LEBANON PLANNING BOARD
FEBRUARY 14, 2022 - 6:30 PM
COUNCIL CHAMBERS, CITY HALL OR
REMOTE VIA VIRTUAL PLATFORM
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1. Call to Order

2. Notice of Regional Impact

3. Public Hearing Items

A. **Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Road (Tax Map 24, Lots 9 & 10), zoned R-1:** Request for Site Plan Review to construct a proposed 4-building multi-family development consisting of 204 dwelling units, together with parking, utilities, landscaping, access, and other related site improvements. PB2021-33-SPR - Continued from January 10, 2022

B. **Trustees of Dartmouth College, 56 Etna Road (Tax Map 50, Lot 28), zoned IND-L**: Request for Site Plan Review to construct a +/-19,672 sq. ft. library storage building and related site improvements. PB2022-03-SPR - Continued from January 10, 2022

C. **Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L**: Request for approval of a Boundary Line Adjustment between lands located at 25 & 0 Labombard Road. PB2022-04-BLA
Continued from January 10, 2022

D. **Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax 51, Lot 15), zoned IND-L**: Request for Site Plan Review to construct a +/-12,250 sq. ft. building for a health club to include a climbing gym, yoga studio and accessory retail space, together with site improvements consisting of a new parking lot, sidewalks, patio, sewer and water utility connections, and stormwater improvements. PB2022-05-SPR
Continued from January 10, 2022

E. **Robert & John Oakes, 92 Riverside Drive (Tax Map 111, Lot 16), zoned RL-1**: Request for Site Plan Review to construct a +/-26,176 sq. ft. commercial self-storage unit facility together with related site improvements. PB2022-06-SPR
Continued from January 10, 2022

F. **Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L**: Request for a Conditional Use Permit to convert a previously approved contractor's yard to a car wash. PB2022-02-CUP - Continued from January 10, 2022

G. **EJB Holdings, LLC (applicant) and Valley Publishing Corp (property owner), 24 Interchange Drive (Tax Map 129, Lot 8), zoned GC:** Applicant requests a Conditional Use Permit to convert a portion of the existing building to a warehouse use. PB2022-07-CUP

H. **Unifirst Corporation, 125 Etna Road (Tax Map 26, Lot 6), zoned IND-L:** Site Plan approval for the existing industrial laundry facility was granted on March 3, 1987. Applicant requests removal of the Planning Board's condition of approval requiring bi-annual groundwater monitoring. PB2022-08-SPA

I. **Lebanon School District SAU #88, 38 Dana Street (Tax Map 73, Lot 41) and 5 White Avenue (Tax Map 73, Lot 93), zoned R-3:** Request for Site Plan Review to construct additions to the Mount Lebanon Elementary School, parking utilities upgrade, landscaping, and lighting. PB2022-09-SPR

J. **Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L**: Request for Site Plan Review to construct a parking lot for a proposed car wash use. PB2022-10-SPR

4. Other Business

5. Approval of Minutes

A. January 10, 2022

B. January 12, 2022 - Site Walk

C. January 24, 2022 - Planning Session

6. Adjournment

The order of agenda items is subject to change.

At the scheduled meeting, the Planning Board will first consider the completeness of the applications. If the applications are found to be complete enough to accept jurisdiction, the Board may then open the public hearing.

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.

Agenda
Planning Board
February 14, 2022

Agenda Item #3A
Public Hearing Items

Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Rd (Tax Map 24, Lots 9 & 10), zoned R-1

PB2021-33-SPR

PLANNING BOARD

January 10, 2022 Meeting

Staff Memorandum – PB2021-33-SPR – *con't from 1/10/22*

APPLICATION INFORMATION

Agenda Item: 3.A

Application ID: PB2021-33-SPR

Application Type:
Site Plan Review of a 204-unit multi-family residential development

Property Location & Tax Map:
402 Mount Support Road (Tax Map 24, Lot 9) and 392 Mount Support Road (Tax Map 24, Lot 10)

Applicant: Mount Support Development, LLC

Property Owners:
Sylvia D. Lahaye Revocable Trust (402 MS Rd) and Pat Lumber Jack, Inc. (392 MS Rd)

Property Size *(per City Assessor's records)*:
+/-14.21 acres (consisting of +/-6.55 acres for 402 MS Rd, and +/-7.66 acres for 392 MS Rd)

Existing Use & Improvements:

- 402 MS Rd: +/-3,552 (gross) sq. ft. one-family dwelling, constructed in 1986 (a conforming use in the R-1 District per §308.2), and accessory structures
- 392 MS Rd: vacant

Proposed Use:
204-unit multi-family development consisting of four (4) buildings

Zoning District: Residential One (R-1)

Overlay Districts:
Wetlands Conservation District

Future Land Use Map:
Residential – High and Rural

LEGAL NOTICE

Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Road (Tax Map 24, Lots 9 & 10), zoned R-1: Request for Site Plan Review to construct a proposed 4-building multi-family development consisting of 204 dwelling units, together with parking, utilities, landscaping, access, and other related site improvements. PB2021-33-SPR

PLANS AND APPLICATION MATERIALS

- Letter dated January 24, 2022, from Nicholas A. Fiore, PE, of Engineering Ventures, PC (*response to staff comments*; 7 pages)
- Revised Plan Sheets 1, 10, 11, 12, 13, 14, 16, 17, 25, 26, and 26a (*new*), dated January 24, 2022, from the plan set titled "402 Mr. Support Road – Residential Development Site Plan Review" prepared by Engineering Ventures, PC, dated November 8, 2021, EV Project #19324 (33 Sheets (*now 34 Sheets with the addition of Sheet 26a*))
- *Other*:
  - Letter dated February 2, 2022, from Steve Keach, PE, of Keach-Nordstrom Associates, Inc. (*engineering review of revised plans dated January 24, 2022 and of revised Drainage Report dated January 24, 2022*, 4 pages)
  - E-mail sent January 10, 2022 from David Duncan on behalf of Dartmouth Hitchcock Medical Center
  - E-mail sent January 14, 2022 from Sherry Boschert
  - Letter from New Hampshire Housing received by the Planning and Development Department on February 8, 2022

On-line only (not included with Planning Board hard copy agenda packets):

- Spec sheet for 6 ft. Skyline Bench from The Park Catalog
- Drainage Report titled, "402 Mt Support Rd Residential Development," with a revised date of January 24, 2022, prepared by Engineering Ventures, PC, EV Project #19324 (65 pages and 2 plan sheets)
- Test pit soil logs prepared by Doiron Environmental LLC, dated November 21, 2021 (4 pages)

STAFF COMMENTS

A. Revised Plans

The applicant has revised 10 of the plan set sheets and has added a new sheet. A summary of the proposed changes, which were partially made to address staff comments, is included on pages 6 and 7 of the attached letter from Nik Fiore, PE, dated January 24, 2022.

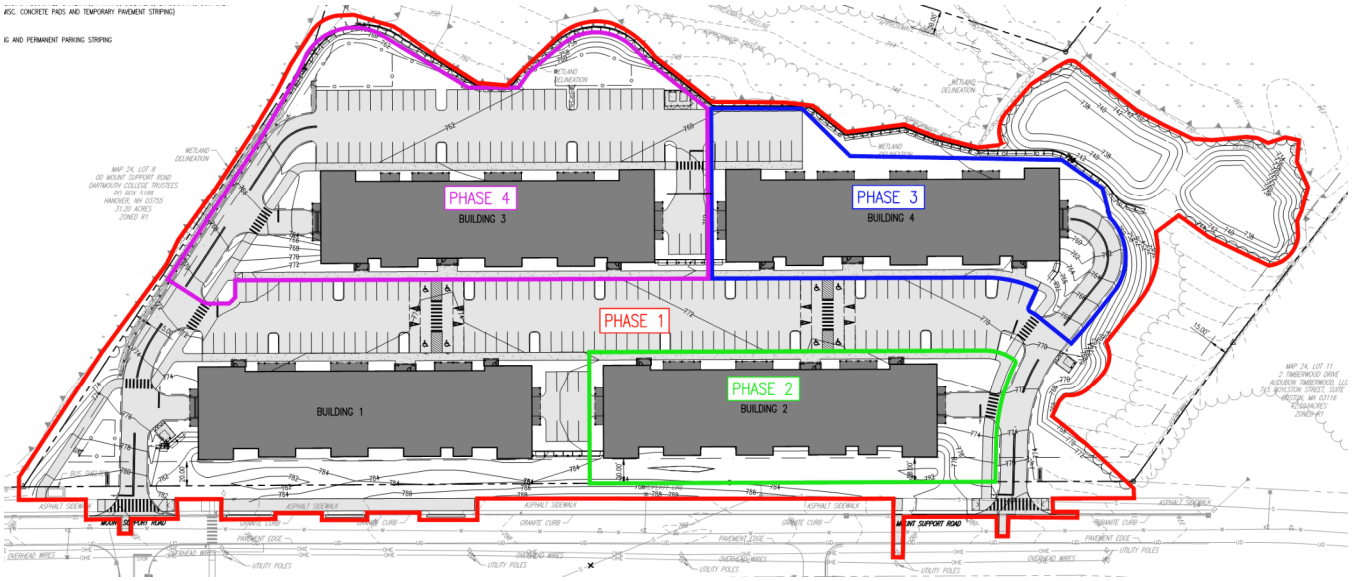
As discussed on page 2 of the Mr. Firore's letter, the revisions include measures to protect the wildlife corridor located along the southern end of the property. These measures were developed in response to questions raised at the site walk held on January 12th, and at the recommendation of staff in consultation with Dr. Rick van de Poll, author of the City's wildlife corridor study. Staff may suggest additional minor modifications at the February 14th meeting.

B. Engineering Review

The applicant has substantially addressed the outstanding comments of the Board's Reviewing Engineer. Staff is comfortable recommending that all remaining comments of the Reviewing Engineer as outlined in the attached letter dated February 2, 2022, from Steve Keach, PE, be made conditions of approval.

C. Phasing

As depicted on the plan set submitted with the January 10, 2022, agenda packet (but not specifically discussed in the staff memo prepared for that meeting), the applicant is proposing to phase the development per Section 4.9 of the Site Plan Review Regulations. The phasing plan is Sheet 4 of the plan set and includes both a written description of each phase as well as a graphic depiction of the phases, which is pasted below for quick reference:



The purpose of the phasing would be 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.") 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).

Pursuant to Section 4.9.C, the proposed phasing schedule shall include the following information for each phase:

> "1. A specification of all improvements, on-site or off-site, to be installed as part of that phase;
>
> 2. A deadline for the posting of any required security for that phase;
>
> 3. A deadline for the completion of such improvements subsequent to the posting of such security; and
>
> 4. A date by which a Building Permit must be obtained to prevent the approval for that phase from being considered void pursuant to Section 4.10 of these Regulations."

Section 4.9.C further provides that, "The phasing schedule may also specify threshold levels of work and time lines which must be completed, in order for the project, as a whole, or particular phase(s) of the project, to be considered "vested" pursuant to RSA 674:39, and the New Hampshire common law of vested rights."

Per Section 4.9.D, "[i]n determining whether to grant an applicant's request for phased development, or to approve a proposed phasing schedule, the Board may consider the totality of the circumstances, including but not limited to the following factors:

1. The extent to which review of the development in its totality is logical and reasonable due to the degree to which the proposed phases are well-integrated, both as to their use and development scheme, and as to common infrastructure and other improvements, by contrast with a series of superficially-related projects which could just as effectively be reviewed individually;

2. The degree to which the integration of the phases, as described above, would make private investment in such improvements unlikely without the predictability of a phased approval.

3. The extent to which phasing will benefit the City by mitigating and making more predictable the impacts of the complete development upon community facilities, services, utilities and other City goals as set forth in the Master Plan.

4. The extent to which the proposed phasing schedule represents a realistic timeline for active and substantial development progressing at a steady pace, in light of the type and complexity of the project as a whole, rather than an attempt to maintain "vesting" during significant periods of non-development.

5. The total length of time proposed, and the degree of unpredictability or Board uncertainty involved, with respect to whether a later phase or phases will continue to meet current regulations at the time of construction, and in light of potential

changed conditions which might occur in the meantime within the neighborhood or the City as a whole."

D. Conditions of Approval

Staff is preparing updated proposed conditions of approval and will provide these to the Board and to the applicant as soon as possible prior to the Board's February 14th meeting. Additional conditions will include conditions to address the phasing of the development, the conservation of the undeveloped portion of the lot with covenants or deed restrictions, and coordinating with Advanced Transit on the construction of the bus shelter adjacent to the development site.

Attachments

cc: Ken Braverman, Mount Support Development, LLC (via e-mail)
Sylvia D. Lahaye Revocable Trust (via e-mail)
Pat Lumber Jack, Inc. (via e-mail)
Nicholas A. Fiore, PE, of Engineering Ventures, PC (via e-mail)
File

ENGINEERING VENTURES PC

208 Flynn Avenue, Suite 2A, Burlington, VT 05401 · Tel: 802-863-6225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 · Tel: 603-442-9333
414 Union Street, Schenectady, NY 12305 · Tel: 518-630-9614

MEMO

Date: January 24, 2022

To: Tim Corwin, Senior Planner and Zoning Administrator
City of Lebanon Planning & Development Department

From: Nicholas A. Fiore, PE

Re: PB2021-33-SPR
Site Plan Review Application
402 Mt Support Rd Residential Development
Tax Map 24 Lots 9 & 10

Dear Mr. Corwin,

On behalf of Mt Support Development, LLC please find below written responses to comments on the above referenced Site Plans Review application provided by yourself as noted below and by Steven Keach of Keach-Nordstrom Associates, Inc in a letter dated January 5, 2022. The comments are repeated below and the responses follow each in blue.

T. Corwin comments:

Via Staff Report to Planning Board dated January 10, 2022 (comments that pertain to the site design)

Proposed Condition 1. a) i: Provide description of plan revisions (5.1.E.4.d).

- A written summary of the plan changes is at the end of this memo. The revised plans also include revisions clouds and tags. Further plan revisions will be noted as desired by Planning Staff.

Proposed Condition 1. a) iii: Amend the Zoning Chart to:

1. Provide the dwelling unit density calculation.
   - Sheet C0.0 now includes a Density Calculations table.
2. Identify the number of proposed dwelling units and the unit mix (total number of studios, one-bedrooms, two-bedrooms, etc.)
   - Sheet C0.0 now includes a Dwelling Unit Mix table.

Proposed Condition 1. b): Amend Sheet 16 (Utilities Plan) to add a note indicating that underground utilities, electric, telephone and cable, must maintain a minimum clearance of 10 ft. from all proposed water lines.

- This resubmission package includes a revised Sheet 16 (C2.7) with the requested note. The project's utility designs maintain the requisite separation.

Via e-mail on January 18, 2022 (comments that pertain to the site design)

"… Dr. Van de Poll recommends a row of northern white cedars of at least 2-inch caliper is planted from the edge of the rear retaining wall to the front of the property, keeping 10 ft. off of the driveway, and planted 6-8 ft. on center."

- This resubmission package includes a revised C2.8 Landscaping Plan which includes this requested row of trees.

"The row of northern white cedars would necessitate the relocation of the dumpster labeled "C4"... "

- The dumpster is in the best location for access by residents and a service truck. The project team is suggesting that the cedar trees go around the dumpster as depicted on sheet C2.8.

"We also recognize that your proposed sewer connection cuts across the wildlife corridor and the suggested landscaping."

- As coordinated with you and Brian Vincent, the row of cedars includes a 20-foot gap at the sewer line to avoid future issues from the tree roots damaging the sewer line. This gap will also be used if a machine is need for repairs to the gravel wetlands.

"…the location of the propane tanks at the southeastern corner of the building might get plowed in during the winter. Would it be possible to relocate these?"

- There is not another acceptable location for these propane tanks. The bollards in front of the tanks have been shifted closer to the road to dissuade snow being plowed on them. Also, the people clearing the snow will be contractually obligated to keep accessible all propane tanks on site.

