasible and reasonable to do so when the member's attendance is not reasonably practical; the reason for absence is stated in the minutes; the remote member states where they are physically located, and states who is present in that location with them. The Chair shall ask if any other Board member has a concern or objection regarding the absent member's virtual attendance. All participants, including the public, must be able to [contemporaneously](#) hear, read and discern the meeting discussion. Members participating remotely may vote, but shall not count toward quorum. All votes must be taken by roll call. The Chair shall be physically present at the meeting location specified in the meeting notice.

2.6 TRAINING. All newly-appointed Board members shall attend one (1) orientation meeting with the Planning and Development Director, prior to sitting as a member of the Board, unless waived or extended by the Chair at the request of the Planning and Development Director.

2.7 REMOVAL OF MEMBERS. A Board member may be removed from the Board by the City Council, after a public hearing on the matter, upon written findings of inefficiency, neglect of duty, or malfeasance in office, in accordance with RSA 673:13.

ARTICLE III **OFFICERS AND DUTIES**

3.1 ELECTION OF OFFICERS. At the annual meeting, the Board shall elect a Chair and a Vice-Chair from the regular members and such other officers as it may deem necessary; but in case of failure to elect at the time specified, the election shall take place at the next meeting. The Chair and the Vice-Chair shall hold their respective offices until the next annual meeting after election or until their successors are elected and qualified. They shall perform such duties as the Board may prescribe. The office of Chair and Vice-Chair shall be held by an individual for no more than three consecutive terms per office unless waived by the Board. [The office of Chair may not be held by the ex-officio member.](#)

3.2 DUTIES OF THE CHAIR. The Chair shall call the meeting together, preside over all meetings and hearings of the Board, put all questions to a vote, maintain order, decide all questions of order and procedure, subject to these rules, and shall appoint any committees found necessary to carry out the business of the Board.

The Chair may present to the Board such matters as in the Chair's judgment require attention.

At the request of any Board member, the Chair shall direct that the yeas and nays be taken and entered on the record on any question before the Board.

When the Board has no established rule of parliamentary practice, the Chair may seek guidance from Robert's Rules of Order as may be appropriate and helpful. Robert's Rules of Order shall be used as a reference only and shall not bind the Chair or the Board in any manner.

The Chair shall exercise general supervision over the business of the Board and shall execute all formal documents on behalf of the Board.

3.3 DUTIES OF THE VICE-CHAIR. The Vice-Chair shall assume the duties and powers of the Chair in the Chair's absence and aid the Chair as necessary in the performance of their duties.

3.4 DUTIES OF STAFF. Staff shall be in attendance at every meeting of the Planning Board as defined by Article IV of these Rules and shall arrange for the City Engineer to be present at the Board's regular meetings and as needed. Subject to these Rules and at the direction of the Board, Staff shall act to support the Board. This support shall take such forms as necessary to ensure that the Board's actions and decisions are made in an educated and well-informed manner, including but not limited to: preparing reports and other duties as directed by the Chair; preparing forms as necessary for the Board's functions; compiling relevant information, maps, and records for the Board's review; sending such notices as required by law; keeping the minutes of all Board actions and proceedings; and keeping records of its examinations and other official actions.

Staff shall take such steps as necessary for the recording of meetings and the creation of complete and accurate minutes, including the provision of a recording secretary. Minutes shall, at a minimum: comply with the minimum requirements of NH RSA 91-A; show the vote of each regular member upon every question, or if absent, disqualified, or failing to vote so indicate; include the names of all participants; and include a summary of the facts on which a decision is based, as well as the decision rendered. A draft of the meeting's minutes will be submitted to the Board for review and approval at the next regular meeting and/or planning session of the Board.

Staff, in consultation with the Chair, shall prepare the agenda for each meeting, provide all supportive documentation, and deliver said materials to each Board member no later than the Wednesday preceding any scheduled Monday meeting. Staff shall also make public notice of the agenda of each meeting in accordance with the appropriate regulations. Any Board member may request and have placed on the agenda any item for discussion with the approval of the Chair.

Requests for assistance from Staff in matters before the Board shall be made by the Board either by consensus or motion duly passed. Requests for information may be made to Staff by any Board member.

Staff shall perform other duties as directed by the Chair.

3.5 VACANCIES. Any vacancy among the officers of the Board shall be filled by a regular member by election, for the unexpired term, at the next regular meeting of the Board. Staff

shall take such reasonable steps as necessary to make the City Council aware of vacancies on the Planning Board in a timely fashion.

- 3.6 OTHER CITY STAFF SUPPORT.** The Chair may request, through Staff, the attendance of any employee of the City to confer with the Board.

ARTICLE IV **MEETINGS**

- 4.1 ANNUAL MEETINGS.** The annual meeting of the Board shall be the second Monday in the month of January each year, or if there is no meeting due to a lack of business, then the first public meeting held thereafter. Subject to the requirements of Sections 4.2 and 4.3, Staff shall prepare a draft annual meeting calendar for presentation to and approval by the Board at the annual meeting.
- 4.2 REGULAR MEETINGS.** Regular meetings shall normally be conducted by the Board at which applications for development shall be reviewed and acted upon. Regular meetings of the Board shall be held on the second Monday of the month except that when a regular meeting date falls on a holiday, the Board shall conduct the meeting on the next business day or at the next reasonable opportunity. Staff shall give each Board member timely notice of the cancellation of such meeting and shall post a notice in at least one public place by the time of the regularly scheduled commencement. Regular meetings shall normally start at 6:30 p.m. and shall normally end by 9:30 p.m. [The Board shall hold at least one meeting per month as required by RSA 673:10, II.](#)
- 4.3 PLANNING SESSIONS.** Planning sessions shall be conducted by the Board at which study items and planning issues are analyzed. Said sessions shall normally be held on the fourth Monday of the month unless there is no business to transact, in which case no meeting shall be held. When a planning session meeting date falls on a holiday, the Board shall determine whether to reschedule the meeting to the next reasonable opportunity or cancel the meeting. Staff shall give each Board member timely notice of the cancellation of such meeting and shall post a notice in at least one public place by the time of the scheduled commencement. Planning sessions shall normally start at 6:30 p.m. and shall normally end by 9:30 p.m.
- 4.4 SPECIAL MEETINGS.** Special meetings of the Board may be called by the Chair provided that at least 48 hours' notice shall be given to each Board member of the time, place, and business of such meeting. Staff shall ensure the provision of adequate public notice of such special meetings as required by law and City policy.
- 4.5 PLACE OF MEETING.** Meetings of the Board shall normally be held at City Hall, in the City of Lebanon, or at some other public place in the City of Lebanon, or, pursuant to Section 4.6, at the site of a proposed project for the express purpose of inspecting said site as part of the review for a proposed project.
- 4.6 SITE WALKS.** Site Walks scheduled pursuant to the procedures set forth in the Site Plan Review Regulations and Subdivision Regulations shall constitute meetings as defined by Article 1.4 of these rules, and shall therefore be posted and conducted according to these rules, including the taking of minutes. No decisions shall be made concerning an application during a Site Walk. Members of the public may ask questions during a site walk only at the discretion of the Chair.
- 4.7 OPEN MEETINGS.** All meetings of the Board and its committees shall be open to the public except as stipulated by NH RSA 91-A.

ARTICLE V **CONDUCT OF BUSINESS**

5.1 CALL TO ORDER. Meetings shall be called to order by the Chair, or in the Chair's absence, by the Vice-Chair. In case of absence of both the Chair and the Vice-Chair, if a quorum is determined to be present, the Board shall proceed to elect a Board member, by majority vote of those present, as Temporary Chair of the meeting until the Chair or Vice Chair appears.

5.2 QUORUM. As a public body subject to RSA 91-A, the Board shall only conduct a meeting and transact business when a quorum is physically present, unless that meeting constitutes an "emergency" as defined by and subject to RSA 91-A:2, III. A quorum shall consist of a minimum of five (5) members of the Board including ex-officio members and alternate members sitting in place of regular members.

5.3 ORDER OF BUSINESS. For each regular meeting the order of business, unless otherwise ordered by the Chair, shall be as follows, and shall be so presented on the agenda:

1. Call to Order
2. Notice of Regional Impact
3. Public Hearing Items
4. Other Business
5. Approval of Minutes
6. Adjournment

For each planning session, the order of business shall be so presented on the agenda:

1. Call to Order
2. Study Items
3. Committee Reports
4. Other Business
5. Approval of Minutes
6. Adjournment

5.4 PUBLIC HEARINGS. Public hearings shall normally be held in accordance with the following general procedures:

A. INITIAL PRESENTATIONS. Prior to the opening of a Public Hearing, the Chair may invite Staff to briefly describe the proposed hearing item to the Board. The Chair shall then open the Public Hearing and invite the Applicant for the proposed hearing item to give a presentation to the Board, which shall provide sufficient detail and description so as to inform all community stakeholders, abutters, and members of the public alike as to the nature of the proposed item, including existing conditions and proposed changes, in order that they may comment on it.

B. STAFF AND BOARD QUESTIONS. After the presentation of the item, the Chair shall invite Staff to raise to the Applicant any outstanding questions that the Staff still have concerning the item, which the Applicant shall answer. Once the Staff questions have been answered, the Chair shall invite members of the Board to ask questions concerning the item, and invite the Applicant to respond.

C. PUBLIC COMMENT. After the Applicant has had an opportunity to address all of the Staff and Board questions and comments, the Chair shall invite members of the public, in person or attending remotely, to speak on the item. All comments

and questions shall be addressed to the Chair, who will then invite the Applicant to address any such comments and questions if necessary. A time limit of three minutes for each commenter shall normally be in effect, and the Chair shall ensure that the commenter and Applicant do not engage in back-and-forth commentary or argument. After a given commenter has finished speaking, the Chair may invite the Applicant to respond, at the Chair's discretion. The Chair will also grant the Applicant a chance to respond to any comments at the end of the Public Comment period.

D. FINAL BOARD QUESTIONS, WAIVERS, AND CLOSING THE HEARING. After the Public Comment period, the Chair shall invite the members of the Board to ask any other questions they may have for the Applicant, Staff, or other participants in the hearing. The Board shall normally consider and vote on waiver requests at this time. Waivers shall normally be voted on separately but may be voted on collectively at the discretion of the Chair. The Chair shall then ask the Board if it has all the information it needs to make a decision on the application and, if so, shall close the public hearing and enter into deliberation to discuss the item pursuant to Article VII.

5.5 PERMISSION REQUIRED TO ADDRESS THE BOARD. Persons other than members of the Board shall not be permitted to address the Board except by consent of the Chair. At the Chair's discretion, a time limit for each speaker may be imposed. The speaker shall not enter into any debate or initiate or engage in any direct conversation with anyone present, shall speak only to the subject matter indicated, and shall direct all questions to the Chair.

5.6 MINUTES. The minutes of previous meetings shall be submitted for approval at the next regular meeting or planning session. The Chair shall call for any corrections to the minutes. Following the discussion of corrections, if any, the minutes shall be approved by motion duly passed by majority vote of the members present. All members may vote on the minutes and it shall be presumed that any member who was absent at the meeting that is the subject of the draft minutes under consideration by the Board has - unless the member states otherwise - adequately familiarized themselves with the conduct and content of the meeting by reviewing the meeting materials and the recording of the meeting.

5.7 RECESS OF THE MEETING. The Chair may order a temporary halt to the proceedings of the meeting. Said recess should normally not exceed 30 minutes. Upon ordering the recess, the Chair shall state the time and place for reconvening.

5.8 ADJOURNMENT OF MEETING. The Board shall adjourn each meeting to its next scheduled meeting or to a special meeting specifying time, date, and place. If the order of business has not been concluded by 9:30 PM, the Chair shall poll the attending Board members to determine if the Board should continue beyond 9:30 PM or continue the matters on the agenda to the next appropriate meeting, or continue to a special meeting specifying time, date, and place. The Chair shall then put the proposed determination to a vote.

ARTICLE VI **APPLICATIONS**

6.1 POSTPONEMENTS. The Board may postpone a completeness determination if requested by the Applicant in writing. The Board may grant only one such postponement unless the Applicant demonstrates sufficient cause to allow for a second postponement. No additional postponement shall be permitted.

- 6.2 CONTINUANCES.** The Board may continue a hearing if a decision cannot be reached [at that meeting](#). The Board may request a continuance beyond the 65-day period (or 95-day period for applications found to have regional impact in accordance with the Site Plan Review Regulations [or Subdivision Regulations, as applicable](#). Requests for continuances by the Applicant beyond the 65- or 95-day period shall only be granted upon demonstration of extenuating circumstances that the Board agrees warrant such a continuance. If the reason for the continuance is that there is insufficient information to make an appropriately informed decision, the Board shall instead consider disapproving the application “without prejudice,” allowing the Applicant to reapply with the same or a substantially similar application. In the case of a continuance, no further public notice [or special notice to any party](#) shall be necessary provided that the date, time, and place of the continued hearing shall be announced before adjournment.
- 6.3 SUBMISSIONS.** Application materials shall be submitted by the Applicant in accordance with the Site Plan Review Regulations [or Subdivision Regulations, as applicable](#). Submissions after the agenda packet has been posted are not permitted unless authorized by the Chair upon demonstration of extenuating circumstances that the Chair agrees warrant such a submission. Such late submissions shall not be distributed to the Planning Board members, but shall instead be presented to the Planning Board at the meeting at which the Public Hearing is to take place.
- 6.4 AMENDMENTS.** In the case of applications to amend ~~site plans previously approved~~ [alsed](#) by the Board, discussions shall normally be limited to the substance of the requested amendment(s), subject to the discretion of the Chair.

ARTICLE VII **VOTING & DELIBERATION**

- 7.1 MOTIONS.** Motions to approve or deny an application shall normally be considered during deliberation following the close of the public hearing. If proposed motions are to be written or amended, this should be done during this deliberative period. The Chair may also assign a motion to be written by a member and may continue the deliberation to a future meeting pursuant to Section 7.2.

Motions should be clearly presented to those attending the meeting and shall be accurately rendered in the public record. If a [draft](#) motion is included in the Staff Memo portion of the posted, publicly available packet, reference to said packet shall be considered sufficient to these purposes, and only newly-proposed amendments must be read into the public record [at a meeting](#). If the text of the motion is not publicly available prior to the start of the meeting, then the entire motion must be read into the public record.

A motion may not be withdrawn or amended by the mover without the consent of the second.

Once the motion has been read and seconded, the Chair shall invite the members of the Board to discuss the motion, including proposed amendments or alternatives. The Chair shall then, at their discretion, conduct a vote on the motion which shall normally be held by roll call.

- 7.2 CONTINUATION OF DELIBERATION.** If deemed necessary by the Chair to continue deliberation to a future meeting, the Board may do so without the consent of the Applicant only if such an extension would not push a given application past the 65- (or 95-) day deadline for action by the Board. If such an extension would require the Board to make a decision past the 65- (or 95-) day deadline for action by the Board, the Board shall consider

other alternatives, such as disapproving the application “without prejudice” (see Section 6.2 of these Rules).

- 7.3 MAJORITY VOTE REQUIRED.** Determinations on any motion before the Board shall require the concurrence of a majority of the regular members present, including alternate members serving in the capacity of a regular member, as well as regular members attending remotely as may be permitted pursuant to RSA 91-A.
- 7.4 TIE VOTE OR DECISION BY LESS THAN A MAJORITY.** A tie vote or an approval or denial by less than a majority of the regular members present constitutes no action. If the Board is unable to obtain concurrence of a majority of regular members present on a request because of the absence of one or more Board members from the vote, it shall continue the discussion or may continue the matter to a subsequent meeting pursuant to Section 6.2 above.
- 7.5 CONFLICT OF INTEREST or PREJUDGEMENT.** In accordance with RSA 673:14, no Board member shall participate in deciding or shall sit upon the hearing of any question if that member has a direct personal or pecuniary interest in the outcome which differs from the interests of other citizens, or if that member would be disqualified for any cause to act as a juror upon the trial of the same matter in any action at law.

Reasons for disqualification include, but are not limited to, when a Board member:

- A. Is an abutter;
- B. Is related to the Applicant or any abutter;
- C. Has assisted or advised the Applicant or any abutter; or,
- D. Is biased or prejudiced in any manner or to any degree which would, in the eyes of a reasonable and prudent person, prevent the member from acting impartially with respect to the application before the Board.

Reasons for disqualification also include prejudgment which occurs when a Board member has directly or indirectly taken a position, formed a conclusion, or has prejudged the application to be decided by the Board. Prejudgment includes, but is not limited to, a position taken either for or against an application expressed at a public meeting, by letter, by ex parte communication, or by comment made in some public forum. Prejudgment does not include questions or statements made by Board members in response to the details of the application expressed during the public hearing held on that application or during the Board's deliberations.

When an uncertainty arises as to whether a Board member is disqualified in particular circumstances, the Board shall, at the request of that member or another Board member, vote on the question of his/her disqualification, but such vote shall be advisory and non-binding. Any person with a direct interest in the outcome may voice an objection to a Board member's participation, setting forth specific reasons, and may also request such a vote, but such a request shall be non-binding. Any such request or objection shall be made either prior to or at the commencement of the public hearing, or at such later time as the facts claimed to warrant disqualification first become known. No such vote shall be taken if the Board member involved steps down voluntarily.

A Board member who is disqualified shall remove himself/herself from the Board and shall sit with the public until such time as the Board has completed its consideration of the application at that meeting. The member may then return to the Board. If, as a result of disqualification, the Board loses its quorum, then there shall be an adjournment or recess of consideration of the matter until there is a quorum at either the same meeting or the next available meeting.

- 7.6 VOTE OF ABSENT MEMBERS.** Unless a Board member has attended the meetings on an application or has stated publicly that he or she has examined the record and become familiar with the evidence presented from a transcript of the proceedings, he or she shall not cast a vote on any matter directly related to the application.