S. Keach Comments:

General Comments

1. It appears this proposal will require the following State Agency Permits: (a) a NHDES Alteration of Terrain Permit; and (b) a NHDES Wastewater Connection Permit. We recommend each required permit be received prior to or as a condition of any approval ultimately granted by the Planning Board. In addition, we recommend receipt of each permit be acknowledged in the text of notes provided on Sheet C0.0 of the final site plan.
   - It is standard for the Lebanon Planning Board to make obtaining the requisite NHDES permits a condition of approval, and the applicant's team expects the same with this project.
2. It is understood the planned residential development proposes to rely on public water and sewer utilities available at Mount Support Road. Accordingly, we continue to 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.
   - A Notice of Sewer Allocation for sewer capacity was issued by the City DPW on December 21, 2021.
   - Brian Vincent, City Engineer, has indicated that he does not expect there to be any issues with the City's water supply system to provide domestic and fire protection flows. The

model of the City's water system is being checked to confirm, and Mr. Vincent will supply the project team with water pressure numbers in the project area for use in designing the building's sprinkler systems.

- The applicant expects that final approvals for sewer and water use will be completed prior to issuance of a building permit.

3. Given the extent of land area to be disturbed by planned construction activities, coupled with immediate proximity of this work to on-site wetland, abutting land and Mount Support Road, 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 approval, the applicant provide a performance guarantee, in an amount and form acceptable to your Department, to serve as a financial surety for: restoration of the site in the event of abandonment; installation and maintenance of appropriate erosion and sedimentation controls throughout construction; and full and final completion of any proposed public improvements and/or work within a public right-of-way.

   - Requiring a performance guarantee as a condition of approval is standard for the Lebanon Planning Board and the applicant expects the same with this project.

4. As acknowledged on Sheet C1.0 of the site plan, it is understood Lots 9 & 10, identified on Assessor's Map 24, are to be voluntarily merged in order to create a single parcel upon conclusion of project permitting and transfer of land to common ownership. We recommend voluntary merger be a condition of final site plan approval.

   - The applicant takes to exception to this recommendation.

Planning/Design Matters

1. A Zoning Chart provided Sheet C0.0 indicates a residential density of 204 dwelling units is planned. We continue to recommend a footnote be added to this chart for the purposes of acknowledging this dwelling unit density value was established pursuant to provisions of Section 308.3 of the Zoning Ordinance.

   - Sheet C0.0 now includes a Density Calculations table.

2. Based upon consideration and review of design plans of proposed stormwater management accommodations we continue to offer the following remarks:

   - As shown on Sheets C2.3 & C2.4, a subsurface stormwater management (chamber) system is planned to the immediate east of proposed Buildings 3 and 4. We continue to recommend a detailed system layout/design plan of all system components, structures and piping be added to the final site plan drawings. This remark includes a recommendation to include design information for immediately adjacent catch basins, drain manholes and control structures (i.e., D3 thru D5, D29 and D38) on the same detailed system layout/design plan. When preparing this plan, we recommend the design engineer recheck, and to the extent warranted, revise pipe diameter and invert elevations currently specified within the Stormwater Schedule provided on each sheet.

     - The plan set now includes Sheet C4.4a which carries a detailed system layout and design as requested.

   - We continue to offer an identical comment in regard to the proposed gravel wetland to be constructed to the southeast of Building 4. When preparing the recommended detail, we

suggest the design engineer reconcile design information for Outlet Structure D25 specified on Sheets C2.4 and C4.4 respectively. Although we acknowledge a typical detail of gravel wetland construction is provided on Sheet C4.4, we recommend this detail be edited to be site specific.

- The gravel wetlands details on Sheet C4.4 now includes additional site-specific information. Some components of the details are still of a "typical detail" nature and some components are not drawn to scale. EV has had great success with this style of details in the past; with local permitting, state permitting, and in construction.

- We recommend design invert elevations at proposed drainage structures D8 and D36 be adjusted to provide a vertical elevation drop equal to the difference in diameter of inflowing and outflowing storm drains.
  - The revised plans adjust the inverts as suggested.
- We continue to recommend the design engineer consider accommodations for access to planned gravel wetland stormwater management areas to facilitate future maintenance functions.
  - Access by foot is provided south of Building 4. This will be sufficient for regular inspections. The grading near Mt Support Rd and the south driveway has been adjusted to provide easier access for gravel wetland repairs. A permanent hardscape access to the gravel wetlands will increase the project's impacts, extend into the wildlife corridor, and is excessive for the very limited use it would see.
- Sheet C4.3 includes a Typical Storm Drain Trench detail. Based upon our review of the same we continue to recommend specified a minimum depth of soil cover value of 3.0-feet (rather than 5 to 6-feet as currently specified).
  - The revised plans adjust the minimum cover depth to 3 feet as suggested.
- We recommend Sheets C2.4 and C2.4 be edited to restore plan graphics which previously illustrated segments of proposed storm drain to be situated between Structures D15 and D11.
  - The revised plans restore the pipe segments as suggested.
- We recommend the design engineer recheck/revise the specified pipe barrel slope between structures D41 and D12 to match specified pipe length and invert elevations.
  - See revised Detail 8/C4.3, the trench drain will connect with a 6" PVC pipe to a fernco saddle, the main drainage pipe invert is consistent with the slope as shown on the plans, the inverts listed are for the trench section only
- An identical comment is offered relative to the segment of proposed storm drain exiting structure D11.
  - See response to the previous bullet item.
- We recommend Sheet C2.4 indicate how proposed trench drain structure D42 it to connect to the adjoining drainage system.
  - See response to the previous bullet item.

- Sheet C4.4 includes a typical 5,000-gallon sediment forebay structure detail. We recommend the design engineer reconcile this detail with design data provided on Sheet C2.4 for consistency in terms of connecting pipe diameter.
  - The revised plans reconcile the plans and details as suggested.

3. Based upon review and consideration of the applicant's Drainage Analysis we continue to offer the following series of remarks:
   - In order to satisfy the requirements of Sections 6.6.C.1 (1) & 6.6.C.1 (2) of the SPRR's respectively, we recommend detailed existing conditions and proposed conditions stormwater management plans corresponding to specified requirements of the two referenced Sections of the SPRR's be prepared and submitted.
     - This resubmission package includes existing conditions and proposed conditions stormwater management plans; sheets D1.1 and D1.2 respectively.
   - As acknowledged above, a NHDES Alteration of Terrain Permit is needed for this project. We continue to recommend the applicant's final Drainage Analysis/Report be expanded to include all information, computations and exhibits required for submission of a full and complete Alteration of Terrain Permit application.
     - All information required of an Alteration of Terrain Permit application will be submitted to NHDES with this project's Alteration of Terrain Permit application. A copy of the Alteration of Terrain Permit application will be provided to the City DPW for review. The site is designed to meet the requirement of both City of Lebanon and NHDES, as is typical and required for projects of this size. This resubmission package includes a drainage report with additional requested information.
   - We continue to recommend test pit information collected in the vicinity of proposed gravel wetland construction be provided to demonstrate soil and groundwater conditions are adequate to support gravel wetland construction and function at the selected location.
     - Test pits were dug in November 2021 along with the site-specific soil mapping. This resubmission package includes the test pit logs. Groundwater conditions are adequate to support gravel wetland construction and function at the selected location. Test pit locations are shown on sheets D1.1 and D1.2.

4. Based upon review of planned accommodations for sanitary sewer service provided on the project plans (See Sheet C3.2) we continue to offer the following remarks:
   - We recommend detailed sanitary sewer profiles with corresponding design elevations be provided for the following runs: (a) from floor drains at Buildings No. 1 & 2 to sewer manhole S15; (b) from sewer manhole S5 to sewer manhole S5B; (c) from floor drains at Buildings No. 3 & 4 to sewer manhole S16; and (d) from sewer manhole S16 to sewer manhole S5A.
     - The design team will include additional profiles with plans for the NHDES Sewer Connection Permit, which are to be reviewed and approved by the City prior to submission to NHDES.
   - As shown on Sheet C3.2, wastewater discharge from a proposed oil-grit separator receiving floor drain discharge from parking garages at Buildings No. 3 & 4, as well as sanitary

wastewater discharge from Building No. 4 is to be delivered to gravity sewer via force main. Although a generic detail of a small simplex pump station is provided on Sheet C4.5, we recommend fully detailed design plans for each lift station corresponding with applicable NHDES and local requirements be added to the project plans.

- The design team will include additional details with plans for the NHDES Sewer Connection Permit, which are to be reviewed and approved by the City prior to submission to NHDES.

Summary of Plan Changes

C0.0 Cover

- Added Dwelling Unit Mix table
- Added Density Calculations table
- Corrected parking totals. (The plan sheets always showed the correct number but the tables contained typos.
- Added sheet C4.4a to Table of Contents

C2.1 & C2.2 Site Layout Plan

- Added benches and picnic tables.
- Adjusted grading near Mt Support Rd and south driveway to provide easier access for gravel wetland repairs.
- Adjusted bollards in front of propane tanks a south end of building 4.

C2.3 & C2.4 Grading and Drainage Plans

- Minor plan edits as suggested by Steven Keach of Keach-Nordstrom Associates, Inc
- Adjusted grading near Mt Support Rd and south driveway to provide easier access for gravel wetland repairs.

C2.5 Site Circulation, Signage, and Striping Plan

- Additional signage for multi-use path crossing.

C2.7 Utilities Plan

- Shifted water line to be 10’ off storm line.
- Added note from proposed staff conditions regarding maintaining 10 feet clearance between water line and other utilities.

C2.8 Landscaping Plan

- A row of Northern White Cedar added along the southern edge of the southern driveway per request of Planning staff.
- Adjustments to plant species and quantities.

C3.1 Waterline Plan & Profiles

- Slight revision to waterline alignment in the south driveway.

C4.3 Stormwater Details (1 of 3)

- Revised pipe trench detail and revised trench drain detail.

C4.4 Stormwater Details (2 of 3)

- Additional detailing for gravel wetland.

C4.4a Stormwater Details (3 of 3)

- New sheet to show additional detailing for stormwater chamber system.

Thank you for your time and consideration with this project. Please do not hesitate to call or email if you have any questions or need additional information.

Sincerely,
ENGINEERING VENTURES, PC



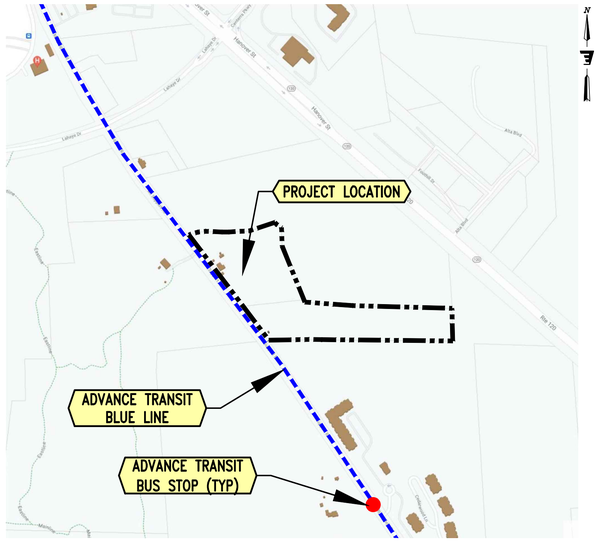
Nicholas A. Fiore, PE
Project Manager/Principal

Cc: Ken Braverman, The Braverman Company
Dick Anagnost, Anagnost Investments

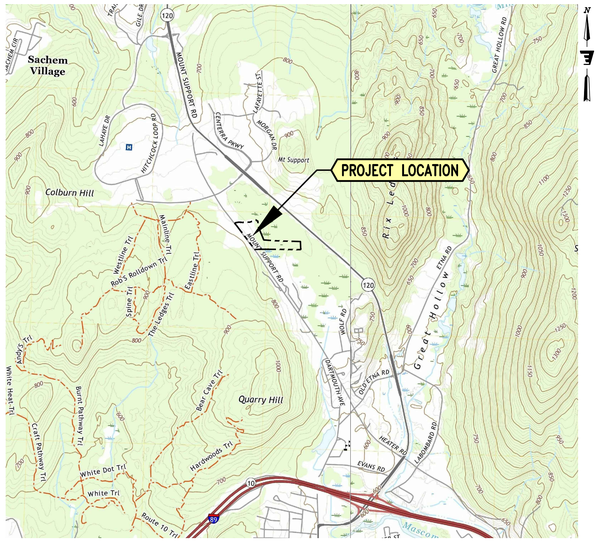
Enc: Plan Sheets listed above
Drainage Report (Revised 2022.01.24)
Test Pit Soil Logs
Stormwater Management Plans
Bench cut sheet

PLOTTED: 1/24/2022 3:02 PM

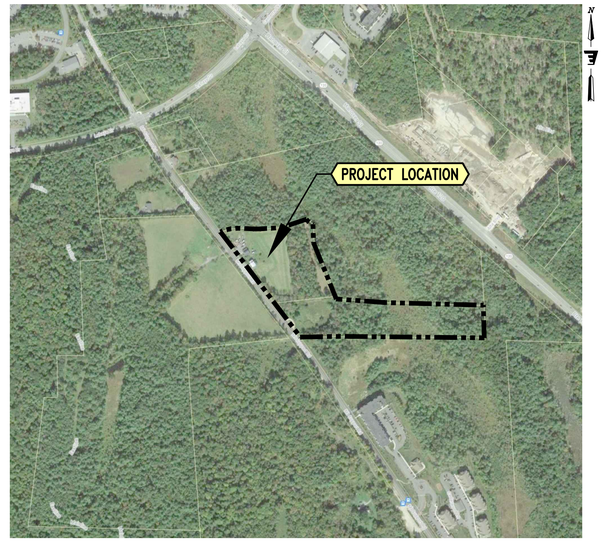
402 MT. SUPPORT ROAD - RESIDENTIAL DEVELOPMENT
SITE PLAN REVIEW



LEBANON GIS MAP
1"=500'



USGS MAP
1"=2,000'



AERIAL PHOTOGRAPH
1"=250'

ZONING CHART

	Existing	Proposed	Notes
Zoning District	R1	R1	
Tax Map / Lot #	24 / 9 & 24 / 10	24 / 9	
Use	One-Family Dwelling	Multi-Family Dwelling	
Number of Dwelling Units	1 & 0	204	
Property Class	3	1	
Minimum Area of Lot	10,000 sf	14.14 acres	
Area of Lot (acres)	6.55 & 7.66	14.21	1
Building Footprints (sf)			
Building 1	1,190	20,233	
Building 2	1,402	20,233	
Building 3	225	20,233	2
Building 4	-	20,233	
Total Footprint	2,817	80,932	
Gross Floor Area (sf)			
Building 1 - Level 1	1,168	19,148	
- Level 2	291	19,148	
- Level 3	0	19,148	
Building 2 - Level 1	0	19,148	
- Level 2	0	19,148	
- Level 3	0	19,148	2
Building 3 - Level 1	0	19,148	
- Level 2	0	19,148	
- Level 3	0	19,148	
Building 4 - Level 1	0	19,148	
- Level 2	0	19,148	
- Level 3	0	19,148	
Total Gross Floor Area	1,459	229,776	
Building Heights	45' max.	45' max.	3
Building 1	20'+/-	44' 11"	
Building 2	22'+/-	44' 11"	2
Building 3		44' 11"	
Building 4		44' 11"	
Number of Stories	2	3	
Building Coverage Max	15%	25%	
Building Coverage	0.99%	13.07%	
Parking Spaces Required	2	306	4
Parking Spaces Provided	5±	394 1	
Loading Spaces	0	0	
Bicycle Spaces - Short-Term / Long Term	0	128	5
Impervious Area (sf)	8,670	186,111	
Impervious Area (% of lot)	3.0%	30.07%	
Setbacks - Required / Provided (ft)			
Front	25' /	20' / 20.6'	
Side	25' /	15' / 68.8'	
Rear	30' /	20' / 96.0'	
City Overlay Districts	Wetlands	Wetlands	
NHDES Shorland Jurisdiction	NA	NA	
FEMA Flood Hazard Designation	Zone X	Zone X	6

Notes:
1. AREA OF LOT PER BOUNDARY SURVEY BY LATITUDE LAND SURVEYING
2. PROPOSED BUILDING AREA AND HEIGHT PER BRUNELL ARCHITECTS.
3. PER SECTION 308.4 BUILDING HEIGHTS OF UP TO 55' ARE ALLOWED BY CONDITIONAL USE PERMIT.
4. SEE PARKING SUMMARY TABLE FOR ADDITIONAL PARKING TALLY INFORMATION.
5. ALL BICYCLE PARKING IS IN GARAGE. SHORT-TERM AND LONG-TERM SPACES ARE INTERCHANGEABLE.
6. PER FEMA ZONE X IS AN AREA OF MINIMAL FLOOD HAZARD

DWELLING UNIT MIX*

FIRST FLOOR
9 – ONE BEDROOM
7 – TWO BEDROOM
1 – THREE BEDROOM

SECOND FLOOR
9 – ONE BEDROOM
7 – TWO BEDROOM
1 – THREE BEDROOM

THIRD FLOOR
9 – ONE BEDROOM
7 – TWO BEDROOM
1 – THREE BEDROOM

* DWELLING UNIT MIX IS THE SAME FOR ALL FOUR BUILDINGS

1

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PARKING SUMMARY

Use	Independent Variable	Independent Variable Value	Min. Spaces Required	120% of Min	150% of Min	Parking Space Provided		
						In Structures	Outdoors	Total
Apartments	1.5/Unit	204	306	367.2	459	184	210	394

1

DENSITY CALCULATIONS

Minimum Lot Size Class 1 Lot	Additional Area per Dwelling Unit After 2	Total Dwelling Units	Minimum Lot Size Equation	Minimum Lot Size Square Feet	Minimum Lot Size Acres
10,000 sf	3,000 sf	204	A = 10,000sf + 202(3,000sf)	616,000	14.14

1. Density calculations per Table 308.3 of the City of Lebanon Zoning Ordinace
2. A Class 1 Lot is a legal parcel of land services by municipal water and municipal sewerage.