ARTICLE VIII **COMMITTEES**

- 8.1 AUTHORIZATION.** The Chair is authorized to appoint Committees to study and to report upon such matters as directed by the Chair which are germane to the purpose of the Board.
- 8.2 DEFINITION OF COMMITTEE.** A group of Board members delegated by the Chair to perform a function.
- 8.3 MEMBERSHIP.** All Committees shall consist of not more than four (4) Board members.
- 8.4 DUTIES.** The duties of any Committee shall be defined by the Board at a regular meeting.
- 8.5 COMMITTEE CHAIR.** The Chair of the Committee shall be determined at the discretion of the Chair of the Planning Board.
- 8.6 MEETINGS.** The Chair of a Committee shall call a meeting at such time and place as he or she may deem proper whenever there is any business requiring the attention of the Committee.
- 8.7 INVESTIGATIONS.** If necessary for the proper consideration of any matter referred to the Committee, the Committee is authorized to make investigations and call upon the City staff for such surveys, plans, estimates, and recommendations as may be deemed necessary.
- 8.8 RSA 91-A.** All committees shall comply with the provisions of RSA 91-A including but not limited to notice, open meetings, minutes, and governmental records requirements.

ARTICLE IX **E-MAIL AND OTHER COMMUNICATIONS BETWEEN MEETINGS**

- 9.1 PURPOSE.** The purpose of this Article is to ensure compliance with the letter and spirit of the Right-to-Know Law, RSA 91-A, and with the Due Process rights of parties appearing before the Board.
- 9.2 DEFINITIONS.** In this Article:
- A. **Communication** means a transfer of information, objective or subjective, from one person to another. It includes face-to-face or phone conversations, letters, memos, E-mails, web sites, or any other medium, regardless of the location or ownership of any device or equipment used.
 - B. **Distribution** is a one-way communication between meetings involving more than one Board member where no between-meeting response (except acknowledgment of receipt) occurs or is expected.
 - C. **Exchange** is a communication between meetings, or series of communications, involving more than one Board member which includes a between-meeting response, or expectation of a response.
 - D. **Ex Parte Communication** is communication, other than at a legally noticed meeting, between a Board member and a person with an interest in, or affected by, a pending or future case.

9.3 ACTIVITIES BETWEEN MEETINGS OF INDIVIDUAL MEMBERS. Individual Board members may, between meetings, prepare drafts of motions or other potential Board actions, and may meet or communicate with Staff with questions regarding any pending application before the Board. If a Board member discovers or is made aware of facts or information outside of a public meeting that is pertinent to the member's decision-making on an application pending before the Board, the Board member shall, at the public hearing, report all such facts or information to the Board, and parties to the case shall be given a meaningful opportunity to respond.

9.4 DISTRIBUTIONS. A Distribution may be made to any number of Board members by Staff, so long as it does not become an Exchange. Distributions by individual Board members are not permitted, but a Board member may ask Staff to make a Distribution. Staff shall normally make a Distribution as requested, but may decline to do so for good cause and upon consultation with the Chair.

If a Board member inadvertently or mistakenly makes a Distribution concerning a pending or future case and it involves a quorum of the Board (counting all senders and recipients):

- A. A copy shall be forwarded to Staff who shall determine, under RSA 91-A or other applicable law, whether the Distribution is subject to public disclosure and shall place the copy in the appropriate file;
- B. The Board member making the Distribution shall report on it, and its contents, at the public hearing on the case unless the information is exempt from disclosure under RSA 91-A; and,
- C. If subject to public disclosure, Staff shall provide a copy of the Distribution to the Applicant and all parties to the case who shall be given a meaningful opportunity to respond to the information in the Distribution at the public hearing.

9.5 EXCHANGES.

- A. Exchanges involving a quorum or more of the Board or of any Planning Board Committee are prohibited. Such Exchanges shall be considered deliberations and shall occur only at meetings noticed in accordance with RSA 91-A.
- B. Exchanges relating to an application pending before the Board that involves less than a quorum are also prohibited except that the Chair and Vice Chair may meet with Staff to discuss procedural matters related to pending applications.
- C. An Exchange pertaining to:
 - (i) policy matters that do not directly impact any application currently pending before the Board where the number of Board or Committee members involved is less than a quorum or
 - (ii) the drafting of motions pursuant to Section 8.3 involving not more than two (2) Board membersis permitted; however:
 - 1. Each Board member involved shall be responsible for preventing the number of members involved from reaching a quorum;
 - 2. Information discussed in, or generated by, an Exchange between Board members shall not be subject to further Distribution; and
 - 3. No Exchange shall include any vote or straw vote, or any Ex Parte Communication.

9.6 EX PARTE COMMUNICATIONS. Board members shall not initiate Ex Parte Communications. If an Ex Parte Communication is initiated by another person, the Board member contacted shall:

- A. Refrain from discussing the substance or merits of a case;
- B. Inform the person, if necessary, that such a discussion could lead to disqualification;

- C. Refer the person to the Department of Planning & Development or to a Board meeting, as appropriate; and
- D. Report on the conversation to the Board at a public meeting.

9.7 SCHEDULING AND AGENDA. Notwithstanding Subsections 9.4, 9.5, and 9.6, nothing in this policy prevents any Distributions, Exchanges, or Ex Parte Communications which pertain solely to:

- A. Scheduling of meetings or hearings;
- B. The determination or ordering of agenda items or topics to be taken up at meetings or hearings; or
- C. General procedural requirements pertaining to such scheduling and agenda matters.

9.8. PLANNING BOARD COMMITTEES. A Planning Board Committee shall be considered a public body, and all provisions of RSA 91-A and this Article, applicable to a quorum of the Board, shall also apply to a quorum of a Committee.

ARTICLE X **ADMINISTRATION**

10.1 ADOPTION. Upon adoption, Staff shall file a copy of these Rules and all amendments with the City Clerk as a public record and shall post the amended Rules on the City's website.

10.2 AMENDMENTS. These rules may be amended at any regular meeting by a majority vote of a quorum of the Board provided that such amendment has been presented in writing to each member of the Board at least 15 days preceding the meeting at which the vote is taken.

These Rules of Procedure were adopted by the Planning Board on November ~~21, 1989~~25, 2024 ~~and~~ ~~and amended on:~~

~~December 9, 1996 — Section 5.6 — MINUTES~~
~~January 11, 1999 — Section 5.3 — ORDER OF BUSINESS~~
~~September 11, 2000 — Section 4.1 — ANNUAL MEETINGS~~
~~September 11, 2000 — Section 4.2 — REGULAR MEETINGS~~
~~January 28, 2002 — Section 5.3 — ORDER OF BUSINESS~~
~~May 7, 2003 — Section 2.7 (new) — ASSISTANCE BY THE CITY PLANNER & PLANNING OFFICE~~
~~May 7, 2003 — Section 6.5 — CONFLICT OF INTEREST OR PREJUDGMENT~~
~~May 7, 2003 — Article VII (new) — E-MAIL AND OTHER COMMUNICATIONS BETWEEN MEETINGS.~~
~~December 13, 2010 — Section 4.2 — REGULAR MEETINGS~~
~~December 13, 2010 — Section 4.3 — PLANNING SESSIONS~~
~~July 11, 2016 — Article II (new) — MEMBERS AND ALTERNATES;~~
~~July 11, 2016 — Section 5.9 — ADJOURNMENT OF MEETING;~~
~~July 11, 2016 — General updates and reformatting;~~
~~January 28, 2019 — Section 5.6 — MINUTES, General updates~~
~~August 26, 2019 — Section 5.3 — ORDER OF BUSINESS~~
~~June 28, 2021 — Section 1.4 — RULES OF DECORUM and Addendum~~

~~These Rules of Procedure~~ supersede all other previously adopted Rules and By-Laws.

ADDENDUM

LEBANON BOARDS, COMMITTEES, AND COMMISSIONS

RULES OF DECORUM AND COMMITMENT TO CIVIL BEHAVIOR

It is acknowledged that:

1. Civil, respectful, and courteous discourse and behavior are conducive to the democratic and harmonious airing of concerns and decision making.
2. Uncivil discourse and/or discourteous and inappropriate behavior have a negative impact on the character and productivity of the decision-making process.
3. Anger, rudeness, ridicule, obscene or profane language, impatience, and lack of respect for others and personal attacks are not acceptable behavior.
4. Demonstrations in support or opposition to a speaker or idea are not permitted by members of the Board. The Chairman is responsible for maintaining order. Failure to abide by this requirement may result in the forfeiture of the speaker's right to speak.

To maintain a cohesive, productive working environment, the members of the Lebanon Boards, Committees, and Commissions commit to:

1. Supporting the Board's mission.
2. Showing respect to each other as appointed members and staff representatives to the Board.
3. Promoting civility during Board meetings and tolerating nothing less.
4. Demonstrating reflective listening and not displaying negative body language (for example eye rolling, pencil tapping, shrugging of one's shoulders, hand gestures, etc.)
5. Allowing uninterrupted speech by those recognized as "having the floor" and refraining from speaking until recognized by the Chair.
6. Bringing appropriate committee-related concerns, issues, and conflicts to the Board for discussion.
7. Offering alternative solution(s) when addressing a problem or issue.
8. Maintaining the confidentiality of material discussed during closed Board meetings.

PLEDGE OF CIVILITY

The manner in which we govern ourselves is often as important as the positions we take. The City's collective decisions will be better and truer to our mission when differing views have had the opportunity to be fully vetted and considered. All those who appear before the City's boards, committees, and commissions have the right to be treated with respect, courtesy, and openness. We value all input.

Accordingly, we commit to conduct ourselves at all times with civility and courtesy, to both those with whom the Board interacts and to each other. We also pledge to endeavor to correct ourselves, should our conduct fall below this standard.

DRAFT

**LEBANON PLANNING BOARD
COMMUNITY ROOM, KILTON LIBRARY OR
REMOTE VIA MICROSOFT TEAMS
LEBANONNH.GOV/LIVE
MONDAY, OCTOBER 14, 2024 6:30 PM**

MEMBERS PRESENT: Andrew Faunce (Chair), Richard Ford Burley (Vice Chair), Kathie Romano, Patrick Kennelly, Karen Zook (City Council Rep), Jeremy Rutter, Eric Stacey

MEMBERS ABSENT: Brandon Hill, Kellan Appleton

STAFF PRESENT: Nathan Reichert (Planning & Development Director), Tim Corwin (Deputy Planning Director), Brian Vincent (City Engineer)

OTHERS PRESENT: Christine Johnston, Esq. (Legal Counsel for the Planning Board)

1. CALL TO ORDER

Chair Faunce called the meeting to order at 6:32pm.

Mr. Corwin reviewed the City's meeting in-person and REMOTE attendance policies and procedures.

2. NOTICE OF REGIONAL IMPACT

The following applications were received by the Planning and Development Department on or before October 14, 2024:

- **Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2: Request for a site plan review to construct a +/- 2,235 sq ft. two story office building, together with associated site improvements, including relocating a basketball court and 12 new parking spaces. PB2024-41-SPR**

Mr. Corwin said Staff recommends the application does not have the potential for regional impact.

A MOTION was made by Kathie Romano that the application of the Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2 does not have the potential for regional impact. The motion was seconded by Richard Ford Burley.

**The MOTION was approved (7-0).*

Chair Faunce introduced Mr. Eric Stacey as Lebanon Planning Board a new member.

Chair Faunce said the agenda for the Public Hearing Items would be in the order of 3A., 3B, 3D, and then 3C., which is out of the order of the agenda for this meeting.

Mr. Corwin stated that Staff recommends that the application is complete enough for the Planning Board to accept jurisdiction and commence review.

A MOTION was made by Jeremy Rutter that the application of Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2 is complete enough for the Planning Board to accept jurisdiction and commence review. The motion was seconded by Richard Ford Burley.

****The MOTION was approved (7-0).***

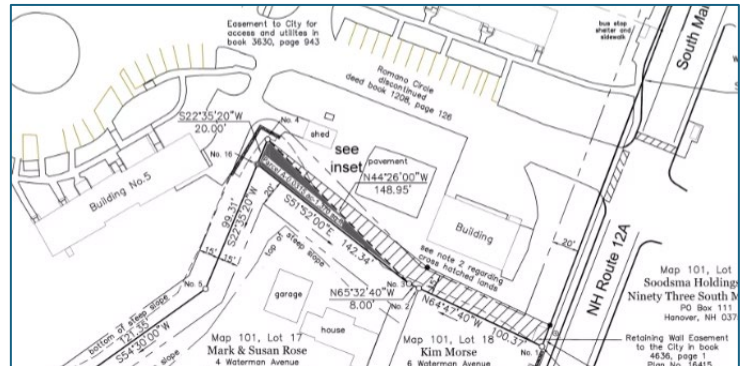
3. PUBLIC HEARING ITEMS

A. Mark & Susan Rose, Sr. and Lebanon Housing Authority, Mark & Susan Rose Sr. and Lebanon Housing Authority, 4 Waterman Avenue & 31 Romano Circle (Tax Map 101, Lot 17, and Tax Map 101, Lot 20, zoned R-2: Request for approval of a Boundary Line Adjustment. PB2024-39-BLA

Mr. Corwin said there is one suggested Condition of Approval, which is that the Discontinuance of Romano Circle be finalized before the plat is finalized.

Mr. Tim Rockwood (land surveyor) gave an overview of the project. He said the application is for a boundary line adjustment for a triangular piece of property.

Ms. Dida Alonso (Director of Lebanon Housing Authority) said the piece of property is unbuildable, but it will help LHA achieve another proposed project for a new office building at Romano Circle. She said the proposed boundary line adjustment will allow flexibility with the positioning of the building related to setbacks.



She explained that the City Council had approved that LHA become owner of the entry driveway to Romano Circle, which is a cul-de-sac, but the road will continue to be called Romano Circle. She said all the residents that live there are residents under LHA.

Chair Faunce opened the public comment portion of the hearing.
Chair Faunce closed the public comment portion of the hearing.

A MOTION was made by Richard Ford Burley that the Lebanon Planning Board approves the application of Mark & Susan Rose Sr. and Lebanon Housing Authority, for a proposed boundary line adjustment between 4 Waterman Avenue & 31 Romano Circle (Tax Map 101, Lot 17 and Tax Map 101, Lot 20), PB2024-39-BLA, as shown on a plat titled "Minor Lot Line Adjustment – Lebanon Housing Authority – Mark & Susan Rose," prepared by Rockwood Land

Services, LLC, dated September 4, 2024, last revised October 7, 2024, Project No. 1424-1, including any and all supplemental submissions and testimony provided during the public hearing, subject to the conditions as presented in the packet for this meeting with the additional condition that the discontinuance of Romano Circle shall be finalized.

The Motion was seconded by Kathie Romano.

**The MOTION was approved (7-0).*

B. Brickyard One Nominee Trust, 174 Hanover Street (Tax Map 48, Lot 4), 0 Hanover Street (Tax Map 48, Lot 2), 0 Hanover Street (Tax Map 48, Lot 1), and 238 Hanover Street (Tax Map 63, Lot 1), zoned R-1, R-O-1, R-3 & RL-3: Request for Site Plan Review and a Conditional Use Permit pursuant to Sections 308.2, 310.2, 311A.2, and 501.2 of the Zoning Ordinance for a proposed 474-unit multi-family Planned Unit Residential Development (PURD) totaling +/- 731,600 sq. ft. in size, consisting of 11 buildings together with parking, utilities, landscaping, access, and other related site improvements. Applicant also requests a Conditional Use Permit pursuant to Section 308.4 of the Zoning Ordinance to allow an increase in the maximum permitted building height from 45 ft. to 55 ft. PB2024-22-CUPSPR - Continued from September 9, 2024

Mr. Corwin said the applicant has heard the comments made by the Board and by the public in previous meetings and has redesigned the layout of the project. He said the purpose of the discussion at this meeting is for the Board to familiarize itself with the proposed design changes.

Mr. Dave Fenstermacher (VHB), Mr. Rich Whitehouse (VHB), and Mr. Gil Aleixo (Brickyard One Nominee Trust) were present on behalf of the applicant.

Overview of comments/concerns

Mr. Fenstermacher gave an overview of the concerns and comments that have been made, as well as some information from the Route 120 Corridor Study that he said impacted the changes that have been proposed. He noted the following feedback about the project:

- Provide more housing in a cohesive, sustainable way.
- Need for better, safer pedestrian connections
- Rezone existing light industrial to residential, highlighting the need for residential higher bedroom counts in the multifamily developments
- Incorporate climate resiliency measures and new development
- Preserve the historic features of the former Brickyard site
- Incorporate community use and retail and commercial
- Preserve and expand existing quality of life values such as green space
- New development should be a combination of mixed-use as an adaptive reuse

Overview of proposed redesign

He said the proposed redesign includes the following:

- Mixture of studio, one-bedroom, and townhome options
- Focused massing to the south side of the site toward I-89
- Replaced half of the larger multifamily buildings with smaller-scale townhouses
- Pond west bank enhancements
- Reduced total disturbance areas and total impervious areas (reduced building heights)
- Reduced amount of parking
- Reduced water & sewer demands by proposing fewer bedrooms
- Greatly reduced required earthwork and blasting needed for construction
- Increased area of green/community spaces to provide recreation opportunities

Design Change - Quantities

	Original Design	Revised Design
Number of Multifamily Buildings	10 Buildings	5 Buildings
Number of Units in Multifamily Buildings	473 Units	422 Units
Number of Townhomes	0 Townhomes	51 Townhomes
Number of Parking Spaces for Multifamily Units (Total Covered)	787 spaces (502 covered spaces)	541 spaces (237 covered spaces)
Reduction in Proposed Impervious Area	N/A	+/- 85,380 SF (1.96 AC)

He shared the revised site layout, which includes five buildings and parking with 541 spaces. He confirmed that the current design includes all rental properties, but he said there may be consideration for ownership in the future.

Revised Site Layout



He said they are working with the City to develop defined crosswalks and additional sidewalks on Hanover Street. He said they also met with Advance Transit to discuss the nearby pedestrian bridge and potential new bus stops that may be needed for the area.