1

OWNER\APPLICANTS:

PROPERTY OWNERS:
LOT 9:
SYLVIA D. LAHAYE REV. TRUST
KEVIN F. CARR, ESQ.
29 SCHOOL STREET
LEBANON, NH 03766
(603) 448-2720

LOT 10:
PAT LUMBER JACK, INC.
JAMES P. FREIDMA
109 CARRIAGE LANE
CONTOOCOOK, NH 03229
(603) 746-4923

APPLICANT:
MOUNT SUPPORT DEVELOPMENT, LLC (CONSISTING OF):

BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672

AND

AGNANOST INVESTMENTS
1662 ELM STREET
MANCHESTER, NH 03101

SUBJECT PROPERTY:

TAX MAP 24 LOTS 9 AND 10
CITY OF LEBANON
GRAFTON COUNTY
NEW HAMPSHIRE, 03766

CONSULTANTS:

CIVIL ENGINEER:
ENGINEERING VENTURES, PC
NICHOLAS A. FIORE, PE
85 MECHANIC ST. SUITE B2-2
LEBANON, NH 03766
(603) 442-9333

ARCHITECT:
BURNELL JOHNSON ARCHITECTS
STEPHEN BURNELL, AIA
180 STARK STREET
MANCHESTER, NH 03101
(603) 625-5098

TOPOGRAPHIC SURVEY:
LATITUDES LAND SURVEYING
NATE YAGER, L.L.S.
1298 SPRUCE STREET
BURLINGTON, VT 05401
(802) 825-6545

WETLAND SCIENTIST:
A&D KLUMB ENVIRONMENTAL, LLC
AUDRA L. KLUMB
34 CENTENNIAL DRIVE
WEBSTER, NH 03303

Stamp

No.	Description	Date
1	REVISED PER STAFF AND PLANNING BOARD COMMENTS	01/24/22

ENGINEERING VENTURES PC
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MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-8330

Sheet Title: COVER SHEET

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	NOT TO SCALE
Date:	11/08/2021

C0.0
Page 1 of 33

S:\PROJECTS\2019\19324 402 MT. SUPPORT RD\NVS\SHEET FILES\19324 C0.0 COVER SHEET.DWG

PLOTTED: 10/4/2022, 12:09 PM

SITE SCHEDULE

- C1 ASPHALT DRIVEWAY/PARING, TYP.
- C2 CONCRETE CURB, TYP.
- C3 CONCRETE SIDEWALK WITH INTEGRAL CURB
- C4 DUMPSTER/RECYCLING ENCLOSURE
- C5 SEGMENTAL CONCRETE BLOCK RETAINING WALL
- C6 8' WIDE PAVED MULTI-USE PATH
- C7 PLAYGROUND AREA SURROUNDED BY 6' HIGH CHAINLINK FENCE WITH VINYL SLATS
- C8 DOG PARK SURROUNDED BY 6' HIGH CHAINLINK FENCE WITH VINYL SLATS
- C9 6' HIGH CHAINLINK FENCE ALONG TOP OF RETAINING WALL OR TOP OF SLOPE (AS SHOWN)
- C10 GUARD RAIL
- C11 6.5' WIDE PAVED SIDEWALK
- C12 4' WIDE GRAVEL PATH
- C13 GRANITE CURB
- C14 REBUILD PORTION OF EXISTING MULTI-USE PATH TO ELIMINATE DRIVEWAY ENTRANCES
- C15 PERMANENT PAVEMENT PATCH
- C16 LIMIT OF TREE CLEARING
- C17 ENTRANCE SIGN WITH DEVELOPMENT NAME AND MANAGER INFORMATION. SIGN IS SUBJECT TO THE REQUIREMENTS OF SECTION 608 OF THE ZONING ORDINANCE
- C18 1:1 SLOPE ARMORED WITH STONE RIP-RAP
- C19 FALL PROTECTION RAILING
- C20 6' SKYLINE BENCH AS MANUFACTURED BY THE PARK CATALOG, OR APPROVED EQUAL. MOUNT BENCH TO 6" THICK CONCRETE SLAB, REFER TO CONCRETE SIDEWALK DETAILS
- C21 PICNIC TABLE

UTILITIES

FOR DETAILED UTILITY INFORMATION REFER TO THE FOLLOWING SHEETS:

- C2.3 – GRADING AND DRAINAGE PLAN (1 OF 2)
- C2.4 – GRADING AND DRAINAGE PLAN (2 OF 2)
- C2.7 – UTILITIES PLAN
- C3.1 – WATER PLAN AND PROFILES
- C3.2 – SEWER PLAN AND PROFILES

LANDSCAPING

REFER TO SHEET C2.8 FOR LANDSCAPING

CIRCULATION, MARKINGS AND SIGNAGE

REFER TO SHEET C2.5 – CIRCULATION AND SIGNAGE PLAN FOR PAVEMENT MARKINGS, TRAFFIC CIRCULATION PATTERNS AND ROADWAY SIGNS.

GRADING

FOR DETAILED GRADING INCLUDING SPOT ELEVATIONS AND SLOPES REFER TO THE FOLLOWING SHEETS:

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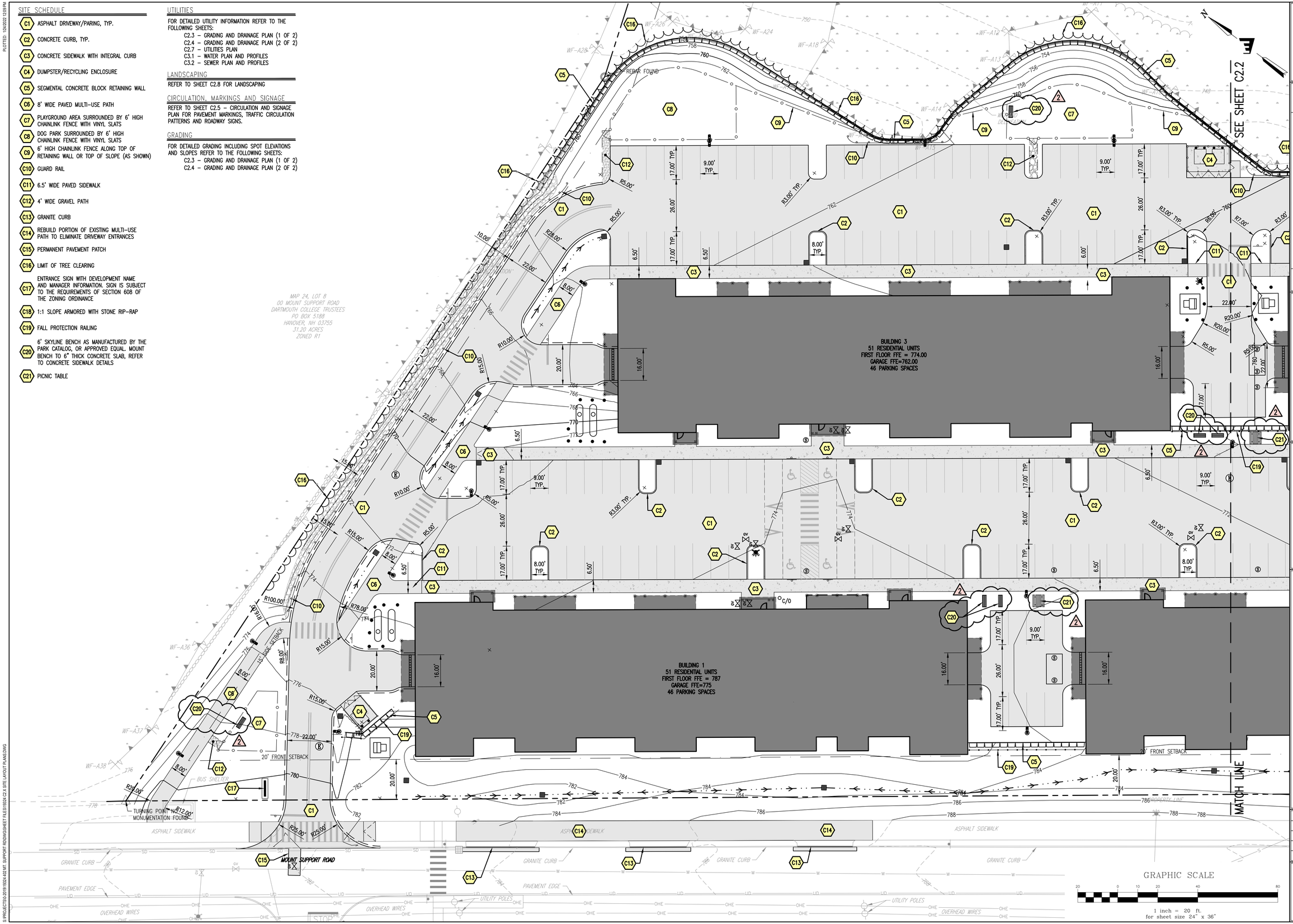
- C2.4 – GRADING AND DRAINAGE PLAN (2 OF 2)



STATE OF NEW HAMPSHIRE
NICHOLAS A. FIORE
No. 13286
LICENSED
PROFESSIONAL ENGINEER
Stamp

No.	Description	Date
1	REVISED PER STAFF REVIEW COMMENTS	12/20/21
2	REVISED PER STAFF AND PLANNING BOARD COMMENTS	01/24/22

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ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-8330

Sheet Title: SITE LAYOUT PLAN (1 OF 2)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 20'
Date:	10/19/21

C2.1
Page 10 of 33

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SEE SHEET C2.1

SITE SCHEDULE

- C1 ASPHALT DRIVEWAY/PARING, TYP.
- C2 CONCRETE CURB, TYP.
- C3 CONCRETE SIDEWALK WITH INTEGRAL CURB
- C4 DUMPSTER/RECYCLING ENCLOSURE
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- C2.4 – GRADING AND DRAINAGE PLAN (2 OF 2)

GRAPHIC SCALE
20 0 10 20 40 80
1 inch = 20 ft.
for sheet size 24" x 36"

Jacob F. Fiore
No. 13286
LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
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Sheet Title: SITE LAYOUT PLAN (2 OF 2)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

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PLOTTED: 10/4/2021 11:39 AM

STORMWATER SCHEDULE

D2 5' I.D. DRAIN MANHOLE
RIM: 758.07
INV. IN: 749.00 (24" HDPE)
INV. OUT: 744.09 (24" HDPE)
SUMP: 743.76

D3 5' I.D. OUTLET STRUCTURE
RIM: 758.70
INV. IN: 752.20 (24" HDPE)
INV. IN: 750.90 (24" HDPE)
INV. OUT: 750.80 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
INV. OUT: 750.80 (15" VERTICAL ORIFICE)
SUMP: 748.80

D4 5' I.D. CATCH BASIN
RIM: 758.61
INV. OUT: 752.40 (24" HDPE)
INV. OUT: 751.10 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
SUMP: 749.10

D5 5' I.D. CATCH BASIN
RIM: 760.50
INV. IN: 751.20 (24" HDPE)
INV. OUT: 751.10 (24" HDPE)
INV. OUT: 752.40 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
SUMP: 749.10

D6 4' I.D. CATCH BASIN
RIM: 762.22
INV. IN: 757.60 (15" HDPE)
INV. IN: 757.80 (12" HDPE)
INV. OUT: 757.30 (18" HDPE)
SUMP: 755.30

D7 5' I.D. CATCH BASIN
RIM: 767.13
INV. IN: 763.50 (15" HDPE)
INV. OUT: 763.40 (15" HDPE)
SUMP: 761.40

D8 4' I.D. CATCH BASIN
RIM: 772.32
INV. IN: 767.75 (12" HDPE)
INV. IN: 767.75 (12" HDPE)
INV. OUT: 767.50 (15" HDPE)
SUMP: 765.50

D9 4' I.D. CATCH BASIN
RIM: 775.81
INV. IN: 770.90 (12" HDPE)
INV. OUT: 770.80 (12" HDPE)
SUMP: 768.80

D11 4' I.D. CATCH BASIN
RIM: 771.18
INV. IN: 760.55 (24" HDPE)
INV. OUT: 751.90 (24" HDPE)
SUMP: 749.90

D12 4' I.D. CATCH BASIN
RIM: 772.26
INV. IN: 761.83 (18" HDPE)
INV. IN: 764.81 (12" HDPE)
INV. OUT: 761.63 (24" HDPE)
SUMP: 759.63

D13 4' I.D. CATCH BASIN
RIM: 773.35
INV. IN: 763.10 (15" HDPE)
INV. OUT: 762.90 (18" HDPE)
SUMP: 760.90

D14 4' I.D. CATCH BASIN
RIM: 772.67
INV. IN: 765.45 (12" HDPE)
INV. OUT: 765.20 (15" HDPE)
SUMP: 763.20

D15 4' I.D. CATCH BASIN
RIM: 771.13
INV. OUT: 766.46 (12" HDPE)
SUMP: 764.46

D17 10,000 GALLON SEDIMENT FOREBAY
RIM: 759.46
INV. IN: 753.45 (15" HDPE)
INV. OUT: 753.35 (15" HDPE)
SUMP: 748.35

D18 4' I.D. CATCH BASIN
RIM: 769.03
INV. IN: 761.32 (12" HDPE)
INV. IN: 758.24 (12" HDPE)
INV. OUT: 757.75 (15" HDPE)
SUMP: 755.75

D19 4' I.D. CATCH BASIN
RIM: 770.60
INV. IN: 762.20 (12" HDPE)
INV. OUT: 762.00 (12" HDPE)
SUMP: 760.00

D20 4' I.D. CATCH BASIN
RIM: 774.18
INV. IN: 769.48 (12" HDPE)
INV. OUT: 764.91 (12" HDPE)
SUMP: 762.91

D21 4' I.D. CATCH BASIN
RIM: 769.33
INV. IN: 759.20 (12" HDPE)
INV. OUT: 759.10 (12" HDPE)
SUMP: 757.10

D22 4' I.D. CATCH BASIN
RIM: 770.44
INV. IN: 762.83 (12" HDPE)
INV. OUT: 760.43 (12" HDPE)
SUMP: 758.43

D23 4' I.D. CATCH BASIN
RIM: 770.55
INV. OUT: 766.12 (12" HDPE)
SUMP: 764.12

D24 4' I.D. CATCH BASIN
RIM: 759.24
INV. IN: 754.00 (15" HDPE)
INV. IN: 754.00 (12" HDPE)
INV. OUT: 753.90 (15" HDPE)
SUMP: 751.90

D25 3' I.D. NYOPLAST STRUCTURE
RIM: 741.70
INV. OUT: 737.20 (24" HDPE)
INV. OUT: 740.00 (10" VERT. ORIFICE (8))
SUMP: 736.61

D26 CULTEC R902HD 4 ROWS OF 54 CHAMBERS (216 CHAMBERS)
STONE INVERT = 750.0
FIELD HEIGHT = 5.75'
FOREBAY AND DETENTION SYSTEM

D27 GRAVEL WETLAND
CELL 1 AREA = 3,700 SF
CELL 2 AREA = 2,600 SF

D28 ISOLATOR ROW 1 ROW OF 54 CHAMBERS

D29 24" HDPE WEIR OVERFLOW AND MANIFOLD BYPASS SYSTEM

D31 4' I.D. CATCH BASIN
RIM: 781.60
INV. OUT: 778.20 (12" HDPE)
SUMP: 776.20

D32 4' I.D. CATCH BASIN
RIM: 781.59
INV. IN: 776.10 (12" HDPE)
INV. OUT: 775.90 (12" HDPE)
SUMP: 773.90

D33 4' I.D. CATCH BASIN
RIM: 782.50
INV. OUT: 778.89 (12" HDPE)
SUMP: 776.89

D34 4' I.D. CATCH BASIN
RIM: 780.51
INV. IN: 775.75 (12" HDPE)
INV. OUT: 775.65 (12" HDPE)
SUMP: 773.65

D35 4' I.D. CATCH BASIN
RIM: 783.48
INV. IN: 774.80 (12" HDPE)
INV. OUT: 774.70 (12" HDPE)
SUMP: 772.70

D36 4' I.D. CATCH BASIN
RIM: 761.56
INV. IN: 752.90 (18" HDPE)
INV. OUT: 752.40 (24" HDPE)
SUMP: 750.40

D38 4' I.D. CATCH BASIN
RIM: 759.67
INV. OUT: 751.30 (12" HDPE)
SUMP: 749.30

D39 TRENCH DRAIN
START INV. = 774.5
END INV. = 774.2

D40 TRENCH DRAIN
START INV. = 761.5
END INV. = 761.2

D41 TRENCH DRAIN
START INV. = 771.8
END INV. = 771.5

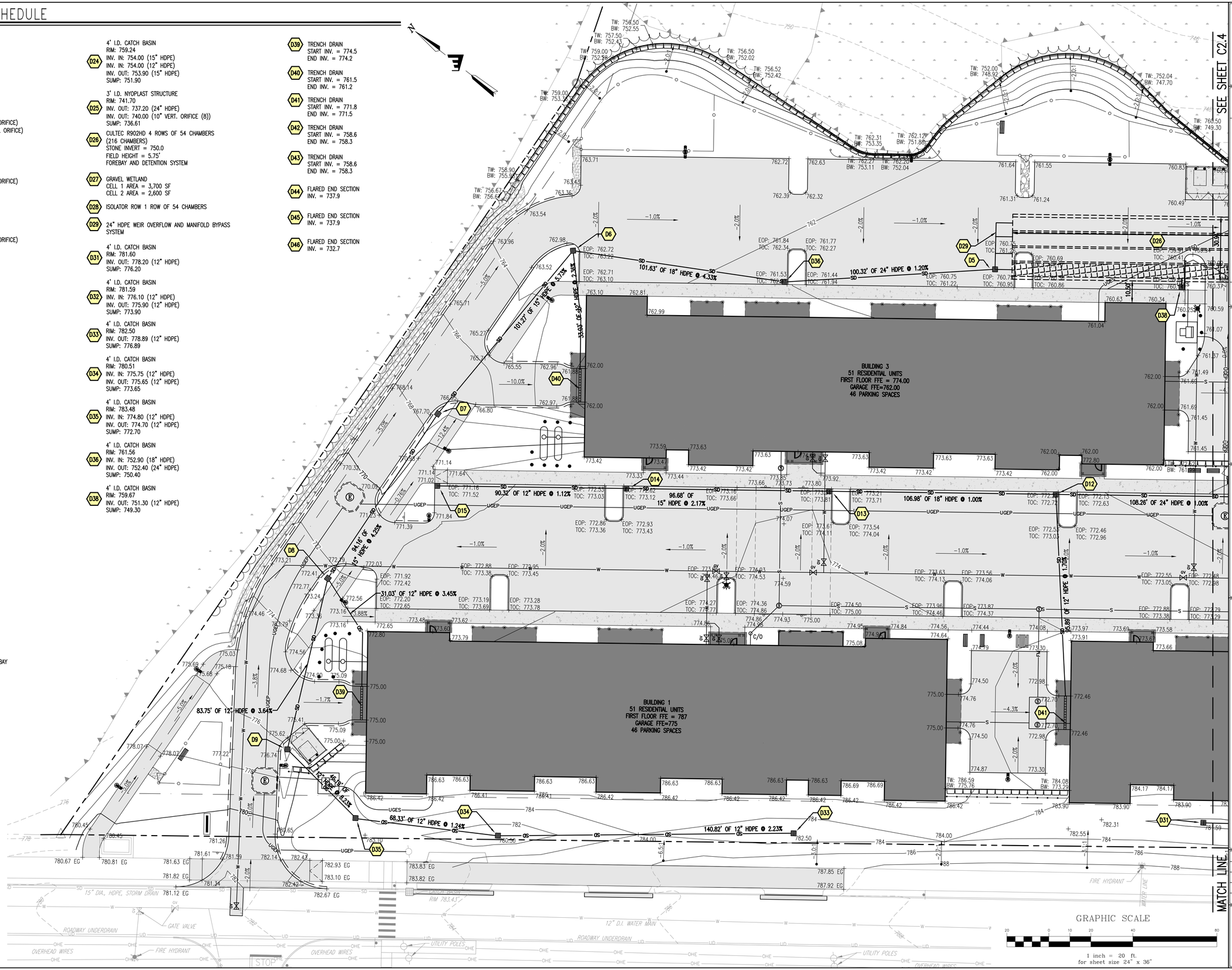
D42 TRENCH DRAIN
START INV. = 758.6
END INV. = 758.3

D43 TRENCH DRAIN
START INV. = 758.6
END INV. = 758.3

D44 FLARED END SECTION
INV. = 737.9

D45 FLARED END SECTION
INV. = 737.9

D46 FLARED END SECTION
INV. = 732.7



GRAPHIC SCALE
20 0 10 20 40 80
1 inch = 20 ft.
for sheet size 24" x 36"

STATE OF NEW HAMPSHIRE
MARK A. FIORE
No. 13286
LICENSED
PROFESSIONAL ENGINEER
Stamp

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& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-6330

Sheet Title: GRADING AND DRAINAGE PLAN (1 OF 2)

Project Title: 402 MT SUPPORT ROAD
RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	AMJF
Checked By:	NAF
Scale:	1" = 20'
Date:	11/08/21

C2.3
Page 12 of 33

S:\PROJECTS\A\2019\19324 402 MT. SUPPORT RD\DWG\SHEET FILES\19324 C2.3 DRAINAGE.DWG

PLOTTED: 1/24/2022 12:22 PM

SEE SHEET C2.3

BUILDING 4
51 RESIDENTIAL UNITS
FIRST FLOOR FFE = 771.20
GARAGE FFE=759.20
46 PARKING SPACES

BUILDING 2
51 RESIDENTIAL UNITS
FIRST FLOOR FFE = 784.46
GARAGE FFE=772.46
46 PARKING SPACES

MATCH LINE

GRAPHIC SCALE
20 0 10 20 40 80
1 inch = 20 ft.
for sheet size 24" x 36"

S:\PROJECTS\S-2018\19324 402 MT. SUPPORT ROD\NV\SHEET FILES\19324 C2.X DRAINAGE.DWG

STORMWATER SCHEDULE

D2 5' I.D. DRAIN MANHOLE
RIM: 758.07
INV. IN: 749.00 (24" HDPE)
INV. OUT: 744.09 (24" HDPE)
SUMP: 743.76

D3 5' I.D. OUTLET STRUCTURE
RIM: 758.70
INV. IN: 752.20 (24" HDPE)
INV. IN: 750.90 (24" HDPE)
INV. OUT: 750.80 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
INV. OUT: 750.80 (15" VERTICAL ORIFICE)
SUMP: 748.80

D4 5' I.D. CATCH BASIN
RIM: 758.61
INV. OUT: 752.40 (24" HDPE)
INV. OUT: 751.10 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
SUMP: 749.10

D5 5' I.D. CATCH BASIN
RIM: 760.50
INV. IN: 751.20 (24" HDPE)
INV. OUT: 751.10 (24" HDPE)
INV. OUT: 752.40 (24" HDPE)
INV. OUT: 755.00 (24" HORIZ. ORIFICE)
SUMP: 749.10

D6 4' I.D. CATCH BASIN
RIM: 762.22
INV. IN: 757.60 (15" HDPE)
INV. IN: 757.80 (12" HDPE)
INV. OUT: 757.30 (18" HDPE)
SUMP: 755.30

D7 5' I.D. CATCH BASIN
RIM: 767.13
INV. IN: 763.50 (15" HDPE)
INV. OUT: 763.40 (15" HDPE)
SUMP: 761.40

D8 4' I.D. CATCH BASIN
RIM: 772.32
INV. IN: 767.75 (12" HDPE)
INV. IN: 767.75 (12" HDPE)
INV. OUT: 767.50 (15" HDPE)
SUMP: 765.50

D9 4' I.D. CATCH BASIN
RIM: 775.81
INV. IN: 770.90 (12" HDPE)
INV. OUT: 770.80 (12" HDPE)
SUMP: 768.80

D11 4' I.D. CATCH BASIN
RIM: 771.18
INV. IN: 760.55 (24" HDPE)
INV. OUT: 751.90 (24" HDPE)
SUMP: 749.90

D12 4' I.D. CATCH BASIN
RIM: 772.26
INV. IN: 761.83 (18" HDPE)
INV. IN: 764.81 (12" HDPE)
INV. OUT: 761.63 (24" HDPE)
SUMP: 759.63

D12 4' I.D. CATCH BASIN
RIM: 772.26
INV. IN: 761.83 (18" HDPE)
INV. IN: 764.81 (12" HDPE)
INV. OUT: 761.63 (24" HDPE)
SUMP: 759.63

D13 4' I.D. CATCH BASIN
RIM: 773.35
INV. IN: 763.10 (15" HDPE)
INV. OUT: 762.90 (18" HDPE)
SUMP: 760.90

D14 4' I.D. CATCH BASIN
RIM: 772.67
INV. IN: 765.45 (12" HDPE)
INV. OUT: 765.20 (15" HDPE)
SUMP: 763.20

D15 4' I.D. CATCH BASIN
RIM: 771.13
INV. OUT: 766.46 (12" HDPE)
SUMP: 764.46

D17 10,000 GALLON SEDIMENT FOREBAY
RIM: 759.46
INV. IN: 753.45 (15" HDPE)
INV. OUT: 753.35 (15" HDPE)
SUMP: 748.35

D18 4' I.D. CATCH BASIN
RIM: 769.03
INV. IN: 761.32 (12" HDPE)
INV. IN: 758.24 (12" HDPE)
INV. OUT: 757.75 (15" HDPE)
SUMP: 755.75

D19 4' I.D. CATCH BASIN
RIM: 770.60
INV. IN: 762.20 (12" HDPE)
INV. OUT: 762.00 (12" HDPE)
SUMP: 760.00

D20 4' I.D. CATCH BASIN
RIM: 774.18
INV. IN: 769.48 (12" HDPE)
INV. OUT: 764.91 (12" HDPE)
SUMP: 762.91

D21 4' I.D. CATCH BASIN
RIM: 769.33
INV. IN: 759.20 (12" HDPE)
INV. OUT: 759.10 (12" HDPE)
SUMP: 757.10

D22 4' I.D. CATCH BASIN
RIM: 770.44
INV. IN: 762.83 (12" HDPE)
INV. OUT: 760.43 (12" HDPE)
SUMP: 758.43

D24 4' I.D. CATCH BASIN
RIM: 759.24
INV. IN: 754.00 (15" HDPE)
INV. IN: 754.00 (12" HDPE)
INV. OUT: 753.90 (15" HDPE)
SUMP: 751.90

D25 3' I.D. NYOPLAST STRUCTURE
RIM: 741.70
INV. OUT: 737.20 (24" HDPE)
INV. OUT: 740.00 (10" VERT. ORIFICE (8))
SUMP: 736.61

D26 CULTEC R902HD 4 ROWS OF 54 CHAMBERS
(216 CHAMBERS)
STONE INVERT = 750.0
FIELD HEIGHT = 5.75'
FOREBAY AND DETENTION SYSTEM

D27 GRAVEL WETLAND
CELL 1 AREA = 3,700 SF
CELL 2 AREA = 2,600 SF

D28 ISOLATOR ROW 1 ROW OF 54 CHAMBERS

D29 24" HDPE WEIR OVERFLOW AND MANIFOLD BYPASS SYSTEM

D31 4' I.D. CATCH BASIN
RIM: 781.60
INV. OUT: 778.20 (12" HDPE)
SUMP: 776.20

D32 4' I.D. CATCH BASIN
RIM: 781.59
INV. IN: 776.10 (12" HDPE)
INV. OUT: 775.90 (12" HDPE)
SUMP: 773.90

D33 4' I.D. CATCH BASIN
RIM: 782.50
INV. OUT: 778.89 (12" HDPE)
SUMP: 776.89

D34 4' I.D. CATCH BASIN
RIM: 780.51
INV. IN: 775.75 (12" HDPE)
INV. OUT: 775.65 (12" HDPE)
SUMP: 773.65

D35 4' I.D. CATCH BASIN
RIM: 783.48
INV. IN: 774.80 (12" HDPE)
INV. OUT: 774.70 (12" HDPE)
SUMP: 772.70

D36 4' I.D. CATCH BASIN
RIM: 761.56
INV. IN: 752.90 (18" HDPE)
INV. OUT: 752.40 (24" HDPE)
SUMP: 750.40

D38 4' I.D. CATCH BASIN
RIM: 759.67
INV. OUT: 751.30 (12" HDPE)
SUMP: 749.30

D39 TRENCH DRAIN
START INV. = 774.5
END INV. = 774.2

D40 TRENCH DRAIN
START INV. = 761.5
END INV. = 761.2

D41 TRENCH DRAIN
START INV. = 771.8
END INV. = 771.5

D42 TRENCH DRAIN
START INV. = 758.6
END INV. = 758.3

D43 TRENCH DRAIN
START INV. = 758.6
END INV. = 758.3

D44 FLARED END SECTION
INV. = 737.9

D45 FLARED END SECTION
INV. = 737.9

D46 FLARED END SECTION
INV. = 732.7

Stamp
STATE OF NEW HAMPSHIRE
NICHOLAS A. FIORE
No. 13286
LICENSED
PROFESSIONAL ENGINEER

No.	Description	Date
1	REVISED PER STAFF REVIEW COMMENTS	12/20/21
2	REVISED PER STAFF AND PLANNING BOARD COMMENTS	01/24/22

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MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-8330

Sheet Title: GRADING AND DRAINAGE PLAN (2 OF 2)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	AMJF
Checked By:	NAF
Scale:	1" = 20'
Date:	11/08/21

C2.4
Page 13 of 33

PLOTTED: 12/4/2022 3:03 PM

PAVEMENT MARKINGS

- PM1 — 4" WIDE, DSLY, PAINTED CENTERLINE STRIPING, TYP.
- PM2 — 4" WIDE, SSLW, PARKING STALL STRIPING, TYP.
- PM3 — 10' WIDE CROSSWALK CONSISTING OF 12" WIDE, SSLW, PAINTED BARS SPACED 24" APART.
- PM4 — 36"X36", BLUE & WHIT, ADA WHEELCHAIR SYMBOL FOR ACCESSIBLE PARKING STALLS, TYP.
- PM5 — 18" WIDE, SSLW, STOP BAR, TYP.
- PM6 — 4" WIDE, SSLW, DIAGONAL ACCESS AISLE STRIPING, TYP.
- PM7 — 9' WIDE CROSSWALK CONSISTING OF 12" WIDE, SSLW, PAINTED BARS SPACED 24" APART.
- PM8 — 6.5' WIDE CROSSWALK CONSISTING OF 12" WIDE, SSLW, PAINTED BARS SPACED 24" APART.
- PM9 — 6' WIDE CHEVRON CONSISTING OF TWO, 12" WIDE, SSLW, PAINTED BARS SPACED 12" APART.