He said they plan to present their technical review, which would include a fiscal impact analysis, engineered sites plans, a traffic report, stormwater management plans, and wetlands review and at a November Planning Board meeting.

Mr. Fenstermacher said there will be a barrier between the backyards for the units and the pond. He noted the additional gathering spaces make it feel less crowded. He also confirmed EV chargers would be located in the parking lots. He said handicapped parking spaces could be shaded or located under the buildings. Mr. Kennelly asked if the height variances were for two of the buildings and Mr. Fenstermacher confirmed they were for Buildings 4 and 5. He said Buildings 1, 2, and 3 are under 45 feet high.

Mr. Aleixo confirmed the townhomes will be 3-bedroom homes and the rest would be one-bedroom and studio units. Mr. Corwin confirmed that one parking space is required for studio units and 1.5 spaces are required for one- or more bedroom units per the zoning ordinance. Mr. Stacey asked who the proposed tenants would be, and Mr. Aleixo said professionals who work at the hospital and Dartmouth College. He confirmed that the expansion of the number of one-bedroom units matches the demographics of the area.

1 Chair Faunce said several other City boards and committees have provided either questions or
2 comments about this project and will attend a future Planning Board meeting to discuss them.

3
4 Mr. Rutter said there are many depressions on the ground and other elements that may be
5 remnants of buildings or other structures in SV1 and SV3 areas. He asked whether an archeologist
6 will survey the site and provide a report of what is there, including impervious surfaces on the site.
7 He said petroleum was used on that site so it would be good to know what is under the ground as
8 well because it is a brownfield site.

9
10 Ms. Romano asked about plans to extend a sidewalk on the property side of Hanover Street from
11 the northern entrance down to the entrance into the parking lot of the school. Mr. Fenstermacher
12 said that another survey will be done for the north side of Hanover Street to determine the
13 wetlands in that area.

14
15 Mr. Ford Burley asked if red bricks could be used in the construction of the buildings, given that it
16 is located at a former brickyard. He noted that Buildings 3 and 4 do not have the same access to
17 the greenspace as other buildings on the site and asked if benches could be added to encourage
18 congregation. He suggested an additional park/playground could be added near the townhouses.

19
20 Mr. Rutter asked if consideration has been given to changing the nature of the pedestrian bridge
21 over I-89 (from pedestrian to vehicle). Mr. Fenstermacher said the plans for the project will not
22 interfere with historical plans for the future redesign the bridge. The group discussed past and
23 current plans related to the pedestrian bridge, and the importance of it to the connectivity of the
24 new residential project and downtown Lebanon (for recreation and emergency vehicle
25 accessibility).

26
27 Mr. Fenstermacher said the northern entrance of the site will include parking spaces that can be
28 used by trail walkers/hikers who want to access the trails behind the proposed buildings and to the
29 network of trails near and around Boston Lot.

30
31 Mr. Rutter noted that none of the plans include the quarries at the very top of the site and
32 underneath where the townhouses would be located. He said the quarries deserve some kind of
33 mention in the project.

34 35 **Public comment portion**

36 Chair Faunce opened the public comment portion of the public hearing.

37
38 Ms. Nicole Ford Burley (City Historian, Chair of the Lebanon Heritage Commission) said the
39 Heritage Commission had submitted questions about this project a few months ago and received a
40 response from the applicant. She said the Commission's recommendations based on those
41 responses are included in the agenda packet for this meeting. She said the Commission has
42 requested the following:

- 43 1. Historical survey and Archeological survey
- 44 • Study of the Brickyard
 - 45 • Study of the Chandler cabins (northeast side of site)
 - 46 • Study of the quarries (earliest ones date from the first half of 19th century)

2. Preserve / rehabilitate the beehive kilns (not just allowed to stand)
3. Provide public access to the kilns
4. Make the site accessible to the public and add interpretive signage
5. Enact recommendations that come from preservation professionals

Ms. Mary Davis (Ward 2) said she lives in Renihan Meadows condominium development, which is part of the Densmore Brickyard. She said she and other residents have had flooding problems for years until a basement dewatering system was installed in 2004 at a cost of \$250,000. She said the cost for clean up and repairs after flooding events cost the condo board about \$40,000 per year. She said the ground in the Brickyard does not absorb water. Chair Faunce noted that the Conservation Commission is looking at the hydrological properties of the soils that will be disturbed for the project.

Mr. Tony Palazzo (Ward 3) said there are no retention basins for stormwater runoff and said there may be real problems if the pond becomes polluted. He said it would probably stay that way for a very long time.

Mr. Bill Lamb (Ward 3) read the objectives of a PURD and said he's concerned that this project does not fulfill the objectives of a PURD. He said he did not believe the Planning Board has the legal right to approve this project as a PURD.

Ms. Jeanette Hutchins (Ward 1) said she read the project statement of the Upper Valley chapter of the GSOP (Granite State Organizing Project) at a September Planning Board meeting. She said one focus of the GSOP is on affordable and workforce housing. She said the ideal tenants for the units were said to be professionals from the hospital and college. She said not all people that work at the college and hospital are professionals. She asked that ancillary staff (maintenance, housekeeping) be included as ideal tenants. She also said she would encourage the use of red brick in the buildings on the site.

Dr. David Kroner (Ward 2) said he lives across the pond from the site. He thanked all the Lebanon residents for their input on this project and Mr. Corwin for always responding promptly to his emails and requests. He said he's lived near the pond for 39 years and has always had a problem with flooding due to beaver dams. He said beavers are dangerous and carry disease.

He said he did have to call the current owners of the property recently because the level of the pond was rising and said within 48 hours, they had the pond draining. He said he believes they have been listening to the concerns of the public and commended them on that. He said the area does need more affordable housing. He also asked if they would consider the nearby houses' basements and plaster that will fracture during any blasting that might go on at the site.

Ms. Romano said when the Kimball Street water lines were redone this summer, the City offered to inspect the structural integrity of the homes in the area before the blasting so any damage could be documented.

1 **Ms. Jenny Lamb (Ward 3)** asked if the project was not a PURD and was under the standard
2 zoning, how many units would be allowed. Mr. Fenstermacher said he could calculate that and
3 provide the information. She also asked if the pedestrian bridge were to be redesigned, would
4 taxpayers pay for the project or would that be part of the Brickyard residential project.

5
6 Chair Faunce said if there were interest amongst the City to redesign the bridge, it might make
7 sense to explore whether there are Co funding opportunities to do so. Ms. Lamb said perhaps
8 rather than build a bridge and invite traffic to come, limit development and utilize the traffic
9 access and egress that's available now.

10
11 **Ms. Alice Dansby (Ward 2)** said it doesn't make sense to allow 600+ more cars into an area that
12 is already a traffic problem. She asked what the plan is for Evans Drive regarding additional stop
13 lights that would have to be added. She asked if anyone has estimated what the costs of the traffic
14 alone will be. Chair Faunce said the traffic study will be included in the technical review at the
15 next meeting (second Tuesday of November).

16
17 **Ms. Chris Hadari** said other proposals are increasing parking because of residents' demand but
18 this project is decreasing parking. She said the City is trying to be more walkable and bring eco-
19 friendly things for Lebanon. She said making the bridge accessible to cars is not going to achieve
20 these goals – it is just going to allow more cars in the area. She said the recent perceived trends
21 that people will walk or bike or use public transportation are changing. She said we need to focus
22 on what the vision and plan are for the people of Lebanon who live here now, not on the people
23 who aren't here yet. She said it's important to have housing for the people who are working and
24 want to live here, but the interests of the current taxpayers are also important.

25
26 Ms. Romano commented it seems to be that Lebanon or Hartford that are expected to provide
27 affordable housing and asked why Hanover can't provide some of that housing. Lebanon certainly
28 wants to do its part, but it shouldn't be the sole provider of affordable housing in in this area.

29
30 **Mr. John Weatherly (Ward 3)** said the City has been struggling with large-scale residential
31 development projects for the last 10 years and many have been told the City doesn't have
32 stormwater capacity. He asked why the City now has the capacity for this project. He also noted
33 that residents of this development who need more than 1.5 parking spaces will park on the street
34 and over the bridge (if is accessible to vehicles), which he said is dangerous for school kids who
35 are walking to school. Ms. Romano said the capacity issues were not with stormwater but with
36 sanitary sewer and the connector pipe (that delivered sewage to the plant) has been enlarged.

37
38 Mr. Ford Burley noted that the newly created Housing Task Force are working on solutions for the
39 Upper Valley and encouraged residents to follow its progress.

40
41 Ms. Hutchins noted that she did not mean to imply Lebanon was responsible for providing all
42 workforce housing. She said she just wanted to encourage the owner of this project to include
43 accommodations for pricing that will allow for workforce housing.

44
45 **Ms. Kate Weatherly (Ward 3)** said she's concerned about the entrances/exits of the project site
46 and the traffic that comes off Route 89 onto Route 120 at the same time the children go to school.

1 She said she lived in an area that experienced a lot of effects from blasting from the Prospect
2 Street project. Mr. Ford Burley said the traffic will be discussed at the next meeting during the
3 technical review, but the traffic study is included in the Planning Board agenda for the August 8,
4 2024 meeting (accessible via the City's website). Mr. Fenstermacher said one of the intents of the
5 redesign of this project was to minimize blasting or to eliminate it if possible.
6

7 Ms. Dansby said Vital Communities housing studies stated the number of new rental units the City
8 needed to add 534 rental units by 2030 in order to have healthy, responsible development and do
9 its share of meeting housing needs for the Upper Valley. She said this proposal seeks to add as
10 many as it was said by the data in the studies that we needed to add in 20 years. She said,
11 according to the mission statement of the City of Lebanon, the Board is obligated to say no to any
12 exceptions requested by this development because rental units have been overbuilt in the City.
13 Chair Faunce said the dates of the Housing Task Force meetings are provided on the City's
14 website and encouraged her to review the activities of that committee.
15

16 Chair Faunce closed the public comment portion of the public hearing.
17

18 ***A MOTION was made by Andrew Faunce to continue the public hearing to the November 12,***
19 ***2024 Planning Board meeting at 6:30pm in City Council Chambers in City Hall. The Motion***
20 ***was seconded by Jeremy Rutter.***
21

22 ****The MOTION was approved (6-0).***

23 At 8:14pm, Chair Faunce called for a brief recess.

24 At 8:25pm, the meeting resumed.
25

26
27 **D. XYZ Dairy, LLC, River Park Drive (Tax Map 44, Lots 21 - 30 & Tax Map 44, Lot 7),**
28 **zoned CBD, IND-L and R-3: Applicant requests a 2-year extension of the River Park**
29 **Subdivision approval (PB2011-01-FMAJ) and Site Plan approval (PB2010-25-SPR),**
30 **as most recently amended on September 9, 2019 (PB2018-34-SPA) and extended on**
31 **October 12, 2021 (PB2021-29-EXT). PB2024-34-EXT**
32

33 Ms. Romano recused herself from the discussion. Chair Faunce said Mr. Stacey will sit with the
34 Board but will not participate in any decisions that may be made for this application.
35

36 Chair Faunce noted that the public hearing had been continued from the September 09, 2024
37 meeting so that the Board could have more time to deliberate over the request for extension. He
38 said some additional information has been generated by staff that has been included in the packet
39 so it seems appropriate to continue with the hearing. He said Mr. Corwin can provide the Board
40 with information regarding the new materials for this evening and the Board can entertain
41 additional testimony from the applicant. He said the Board will then go into deliberative session.
42

43 Mr. Corwin said one new item for consideration is how the Planning Board's Conditions of
44 Approval should be administered and confirmed should the extension request be granted.
45

1 He said there also was some discussion about a stormwater pipe that runs across the Route 10 and
2 the role that that pipe played in the delay of the River Park development. He said the stormwater
3 pipe has been shown on the River Park plan since the very beginning and the approved plans show
4 how that pipe is to be rerouted. He clarified that the developer has been aware of that pipe since
5 the very beginning of the process.

6
7 He said the City Engineer reminded him that he met with the applicant in early May, at which
8 point it was discussed that the proposed temporary stormwater bypass solution would be
9 abandoned and the applicant intended to continue with the approved site plan as is.

10
11 He said the staff memo points out that the building permit is now expired, and he said that
12 decision was upheld by the State Building Code Board of Appeals.

13
14 Mr. Chet Clem (Lyme Properties) and Mr. David Clem (XYZ Dairy) were present on behalf of the
15 applicant. Mr. Chet Clem said he was not aware of what additional information was provided to
16 the Board prior to this evening's meeting and he received no additional staff memo. He said this is
17 the first that he's heard of additional information being provided to the Board.

18
19 He said he is happy to provide any and all previous communications to the City on the
20 characterization of the temporary bypass line versus the previously approved line versus the
21 alternatives that were in discussion between XYZ Dairy and the City in 2022 and 2023 trying to
22 value engineer more affordable solution to these City's stormwater pipe on XYZ's property with
23 no easement, which represents a \$600,000 expense to XYZ.

24 25 **Temporary Bypass Line**

26 He said the temporary bypass line, which has been approved by the state of New Hampshire for
27 the purposes of temporary bypass to allow the project to proceed, is still in consideration and is the
28 jurisdiction of the state. He said Mr. Corn is referencing is that alternative designs for an
29 alternative storm water solution were abandoned by XYZ Dairy in the interest of proceeding due
30 to the tenant that it has been trying to secure and due to the time sensitivity. He said they felt work
31 to get that through the process wasn't worth the effort given that they had to meet the time
32 sensitivity of their tenant.

33
34 He said they were aware of the pipe from the get-go, and it has never been their insinuation that
35 they weren't. He said they called it out in a comprehensive memo to the City Manager well in
36 advance of mobilization that they did not have complete information (elevations, material), but
37 they knew that the pipe was there, which is why we did the exploratory excavation in November
38 of 2022 to answer those questions for themselves and their construction manager.

39
40 He said he objects with Mr. Corwin's classification of the decision of the State Appeal Board. He
41 said the Board did uphold the definition of work and that work must be physical and onsite, which
42 he said is in contrast with the building inspector's own decision. He said the matter was remanded
43 back to the BCBA, to the City's Building Code Board of Appeals. He said the matter is ongoing.

44
45 Chair Faunce asked if the matter was remanded to the City's Zoning Board or to City Staff. Mr.
46 Corwin said the matter is over. He said the applicant is suing the City to reinstate the building

1 permit and they did not appeal the State Building Code Board of Appeals decision. He said they
2 have not communicated with the City at all about this matter other than to file a lawsuit. He said
3 the building permit as of today is expired and that went unappealed. He said if they are successful
4 in their lawsuit, then they're asking the court to reinstate the building permit. He said as of today, it
5 is not valid and there is no building permit.

7 **Timeline from 2020-2024 RE extension of excavation permit**

8 Mr. Ford Burley asked for a clear timeline of events from 2020 to present related to the application
9 an extension for the excavation permit for Route 10, filed with the NHDOT, at the southern
10 entrance of the site. He said the materials in the meeting agenda packet seems to have a gap
11 between the applicant's last correspondence with NHDOT in September of 2020 and June of 2024
12 when there was a communication from the site construction manager and NHDOT.

13
14 Mr. Clem said space in the communications occurred because he said they thought that the matter
15 had been put to bed after the correspondence with NHDOT in 2020. He said it was quite a surprise
16 when it resurfaced after that gap in time, having already had numerous meetings with NHDOT and
17 the matter was not brought up. He said the issue resurfaced on June 5, 2024 when they were not
18 aware that NHDOT was going to seek a third traffic study.

19
20 Mr. Ford Burley said he read that, in 2020, Mr. Chris Turgeon of the NHDOT "highly
21 recommends that they contact NHDOT immediately to get the process the excavation process
22 started so as not to delay construction," in an email included in the agenda packet materials. He
23 said it appears that Mr. Clem corresponded back and forth with the NHDOT a few times and then
24 did not hear back. He asked Mr. Clem why he did not reach back out to Mr. Turgeon. He said if he
25 had sent an email to someone at the state and no one responded to it, he would assume it had
26 gotten lost. He also asked why Mr. Clem did not apply for the excavation permit until June of this
27 year.

28
29 Mr. Clem said in 2020, work was stopped due to the COVID pandemic. He said they had
30 suspended construction on the building, which was due to start prior to the infrastructure project.
31 He said that the construction timeframe for the building is 16 months and the timeframe for the
32 infrastructure work is approximately 3 months. He said that means they need about a year head
33 start in which to proceed on the building.

34
35 He said in 2020, they were informed by the previous Lebanon City Engineer of the scope of
36 paving to be done on Route 10 and they proactively reached out to NHDOT, seeking to coordinate
37 for efficiency. He said they communicated back and forth, including the five years it took to get
38 approval in the first place.

39
40 He said they had supplied substantial information to the NHDOT addressing the fact that they felt
41 that they were in good standing and received no response. He said the matter of filing the
42 excavation permit did not come up until 2024 because they had initiated the construction of the
43 building in November of 2022, then they were stalled until July of 2023, then sought to
44 recommence in August of 2023.

1 He said, in the course of rebidding the project and of making the business decisions of how they
2 would proceed, they sought to do the infrastructure upfront. He said it wasn't their desire, and they
3 sought amendments to avoid that, but they were trying to get it done.

4
5 He said, given the fact that the building permit was revoked on February 1, he said they spent
6 months in the City's appeal process to get the BCBA to reach that decision in May. He said that
7 was when they felt like they had the green light to proceed, never anticipating that the City would,
8 in effect, sue its own board by taking it to the state appeal. He said that's why they filed that then.
9 He said they have provided the information relating to the communication Mr. Turgeon many
10 times before, believing it was the answer to the question posed.

11 12 **Correspondence RE TIF District**

13 Mr. Ford Burley asked about the correspondence in 2021 regarding a TIF district. He said the
14 minutes of a Planning Board meeting for October 12, 2021 when one of the extensions was
15 requested.