GRAPHIC SCHEDULE

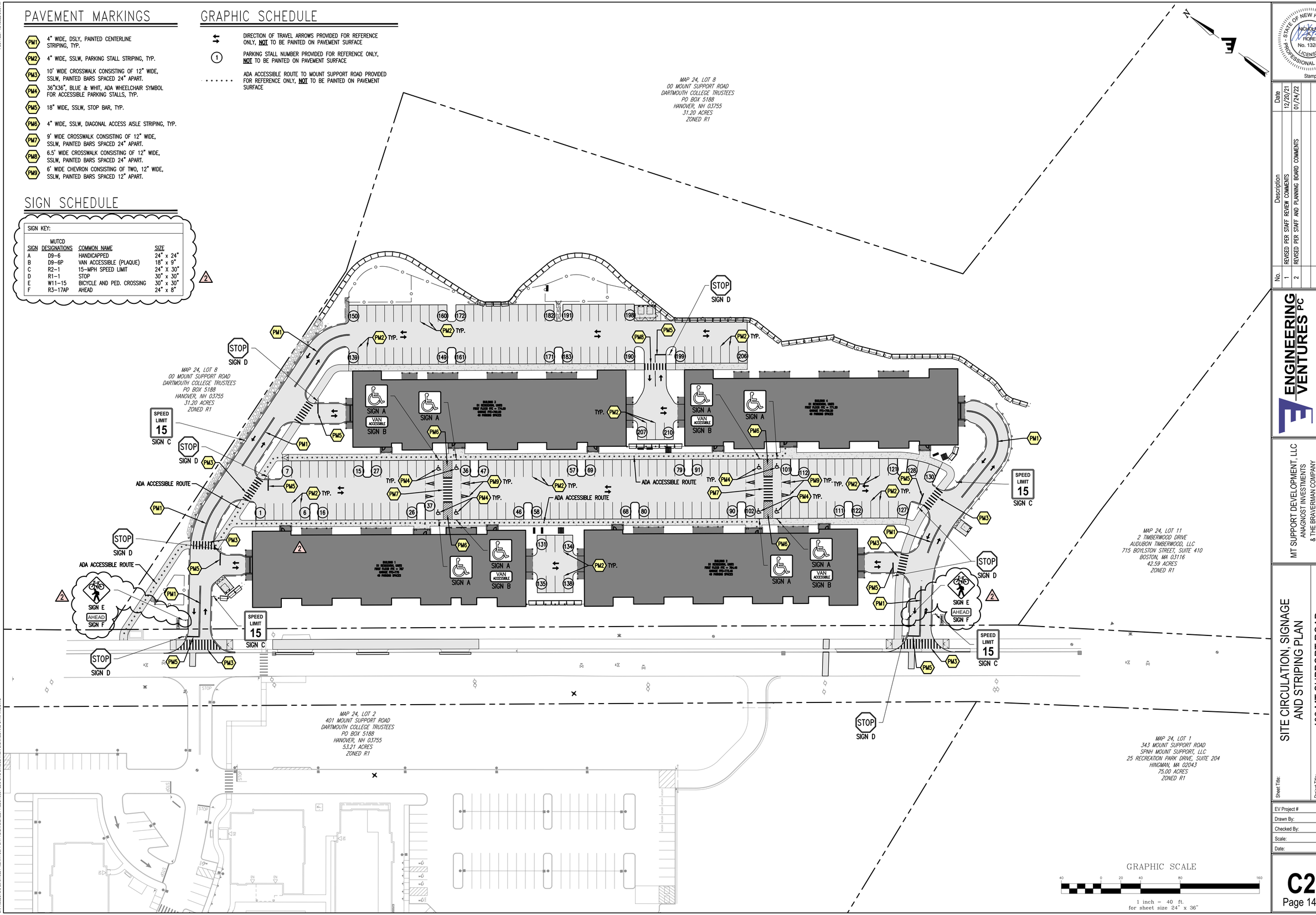
- DIRECTION OF TRAVEL ARROWS PROVIDED FOR REFERENCE ONLY, **NOT** TO BE PAINTED ON PAVEMENT SURFACE
- (1) PARKING STALL NUMBER PROVIDED FOR REFERENCE ONLY, **NOT** TO BE PAINTED ON PAVEMENT SURFACE
- ADA ACCESSIBLE ROUTE TO MOUNT SUPPORT ROAD PROVIDED FOR REFERENCE ONLY, **NOT** TO BE PAINTED ON PAVEMENT SURFACE

SIGN SCHEDULE

SIGN KEY:

SIGN	MUTCD DESIGNATIONS	COMMON NAME	SIZE
A	D9-6	HANDICAPPED	24" x 24"
B	D9-6P	VAN ACCESSIBLE (PLAQUE)	18" x 9"
C	R2-1	15-MPH SPEED LIMIT	24" X 30"
D	R1-1	STOP	30" x 30"
E	W11-15	BICYCLE AND PED. CROSSING	30" x 30"
F	R3-17AP	AHEAD	24" x 8"

2



STATE OF NEW HAMPSHIRE
Nicholas A. Fiore
No. 13286
LICENSED
PROFESSIONAL ENGINEER
Stamp

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MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-6330

Sheet Title: SITE CIRCULATION, SIGNAGE AND STRIPING PLAN

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 40'
Date:	11/08/2021

C2.5
Page 14 of 33

S:\PROJECTS\A-D\19-19324 402 MT. SUPPORT RD\DWG\SHEET FILES\19324 C2.5 SITE CIRCULATION SIGNAGE AND STRIPING.DWG

PLOTTED: 10/4/2021 11:35 AM

WATER NOTES

SEE SHEETS C3.1 FOR WATER SYSTEM PLAN AND PROFILES. SEE SHEET C4.6 FOR WATER DETAILS AND NOTES.

SEWER NOTES

SEE SHEETS C3.2 FOR SANITARY SEWER COLLECTION SYSTEM PLAN AND PROFILES. SEE SHEET C4.5 FOR SEWER DETAILS AND NOTES.

FIRE ALARM NOTES

THE PROPOSED MUNICIPAL FIRE ALARM LOOP SHALL BE PROVIDED IN A DEDICATED 2" CONDUIT, SAME TRENCH AS THE TELECOMM UTILITIES, WITH NO POWER, AND MUNICIPAL FIRE ALARM BOXES SHALL BE LOCATED ON EACH BUILDING TO THE SATISFACTION OF THE LEBANON FIRE DEPARTMENT.

ELECTRICAL NOTES

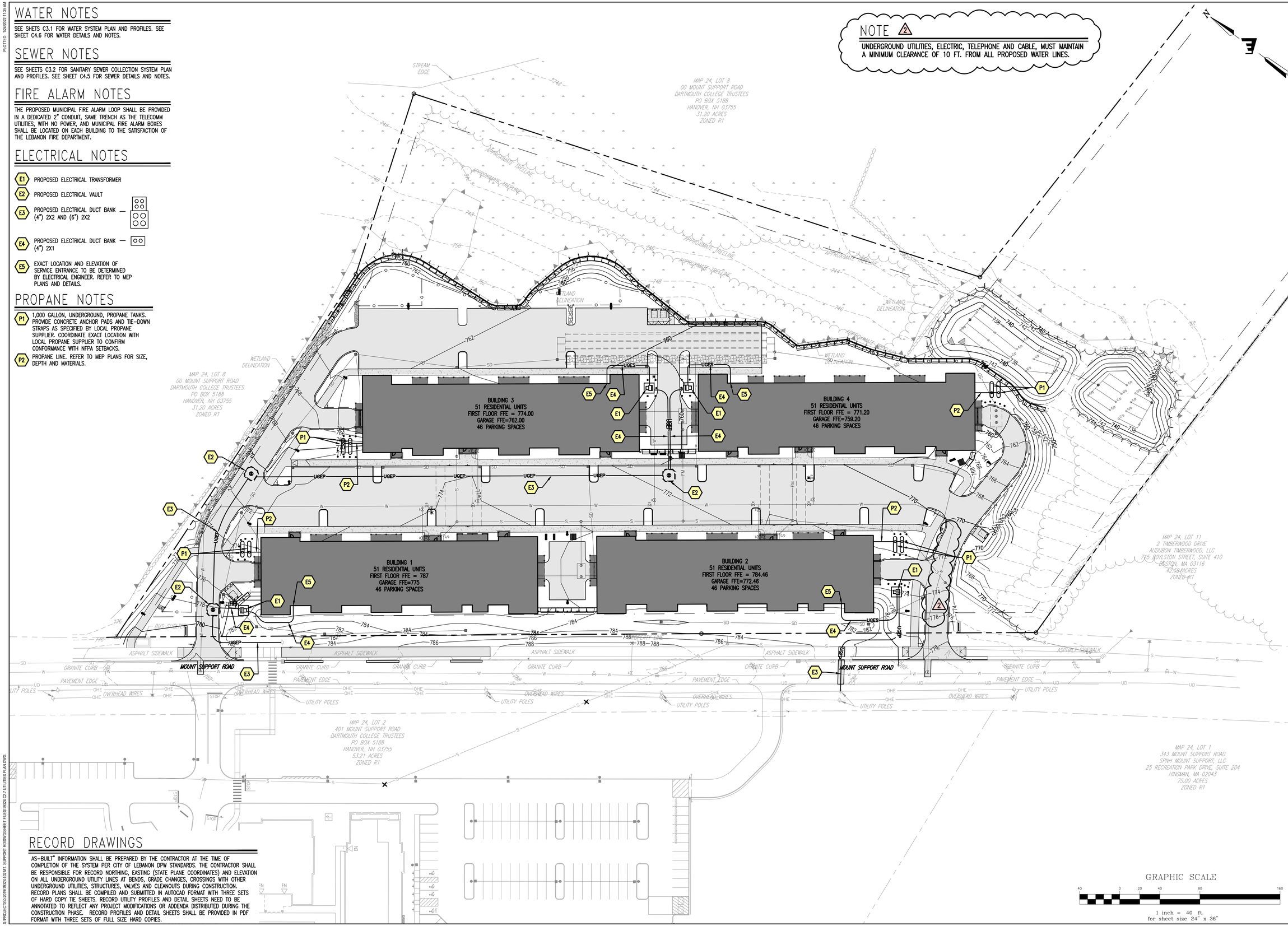
- E1 PROPOSED ELECTRICAL TRANSFORMER
- E2 PROPOSED ELECTRICAL VAULT
- E3 PROPOSED ELECTRICAL DUCT BANK — (4") 2X2 AND (6") 2X2
- E4 PROPOSED ELECTRICAL DUCT BANK — (4") 2X1
- E5 EXACT LOCATION AND ELEVATION OF SERVICE ENTRANCE TO BE DETERMINED BY ELECTRICAL ENGINEER. REFER TO MEP PLANS AND DETAILS.

PROPANE NOTES

- P1 1,000 GALLON, UNDERGROUND, PROPANE TANKS. PROVIDE CONCRETE ANCHOR PADS AND TIE-DOWN STRAPS AS SPECIFIED BY LOCAL PROPANE SUPPLIER. COORDINATE EXACT LOCATION WITH LOCAL PROPANE SUPPLIER TO CONFIRM CONFORMANCE WITH NFPA SETBACKS.
- P2 PROPANE LINE. REFER TO MEP PLANS FOR SIZE, DEPTH AND MATERIALS.

NOTE 2

UNDERGROUND UTILITIES, ELECTRIC, TELEPHONE AND CABLE, MUST MAINTAIN A MINIMUM CLEARANCE OF 10 FT. FROM ALL PROPOSED WATER LINES.



RECORD DRAWINGS

AS-BUILT" INFORMATION SHALL BE PREPARED BY THE CONTRACTOR AT THE TIME OF COMPLETION OF THE SYSTEM PER CITY OF LEBANON DPW STANDARDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORD NORTHING, EASTING (STATE PLANE COORDINATES) AND ELEVATION ON ALL UNDERGROUND UTILITY LINES AT BENDS, GRADE CHANGES, CROSSINGS WITH OTHER UNDERGROUND UTILITIES, STRUCTURES, VALVES AND CLEANOUTS DURING CONSTRUCTION. RECORD PLANS SHALL BE COMPILED AND SUBMITTED IN AUTOCAD FORMAT WITH THREE SETS OF HARD COPY TIE SHEETS. RECORD UTILITY PROFILES AND DETAIL SHEETS NEED TO BE ANNOTATED TO REFLECT ANY PROJECT MODIFICATIONS OR ADDENDA DISTRIBUTED DURING THE CONSTRUCTION PHASE. RECORD PROFILES AND DETAIL SHEETS SHALL BE PROVIDED IN PDF FORMAT WITH THREE SETS OF FULL SIZE HARD COPIES.

GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.
for sheet size 24" x 36"

STATE OF NEW HAMPSHIRE
Nicholas A. Fiore
No. 13286
LICENSED PROFESSIONAL ENGINEER
Stamp

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MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-8330

Sheet Title: UTILITIES PLAN

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 40'
Date:	11/08/2021

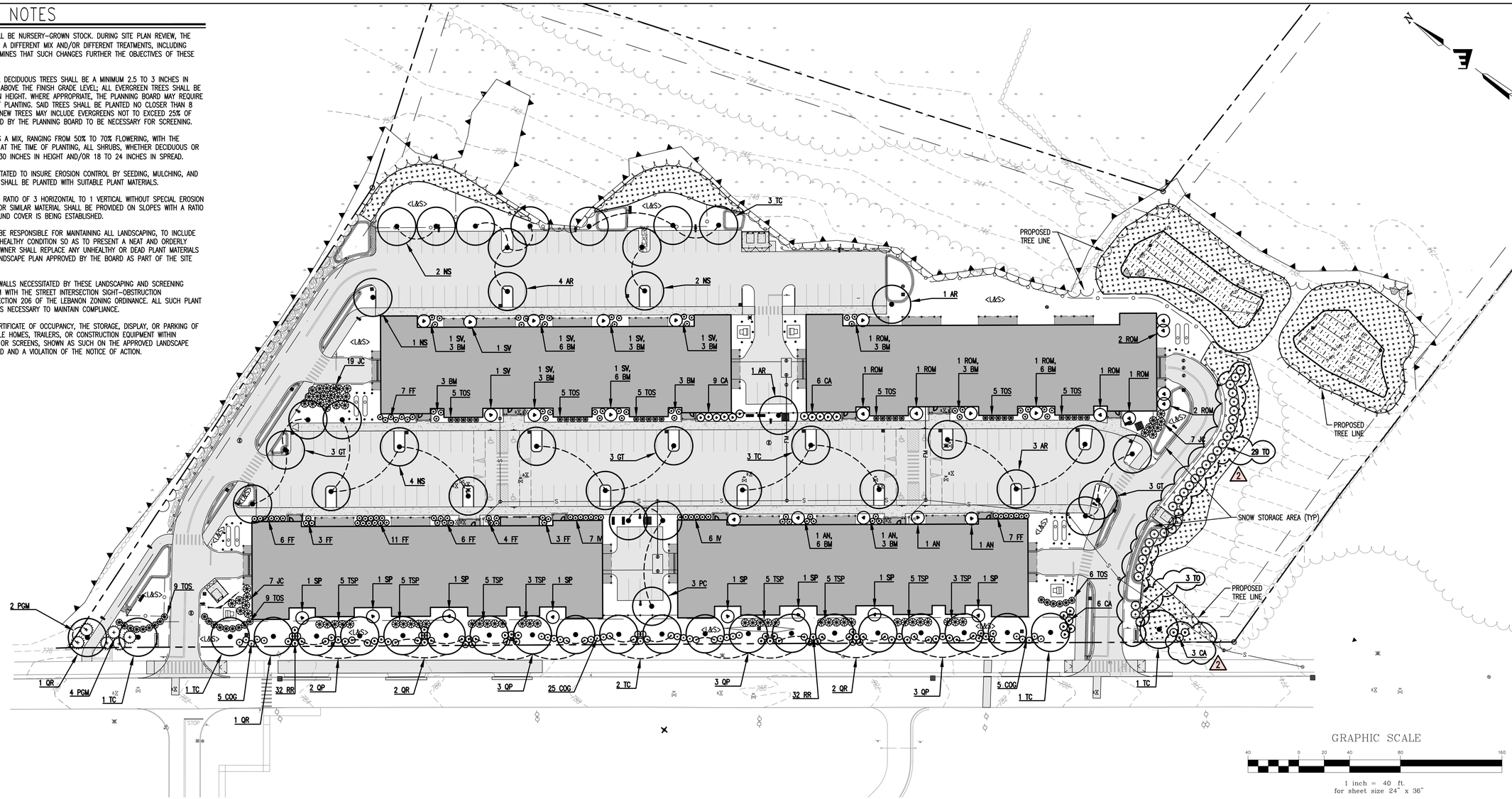
C2.7
Page 16 of 33

S:\PROJECTS\2019\19324.402 MT. SUPPORT ROW\SHEET FILES\19324 C2.7 UTILITIES PLAN.DWG

PLOTTED: 12/4/2022 2:56 PM

LANDSCAPING NOTES

1. ALL NEW PLANT MATERIAL SHALL BE NURSERY-GROWN STOCK. DURING SITE PLAN REVIEW, THE PLANNING BOARD MAY REQUIRE A DIFFERENT MIX AND/OR DIFFERENT TREATMENTS, INCLUDING ADDITIONAL TREES, IF IT DETERMINES THAT SUCH CHANGES FURTHER THE OBJECTIVES OF THESE REGULATIONS.
2. AT THE TIME OF PLANTING, ALL DECIDUOUS TREES SHALL BE A MINIMUM 2.5 TO 3 INCHES IN CALIPER, MEASURED 6 INCHES ABOVE THE FINISH GRADE LEVEL; ALL EVERGREEN TREES SHALL BE A MINIMUM OF 6 TO 7 FEET IN HEIGHT. WHERE APPROPRIATE, THE PLANNING BOARD MAY REQUIRE LARGER TREES AT THE TIME OF PLANTING. SAID TREES SHALL BE PLANTED NO CLOSER THAN 8 FEET TO ANY PROPERTY LINE. NEW TREES MAY INCLUDE EVERGREENS NOT TO EXCEED 25% OF THE TOTAL, UNLESS DETERMINED BY THE PLANNING BOARD TO BE NECESSARY FOR SCREENING.
3. SHRUBS SHALL BE PLANTED AS A MIX, RANGING FROM 50% TO 70% FLOWERING, WITH THE REMAINDER BEING EVERGREEN. AT THE TIME OF PLANTING, ALL SHRUBS, WHETHER DECIDUOUS OR EVERGREEN, SHALL BE 24 TO 30 INCHES IN HEIGHT AND/OR 18 TO 24 INCHES IN SPREAD.
4. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
5. 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 RATIO GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.
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. ALL PLANTINGS, FENCES, AND WALLS NECESSITATED BY THESE LANDSCAPING AND SCREENING REQUIREMENTS SHALL CONFORM WITH THE STREET INTERSECTION SIGHT-OBSTRUCTION REQUIREMENTS PROVIDED IN SECTION 206 OF THE LEBANON ZONING ORDINANCE. ALL SUCH PLANT MATERIALS MUST BE PRUNED AS NECESSARY TO MAINTAIN COMPLIANCE.
8. AFTER THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE STORAGE, DISPLAY, OR PARKING OF MOTOR VEHICLES, BOATS, MOBILE HOMES, TRAILERS, OR CONSTRUCTION EQUIPMENT WITHIN LANDSCAPED AREAS, BUFFERS, OR SCREENS, SHOWN AS SUCH ON THE APPROVED LANDSCAPE PLAN, IS EXPRESSLY PROHIBITED AND A VIOLATION OF THE NOTICE OF ACTION.



GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.
for sheet size 24" x 36"

PLANT SCHEDULE – TREES

SYM	BOTANICAL NAME	COMMON NAME	QTY	SIZE
DECIDUOUS TREES				
NS	***NYSSA SYLVATICA***	**BLACK GUM**	9	2.5-3" CAL
AR	*ACER RUBRUM 'OCTOBER GLORY'*	OCTOBER GLORY MAPLE	9	2.5-3" CAL
GT	*GLEDITSIA TRIACANTHOS*	HONEY LOCUST	9	2.5-3" CAL
PC	*PRUNUS CERASUS 'NORTH STAR'*	NORTH STAR CHERRY	3	2.5-3" CAL
QP	*QUERCUS PALUSTRIS*	PIN OAK	11	2.5-3" CAL
QR	*QUERCUS RUBRA*	RED OAK	6	2.5-3" CAL
TC	*TILIA CORDATA*	LITTLELEAF LINDEN	**12**	2.5-3" CAL
CONIFEROUS TREES				
SYM	**BOTANICAL NAME**	**COMMON NAME**	**QTY**	**SIZE**
TO	***THUJA OCCIDENTALIS***	**NORTHERN WHITE CEDAR**	**32**	**2" CAL**

2

PLANT SCHEDULE – SHRUBS

NOTE:
AT THE TIME OF PLANTING, ALL SHRUBS, WHETHER DECIDUOUS OR EVERGREEN, SHALL BE 24 TO 30 INCHES IN HEIGHT AND/OR 18 TO 24 INCHES IN SPREAD.

SYM	BOTANICAL NAME	COMMON NAME	QTY
DECIDUOUS SHRUBS			
AN	***HYDRANGEA ARBORESCENS 'ANNABELLE'***	**ANNABELLE HYDRANGEA**	**4**
BM	*BUXUS MICROPHYLLA 'FRANKLIN'S GEM'*	FRANKLIN'S GEM BOXWOOD	51
CA	*CLETHRA ALNIFOLIA*	SUMMERSWEET	**24**
SV	***SYRINGA VULGARIS***	**COMMON LILAC**	8
FF	*FORSYTHIA 'FIESTA'*	FIESTA FORSYTHIA	47
IV	*ILEX VERTICILLATA*	WINTERBERRY	**13**
ROM	*RHODODENDRON 'OLGA MEZITT'*	OLGA MEZITT RHODODENDRON	**11**
RR	*ROSA RUGOSA*	RUGOSA ROSA	64
SP	*CARAGAN ARBORESCENS*	SIBERIAN PEASHRUB	8
CONIFEROUS SHRUBS			
SYM	**BOTANICAL NAME**	**COMMON NAME**	**QTY**
COG	*CHAMAECYPARIS OBTUSA 'GRACIOSA'*	GRACIOSA HINOKI FALSECYPRESS	35
JC	*JUNIPERUS CONFERTA 'BLUE PACIFIC'*	BLUE PACIFIC JUNIPER	**33**
PGM	*PICEA GLAUCA 'MAC'S GOLDEN'*	MAC'S GOLDEN WHITE SPRUCE	6
TOS	*THUJA OCCIDENTALIS 'SMARAGD'*	EMERALD GREEN ARBORVITAE	54
TSP	*THUJA STANDISHII X PLICATA 'GREEN GIANT'*	GREEN GIANT ARBORVITAE	36

2

PLANT LEGEND

- DECIDUOUS TREES
- CONIFEROUS TREES
- DECIDUOUS SHRUBS
- CONIFEROUS SHRUBS
- NEW ENGLAND CONSERVATION/WILDLIFE MIX AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. OF SOUTH HADLEY, MA (WWW.NEWP.COM). APPLY SEED MIX AT A RATE OF 25LBS/ACRE (1LB/1,750SF).
- NEW ENGLAND WETMIX AS MANUFACTURED BY NEW ENGLAND WETLAND PLANTS, INC. OF SOUTH HADLEY, MA (WWW.NEWP.COM). APPLY SEED MIX AT A RATE OF 18LB/ACRE (1LB/2,500SF).
- <L&S> LOAM AND SEED

PERIMETER LANDSCAPING

MT SUPPORT RD FRONTAGE	
LENGTH OF FRONTAGE	917.9'
SHADE TREES	
REQUIRED: 917.9'x15'/600SF	23
PROVIDED:	23
UNDERSTORY TREES AND SHRUBS	
REQUIRED: 917.9'x15'/600SFx5	115
PROVIDED:	115
TOTAL:	138

STATE OF NEW HAMPSHIRE
NICHOLAS A. FIORE
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Stamp

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& THE BRAVERMAN COMPANY
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Sheet Title: LANDSCAPING PLAN

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	1" = 40'
Date:	11/08/2021

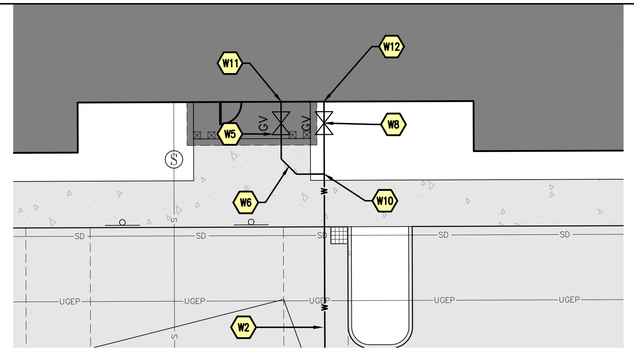
C2.8
Page 17 of 33

S:\PROJECTS\0-2019\19324.402 MT. SUPPORT RD\DWG\SHEET FILES\19324 C2.8 LANDSCAPE PLAN.DWG

PLOTTED: 10/4/2022 11:38 AM

WATER SCHEDULE

- W1 — 12" TAPPING SLEEVE AND VALVE WITH 12"X8" REDUCER FOR CONNECTION TO EXISTING 12" WATERMAIN, COORDINATE WORK WITH LEBANON DEPARTMENT OF PUBLIC WORKS.
- W2 — 8" DIA. DUCTILE IRON WATER LINE
- W3 — 8" DIA. HORIZONTAL BEND FITTING AS NEEDED TO MATCH ALIGNMENT SHOWN, TYP.
- W4 — 8"X8"X6" REDUCING HYDRANT TEE, TYP.
- W5 — 6" DIA. GATE VALVE, MJXMJ WITH MECHANICAL RESTRAINTS, TYP.
- W6 — 6" DIA. DUCTILE IRON WATER LINE, TYP.
- W7 — FIRE HYDRANT, TYP.
- W8 — 8" DIA. GATE VALVE, MJXMJ WITH MECHANICAL RESTRAINTS, TYP.
- W9 — 8"X8"X8" TEE FOR BUIDLING SERVICE, TYP.
- W10 — 8"X8"X6" REDUCING TEE FOR DOMESTIC WATER SERVICE, TYP.
- W11 — 6" DOMESTIC WATER SERVICE ENTRANCE, TYP. INVERT ELEVATION TO MATCH FIRE SERVICE ENTRANCE ELEVATION SHOWN ON PROFILES.
- W12 — 8" FIRE SERVICE ENTRANCE, TYP.
- W13 — 8"X8"X8" HYDRANT TEE
- W14 — 30' WIDE WATER EASEMENT CENTERED ON AS-BUILT WATER LINE AND SHALL INCLUDE HYDRANTS AND HYDRANT SERVICE LINES



WATER PLAN VIEW, TYPICAL SERVICE LINE ENTRANCE

SCALE: 1" = 10'

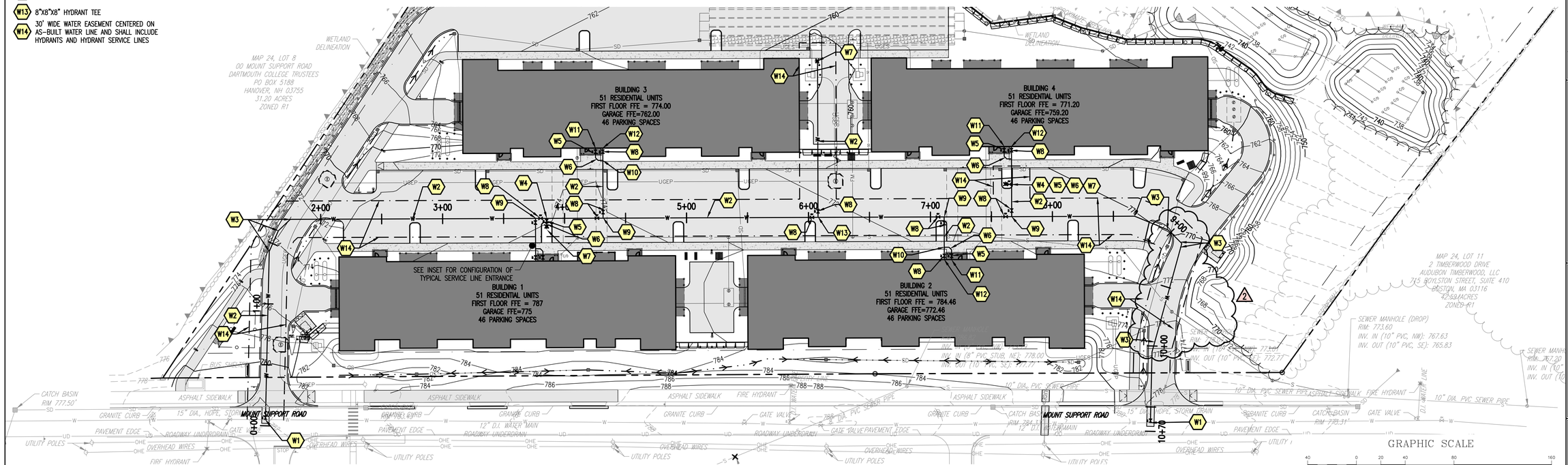
GRAPHIC SCALE

10 0 5 10 20 40

1 inch = 10 ft.
for sheet size 24" x 36"

NOTE 2

UNDERGROUND UTILITIES, ELECTRIC, TELEPHONE AND CABLE, MUST MAINTAIN A MINIMUM CLEARANCE OF 10 FT. FROM ALL PROPOSED WATER LINES.



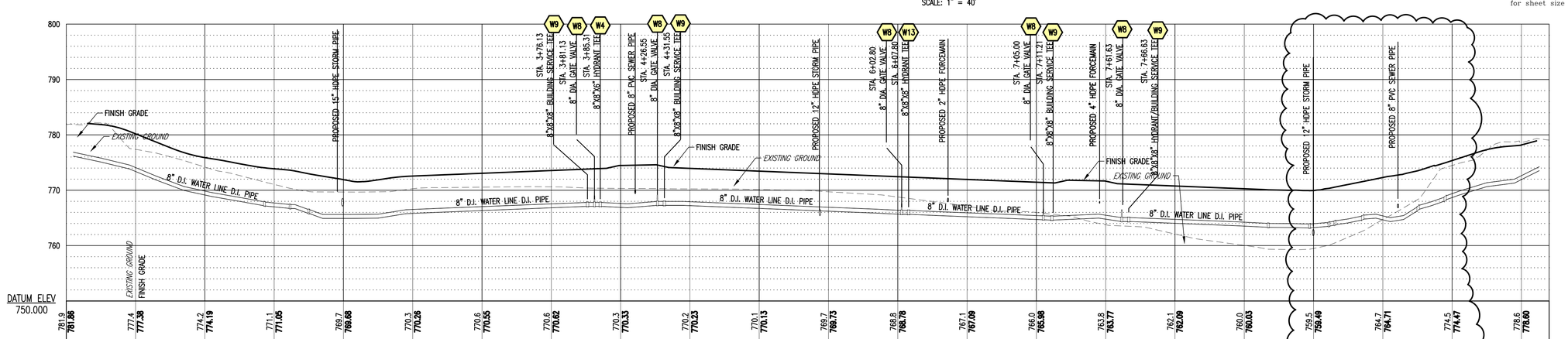
WATER PLAN VIEW, 0+00 – 10+70

SCALE: 1" = 40'

GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.
for sheet size 24" x 36"



PROPOSED WATER PROFILE, STA. 0+00 – 10+70

SCALE: HORIZ. 1" = 40
VERT.: 1" = 10'

STATE OF NEW HAMPSHIRE
NICHOLAS A. FIORE
No. 13286
LICENSED
PROFESSIONAL ENGINEER
Stamp

No.	Description	Date
1	REVISED PER STAFF REVIEW COMMENTS	12/20/21
2	REVISED PER STAFF AND PLANNING BOARD COMMENTS	01/24/22

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85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
414 Union Street, Schenectady, NY 12305 • 518-630-9614
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MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-6330

Sheet Title: WATER PLAN & PROFILES

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF/HKW
Checked By:	NAF
Scale:	AS NOTED
Date:	11/08/2021

C3.1
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S:\PROJECTS\0-2019\19324.402 MT. SUPPORT RD\DWG\SHEET FILES\19324-C3.1 WATER PLAN & PROFILES.DWG