16
17 Mr. Clem said the TIF district (or tax increment financing district) was center to a public private
18 partnership proposal. He said XYZ Dairy had done that back in the original permitting process but
19 gotten nowhere with it. He said he returned to the project in 2019 after having worked in the TIF
20 district in Quincy, Massachusetts and seeing the impact of that. He said it was on his radar when
21 the City Manager and the City Fire Chief approached them in 2020, looking to relocate the West
22 Lebanon Fire Station, and they offered a location and offered a 10-point deal structure to try to do
23 that expeditiously. He said included in that deal was the idea of a public private partnership, given
24 the fact that their already approved, already engineered (at their sole dollar) infrastructure (that
25 had already passed through the state, the local and state regulatory bodies), was shovel ready and
26 thus could be a "two birds with one stone" situation. He said those conversations were fruitless.
27 He said, in 2021, as vice chair of the West Lebanon Revitalization Advisory Committee and in the
28 face of the City entertaining a TIF district in downtown Lebanon and a TIF district at the Airport,
29 to facilitate an upfront, taxpayer-subsidized investment in making that pad ready, the West
30 Lebanon Committee unanimously voted for consideration of a TIF district in West Lebanon, along
31 with equal consideration of all their zoning changes that have been done, including height
32 increases, etcetera, to be applied equally to West Lebanon.

33
34 He said, in the course of that, the City Manager came to the next meeting and said that he was not
35 interested in entertaining a TIF district. He said it was not a City Council decision. He said they
36 have gone back and forth for a couple of years to also include the fact that we then found
37 ourselves in competition with the City in response to an RFP for a large life science company and
38 the state BEA asked why a TIF district was not offered to River Park when it was being doing
39 elsewhere in the city. He said it was then, and only then, that the City Manager suggested
40 consideration of a TIF district for River Park River Park, which was not their initial goal.

41
42 He said there were conversations to that effect in 2021 and 2022, until the point that those
43 conversations fell apart in July or August of 2022, when it became clear that the TIF district would
44 be a TIF in name only because the City was requesting the entirety of the property in collateral.
45

1 Mr. Ford Burley asked if he thought the negotiations about the TIF district held up any of the
2 infrastructure work on the site. Mr. Clem said the document that Mr. Ford Burley was referencing
3 is the request for an extension and that was granted so because of the conversations with City
4 Manager Mulholland. He said the City Manager came to that meeting and endorsed the extension
5 because of those more time was needed and because they were still dealing with the impacts of
6 COVID. He said by July of 2022 / August 2022, they were completing the cross-country
7 connector infrastructure.

8
9 He said they internally reached the decision that were barking up the wrong tree to try to reach a
10 mutually beneficial public-private partnership, and so they decided to proceed on their own.

11 12 **Public Comment portion**

13 Chair Faunce opened the public comment portion of the public hearing.

14
15 Ms. Kathie Romano (Ward 1) spoke as a member of the public. She requested that the Board to
16 consider two issues when it makes its decision:

- 17 1. The issue of fairness in terms of how the Board treats every applicant who comes before it.
18 She said this development, which was approved in 2010 still doesn't have a single building
19 built and, because of a number of extensions granted over the last 14 years, they currently
20 have until 2040 to finish the build-out of this development. She said they're asking for a
21 two-year extension to put the first building up. She said if it took 16 years for the first
22 building, how many years is it going to take for the rest of the buildings.
23
- 24 2. The issue of setting a precedent and fairness. She said the issue has something to do with
25 these extensions during the COVID period and even outside of that period. She said
26 occasionally, applicants do come and ask for a two-year extension, and if there's good
27 reason, the Board usually grants it. She said sometimes the board has granted a second
28 two-year extension. She said she could not remember in the last decade any other
29 development that was granted a third two-year extension other than River Park, and they've
30 had a fourth and a fifth two-year extension. She said this may be their 6th request for an
31 extension and there isn't even one building.
32

33 She said does the Board want to say to every applicant that the Board will give them two
34 years, but if they don't make it in two years, come back and we'll give you another two.
35 Come back and we'll give you another two. Come back and we'll give you another two
36 because they're going to say, well, you know, the Board gave it this applicant, why not
37 give it to us?
38

39 She said one of the things that happened in one of those extension periods, either 2019 or
40 2021, this applicant came before the Board with a reordering of the phases of the
41 development. She said because of the cry for residential housing, for the one apartment
42 building in this development, they asked to be able to build it earlier than it was slated to
43 be built within. She said it had originally been approved as an 80-apartment building with
44 about 120 parking spaces. She said it was approved with an increase of over 50% in the
45 number of apartments in the building, but not one single extra parking space.
46

1 She said the reason the applicant gave was that people living there are going to work at the
2 corporations in the development and won't need a car. She said they also said they were
3 going to be building a parking garage. She said but, when they reordered the phases, the
4 parking garage was planned for a phase after the phase where the building may be built.
5 She said the people would have to park in a vacant lot until they get to the basically the
6 fifth phase of the building. She said the City has no financial guarantee that that parking
7 garage will be built. She said if the apartment house is built and people are parking on a
8 vacant lot, and this developer decides not to go any farther, the taxpayers of the City of
9 Lebanon are stuck with what to do with these people that are parking on a vacant lot. She
10 said the taxpayers of the city of Lebanon are not going to want to pay for that parking
11 garage.

12
13 She said a couple weeks ago the Board approved a development and one of the conditions
14 in the approval was this wording: "If active and substantial development is not achieved
15 within five years of Planning Board approval, the development shall be subject to any
16 changes in the City's Land Use Regulations." She said she believed this development is
17 subject to the Land Use Regulations of 2010 and, if they get an extension and build the
18 first phase and finish that by January of 2027, they'll still be subject to the regulations of
19 2010 unless the Board puts additional conditions. She said how can the Board give an
20 applicant permission to use regulations that are more than a generation old

21
22 She said it appears that the Board has three choices:

- 23 1. Approve their request and give them another two years to do something they haven't
24 done in the last 14 years.
- 25 2. Approve their request but put some conditions in with regard to financial security and
26 other stipulations so the City has sufficient financial guarantees that the infrastructure
27 needed will be completed whenever they first build something that requires temporary
28 parking.
- 29 3. Deny the request for the extension and say the Board doesn't want to be in the business
30 of giving people 32 years to build something

31
32 He invited the applicant to share their thoughts on the information that was shared.

33
34 Mr. Clem said it was their desire to build this project long ago and the timeline of events
35 showcases why it is where it is today. He said the insinuation that this is just another extension to
36 "kick the can down the road" doesn't stand up to the analysis of what has transpired.

37
38 He said his last comment is in response to issues outside of their control and delays beyond their
39 control, they filed a request for extension 98 days ago. He said, on top of all the other delays that
40 have been incurred this year and last year, their ongoing efforts to develop River Park for a
41 perspective tenant, who has been patiently watching, waiting, and wondering what's going, have
42 been put on hold while we wait for this extension in the building permit matter to be adjudicated.
43 He said he hoped the Board can reach a decision this evening, so that those efforts can proceed.

44
45 Chair Faunce closed the public comment portion of the meeting and said the Board would move
46 on to the deliberative portion of the public hearing.

Board deliberation

Mr. Ford Burley said he felt the question the Board should focus on is this: Which phase one infrastructure improvements are not yet complete and whether the reason they are complete or not is outside of the control of the applicant. He read the wording of the extension application requirements:

“In determining whether to grant any requested extensions, the Board shall consider the totality of the circumstances, including the extent and complexity of the conditions precedent, and whether the need for more time is attributable to circumstances beyond the control of the applicant, rather than to the applicant’s neglect or failure to proceed with reasonable promptness.”

Mr. Ford Burley itemized the Phase I infrastructure improvements:

- Temporary parking lots on LOT 2 and three
- Roadway-sufficient access Lot 3
- Southern Way development entrance intersection
- Extension of Crafts Ave - complete
- Installation of water and sewer lines necessary for LOT 1 - complete
- Installation of other utilities

Mr. Kennelly said he is looking for the reasons for the delay and the need for the extension. He said the applicant has said the reasons are the building permit expiration, the issues with NHDOT, and maybe issues with the stormwater pipe.

He said the question he had regarding the NHDOT is why the applicant did not fulfill the NHDOT requirement to complete a traffic study. He said the applicant may have felt they did not have to do it. He said if the NHDOT asked him to do something, he would do it.

Mr. Kennelly said it does seem like a reasonable request, but maybe the applicant thought it was taken care of in 2020, or maybe, by 2024 when the issue resurfaced, the applicant felt there was not enough time to get it done - but he said there seems to have been ample time to get it done. He said it seems like the applicant was more focused on the building permit issues and did not pay attention to the traffic study request. He said for a project of this size and scope, he did not know if the applicant can only focus on one issue at a time.

Mr. Ford Burley said, regarding the building permit, which expired on or was invalidated on February 1, 2024, the applicant did have the option of applying for a new building permit. He said the City offered to transfer the money they already put into the first building permit to whatever the updated fee structure would be for the new building permit.

Mr. Ford Burley said he also had a concern from testimony from a previous meeting where the applicant repeatedly mentioned a \$4 million price tag for the infrastructure development and that they did not want to pay into without the guarantee of a building on the other end of it.

Chair Faunce said he had asked the applicant what the priorities were for getting the application. He said the applicant made a fair amount of testimony relating to looking for ways to offset costs.

1 He said the applicant may have been looking for ways to offset costs and perhaps relocate to find
2 some way to justify others contributing to the cost of the infrastructure.

3
4 He said testimony began with some of the work Mr. Clem did as chair of the West Lebanon
5 Revitalization Committee, such as the plan to bring to a West Lebanon Advance Transit hub into
6 River Park, working on trail access, sending a memo and introducing City officials to a public-
7 private Partnership proposal to offset cost for providing access to Road Park Drive, attempting to
8 revitalize the 2020 failed effort to cost share on relocating the City's pipe, and proposing
9 additional ways to offset higher construction costs, including a TIF.

10
11 He said that testimony suggests that the most pressing issue for developer was 'how do I pay for
12 this and how do I get things done as quickly as possible in order to satisfy my obligations for the
13 level of development required to advance the project.' He said it seems that the incredibly
14 important milestone to have an official status of complete did not seem to be the focus at that time.
15 He said he thought things haven't concluded in this because at the last extension efforts were not
16 made more quickly at that time to focus on the doing rather than the financing. Chair Faunce said
17 he knows these are large projects and he understands the importance of it.

18
19 He said all this testimony added to other testimony regarding the costs of infrastructure reads as
20 though the applicant is trying to make this work within a financial space. He said these concerns
21 are real and can be part of this kind of project.

22
23 City Attorney Ms. Christine Johnston, Esq. confirmed that, regardless of what decision the Board
24 may make in this situation, the decision should be vetted by Legal Counsel. Chair Faunce any
25 suggestion of a decision made either by a straw poll for an unbinding informal opinion of the
26 group which will form instructions to Staff with Legal Counsel on how to develop a Motion that is
27 suitable in a legally sustainable manner. Chair Faunce said he would not want to put a decision
28 this significant on the lay persons of the Board. He said the goal of the Board right now is to
29 understand how they feel about the issues up for discussion and to discuss the issues with vigor.

30
31 He suggested the deliberation should be continued into the next meeting so they will have the
32 tools developed by Staff and Counsel to support the decision intimated by a straw poll.

33
34 Mr. Ford Burley said the applicant has done some things, but they all have to be done. He said the
35 southerly entrance roadwork is a big sticking point. Chair Faunce said he felt the applicants are
36 having difficulty with a focus on cost relative to revenues coming in. He said the issue with
37 respect to communication with NHDOT is unsatisfactory and he would not go from 2020 to 2024
38 on the assumption that everything was good. He said the applicant may have been constrained by
39 their finances and maybe that changed their calculations.

40
41 Mr. Ford Burley said he did not think this passes the bar of "beyond the control of the applicant."
42 Mr. Kennelly said they have to consider the reasons that have been offered.

43 44 **Decision discussion**

45 Mr. Rutter said he understands they can deny the extension strictly because the applicant did not
46 meet the levels of what they need to show, but he suggested maybe they take Ms. Romano's

1 suggestion to grant the extension but with conditions that keep the applicant on track to complete
2 the project. The group discussed this idea at length.

3
4 Attorney Johnston confirmed the City cannot legally grant an extension and state it is the “last
5 one” for the applicant. Chair Faunce suggested a Condition of Approval could be that there must
6 be some ongoing (for example, every three or six months) engagement between the developer and
7 the City regarding activity toward the fulfillment of the plans. Mr. Rutter said the fluidity of the
8 communication between the two parties concerned does not have a very good track record and so
9 to improve that communication the Board would need a lot of assistance from Legal Counsel.
10 Attorney Johnston said that the City’s Legal Counsel could help with that.

11
12 Ms. Zook said the challenge with that sort of solution is that it's only enforceable in one direction,
13 and, in a situation where communication between the two parties is monitored, she did not see
14 how the City could help effectively. Attorney Johnston clarified that a Condition of Approval is
15 enforceable against an applicant and what the City would be undertaking to fulfill whatever its
16 obligations might be under that would have no impact on the applicant. She said if a schedule was
17 established, the applicant would be held to their part and would not be punished for anything that
18 the City might do or not do.

19
20 Chair Faunce said more regular face-to-face time between parties gives an opportunity to reset the
21 reality of what is being done. Ms. Zook said she is not sure it’s the nature of the communication
22 between the parties that is necessarily being reflected in what has happened. She said the applicant
23 has an obligation to demonstrate that they have pursued everything that would bring the project to
24 completion, and she said she is not sure that even gets to the root of the problem.

25
26 ***A MOTION was made by Richard Ford Burley to extend the meeting to 9:50pm. The Motion***
27 ***was seconded by Jeremy Rutter.***

28 ****The MOTION was approved (5-0).***

29 Chair Faunce called for a straw poll of the participating members

30
31 ***Straw Poll Vote***

32 ***Rutter – approve extension***

33 ***Faunce - deny extension***

34 ***Ford-Burley - deny extension***

35 ***Zook - deny extension***

36 ***Kennelly - deny extension***

37 ***(4-1 in favor of denying the extension)***

38
39 Chair Faunce said the Board should direct Staff and Legal Counsel to write a motion that reflects
40 the results of the straw poll.

41
42 ***A MOTION was made by Andrew Faunce to direct City Staff and the City’s Legal Counsel to***
43 ***prepare a draft motion related to the straw poll taken in this meeting. He further moved that the***
44 ***draft motion would be reviewed and decided upon by the Planning Board in one month’s time***
45 ***(at a November Planning Board meeting).***

1
2 ***The motion was seconded by Richard Ford Burley.***

3
4 ****The MOTION was approved (5-0).***

5
6
7 Chair Faunce said Item 3C would be discussed next, if the applicant feels it would be helpful,
8 given that it is impacted by the previous discussion of Item 3D.

9
10 **C. XYZ Dairy, LLC, River Park Drive (Tax Map 44, Lots 21 - 30, and Tax Map 44, Lot**
11 **7), zoned CB, IND-L and R-3: Appeal of administrative decision made on September**
12 **10, 2024, that conditions 1, 2, 4, 5, 7 and 14-4 of the River Park development Site Plan**
13 **approval as set forth in the Notice of Action dated September 9, 2019, for PB2018-34-**
14 **SPA, have not yet been satisfied and, consequently, that construction of Phase 1 may**
15 **not commence. PB2024-40-AAD**

16
17 Mr. David Clem said the Board has been correct and acknowledging that there is considerable
18 tension between Staff In the planning and building Department and XYZ Dairy. He said they have
19 endeavored to fulfil a project and deal with issues beyond their control in terms of what
20 information is submitted by the City to the state without them seeing it or without our engineers
21 being able to see it even though they stamped original construction drawings. He said this project
22 has had over 84 public hearings and he does not understand why the Staff has not been willing to
23 help. He said they have endeavored diligently to pursue accomplishing work. He said they have
24 facilitated 6+ acres of open space on the river, built four single-family homes on Crafts Ave.,
25 made significant improvements to the infrastructure for West Lebanon. He said he takes exception
26 to the notion that they don't have the economic capacity to complete the project and that that is the
27 reason they're dodging and not fulfilling the conditions. He said that information or that opinion is
28 not based on fact.

29 He said he does not understand why this Board takes the position that they have an endeavor to
30 fulfill the requirements. He said the issue with NHDOT came as a complete shock to them – he
31 said the person who originally asked for additional traffic studies wasn't aware of the traffic
32 studies that they had already done and paid for, and the program hasn't changed, and the
33 assumptions mandated by those traffic studies have not been realized.

34 Chair Faunce asked the applicant if it would be helpful to discuss Agenda Item 3C and Mr. Chet
35 Clem said yes it would.

36
37 ***A MOTION was made by Richard Ford Burley to extend the meeting to 10:00pm. The Motion***
38 ***was seconded by Jeremy Rutter.***

39 ****The MOTION was approved (5-0).***

40 Mr. Corwin stated that Staff recommends that the application is complete enough for the Planning
41 Board to accept jurisdiction and commence review.
42

1 ***A MOTION was made by Richard Ford Burley that the application of XYZ Dairy, LLC, River***
2 ***Park Drive (Tax Map 44, Lots 21 - 30, and Tax Map 44, Lot 7), zoned CB, IND-L and R-3:***
3 ***Appeal of administrative decision made on September 10, 2024, that conditions 1, 2, 4, 5, 7 and***
4 ***14-4 of the River Park development Site Plan approval as set forth in the Notice of Action dated***
5 ***September 9, 2019, for PB2018-34-SPA, have not yet been satisfied and, consequently, that***
6 ***construction of Phase 1 may not commence. PB2024-40-AAD is complete enough for the***
7 ***Planning Board to accept jurisdiction and commence review. The motion was seconded by***
8 ***Jeremy Rutter.***

9
10 ****The MOTION was approved (5-0).***

11
12 Mr. Corwin said per the September 9, 2019 Notice of Action, which he said technically was a site
13 plan amendment but remains sort a controlling decision for the River Park development, any
14 disagreement about the Conditions of Approval are appealable to the Planning Board. He said he
15 had heard from the City Engineer that the applicant was intending to begin construction on Phase I
16 infrastructure work as of July 1, 2024. He said typically, when a developer is beginning
17 construction, they'll coordinate with Staff to ensure that all Planning Board conditions have been
18 satisfied. He said he did not hear from the applicant, reached out to the applicant and provided the
19 conditions of both the site plan approval and subdivision approval that he needed assistance with
20 in verifying compliance. He said that was not a determination that the conditions haven't been met,
21 but it was a question to the applicant to verify these conditions have been met. He said this is a
22 request that is routinely made to developers. He said typically there is a response as a status update
23 and communication back and forth to work where the process stands.

24 He said he received no response from the applicant, but it was his understanding that the applicant
25 was to begin construction on July 1st. He said he did receive a draft performance bond and
26 security agreement from the applicant's Legal Counsel on or about June 25, 2024. He said that was
27 a condition tied to the subdivision approval and Staff provided comments to those and sent those
28 back on or about July 25.

29
30 He said he did not receive a response, but that's the only communication that Planning Staff
31 specifically has had with the applicant relative to fulfilling conditions of approval. He said at the
32 September 9th public hearing, the applicant seemed to suggest that they have satisfied the site plan
33 conditions of approval and necessary to proceed with construction of a Phase I. He said he made it
34 clear that, having heard no response to the to the routine questions that that staff asked earlier in
35 the summer, that the condition have not been satisfied if no information was provided to
36 substantiate compliance. He said now, a very routine request for an extraordinarily complex
37 project has turned into an appeal, which is very unusual.

38 39 **Conditions and actions by applicant to meet them**

40 Mr. Ford Burley asked the following questions regarding the Conditions:

41 Condition 1 – The applicant shall submit final designs, including construction drawings of all
42 infrastructure features associated with each phase, including proposed on- and off-site roadway
43 and parking areas, sidewalk, water and sewer utilities, and storm drainage systems to the City
44 Engineer for approval, which shall not be unreasonably withheld.

45
46 Mr. Ford Burley said the applicant said they have submitted updated drawings to the DPW and

1 NHDOT on June 7, 2024. City Engineer Brian Vincent said, in June, they did receive an
2 excavation permit application that included two plan sets: one was for off-site construction of
3 Route 10 and the other one was for site development and on the project property itself. He said
4 both were focused on roadway and infrastructure construction.

5
6 Mr. Corwin said it was not conveyed that it was the applicant's intent to satisfy Condition 1 by
7 submitting the plan set as part of their excavation permit application. He said Staff can now review
8 the plan set for conformance and compliance with Condition 1.

9
10 Mr. Chet Clem said Condition 1 makes clear that the materials need to be submitted to the City
11 Engineer for approval, so it's not relevant to the Planning Department. He said the June 7
12 submittal was the fourth time these plans have been submitted to the City. Mr. Ford Burley noted
13 the Planning Department is responsible for ensuring the Planning Board's Conditions of Approval
14 have been met so it needs to know the plans have been submitted. Mr. Clem said the timing of the
15 request overlapped with the process of completing the performance bond security agreement,
16 which became their focus. He said it seemed the requirement had been met because the plans had
17 been submitted three times previously and to the City Engineer in June. Mr. Corwin said it is not
18 clear why the applicant couldn't clarify that point as a matter of courtesy. He said a simple
19 explanation would have avoided the Board and all parties spending time on this.

20
21 Mr. Ford Burley said the discussion may have to be continued to another meeting because time is
22 running out for this meeting. Mr. Clem said they have a tenant for whom they have everything
23 lined up to continue to build for so building is imminent. He said the only thing keeping the
24 building from being built are the issues that they have been dealing with all year. Mr. David Clem
25 said they hope the issues will be resolved in an evidencia hearing in Superior Court on Thursday.

26
27 Mr. Chet Clem asked if there are any conditions that Staff believes have not been met. Mr. Corwin
28 said the purpose of this hearing is for the Board to make a determination as to whether the
29 applicant has complied with the conditions. He said the applicant will not respond to Planning
30 Staff, so they are here now for the Board to make its determination.

31
32 ***A MOTION by Richard Ford Burley that discussion of the application of XYZ Dairy, LLC,***
33 ***River Park Drive (Tax Map 44, Lots 21 - 30, and Tax Map 44, Lot 7), zoned CB, IND-L and R-***
34 ***3: Appeal of administrative decision made on September 10, 2024, that conditions 1, 2, 4, 5, 7***
35 ***and 14-4 of the River Park development Site Plan approval as set forth in the Notice of Action***
36 ***dated September 9, 2019, for PB2018-34-SPA, have not yet been satisfied and, consequently,***
37 ***that construction of Phase 1 may not commence. PB2024-40-AAD be continued until the next***
38 ***Planning Board meeting.***

39
40 ***The motion was seconded by Patrick Kennelly.***

41
42 ****The MOTION was approved (5-0).***

43
44
45
46 Ms. Romano and Mr. Stacey rejoined the meeting as participating members of the Board.

1
2 **1. OTHER BUSINESS**

3 None

4
5 **2. APPROVAL OF MINUTES**

- 6 • September 09, 2024
7 • September 16, 2024
8 • September 23, 2024
9 • September 30, 2024

10
11 Mr. Ford Burley said there was not enough time remaining to review and approve the minutes
12 from the September meetings.

13
14 *A MOTION was made by Richard Ford Burley that the approval of minutes for the September*
15 *09, 2024, September 16, 2024, September 23, 2024, and September 30, 2024 Planning Board*
16 *meetings be considered at the next Planning Board Work Session meeting. The motion was*
17 *seconded by Andrew Faunce.*

18
19 **The MOTION was approved (7-0).*

20 Mr. Corwin provided edits to the minutes to the Board members for review and consideration
21 prior to the next Work Session meeting.

22
23 **3. ADJOURNMENT**

24
25 *A MOTION was made by Richard Ford Burley to adjourn the meeting at 9:57pm. The motion*
26 *was seconded by Andrew Faunce.*

27
28 **The MOTION was approved (7-0).*

29
30 The meeting was adjourned at 9:57pm.

31
32 Respectfully submitted,

33 Paula Roux

34 Recording Secretary

DRAFT

**LEBANON PLANNING BOARD
CITY COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA MICROSOFT TEAMS
LEBANONNH.GOV/LIVE
MONDAY, NOVEMBER 12, 2024 6:30 PM**

MEMBERS PRESENT: Andrew Faunce (Chair), Richard Ford Burley (Vice Chair), Kathie Romano (REMOTE), Patrick Kennelly, Karen Zook (City Council Rep), Jeremy Rutter, Kellen Appleton, Eric Stacey (alt), Brian Ceglarski (alt)

MEMBERS ABSENT: NONE

STAFF PRESENT: Tim Corwin (Deputy Planning Director)

OTHERS PRESENT: Christine Johnston, Esq. (Legal Counsel for the Planning Board)

1. CALL TO ORDER

Chair Faunce called the meeting to order at 6:36pm.

Mr. Corwin reviewed the City's meeting in-person and REMOTE attendance policies and procedures.

2. NOTICE OF REGIONAL IMPACT

The following applications were received by the Planning and Development Department on or before November 12, 2024:

- **Grafton County Senior Citizens Council, Inc. and City of Lebanon, 10-12 Campbell Street (Tax Map 92, Lot 23), 0 Flynn Street (Tax Map 92, Lot 17), and 0 Flynn Street (Tax Map 91, Lot 245), zoned L-D: Request for approval of a Boundary Line Adjustment between Lot 92-23 and Lot 92-17 and a Voluntary Lot Merger of Lot 92-17 and Lot 91-245. PB2024-46-BLAVLM**
- **Choice Storage LLC regarding 00 Etna Rd (Tax Map 26, Lot 17 L-D: zoned L-D and RO 3: Request for A 5-lot subdivision and a Conditional Use Permit pursuant to Article 5, Section 508.6A of the Lebanon Zoning Ordinance. PB 2024-47-MAJCUP.**
- **Cicotte Holdings, LLC, 51 Evans Drive (Tax Map 78, Lot 40, Plot 200), zoned R-O-1: Request for a Conditional Use Permit pursuant to Section 311A.2 of the Lebanon Zoning Ordinance and for Site Plan Review per Section 3.1.D of the Site Plan Review**

**Regulations to expand the outdoor vehicular storage area for an existing vehicular sales use together with associated site improvements including landscaping and lighting.
PB2024-48-SPRCUP**

Mr. Corwin said Staff recommends the applications do not have the potential for regional impact.

A MOTION was made by Richard Ford Burley that the applications of Grafton County Senior Citizens Council Inc. in the city of Lebanon regarding 1150 Campbell St. and 0 Flynn St. tax back 91 lot 245 and tax back 92 lot 23. Zoned Lebanon Downtown, Choice Storage LLC regarding 00 Aetna Rd. that is tax map 26, lot 17 zoned Light Industrial and RO 3, and Holdings LLC regarding 51 Evans Drive, Tax map 78, lot 40, plot 200, zoned RO1 do not have the potential for regional impact. The motion was seconded by Jeremy Rutter.

Ms. Romano confirmed that she's participating remotely because she is out of town and she is alone in the room while attending.

Roll Call Vote:

Voting For – Ms. Zook, Mr. Kennelly, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, Mr. Rutter, and Ms. Romano

Voting Against – None

***The MOTION was approved (7-0).**

3. DELIBERATION

A. XYZ Dairy, LLC, River Park Drive (Tax Map 44, Lots 21 - 30 & Tax Map 44, Lot 7), zoned CBD, IND-L and R-3: Applicant requests a 2-year extension of the River Park Subdivision approval (PB2011-01-FMAJ) and Site Plan approval (PB2010-25-SPR), as most recently amended on September 9, 2019 (PB2018-34-SPA) and extended on October 12, 2021 (PB2021-29-EXT). PB2024-34-EXT – Continued from October 14, 2024.

Ms. Romano and Ms. Appleton recused themselves from the discussion. Chair Faunce said only Ms. Zook, Mr. Kennelly, Mr. Ford Burley, Mr. Rutter, and he would participate in the deliberation at this meeting because they were the Board members who have previously participated in this hearing item.

No one was present on behalf of the applicant.

Chair Faunce explained that a straw poll was taken at the October 14, 2024 meeting, which ended in a vote of 4-1, to deny the extension request. He said Staff developed a motion that was reviewed by the City's Legal counsel. Chair Faunce said he also participated in the drafting of the motion. He said the motion had been distributed via email to the Board members that will be deliberating at this meeting. He said participating Board members will have a chance to review and discuss the motion and then make a motion to either deny or approve the two-year extension.

Mr. Ford Burley noted that the draft motion is very long and suggested a motion be made that references that draft as a written decision.

1
2 ***A MOTION was made by Richard Ford Burley to deny the extension request because the***
3 ***applicant has not, in the opinion of the Board, demonstrated the need for more time is***
4 ***attributable to unusual circumstances beyond the control of the applicant or there is otherwise***
5 ***good cause to grant a two-year extension. A written decision, consistent with the draft prepared***
6 ***by Staff and discussed by the Board, including findings of fact and reasoning for this decision,***
7 ***and consistent with testimony and information submitted during the hearings, will be prepared***
8 ***for the Chair's signature.***
9

10 ***The motion was seconded by Jeremy Rutter.***
11

12 Mr. Rutter suggested the word "By" be added before NHDOT on Page 7 on the last line of
13 paragraph 2 of the written draft decision. The correction was accepted by the Board and will be
14 made to the written decision document.
15

16 ***Roll Call Vote:***

17 ***Voting For – Ms. Zook, Mr. Kennelly, Mr. Ford Burley, Mr. Faunce, and Mr. Rutter***

18 ***Voting Against – None***
19

20 ****The MOTION was approved (5-0).***

21 **3. PUBLIC HEARING ITEMS**
22

23 **A. XYZ Dairy, LLC, River Park Drive (Tax Map 44, Lots 21 - 30, and Tax Map 44, Lot 7),**
24 **zoned CB, IND-L and R-3: Appeal of administrative decision made on September 10,**
25 **2024, that conditions 1, 2, 4, 5, 7 and 14-4 of the River Park development Site Plan**
26 **approval as set forth in the Notice of Action dated September 9, 2019, for PB2018-34-**
27 **SPA, have not yet been satisfied and, consequently, that construction of Phase 1 may not**
28 **commence. PB2024-40-AAD – Continued from October 14, 2024**
29

30 Mr. Corwin said, following the October 14, 2024 Public Hearing, Planning Staff worked with the
31 City Engineer to further review the record in relation to the conditions that Staff had asked about
32 back on June 10, 2024 via an e-mail to the applicant. He said that Staff concluded that those
33 conditions have been satisfied, except the requirement to install temporary erosion control
34 measures and the requirement to obtain a third-party reviewer prior to the commencement of
35 construction. He said Staff sent out an e-mail to the applicant earlier today detailing those findings
36 and sent a copy to the Board.
37

38 No one was present on behalf of the applicant.
39

40 Attorney Christine Johnson said the Board might conclude that the conditions that have been met
41 are considered resolved. She said the Board can open the public comment portion now. She said,
42 after that, the Board may conclude that the remaining two conditions (which have not been
43 satisfied) and the appeal for those two conditions could possibly be denied.
44

45 Chair Faunce opened the public comment portion of the meeting. No one from the public made a
46 comment. Chair Faunce closed the public comment portion of the meeting.

1
2 Mr. Corwin reminded the Board that Staff requested a status update for six conditions as set forth
3 in the River Park Site Plan Approval of September 09, 2024 (Application **PB2018-34-SPA**),
4 which are Conditions 1, 2, 4, 5, 7 and 14-4.

5
6 He said, of those conditions, Staff is satisfied that Conditions 1, 2, 7, and 14-4 have been met. He
7 said Condition 4 (third-party inspections) and Condition 5 (edge of disturbance fencing) have not
8 been met.

9
10 ***A MOTION was made by Richard Ford Burley that the Lebanon Planning Board grants the***
11 ***appeal for Conditions 1, 2, 7, and 14-4, and denies the appeal for Condition 4 and Condition 5.***
12 ***The Motion was seconded by Patrick Kennelly.***

13
14 ****The MOTION was approved (5-0).***

15
16 **B. Irma Muzzy Estate & City of Lebanon, 192 Mascoma Street (Tax Map 90, Lot 19) and 0**
17 **Mascoma Street (Tax Map 90, Lot 20), zoned R-3: Request for approval of a Boundary**
18 **Line Adjustment between lands located at 192 & 0 Mascoma Street. PB2024-43-BLA**

19
20 Chair Faunce said all Board members present would participate in the discussion and vote for this
21 Public Hearing, except Ms. Romano, who recused herself from this discussion.

22
23 Mr. Corwin stated that Staff recommends that the application is complete enough for the Planning
24 Board to accept jurisdiction and commence review.

25
26 ***A MOTION was made by Richard Ford Burley that the application of Irma Muzzy Estate &***
27 ***City of Lebanon, 192 Mascoma Street (Tax Map 90, Lot 19) and 0 Mascoma Street (Tax Map***
28 ***90, Lot 20), zoned R-3is complete enough for the Planning Board to accept jurisdiction and***
29 ***commence review. The Motion was seconded by Jeremy Rutter.***

30
31 ****The MOTION was approved (6-0).***

32
33 Mr. Corwin explained that, in 1968, the City and the Muzzy family, owners of two abutting
34 properties on Mascoma Street, agreed to exchange small amounts of land between the two
35 properties. He said, to effectuate the exchange, the parties would have needed City Council
36 approval, Planning Board approval for the lot line adjustment, the land transfer plat and two deeds
37 to be recorded: one from the Muzzys to the City and one from the City to the Muzzys.

38
39 He said the Muzzy Estate now wants to sell its property, but has discovered that, dating back to
40 1968, the deed from the City to the Muzzys was never recorded, and Planning Board approval was
41 never obtained. He said the failure to convey the City's portion of its property to the Muzzy Estate
42 is creating a title issue and is preventing the present sale transaction from moving forward.

43
44 He said the City Council has agreed to reauthorize the land transfer and authorize the City
45 Manager to execute all necessary documentation, including the deed. He said the Planning Board
46 is being asked to retroactively approve the plat that was recorded back in the 1960s. He said if the

Board does approve the plat, the Board's notice of action and the deed from the City to Muzzy will be recorded and the tax maps will be updated accordingly.

A MOTION was made by Richard Ford Burley that the Lebanon Planning Board approves the application of Irma Muzzy Estate & City of Lebanon for a proposed boundary line adjustment between 192 Mascoma Street (Tax Map 90, Lot 19) and 0 Mascoma Street (Tax Map 90, Lot 20), PB2024-43-BLA, as shown on a plat titled "Parcel Transfer – Donald A. & Irma W. Muzzy – City of Lebanon," dated September 19, 1967, prepared by K.A. LeClair Assoc., Inc., Proj. No. 67967, recorded in the Grafton County Registry of Deeds in Book 1060, Page 67, subject to the following conditions:

- 1. The applicants shall provide a draft copy of the land transfer from the City of Lebanon to the Irma Muzzy Estate for review to ensure the transfer will be completed properly for Assessing and recording purposes.*
- 2. The Planning Board Notice of Action for PB2024-43-BLA shall be recorded by the Planning & Development Department in accordance with Planning & Development Department recording procedures which the applicants are required to follow and complete.*
- 3. This approval shall be considered void unless all conditions precedent are met and the Notice of Action and deed of the land transfer from the City of Lebanon to the Irma Muzzy Estate is recorded in the Registry of Deeds within two (2) years from the date of approval.*

The Motion was seconded by Kellen Appleton.

**The MOTION was approved (6-0).*

C. Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2: Request for Site Plan Review to construct a +/- 3,882 sq ft. two story accessory office building for the existing multi-family complex, together with associated site improvements, including relocating a basketball court and new parking spaces. PB2024-41-SPR

Chair Faunce noted this item will be postponed to the December 9, 2024 Planning Board meeting. Ms. Romano rejoined the meeting as an active participant.