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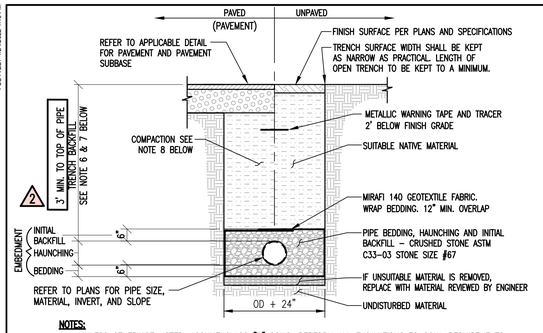
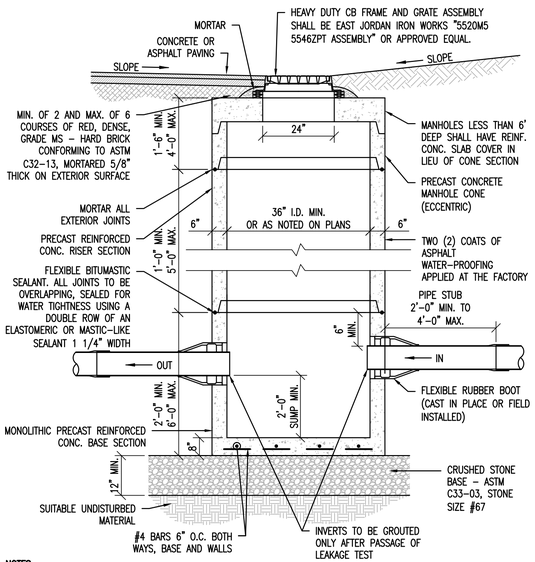


NOTES:

1. UNLESS OTHERWISE NOTED, ASSUME CLASS "C" SOILS. PERFORM ALL EXCAVATIONS TO OSHA REQUIREMENTS.
2. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
3. PROVIDE 6' OF COVER OVER DRAIN PIPE IN PAVED AREAS AND 5' OF COVER OVER PIPE IN UNPAVED AREAS. OTHERWISE, REFER TO INSULATION OVER SHALLOW DRAIN LINE DETAIL.
4. WHEN APPLICABLE INSTALL PIPE WITH BELL ENDS DOWN SLOPE. PREVENT SEDIMENT FROM ENTERING NEW STORM DRAIN SYSTEM DURING CONSTRUCTION.
5. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE PIPE IS NOT DAMAGED.
6. TRENCH BACKFILL MATERIAL, INCLUDING ROADWAY LOCATIONS, SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION AND FREE OF UNSUITABLE MATERIALS AS DEFINED BY NHDOT 203.2.7, WNV-WQ-704.09(j), AND THE EARTHWORK SPECIFICATIONS INCLUDED ON THESE PLANS.
7. LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF SIX INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
8. BACKFILL MATERIALS SHALL BE COMPACTED, IN 12" LAYERS, TO 92% OF MODIFIED PROCTOR (ASTM 1557) TO WITHIN 3 FEET OF FINISHED GRADE. IN AREAS UNDER ROADWAYS, DRIVES, AND PARKING THE UPPER 3 FEET SHALL BE COMPACTED, IN 6" LAYERS, TO 95% MODIFIED PROCTOR (ASTM 1557) AND IN LAWN OR OTHER UNDEVELOPED SPACE THE UPPER 3 FEET SHALL BE COMPACTED TO 92% MODIFIED PROCTOR.

TYPICAL STORM DRAIN TRENCH

NOT TO SCALE — 1

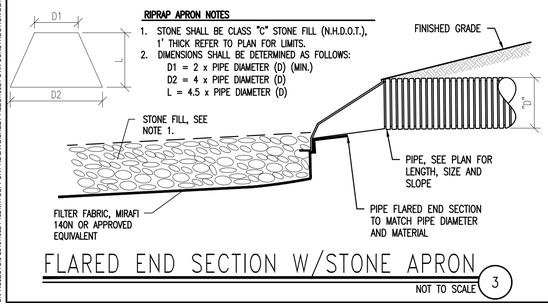


NOTES:

1. IF DEPTH OF MANHOLE IS 6 FT. OR LESS FROM RIM TO CENTERLINE INVERT, THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO CENTERLINE INVERT IS MORE THAN 6 FT., THEN AN ECCENTRIC CONICAL TOP WILL BE INSTALLED.
2. CATCH BASIN AND GRATE SHALL BE DESIGNED FOR H20 LOADING.

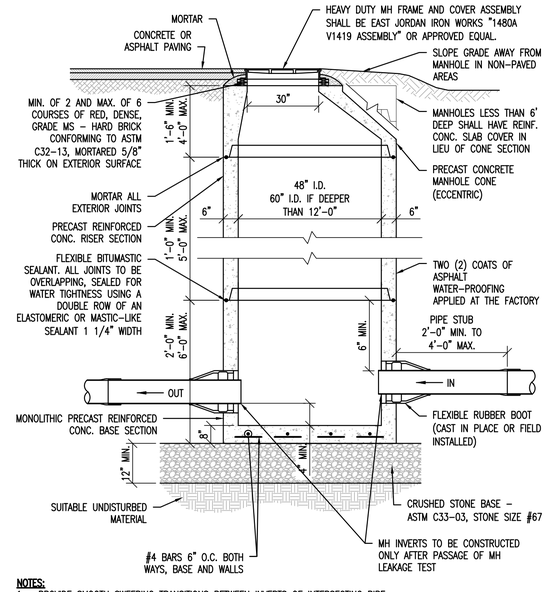
CATCH BASIN

NOT TO SCALE — 2



FLARED END SECTION W/STONE APRON

NOT TO SCALE — 3

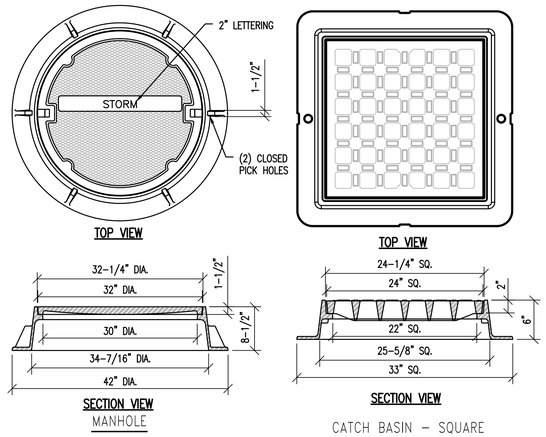


NOTES:

1. PROVIDE SMOOTH SWEEPING TRANSITIONS BETWEEN INVERTS OF INTERSECTING PIPE.
2. IF DEPTH OF MANHOLE IS 6 FT. OR LESS FROM RIM TO CENTERLINE INVERT, THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO CENTERLINE INVERT IS MORE THAN 6 FT., THEN AN ECCENTRIC CONICAL TOP WILL BE INSTALLED.
3. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
4. MANHOLE AND COVER SHALL BE DESIGNED FOR H20 LOADING.

DRAINAGE MANHOLE (CONE SECTION)

NOT TO SCALE — 4

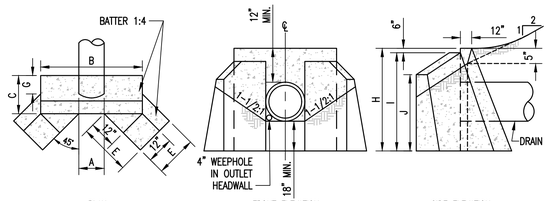


NOTES:

1. ALL DIMENSIONS SHOWN HERE ARE NOMINAL.
2. COVER SHALL BE HEAVY DUTY (H-20) LOAD RATED.
3. CATCH BASIN (SQUARE) FRAME AND GRATE ASSEMBLY SHALL BE EAST JORDAN IRON WORKS FRAME 5546Z (PRODUCT NUMBER 00554611 (4 FLANGE) OR 00554613 (3 FLANGE)) AND GRATE 5520M5 (PRODUCT NUMBER 00552060) OR APPROVED EQUAL.
3. CATCH BASIN (ROUND) FRAME AND GRATE ASSEMBLY SHALL BE EAST JORDAN IRON WORKS "2266Z 1040M3 SET" (PRODUCT NUMBER 00211033205) OR APPROVED EQUAL.
3. CATCH BASIN – (VANED) FRAME AND GRATE ASSEMBLY SHALL BE EAST JORDAN IRON WORKS "5520M8 5521Z ASSEMBLY" (PRODUCT NUMBER 00552081A2) OR APPROVED EQUAL. FRAME AND GRATE VANE DIRECTION SHALL BE "LEFT" OR "RIGHT" DEPENDING ON THE DIRECTION OF FLOW AT EACH BASIN.
4. MANHOLE (MH) FRAME AND COVER ASSEMBLY SHALL BE EAST JORDAN IRON WORKS "1480A V1419 ASSEMBLY" OR APPROVED EQUAL.

STORMWATER MH COVERS AND CB GRATES

NOT TO SCALE — 5



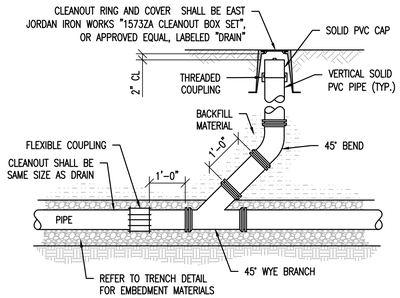
2:1 SLOPE DIMENSIONS																			
PIPE SIZE IN INCHES	A		B		C		E		F		G		H		I		J	
	in.	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in
12	1	2	4	1	1	11	1	2	1	9	0	9	3	6	3	0	3	0
15	1	6	4	4	2	0	1	6	1	9	0	8	3	9	3	3	3	1
18	1	9	4	7	2	0	1	9	1	10	0	8	4	1	3	7	3	3
24	2	3	5	1	2	2	2	4	2	4	1	0	5	4	6	4	0	5	6
30	2	9	5	7	2	3	2	11	1	11	0	6	5	0	4	6	3	10	
36	3	3	6	1	2	5	3	7	2	0	0	6	5	6	5	0	4	1	

NOTE:

1. CONCRETE SHALL BE CLASS "A" CONCRETE
2. STEEL REINFORCING SHALL BE AS SPECIFIED BY THE MANUFACTURER

PRECAST CONCRETE HEADWALL

NOT TO SCALE — 6

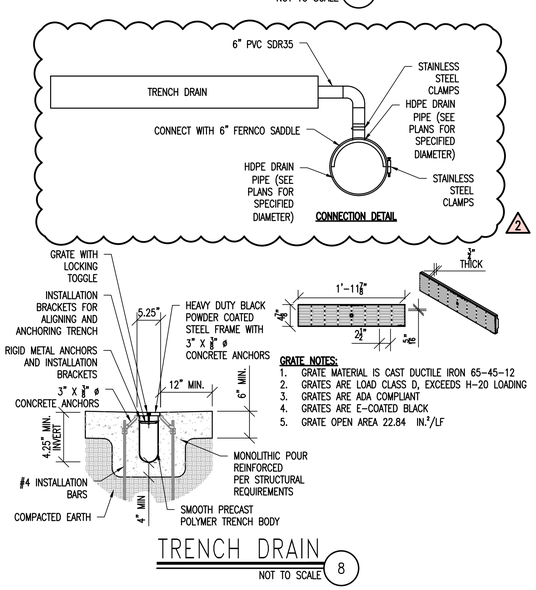


NOTES:

1. ALL CLEANOUT RISER PIPE AND FITTINGS SHALL BE 4" DIAMETER WHEN THE DRAIN PIPE IS LESS THAN 6" IN DIAMETER AND 6" DIAMETER FOR ALL DRAIN PIPE 6" IN DIAMETER AND GREATER.
2. CLEANOUTS SHALL BE PROVIDED AT EACH HORIZONTAL CHANGE IN DIRECTION OF THE DRAIN PIPE GREATER THAN 45 DEGREES AND AS SHOWN ON THE PLANS.
3. CLEANOUT RISER ASSEMBLY PIPE MATERIAL SHALL MATCH DRAIN PIPE MATERIAL.

DRAIN CLEANOUT

NOT TO SCALE — 7



GRATE NOTES:

1. GRATE MATERIAL IS CAST DUCTILE IRON 65-45-12
2. GRATES ARE LOAD CLASS D, EXCEEDS H-20 LOADING
3. GRATES ARE ADA COMPLIANT
4. GRATES ARE E-COATED BLACK
5. GRATE OPEN AREA 22.84 IN.^{2}/LF

TRENCH DRAIN

NOT TO SCALE — 8

NOTES:

1. PROVIDE SMOOTH SWEEPING TRANSITIONS BETWEEN INVERTS OF INTERSECTING PIPE.
2. IF DEPTH OF MANHOLE IS 6 FT. OR LESS FROM RIM TO CENTERLINE INVERT, THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO CENTERLINE INVERT IS MORE THAN 6 FT., THEN AN ECCENTRIC CONICAL TOP WILL BE INSTALLED.
3. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
4. MANHOLE AND COVER SHALL BE DESIGNED FOR H20 LOADING.

DRAINAGE MANHOLE DETAIL (FLAT TOP)

NOT TO SCALE — 9

STATE OF NEW HAMPSHIRE — PROFESSIONAL ENGINEER — Nicholas A. Fiore No. 13286 LICENSED — Stamp

No.	Description	Date
1	REVISED PER STAFF REVIEW COMMENTS	12/20/21
2	REVISED PER STAFF AND PLANNING BOARD COMMENTS	01/24/22

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ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-6330

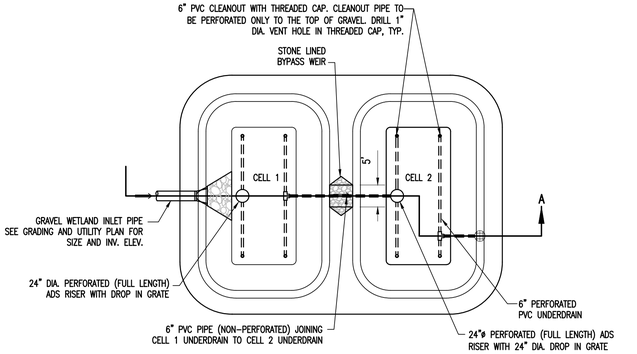
Sheet Title: STORMWATER DETAILS (1 OF 3)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

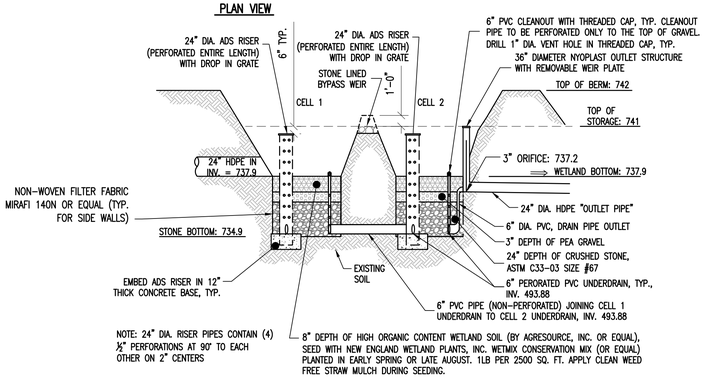
EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	NO SCALE
Date:	11/08/2021

C4.3
Page 25 of 33

S:\PROJECTS\5-2019\19324.402 MT. SUPPORT RD\DWG\SHEET FILES\19324 C4.X CONSTRUCTION DETAILS.DWG



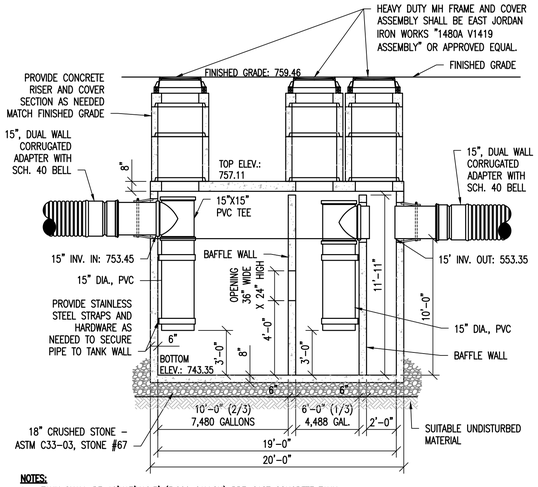
PLAN VIEW



SECTION A-A (EXAGGERATED VIEW)