A MOTION was made by Richard Ford Burley to postpone Agenda Item 4C: Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), zoned R-2 PB2024-41-SPR to December 9, 2024. The Motion was seconded by Jeremy Rutter.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Zook, Mr. Kennelly, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, and Mr. Rutter

1 ***Voting Against – None***

2
3 ****The MOTION was approved (7-0).***

4
5
6 **D. Brickyard One Nominee Trust, 174 Hanover Street (Tax Map 48, Lot 4), 0 Hanover**
7 **Street (Tax Map 48, Lot 2), 0 Hanover Street (Tax Map 48, Lot 1), and 238 Hanover**
8 **Street (Tax Map 63, Lot 1), zoned R-1, R-O-1, R-3 & RL-3: Request for Site Plan Review**
9 **and a Conditional Use Permit pursuant to Sections 308.2, 310.2, 311A.2, and 501.2 of the**
10 **Zoning Ordinance for a proposed 474-unit multi-family Planned Unit Residential**
11 **Development (PURD) totaling +/- 731,600 sq. ft. in size, consisting of 11 buildings**
12 **together with parking, utilities, landscaping, access, and other related site improvements.**
13 **Applicant also requests a Conditional Use Permit pursuant to Section 308.4 of the Zoning**
14 **Ordinance to allow an increase in the maximum permitted building height from 45 ft. to**
15 **55 ft. PB2024-22-CUPSPR - Continued from October 14, 2024**
16

17 Mr. Corwin said the applicant presented a revised site layout to the Planning Board at the October
18 14, 2024 meeting and, following that discussion, the applicant submitted a revised plan set
19 reflecting those changes that were presented at the October 14 meeting. He said the revised plan
20 set, along with an updated traffic memorandum, stormwater report, and two Conditional Use
21 permit applications were submitted on October 25, 2024. He said those documents were included
22 with the Board's agenda packet, as well as the following:

- 23 • comments from the Lebanon Fire Department
- 24 • a letter from the Lebanon Conservation Commission
- 25 • a Weston & Samson peer review of the updated traffic memorandum (dated October 25,
- 26 2024).

27
28 He said the applicant intends to submit an updated Impact Study. He suggested the discussion at
29 this meeting could focus on the comments made by various City boards and committees:

- 30 • Conservation Commission
- 31 • Heritage Commission
- 32 • Pedestrian Bicyclist Advisory Committee
- 33 • Tree Advisory Board

34
35 Mr. Corwin suggested that the full technical presentation could be made by the applicant at this
36 meeting, which has not been presented in full at any previous meetings.
37

38 Mr. Dave Fenstermacher, Mr. Jason Plourde (traffic engineer), Mr. Rich Whitehouse, Mr. Tom
39 D'Aguiar, Mr. Erik Bednarek (landscape architect), Ms. Quinn Stuart (director of cultural
40 resources) – all of VHB – and Mr. Gil Aleixo (Brickyard One Nominee Trust), were present on
41 behalf of the applicant.

Overview of how project meets PURD criteria

Mr. Fenstermacher gave an overview of the concerns and comments that have been made and the design changes that have been made.

He discussed the criteria for a PURD (Planned Unit Residential Development) and how building the development to meet that criteria will allow them to build a better project. He outlined the ways that the project design meets the criteria for a PURD.

Historical presentation

Ms. Stuart said her specialty is architectural history. She said they partnered with Dr. Bob Goodby of Monadnock Archeology Consulting LLC to complete a walk-over and sensitivity assessment of the site. She said Dr. Goodby provided a report on his findings in September.

She provided an overview of the results of the archeology study, the site visit, and other research they have conducted:

- no structures prior built prior to 1900 were identified during the site visit
- over the course of 200 years of use, most buildings have been replaced over time
- At its peak, the site contained 7 buildings, 5 kilns that were built in the 1940s, 10 stable storage buildings
- the company closed its brick making portion of the business in 74 due to the oil embargo
- 1985 began the history of the site being purchased

She said, currently, there are several buildings still standing that appear to be ancillary structures with no specific use associated with them. She said there are three kilns, in varying degrees of condition, that remain on the site. Ms. Stuart discussed the report's observations about subsurface disturbances, such as drainpipes, utilities, buried pavement, public dumping, etc.

She said there is evidence of the quarry on the site but there was no evidence of machinery, landing sites, or processing facilities associated with them.

PUD/PURD Criteria

501.2 Planned Unit Residential Development (PURD)

A. **Objectives.** The objectives of the PURD provisions of this ordinance are as follows:

- To encourage conservation of Open Space to effect appropriate density and protect important natural resources such as agricultural soils, forested land, wildlife habitat, water resources, other natural resources, including geologic and scenic, and historical and archeological resources.
- To establish a connected network of conservation lands, trails, and working farm and forest land throughout the City by linking the Open Spaces and trails within the development, to conservation lands, important natural resources and trails on adjoining lands wherever possible, and as particularly found in the Lebanon Master Plan and Natural Lebanon.
- To preserve those areas of the property that have the highest ecological value, including, for example, wildlife habitat, large un-fragmented blocks of undeveloped land, and areas of co-occurring resources as shown in Natural Lebanon, and water resources, such as drinking water supply areas, wetlands, streams and rivers.
- To encourage the development of environmentally sensitive outdoor recreation land uses.
- To allow flexibility in residential development to provide for a diversity of housing types, densities, and styles.
- To provide opportunities for the development of workforce or affordable housing.
- To locate buildings and structures on those portions of the property which are the most appropriate for development and avoiding developing in areas ill-suited for development, including, for example, areas with poor soil conditions, a high water table, that are subject to frequent flooding or that have excessively steep slopes.
- To encourage a more suitable form of development by facilitating the design, construction, and maintenance of housing, streets, utilities and public services in a more economic and efficient manner and by integrating the new development into the existing built and natural environment.
- To promote the reduction of impervious surface areas and sustainable stormwater management.

Site History and Archaeology

- Area was relatively undeveloped until Hanover Street was established in the late 1700s.
- The brickyard in the project area was first established around 1806 by Comfort Goff, a miller who began digging deep clay beds at the then north end of Hanover Street.
- The brickyard was taken over by Samuel Storrs Barrows in 1810; the Barrows and extended family operated the yard until 1881.
- Jason Densmore purchased the yard in 1881, and it remained in the Densmore family for 3 generations.
- "Brickyard" is first labeled on the 1860 Map (upper right) but not depicted on a map until 1884 (bottom right).



Tom D'Aguiar (External)

View of the Site on the Norris 1884 Bird's Eye Map of Lebanon

Site History and Archaeology

- No structures built prior to 1900 were identified during the site visit, most likely due to the high risk of fire associated with the kilns. A fire in 1906 consumed many buildings (upper right).
- At its peak, the site contained 7 buildings and 5 kilns on Lot 48-4 and 10 stables and storage buildings on Lot 48-2 (see photo at bottom right).
- The Densmore Brick Company was driven out of business in 1974 due to the rising cost of oil, which was used to run the kilns.
- In 1985 the lots were purchased by Hodges Development Corp; a 2-acre piece of Lot 48-4 was acquired separately by "The Burning Log" store and subsequently sold in 1989.
- Ownership of the remainder of the brickyard property was transferred to C.R. Wilson Properties but was left abandoned until the most recent purchase in 2004.
- Buildings along Hanover Street, including three residences and a barn, were acquired by multiple owners.



View of the Site Facing North Before the Interchange was Built in the 1960s. From Carroll, 1984: 45.

Tom D'Aguiar (External)

Site History and Archaeology

- The historical background research indicated that the bulk of the brickyard footprint was located south of the pond where several standing buildings are still visible and that much of the west side of the pond where the majority of construction will occur remained undeveloped.
- Evidence of subsurface disturbance for drainage pipes, utilities, and buried pavement most likely disrupted evidence of the earliest foundations for wooden structures that appear in historic photos.
- Plan from 1982 when the property was being sold shows the concentration of buildings related to the brickyard operations to the south of the pond.



1982 Plan of Densmore Brick Company, Inc. On file, Grafton Co. Registry of Deeds



Finding East of One of the Presumed Brick Kilns

She said the Freeto House dates as far back as 1836. She said it was a single-family home until the property was purchased by the Chandler family in 1950. She said after that, it was listed as Chandler's cabins which were rented as resort cottages to vacationers. She said the fact that the cottages are more than 50 years old is worthy of study in NH under the Division of Historical Resources. She said there are three historical zones associated with the property.

[At 7:36pm, Mr. Kennelly left the meeting.]

She said they are filing a request for project review with the Division of Historical Resources, which initiates that division's involvement, and will include the archaeology report and their above-ground findings. She said they've included quite a large study area surrounding the property to make sure that any historic resources that are further afield that may be impacted visually, or "vibration-wise," – anything that may be indirectly impacted – are captured as well.

Traffic Study

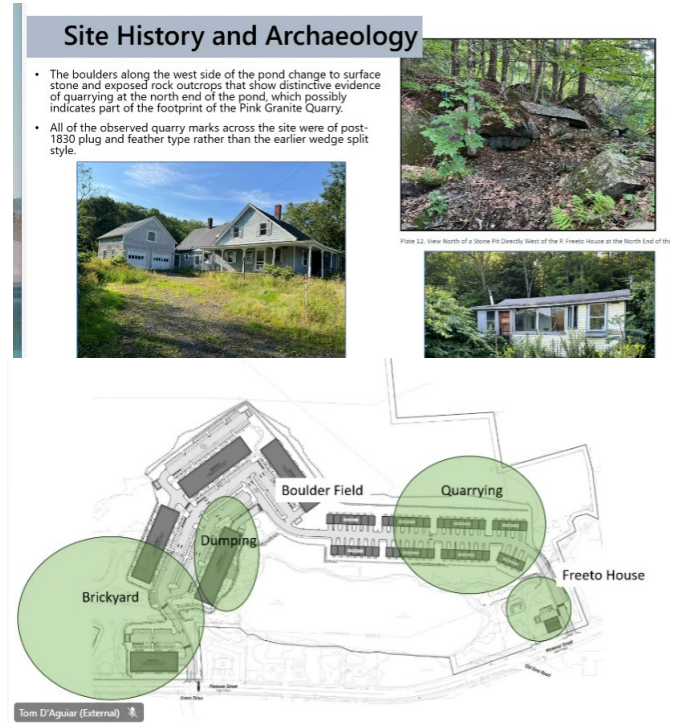
Mr. Plourde gave an overview of the process behind the traffic study, the planning for which he said began in Fall 2022.

He said the circled intersections were identified as sites for data collection:

- Route 120 at Evans Dr
- Evans Dr at Hanover St.
- Hanover St at Old Etna
- Mt. Support Rd at Heater Rd
- Heater Rd at Old Etna
- Old Etna Rd at Route 120

He said, after some delays, they conducted a scoping meeting with NHDOT, City officials and UVLSRPC officials. He said the study area that was agreed upon by the City was approved by the other officials. He said they were asked to look at land development projects in NH and to take the traffic counts, adjust them to peak month conditions, and take the pandemic into account.

He said they used pre-pandemic conditions at peak months to establish a baseline to compare to more current data. He noted that NH DOT did not take those factors into consideration during the Route 120 Corridor Study. He said for this reason, the traffic volumes in their study could be a lot higher than NHDOT's projections for the Route 120 Corridor. He said NHDOT asked them to



show traffic counts without any adjustments and the numbers they had to use show worse operations than the regular traffic counts.

He said the other part of the scoping meeting was to determine what improvement alternatives could be considered along the Route 120 Corridor. He described the improvements proposed for that area.

He said the traffic counts were conducted at the following times:

- Weekdays 7:00am to 9:00am
- Weekdays 4:30pm to 5:30pm
- Saturdays 11:00am and 1:00pm

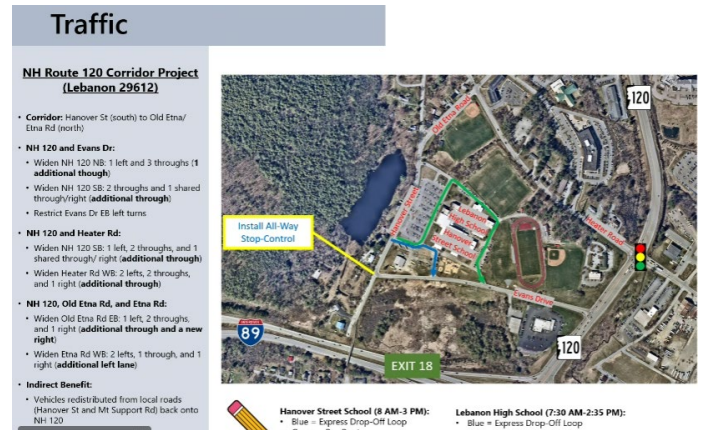
He said they also needed to project the future traffic volume conditions for the area. He said, in NH, they needed to estimate traffic volumes and conditions for the project's opening year (2025) and opening year plus ten (2035). He said NHDOT requires no less than 1% compounded annual growth rate for estimating future traffic volume. He said the City provided a list of developments that have not yet been constructed or occupied. He said they used all these factors to evaluate what the future conditions would be and estimated the number of site trips coming to and from their site to determine the estimated traffic volume in 2025 and 2035.

Mr. Plourde said the traffic study was submitted in May 2024 and the City's peer review consultant, Weston and Sampson, reviewed the study and made a few comments for clarification. He said they updated the study report and reissued it in August 2024. He said on November 1, 2024, after the changes to the number and nature of the units in the development were made in response to City and resident comments/concerns, Weston and Sampson conducted a peer review. He said from an engineering perspective, there was not much change to the traffic estimations even with fewer units and the addition of townhouses to the development.

He noted there are long delays at the Evans Dr and Hanover St intersection in the morning, when students are driving to school and students are parking on campus or along Hanover St. He said the traffic counts and observations were conducted and based on the Manual on Uniform Traffic Control Devices (MUTCD). He said one consideration is to have an all-way stop at that intersection.

He said they do not need a NHDOT permit but they need to submit their information to NHDOT so NHDOT can include the traffic volume in their own projections to ensure that any traffic generated from this development would not force them to make even more improvements along the Route 120 Corridor.

He said they worked with engineers at VHB to figure out the best locations for driveways for the development. He said that is important because they need to prevent all the traffic coming in and out at the same time in one spot.



He said they also considered an all-way or three-way stop at the intersection of Old Etna Rd and Hanover St. He said they determined, after speaking with City Staff, that it would not work.

Landscape Plan / Site Amenities

Mr. Bednarek gave an overview of the landscaping plans for the site. He said they include:

- Landscape strips in the parking areas with shade trees
- Canopy structures that meet perimeter shrub requirements around each building
- Screens for dumpster areas
- Native grasses and perennials
- Plants to provide a buffer along Hanover St
- Plants and trees around the Maintenance Building and Building 1 to provide a screen between them and the residential buildings
- Cover on sloped areas to minimize erosion

He noted other amenities planned for the site:

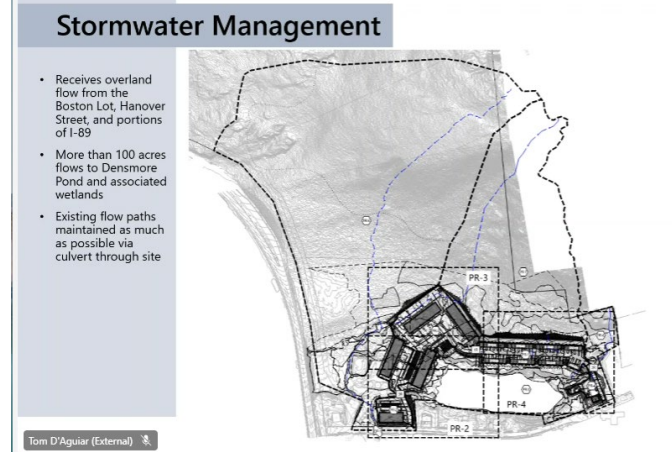
- Bicycle parking and bike racks
- Private patios behind the townhouses
- Path system to provide connectivity throughout the site
- Open spaces (see orange circles in image)
- Terrace overlooking the pond on north side of Building 2
- Overlook facing the historic portion of the site (may include seating and interpretative signage)

He also outlined the lighting plan. He said the location of lighting will result in a minimal amount of spillage into roadways or near property lines. He said the amenity spaces could have light bollards.

Stormwater Management

Mr. Fenstermacher said they have met with DES and developed a stormwater management plan, which will be reviewed by the third-party engineer.

He gave an overview of their plan to reduce peak runoff rates per City and DES regulations. He said they are planning to implement subsurface detention basins and box culverts to divert the water and prevent flooding on the site.



He said they wanted to plan for more than just current rainfall conditions, and he said they are designing for 100-year storms and increased rainfall rates. He said the intent of the site is not to infill wetlands areas. He said residents had concerns about flooding on the site, and that will be part of the state's review, which includes a significant flood study and hydraulic study that will be included with the project team's wetlands permit application.

Circulation

Mr. Fenstermacher said the plan includes opportunities to walk around to the back of the site and access the bike trails. He said they are working with the City to provide a crosswalk across Hanover St and sidewalk extensions at the intersection at Old Etna Rd.

He noted they are also considering implementing some brick into the look of the building architecture.

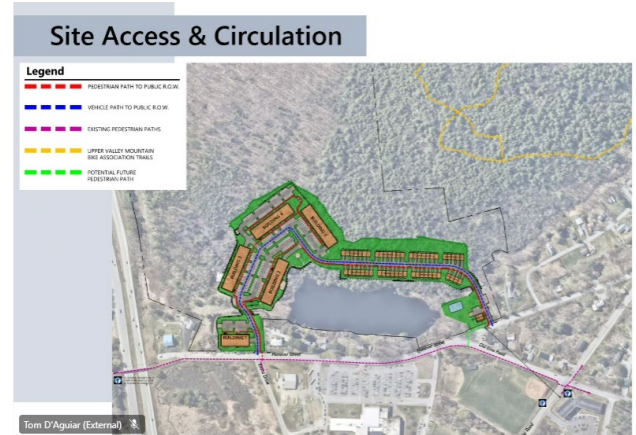
City Boards and Commissions Comments

Mr. Bruce James, Vice Chair of the **Conservation Commission**, said he composed a letter on behalf of the Commission with items that they believe the Planning Board should be considering:

- Planning Board review the Alteration of Terrain application – Mr. James said the alteration of terrain is significant for this project and the Planning Board should review and provide input on the application. Mr. Fenstermacher said the application has not been submitted yet. Mr. James said it is not clear what the disturbances of this glacial hillside will be.
- Wetlands – Mr. James said wetlands are important for their ecological value but also as support to terrain water flowing down to the Mascoma River.
- Soil Properties – Mr. James said soil properties play an important role from a structural engineering point of view
- Groundwater Hydrology – Mr. James said a lot of attention should be given to groundwater hydrology and flows – more than the normal control of stormwater
- Wildlife Habitat Forest Ecosystem – Mr. James said more detail is needed on the amount and impact of the disruption of the landscape

Mr. Fenstermacher said they have a certified soil scientist who will work with them to compose a response to the letter submitted by the Conservation Commission and get that to Mr. Corwin to give to the Commission.

Ms. Sarah Riley, Chair of the **Conservation Commission**, said a major objective of the PURD is to encourage conservation of open space. She encouraged the project team to conserve even more open space than what has been proposed in the plans. She said the zoning ordinance states that “the characteristics of a property have to be studied and described to best ensure that impacts on natural resources are minimalized and that the development should occur in the areas of lowest natural resource value.” She said she'd like to see that mapped out and the layers of natural resources for this project demonstrated visually. She asked if all the site's natural resources have



1 been delineated. She said there is an amphibian migration corridor across Hanover St just south of
2 Evans Dr that should be considered because it is an important natural component of this location.
3 She said she thinks the Impact Statement (that is required by Section 501 of the Zoning
4 Ordinance) will show there are many impacts to natural resources associated with this project.

5
6 She said wetlands would benefit from adjacent buffers and the pond would benefit also from
7 vegetative buffers. She said she would love to see if best management practices for riparian
8 buffers will be used to protect the pond from runoff and increased heat. She asked if floodplains
9 will be impacted by the project. Ms. Riley noted that the Board has the authority to require the
10 applicant to pay for an independent consultant to review and verify the conclusions of an Impact
11 Statement.

12
13 She said the Conditional Use Permit applications repeatedly use the term that “work will minimize
14 revenue tax to the maximum extent practical.” She said, given that this is a PURD and PURDs
15 have higher standards, she hoped they would do better than just minimizing to the maximum
16 extent practical.

17
18 Mr. Corwin said an Impact Study has been submitted. He said the applicant is preparing an
19 updated impact study to reflect the revised layout design.

20
21 Ms. Nicole Ford Burley, Chair of the **Heritage Commission**, said the Commission sent a letter
22 with recommendations to the Planning Board. She said it seems like some of those
23 recommendations are already in progress. Mr. Matt Smith, Vice Chair of the Heritage
24 Commission, said the site contains some very valuable historic resources and the Commission
25 hopes that those resources will be preserved and (preferably) made accessible to residents.

26
27 Mr. Colin Smith, Chair of the **Pedestrian & Bicycle Advisory Committee**, said it seems like
28 there has been a little progress on a crosswalk at the north entrance to help walkers safely across
29 Hanover St. He said the Committee is concerned about kids getting across Hanover St safely to get
30 to the school area. He said another comment the Committee made was about public access to the
31 trail system and development in the Boston Lot area. He said it does not seem like anything has
32 been done on that yet.

33
34 Mr. Fenstermacher said the updated plans include parking spaces near the north entrance that can
35 be used by trail walkers/hikers who want to access the trails behind the proposed buildings and to
36 the network of trails near and around Boston Lot. He said the crosswalk could not be added to the
37 plans yet because it is part of the public right of way and they’re working with City engineers to
38 see what is feasible.

39
40 No one was present from the **Tree Advisory Board** to address the project applicant.

41 42 **Planning Board Questions and Comments**

43 Mr. Ford Burley asked if the kilns can be restored to the point where they can be accessible to the
44 public for more than viewing from a distance. He also asked if the owner would commit to
45 maintaining the kilns in perpetuity.

1 Mr. Fenstermacher said a structural analysis will be done. Ms. Stuart said, because there is a
2 federal permit and the potential for DHR resources to be involved, if they are to be restored, there
3 could be another layer of review for accessibility. Chair Faunce said the kilns are visually and
4 experientially impactful and suggested they be given priority over some of the other interests on
5 the site.

6
7 Mr. Rutter said this is an extraordinary opportunity (that may not exist otherwise in NH) to have
8 as many as five kilns available (if remediation takes place) to present the various stages of brick
9 making to residents and nearby high school children. He said it is incredibly important for
10 residents to see inside the kilns. He said he would also love to see Building 1 and the brickyard
11 there with a park for the whole City. Ms. Stuart said two of the kilns may have to be used to
12 restore the other three to make them available for public viewing.

13
14 Ms. Romano said she is concerned about stormwater runoff. She said there are other developments
15 in the area that have extremely wet sites and those project teams employed some of the ideas
16 presented tonight for this site. She said the idea to retain rainwater and release it slowly, so it
17 doesn't just flood Mount Support road into the Mascoma River did not really solve the problem –
18 it just channeled the water more slowly. She said there needs to be some means of increasing the
19 retention capacity or of preventing the City from being flooded with increasing amounts of water
20 flow due to increased impervious surfaces from all the developments being built.

21
22 Mr. Ford Burley said he noted that (per C8.1 of the Phasing Plan) the townhouses will be built
23 after Phase II, but Buildings B, C, and D will be built based on occupancy and market. He asked if
24 the applicant could provide a commitment to build those townhouses regardless of the market for
25 studio apartments and one-bedroom units. He asked if they have explored whether the townhouses
26 could be made into condominiums. Mr. Fenstermacher said they did look at it, but he thought they
27 would have to have subdivision approval to do that. Mr. Corwin said there may be another way
28 and Mr. Fenstermacher said they will continue to work with Staff to try to accomplish it.

29
30 The group discussed the traffic study and the numbers of vehicles entering and exiting the area
31 during peak hours. Mr. Plourde confirmed the study indicated the predicted number of additional
32 cars on Hanover St and Evans Dr in the morning is 18 entering, 61 exiting onto Evans Dr and 45
33 going to the north. Mr. Plourde explained how the number of cars is determined, based on trip
34 generation calculations and the number of dwelling units. Mr. Ford Burley asked about emergency
35 vehicle access to the school during peak hours and asked if a risk analysis could be done to
36 determine how the increased traffic will impact response times. Mr. Plourde said the police and
37 fire departments may have a way to determine that, but it was not part of the traffic study.

38
39 Mr. Stacy asked what the capacity is of the four-way stop intersection per hour. Mr. Plourde said
40 he did not have that information at hand, but many things impact capacity, such as arrival patterns,
41 number of heavy vehicles, number of pedestrian crossings and bicyclists coming through the
42 intersection.

43
44 The group discussed the traffic volume and the intersections in the area in great detail. Mr. Stacy
45 asked why the intersection of Heater Rd and Route 120, as well as the intersection of Old Etna Rd
46 and Wolfe Rd, were not included as data points in the traffic study and suggested data should be

1 collected at peak hours at those intersections. Chair Faunce suggested Mr. Stacy direct his more
2 detailed traffic questions to Staff off-line to make sure there is time to answer questions from the
3 public at this meeting.

4
5 Mr. Ford Burley asked about the sizes of the open space areas in relation to the number of people
6 who live in the development to ensure the size is adequate to serve that number of people. Mr.
7 Bednarek said the spaces were determined based on similar spaces from other designs. He said
8 they will look at how these spaces may be used and will work with the client to provide amenities
9 (ex: barbeque grills) for the open spaces that best meet the needs of the residents.

10
11 **Public comment portion**

12 Chair Faunce opened the public comment portion of the public hearing. He asked that each
13 speaker keep their comments to two minutes.

14
15 **Mr. Bill Lamb (Ward 3)** said there is only one way out of Wolf Rd and that there are four major
16 developments on Wolf Rd. He asked what the basis legally is for not allowing any comments that
17 are negative about the developer. Mr. Corwin said he believes they are only allowed to take into
18 consideration the project itself and not the people responsible for it. He said there's nothing in the
19 site plan review regulations that relates to the background or status of the developer. Mr. Lamb
20 said if the Board makes a decision that supports this development and has refrained from allowing
21 any comments about the developer, it has opened itself up to an appeal which can be very
22 expensive. He suggested the Board get a legal basis for that and then decide.

23
24 Mr. Lamb said this developer says they will give up some things in order to do something that the
25 greater community needs, wants, or requires. He said there have been suggestions that that they're
26 giving the City something, but he said there aren't any gifts. He said there are 135 acres that they
27 want to develop. He said he has not heard any suggestion that they will not develop the other
28 acreage and leave it for open space or to the greater good of the of the Lebanon community.

29
30 **Ms. Maryann Levin** said the north access road goes right down her property line. She said she
31 has lived there since 1987 on the corner of Dartmouth Ave and Hanover St. She said the kids walk
32 down the road so they will need to build sidewalks. She said the area is biologically,
33 environmentally, and historically beautiful that has not really been developed. She said there are
34 foxes and deer and other wildlife in her yard. She said if they change the waterways, it will make a
35 big difference on the stream behind her house.

36
37 **Ms. Mary Davis (Ward 2)** asked if anyone has consulted the Lebanon Police Department
38 regarding the increased traffic projected for the area. She said additional crossing guards will be
39 needed at some of the intersections that have been identified as busy ones. She said she
40 understands the numbers have been calculated, but for anyone sitting in that traffic trying to bring
41 a child to school, it can be very frustrating. She said the traffic study did not really discuss the
42 walkers and bikers and how they're impacted by the extra traffic. She asked who will take
43 responsibility for maintaining the kilns if they are made accessible to the public. She said if they
44 are going to encourage people to go inside the kilns, they need to make sure someone will take
45 responsibility to keep them safe.

1 **Ms. Janet LaHaye (Ward 2)** asked how the sewer impact fees are determined for a development
2 like this. Mr. Fenstermacher said there is a worksheet that the City provides to calculate the impact
3 fees. Ms. LaHaye said Lebanon currently sends approximately 20% of its sewer to Hanover, and if
4 Hanover decides it doesn't want to handle it anymore, that comes back to the City, which is
5 already close to capacity, and what will the impact be of a huge development like this one.
6

7 **Ms. Sarah Riley (Ward 2)** suggested that bike storage on the site should be covered with access
8 to power so ebikes can be charged. She said the walkers in her area (near Wolf Rd and Heater Rd)
9 are many and should be taken into account in the traffic study. She said the development has to
10 show its aligned with the character of the existing neighborhood (for the conditional use permit)
11 and she recommended that they think about which neighborhood they are comparing the
12 development to. She said there are smaller communities much closer to the school and the site.
13 She also said it would be great if they started looking at designing for beyond the 100-year flood
14 event because we are having these events already.
15

16 **Ms. Cindy LaHaye (Ward 2)** said traffic is horrible when one is trying to get across Route 120
17 and onto Evans Dr in the afternoons. She said she understands the numbers that were presented,
18 but she does not agree with the data from the study.
19

20 Chair Faunce closed the public comment portion of the public hearing.
21

22 Mr. Rutter asked whether the elevator shafts were included in the waiver for the height
23 requirement. Mr. Corwin said there is a provision in the zoning ordinance (Section 203.1) that
24 allows that certain features, like equipment enclosures (ex: elevator shafts) can exceed the
25 maximum permitted height by up to 20 percent. Mr. Fenstermacher confirmed the height increase
26 requests are for Buildings 4 and 5 only.
27

28 ***A MOTION was made by Richard Ford Burley to extend the meeting to 9:45pm. The Motion***
29 ***was seconded by Eric Stacy.***

30 ***Roll Call Vote:***

31 ***Voting For – Ms. Romano, Ms. Zook, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, Mr. Rutter,***

32 ***Voting Against – None***
33

34 ****The MOTION was approved (6-0).***

35 Chair Faunce asked if the rooftops might provide additional recreational space for residents. Mr.
36 Aleixo said they are considering solar panels for the rooftops, so may not be available for
37 recreational space.
38

39 ***A MOTION was made by Richard Ford Burley to continue this matter to the December 9, 2024***
40 ***Planning Board meeting at 6:30pm in City Council Chambers in City Hall, and, currently for***
41 ***the Planning Board to direct the Planning Department Staff to work with the applicant to get in***
42 ***writing their OK to the extension. The Motion was seconded by Andrew Faunce.***
43

44 ***Roll Call Vote:***

45 ***Voting For – Ms. Romano, Ms. Zook, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, Mr. Rutter,***

Voting Against – None

****The MOTION was approved (6-0).***

1. OTHER BUSINESS

None

2. APPROVAL OF MINUTES

- September 16, 2024
- September 23, 2024
- September 30, 2024
- October 14, 2024

A MOTION was made by Mr. Ford Burley to approve the September 16, 2024, September 23, 2024, and September 30, 2024 Planning Board meeting minutes as amended. The Motion was seconded by Jeremy Rutter.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Zook, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, Mr. Rutter

Voting Against – None

****The MOTION was approved (6-0).***

Chair Faunce said the October 14, 2024 Planning Board meeting minutes would be reviewed at the next meeting.

3. ADJOURNMENT

A MOTION was made by Richard Ford Burley to adjourn the meeting at 9:34pm. The motion was seconded by Andrew Faunce.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Zook, Ms. Appleton, Mr. Ford Burley, Mr. Faunce, Mr. Rutter

Voting Against – None

****The MOTION was approved (6-0). The meeting was adjourned at 9:34pm.***

Respectfully submitted,

Paula Roux

Recording Secretary

DRAFT

**LEBANON PLANNING BOARD
MEETING ROOM ONE, CITY HALL OR
REMOTE VIA MICROSOFT TEAMS
LEBANONNH.GOV/LIVE
MONDAY, NOVEMBER 25, 2024 6:30 PM**

MEMBERS PRESENT: Andrew Faunce (Chair), Kathie Romano (REMOTE), Patrick Kennelly, Jeremy Rutter, Kellen Appleton (REMOTE), Eric Stacy (alt), Brian Ceglarski (alt)

MEMBERS ABSENT: Richard Ford Burley (Vice Chair), Karen Zook (City Council Rep),

STAFF PRESENT: Tim Corwin (Deputy Planning Director), Nate Reichert (Director of Planning & Development / Zoning Administrator)

1. CALL TO ORDER

Chair Faunce called the meeting to order at 6:31pm.

Mr. Corwin reviewed the City's meeting in-person and REMOTE attendance policies and procedures.

2. STUDY ITEMS

A. Review of Proposed Amendments to the Zoning Ordinance and Zoning Map

Mr. Reichert said, after this discussion about the proposed amendments, there will be two more public sessions (December 5 at Kilton Library and December 9 at DHMC).

The group reviewed several miscellaneous edits to the proposed amendments.

Nuisance Ordinance

The group discussed the details of the nuisance ordinance. Mr. Reichert said Mr. Corwin was in the process of revising the current language of the nuisance ordinance. He said an option is for the ordinance itself to be discontinued and to define what constitutes a nuisance within the zoning ordinance instead. He said the ordinance should follow the health officers' enforcement (for example, in the case of hoarders and the health risk involved) more so than to zoning officials' enforcement.

Section 607.1

Mr. Corwin said legislation signed into law by the governor in August requires Planning Boards to consider alternative parking arrangements (that are different than what is prescribed by the zoning

ordinance) for residential projects. He said the burden is on the applicant to come up with what the solution will be and the Board has the option to engage a third-party consultant to peer review the proposed alternative parking arrangement.

Section 608

The group discussed the reasons why digital signs are prohibited in the City. Mr. Corwin said, at times, there has been interest in revisiting this prohibition. He said the proposed amendment to the sign regulations is to allow digital signs in certain areas of the City, with the stipulation that the messaging would refresh once per hour. Ms. Romano said it has been noted in the past that flashing signs distract drivers.

Section 607.8

The group discussed the idea of minimum percentages being used to determine how many EV spaces will be required for multi-family dwellings. Mr. Corwin explained how the percentages are calculated. Ms. Romano noted that, for large properties with 50 or 100 units, it is easier to determine a percentage than for smaller, four- or six-unit homes, where the percentage may turn out to be less than one space.

Section 411.3

The group discussed the special exception that allows townhouses to be built as part of the overlay district (for pattern zoning). Mr. Reichert suggested the general special exception criteria be clarified regarding allowing townhouses.

Ms. Romano said that section includes references to several requirements that may not be applicable to townhouses:

- tying into the City's stormwater system - does not say where that stormwater system is
- fuel tanks and garbage containers to be located at the rear of the property - often there's not much room in the rear of the property
- renewable energy – these properties will not have chimneys
- setbacks that start where the lot widens out from the driveway – may not be able to achieve the

- **Section 607.8** - clarify the minimum required percentage of EVSE-installed, EV-ready, and EV-capable spaces for multi-family dwelling and non-residential uses
- **Section 608** - allow freestanding non-static signs (i.e. digital message boards) on certain streets within the GC District, and related changes to the illumination standards and enforcement provisions
- **Section 610** - remove the requirement that an interior door is provided between the principal dwelling unit and an attached accessory dwelling unit (ADU)
- **Section 801 & Appendix A** – per HB 1359, clarify who has standing to (a) appeal an administrative decision to the ZBA, and (b) request a rehearing, and to clarify that "abutter" shall have the same meaning as provided by statute
- **Section 201** – allow stairs and stairwells to project up to 2 ft. into minimum required yards
- **Section 212** – in connection with the development of a proposed nuisance ordinance to be proposed to the City Council at a later date, remove anti-nuisance standards from the Zoning Ordinance
- **Section 213** – clarify procedures for requesting a waiver of impact fees from the Planning Board
- **Section 215** –
 - (a) require applicants for a shared driveway to produce an easement with maintenance provisions
 - (b) allow off-site utility improvements by conditional use permit
- **Section 507** - allow density bonuses for multi-family developments in the R-1 and R-2 Districts that provide for workforce housing, are energy efficient, and/or incorporate renewable energy systems
- **Section 509** -
 - (a) Clarify that building sites of no less than 1,500 sq. ft. shall be provided for both attached and detached cottages
 - (b) Provide a minimum parking requirement of 1.5 spaces per cottage
 - (c) Require an applicant to apply for Site Plan Review contemporaneously with the CUP
- **Section 604 & Appendix A** – per HB 1567, clarify that family day care homes and family group day care homes are allowed as an accessory use to any primary residential use
- **Section 607.1** – per HB 1400, permit Planning Board to authorize alternative parking solutions for residential uses

- required lot width
- street-facing entry – multi-unit townhouses may have end units that do not have front-facing entrances

The group discussed the design standards criteria that have been identified for the pattern housing units. Mr. Reichert said the zoning ordinance can be interpreted to a certain degree by the zoning administrator. He explained that if someone disagrees with the interpretation of the zoning official, they have the right to appeal to the Zoning Board for a ruling.

The group discussed the designs that would be provided by the designers (for example, via a pattern book) and how allowing owners to use their own designs may result in errors during construction. The group discussed how the option to use the designs provided (which would require the services of an architect) will probably be generally accepted for these projects. The group discussed at length possible proposals for funding by groups for pattern zoning projects, specifically for Auxiliary Dwelling Units (ADUs).

Section 614 – Recovery Houses

The group discussed whether vaping is included in the Fire Marshall's state smoking regulation for recovery houses, which are situations where people who are not related live in the same home.

Medical Center 2 District

Mr. Reichert explained that Alice Peck Day (APD) is asking for zoning amendments to their area so it can add residential housing for medical professionals to live directly on campus.

Mr. Reichert noted the MC-2 District does not allow for helicopters to land (as the MC District for DHMC does). He said the APD campus is a light medical campus.

1. Reduce Minimum Lot Sizes and widths

- Minimum Lot Size: - R-1: Class 1 – 10,000 sq ft - R-2: Class 1 – 10,000 sq ft - R-3: Class 1 – 10,000 sq ft - LD: 3,000 sq ft - RO: 75', CBD: 3,000 sq ft, PB 10,000 sq ft - Minimum Lot Width - R-1: Class 1 – 75' - R-2: Class 1 – 75' - R-3: Class 1 – 75' - LD: 40' may be reduced by CUP - RO: 75', CBD: 40', PB 75'	Minimum Lot Size Recommendations: Within the Pattern Zones Overlay Street Frontage: 40', 15' and 0'. Minimum Lot Size: 4,000 sq ft.
--	--

A class 1 lot has access to City Sewer and Water.

Staff Recommended Technical Amendments

- Recovery House - Create Use Code and Special Exception Requirements
- Create Medical Center two (MC2) Zone
- Technical Amendments
- Map Changes – Leb Housing Auth, Create MC2.

Medical Center Two

- Create a Medical Center Two (MC-2) Zoning district.
 - Re-zone the following parcels from R-3 to MC-2:
 - 10 Alice Peck Day Drive (90-59)
 - 0 Young (76-6)
 - 23 Alice Peck Day Drive (76-4)
 - 0 Hough Street (76-7)



Lebanon Housing Authority Romano Circle

Mr. Reichert suggested the Romano Circle property, which is owned by the Lebanon Housing Authority, be rezoned to RO so a variance is not required each time a change needs to be made. He said the LHA would like to build an office space on the property and rezoning to RO will mean that the project will not require a variance.

Map Change: Re-Zone Lebanon Housing Authority

- Re-zone Lebanon Housing Authority's 31 Romano Cir. Complex from R-2 to RO
 - The current use that has been in place since 1975
 - The current use is legal non-conforming
 - As legal non-conforming the use cannot be easily changed to adapt to the changing times. Additional apartments, office space, the conversion of office space to apartments or even a maintenance facility requires a Variance.



Oakes Storage Request

Mr. Dan Nash (Advanced Geomatics & Design) was present on behalf of the party requesting the amendment.

Private Map Change Request

- Oakes Storage
 - 111-16 92 Riverside Drive Rezone from RL-1 to GC with a CUP for Self Storage.
 - Zoning Board approved a Use Variance and several additional dimensional variances thereby allowing the Self-Storage Use.
 - Request by AGD - Dan Nash representing Oakes Storage.

Mr. Nash said three variances have been required to finish the work on the property, which, he said, indicates the RL-1 zone is not appropriate for this business. He suggested rezoning the area to GC would be a better fit. The group discussed the attorney's suggestion that spot zoning could solve this particular issue as opposed to rezoning the whole area.

The group discussed how there has been some discussion in this neighborhood, which is near an Interstate exit, over the years because the Zoning Board has allowed additional uses in the area, which seem to have made it less residential. The group discussed how the area still utilizes septic systems and is not connected to the City's sewer system, which is a constraint on development in the neighborhood.

A MOTION was made by Andrew Faunce that the Lebanon Planning Board recommends against satisfying and addressing this particular request when the area as a whole is being put forth as a request for rezoning. The Motion was seconded by Patrick Kennelly.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Appleton, Mr. Kennelly, Mr. Faunce, Mr. Rutter, Mr. Stacy, Mr. Ceglarski

Voting Against – None

****The MOTION was approved (7-0).***

[at 8:01pm, Mr. Reichert left the meeting, He noted that Christine Johnston is going to be unavailable for a time and Attorney Matt Isham will be providing legal opinions during that time.]

Chair Faunce said Agenda Item 2D would be discussed next, which is out of the order of the agenda.

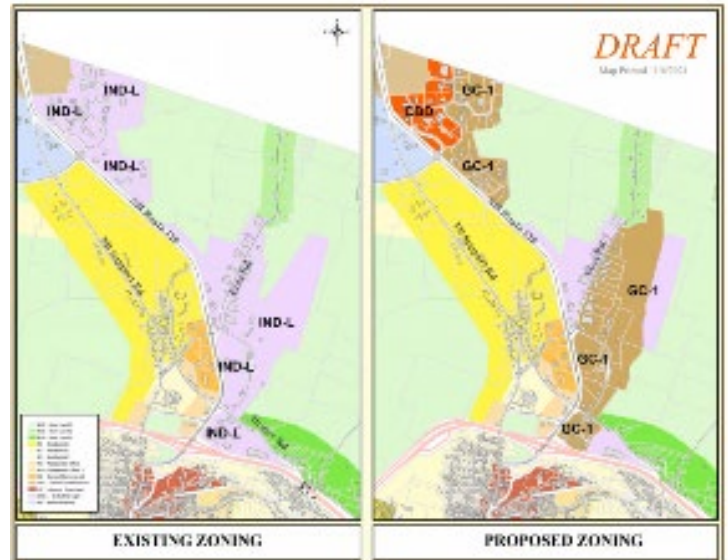
D. Review of Request for Zoning Map Amendment: ICV of NH, LLC - 67 Etna Road, Tax Map 26, Lot 2

Mr. Dan Nash was present on behalf of the applicant making the zoning amendment. Mr. Jay Campion also participated in the discussion.

Mr. Nash said the owner of the property has built a building with 75 units and was interested in building more buildings with residential units, but it has been limited by the regulations of an Industrial PUD that requires 25% of the calculated density (13 units per acre). He said the owner is asking that the percentage be increased or for the area to be rezoned GC1, like other areas in the vicinity and on the other side of Route 120.

The group discussed the concerns of the Conservation Commission about the wetlands and the wildlife corridor in that area. Ms. Romano noted that a wildlife crossing bridge or culvert has been planned to help wildlife cross Route 120. She said they would not want to change zoning that may negate the possibility of building that wildlife crossing. The group also discussed how the area includes residential, IND-L, and GC1 zones, and how expanding the GC1 zones would affect the general characteristics of the area. Chair Faunce noted that currently there is not a lot of property that is zoned IND-L in this area.

Mr. Corwin explained the density formula in relation to PUDs in Industrial-zoned districts. He explained that, if the rezoning proposed for the Centerra Planned Business Park and the Alteria PUD is approved, it calls into question how those developments can take advantage of the rezoning (based on their respective Planning Board approval conditions/requirements). He said the City wants to make sure that the approvals can be amended if the property owners want it. He said the Planning Board needs to be allowed to permit unlimited residential density, because without that there is no benefit to rezoning.



Dwelling units in one-family, two-family and multi-family dwellings or appropriate mixes thereof may be allowed in Commercial or Industrial PUDs, at the discretion of the Planning Board, provided that the Board determines that such residential uses are compatible within the proposed PUD. For PUDs or portions thereof in the IND-L or IND-RA Districts, the density of residential uses allowed pursuant to this section shall be determined based on a maximum of 25% of the net land area of the PUD not planned for open space, roads, or utilities and calculated at a density of 13 dwelling units per acre. For PUDs or portions thereof located in the GC, GC-1, or CB Districts, the density of residential uses allowed pursuant to this section shall be determined by the Planning Board pursuant to Sections 305.5, 305A.4, and 306.5, respectively. Where allowed, such dwelling units may be clustered together and/or distributed within the Commercial or Industrial PUD in mixed use buildings at the discretion of the Planning Board.

The group discussed at length the pros and cons of applying the same zoning that is on one side of Route 120 to an area that is on the other side of the road, versus changing all of the area to zone GC1.

Mr. Kennelly noted the uses that would no longer be allowed if the whole area was zoned GC1:

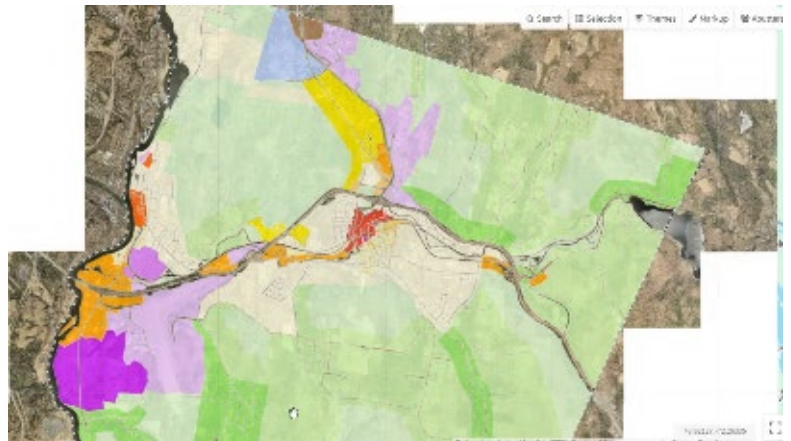
- Bus terminal
- Care and treatment of animals
- Car wash
- Contractor's yard
- Educational facility or vocational school
- Health club
- Industrial PG
- Local government usage

The group reviewed the current zone map and discussed the allowable uses for each (see image at right):

IND-L is light purple

GC is orange

GC-1 is brown



Mr. Kennelly noted the following uses are allowed in IND-L and/or GC and not in GC-1

- Funeral home
- Health club
- Hotel
- House of Worship
- Laundromat
- Membership clubs
- Motel
- Movie theater
- Local government usage
- Retail product pickup
- Retail showroom
- Vehicular sales
- Warehouse
- Publishing & printing

The group discussed the differences between the GC and GC-1 zones.

A MOTION was made by Andrew Faunce that the Lebanon Planning Board endorses the conversion of the remaining set of parcels and the study area on the west side of Route 120, currently zoned IND-L, to GC-1, subject to analysis by the City Council and their agents as to

1 **the remaining sufficiency of IND-L in the City and remedies to any nonconforming uses. The**
 2 **Motion was seconded by Jeremy Rutter.**

3
 4 **Roll Call Vote:**

Voting For – Ms. Romano, Ms. Appleton, Mr. Kennelly, Mr. Faunce, Mr. Rutter, Mr. Stacy, Mr. Ceglarski

5 **Voting Against – None**

6
 7 ***The MOTION was approved (7-0).**

8
 9 **A MOTION was made by Andrew Faunce that the Lebanon Planning Board proposes that the**
 10 **area south of Heater Road and east of Route 120, currently proposed to be rezoned GC-1, to**
 11 **retain the zoning as IND-L. The Motion was seconded by Eric Stacy.**

12
 13 **Roll Call Vote:**

Voting For – Ms. Romano, Ms. Appleton, Mr. Kennelly, Mr. Faunce, Mr. Rutter, Mr. Stacy, Mr. Ceglarski

14 **Voting Against – None**

15
 16 ***The MOTION was approved (7-0).**

17
 18 Mr. Campion suggested that an updated map be created that shows the proposed rezoning to
 19 prevent confusion.

20
 21 **B. Review of Proposed Amendments to**
 22 **Site Plan Review Regulations re:**
 23 **Minor Site Plan Committee and**
 24 **Conceptual Review**

25
 26 Mr. Corwin said this amendment is to
 27 establish the Planning Director as the Chair of
 28 the Minor Site Plan Committee and to add the
 29 Chief Building Official as a member. He said
 30 he would take the role of Staff for the
 31 committee.

A. MINOR SITE PLAN COMMITTEE

1. **Establishment.** A Minor Site Plan Committee is established in accordance with RSA 674:43, III, and the resolution passed by the City Council on September 1, 2021, for the purpose of reviewing minor site plan applications per Section 3.1.C.
2. **Membership.** The Minor Site Plan Committee consists of the Director of Planning and Development, the Chief Building Official, the Director of Public Works, the Fire Chief, and the Police Chief ~~Planning and Development Department's Senior Planner and Associate Planner, and a representative from each of the following City departments: Fire, Police, and Public Works.~~ The Director of Planning and Development ~~Senior Planner~~ shall serve as chair and may use ~~his or her~~ their reasonable discretion in coordinating the activity of the ~~Committee~~ in an efficient and effective manner. The Deputy Director of Planning and Development or designee shall serve as staff for the Committee. ~~The Director of Planning and Development~~ members of the Committee may, at ~~his or her~~ their discretion, appoint a substitute representative from their respective departments to the Committee ~~for the~~

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 33
 34
 35 **Conceptual Review**

36 The group discussed the effectiveness of conceptual review and whether the conceptual review
 37 period should be conducted earlier in the project review timeline. They also discussed whether the
 38 conceptual review period should be lengthened (so the actual approval process can possibly be
 39 shortened). Mr. Corwin suggested the conceptual review period might be a good time to inform
 40 applicants what parts of their developments might undergo peer review.

41
 42 Mr. Rutter asked if, during the conceptual review period, a cut-off point be enforced for applicants

that have not submitted information that has been requested by the Planning Board. He said some applicants go on for months and it seems like there should be a time limit, after which the applicant would have to resubmit.

Chair Faunce said Conceptual Review could be a good time for the Planning Board to establish a structured set of engagements with applicants on big projects that are designed to drive getting information to the Board at the time of formal application. He said Conceptual Review could also help the Planning Board articulate expectations to applicants prior to the formal application submission. The group also discussed completeness of applications and how to hold applicants accountable to provide information that is requested by the Board.

A MOTION was made by Andrew Faunce to extend the meeting to 9:40pm. The Motion was seconded by Jeremy Rutter.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Appleton, Mr. Kennelly, Mr. Faunce, Mr. Rutter, Mr. Stacy, Mr. Ceglarski

Voting Against – None

****The MOTION was approved (7-0).***

The group discussed what figures should be added to the proposed language regarding the number of new or additional dwelling units and the square footage of new buildings. (See image at right.) These figures are some of the proposed conditions that would require a Conceptual Review.

The group agreed to continue discussion about what the numbers should be.

B. Conceptual Review Required. Conceptual review shall be required for any land development that requires Planning Board review pursuant to Section 3.1.D and which involves any one or more of the following:

1. or more new or additional dwelling units;
2. More than one (1) principal building; and/or
3. Any new building of sq. ft. or more.

C. Conceptual Review Optional. For any site land development other than those identified in Section 4.3.B, conceptual review shall be optional.

~~the Applicant may request an informal discussion with the Board, to be conducted in general terms, of the basic concept of the proposed development. The Applicant may end the conceptual discussion at any time.~~

D. Notice. Conceptual reviews shall only take place at a formal meeting of the Board. Public notice of a required the conceptual discussion review shall be provided pursuant to Section 4.8 and shall also be provided to the following:

1. Conservation Commission
2. Pedestrian & Bicyclist Advisory Committee

C. Discussion of potential amendments to the Site Plan Review Regulations re: Article IV procedural requirements, Article V application submission requirements, and Article VII waiver requirements
Was not discussed.

3. COMMITTEE REPORTS

None

4. OTHER BUSINESS

None

5. APPROVAL OF MINUTES

- October 14, 2024

Chair Faunce said he reviewed the October 14, 2024 Planning Board meeting DRAFT minutes and shared his suggestions via email. He asked Board members to consider his edits (or suggest other edits) and come prepared to discuss them at the next meeting.

- October 25, 2024

Amendments: Page 1 Line 14: Change to Chamberlain

Page 7 Line 7: Edit to read “value of”

Page 7 Line 8: Edit to read “as well as qualify to participate”

Page 7 Line 38: Eliminate the line

A MOTION was made by Jeremy Rutter to approve the October 28, 2024 Planning Board meeting minutes as amended. The Motion was seconded by Brian Ceglarski.

Roll Call Vote:

Voting For – Ms. Romano, Ms. Appleton, Mr. Kennelly, Mr. Faunce, Mr. Rutter, Mr. Stacy, Mr. Ceglarski

Voting Against – None

****The MOTION was approved (7-0).***

6. ADJOURNMENT

The meeting adjourned at 9:41pm.

Respectfully submitted,

Paula Roux

Recording Secretary