GRAVEL WETLAND

GRAVEL WETLAND 1

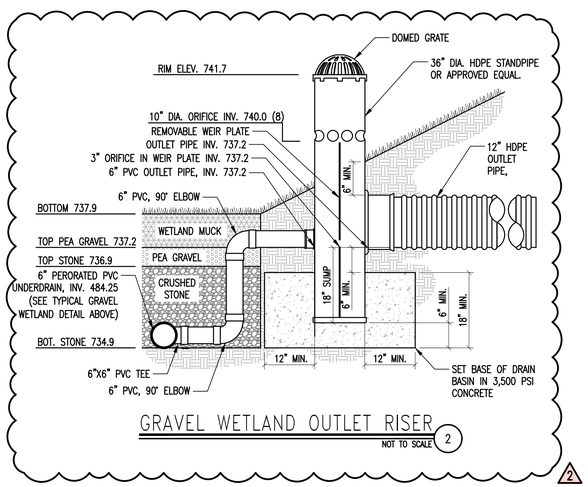


NOTES:

1. TANK SHALL BE 10'X17'X10.3' (5,000 GALLON) PRE-CAST CONCRETE TANK.
2. TANK SHALL BE DESIGNED FOR H-20 LOADING.
3. THE EXTERIOR OF THE PRE-CAST CONCRETE STRUCTURE SHALL RECEIVE TWO COATS OF ASPHALT SEAL COATING AT THE FACTORY.
4. JOINTS BETWEEN THE CONCRETE SECTIONS SHALL BE SEALED BY BUTYL MASTIC (MASHTO M-198).
5. PIPE PENETRATIONS SHALL BE SEALED BY FLEXIBLE WATERTIGHT BOOTS WITH STAINLESS STEEL BANDS.
6. THE WATER QUALITY UNIT AND RISERS SHALL BE FILLED WITH WATER AND SUBJECTED TO A 24 HOUR HYDROSTATIC LEAKAGE TEST. NO LEAKAGE WILL BE ALLOWED DURING THE TEST PERIOD.
7. AN ALTERNATE VACUUM LEAKAGE TEST PRIOR TO BACKFILLING IS ALSO ACCEPTABLE. THE VACUUM TEST WILL REQUIRE THE INSTALLED VAULT AND RISERS TO HOLD A VACUUM PRESSURE OF NEGATIVE 5 INCHES MERCURY FOR 10 MINUTES WITH NO LOSS/GAIN.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE A WATERTIGHT STRUCTURE.
9. SHOP DRAWINGS OF THE WATER QUALITY UNIT AND COMPONENTS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

SEDIMENT FOREBAY

NOT TO SCALE 4



GRAVEL WETLAND OUTLET RISER

NOT TO SCALE 2

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ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-8330

Sheet Title: STORMWATER DETAILS (2 OF 3)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	NO SCALE
Date:	11/08/2021

C4.4
Page 26 of 33

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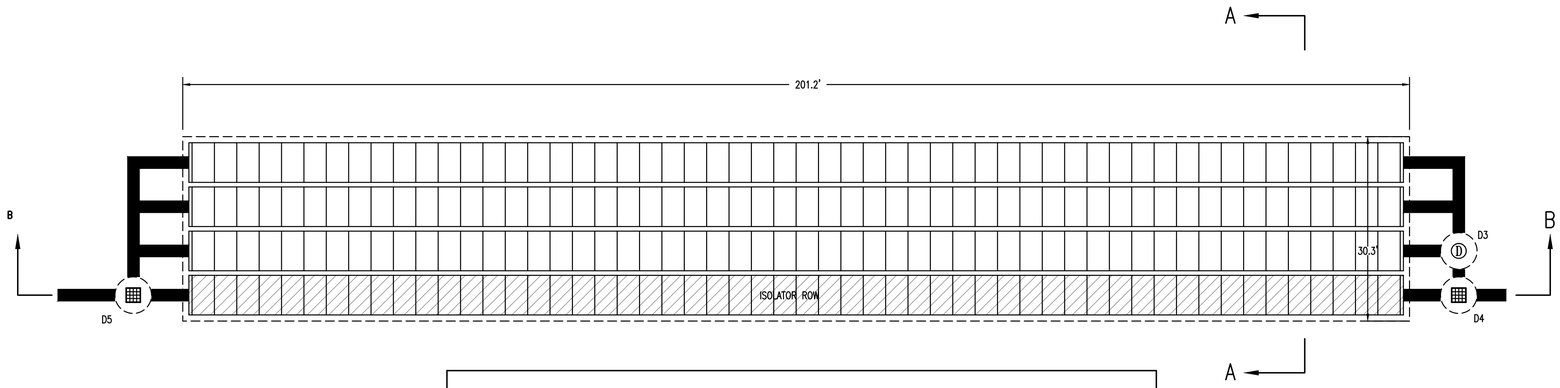
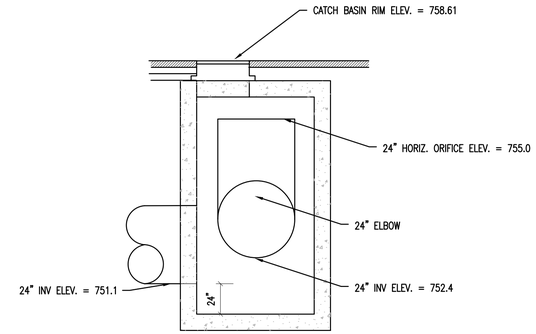
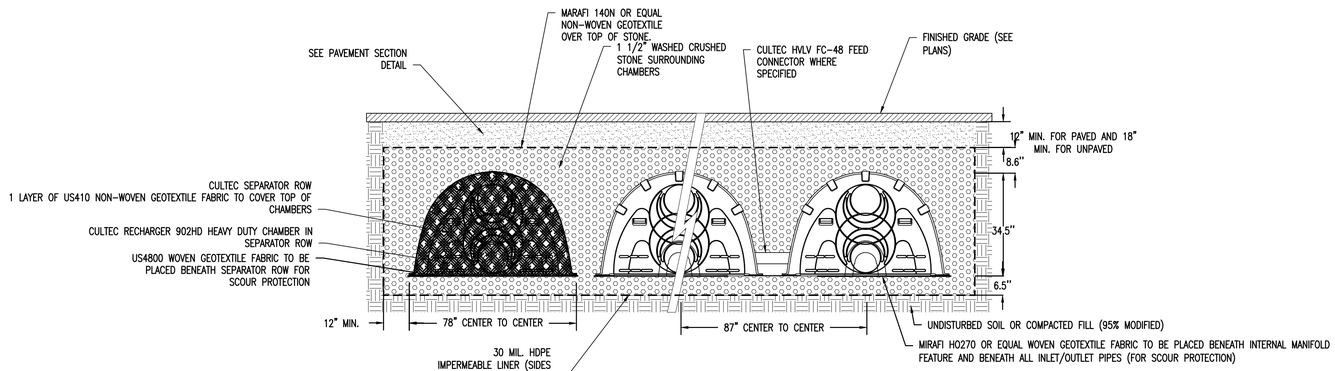


STONE BED: 201.2' LONG x 30.3' WIDE x 5.8' DEEP
CHAMBERS: 4 ROWS X 54 CHAMBERS/ROW = 216 CHAMBERS TOTAL

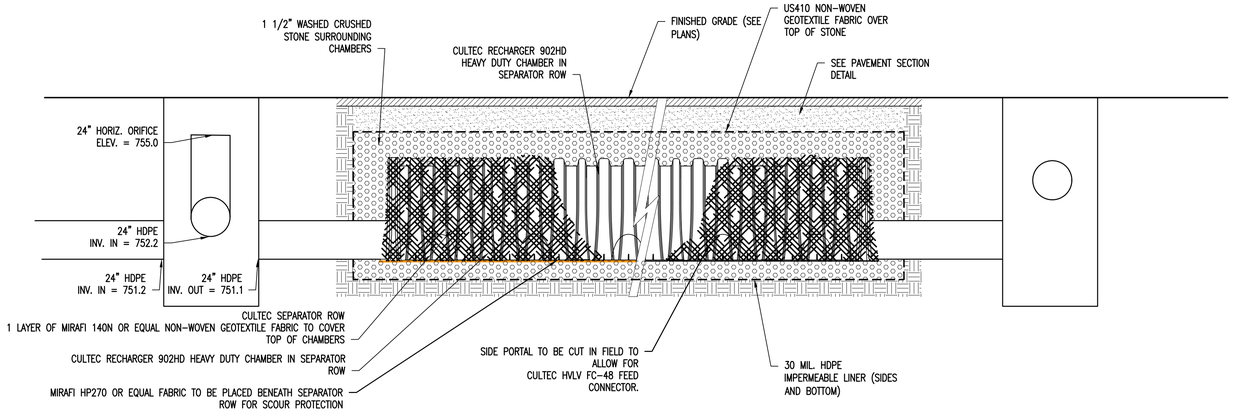


CULTEC SEPARATOR ROW INLET(D4)
NOT TO SCALE 2

SECTION VIEW A



SECTION VIEW B



CULTEC CHAMBER SYSTEM
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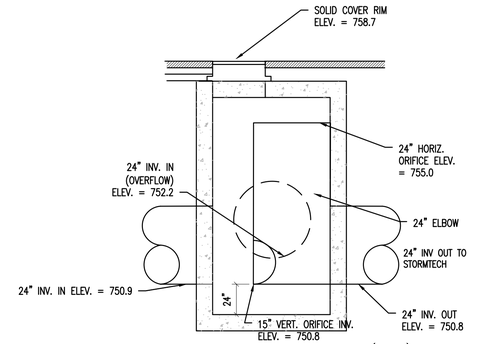

CULTEC SEPARATOR ROW INLET(D3)
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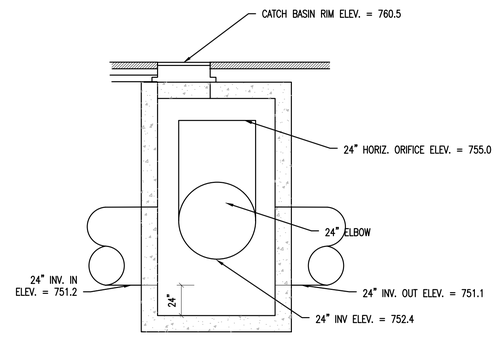

CULTEC SEPARATOR ROW INLET(D5)
NOT TO SCALE 4

STATE OF NEW HAMPSHIRE
PROFESSIONAL ENGINEER
Nicholas
FIORE
No. 13286
LICENSED
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STOWE, VT 05672
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Sheet Title: STORMWATER DETAILS (3 OF 3)

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	JWF
Checked By:	NAF
Scale:	NO SCALE
Date:	11/08/2021

C4.4a
Page 26a of 33

S:\PROJECTS\0-2019\19324 402 MT. SUPPORT RD\DWG\SHEET FILES\19324 C4.X CONSTRUCTION DETAILS.DWG

February 02, 2022

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

Subject: **Site Plan Review Application – Multi-Family Housing Development**
402 Mount Support Road (Map 24 – Lots 9 & 10); Lebanon, New Hampshire
KNA Project No. 21-1109-2

Dear Mr. Vincent:

As you may recall, on December 02, 2021 and January 05, 2022, this office issued letter reports in response to the subject application. Within each report we offered a series of comments and recommendations generated as a result of consideration and review of project plans and supporting information received through each respective date. On January 25th we received a subsequent submittal issued by the applicant's consultant. Specifically, we acknowledge receipt of copies of the following documents:

- A cover letter, addressed to the Planning & Development Department, prepared by the applicant's consultant on January 24, 2022;
- Test pit data witnessed November 04, 2021;
- A Drainage Report last revised on January 24, 2022; and
- A partial site plan (Sheets 1, 10 thru 14, 16, 17, 21,25, 26, 26a of 33 only) dated November 08 and last revised January 24, 2022.

Based upon our careful consideration and review of the cited information we are pleased to report the applicant's consultant was able to satisfactorily address several of our previous remarks. Accordingly, our remaining comments and recommendations are limited to the following at this time:

General Comments

1. This proposal requires the following State Agency Permits: (a) a NHDES Alteration of Terrain Permit; and (b) a NHDES Wastewater Connection Permit. We recommend each permit be received prior to or as a condition of any approval ultimately granted by the Planning Board. In addition, we recommend receipt of each permit be acknowledged in the text of notes provided on Sheet C0.0 of the final site plan.

2. It is understood the planned residential development proposes to rely on public water and sewer utilities available at Mount Support Road. Accordingly, we continue to 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. Based on remarks provided by the applicant's consultant, we understand the local utility permitting process is currently in process.

3. Given the extent of land area to be disturbed by planned construction activities, coupled with immediate proximity of this work to on-site wetland, abutting land and Mount Support Road, 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 approval, the applicant provide a performance guarantee, in an amount and form acceptable to your Department, to serve as a financial surety for: restoration of the site in the event of abandonment; installation and maintenance of appropriate erosion and sedimentation controls throughout construction; and full and final completion of any proposed public improvements and/or work within a public right-of-way.

4. As acknowledged on Sheet C1.0 of the site plan, it is understood Lots 9 & 10, identified on Assessor's Map 24, are to be voluntarily merged in order to create a single parcel upon conclusion of project permitting and transfer of land to common ownership. We recommend voluntary merger be a condition of final site plan approval.

Planning/Design Matters

1. Based upon consideration and review of design plans of proposed stormwater management accommodations we continue to offer the following remarks:

    - We recommend the Stormwater Schedule provided on Sheets C2.3 & C2.4 be revised to indicate the segment of storm drain having an intended invert elevation of 751.10 will enter, rather than exit drainage structure D4.

    - We recommend the Gravel Wetland and Gravel Wetland Outlet Riser details provided on Sheet C4.4 be revised or corrected as follows: (a) to specify dimensions, stone gradation and elevation of a stone lined bypass weir to be constructed between Cell Area 1 and Cell Area 2; (b) to specify grate elevations of proposed risers; (c) to recheck and correct specified underdrain elevations (483.88). We suspect correct elevations are something on the order of 735.00; (d) to correct the specified diameter of the segment of storm drain exiting the proposed outlet riser (12"). Based on information specified elsewhere on the drawings we believe the correct diameter is 24-inches; and (e) to indicate the proposed outlet riser is identified as structure D25 elsewhere on the drawings.

    - We continue to recommend the design engineer make reasonable accommodations for periodic access to the planned gravel wetland stormwater management area to facilitate future maintenance functions.

2. As acknowledged above, a NHDES Alteration of Terrain Permit is needed for this project. Given this project's reliance on one or more innovative best management practices subject to applicable provisions of the NH Code of Administrative Rules (Chapter Env-Wq 1500), we continue to recommend the applicant's final Drainage Analysis/Report be expanded to include all information, computations and exhibits required for submission of a full and complete Alteration of Terrain Permit application.

3. Based upon review of planned accommodations for sanitary sewer service provided on the project plans (See Sheet C3.2) we continue to offer the following remarks:

    - We recommend detailed sanitary sewer profiles with corresponding design elevations be provided for the following runs: (a) from floor drains at Buildings No. 1 & 2 to sewer manhole S15; (b) from sewer manhole S5 to sewer manhole S5B; (c) from floor drains at Buildings No. 3 & 4 to sewer manhole S16; and (d) from sewer manhole S16 to sewer manhole S5A.

    - As shown on Sheet C3.2, wastewater discharge from a proposed oil-grit separator receiving floor drain discharge from parking garages at Buildings No. 3 & 4, as well as sanitary wastewater discharge from Building No. 4 is to be delivered to gravity sewer via force main. Although a generic detail of a small simplex pump station is provided on Sheet C4.5, we recommend fully detailed design plans for each lift station corresponding with applicable NHDES and local requirements be added to the project plans.

We trust you will find remarks provided in the foregoing letter 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.

Tim Corwin

From: David F. Duncan <David.F.Duncan@hitchcock.org>
Sent: Monday, January 10, 2022 4:58 PM
To: David Brooks
Subject: [EXTERNAL] DH Support for item on 1/10/22 Planning board Meeting

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

David

Following up to my call this afternoon. Unfortunately I am not able to attend this evenings planning board meeting. If possible please share my support below with your committee.

Dartmouth-Hitchcock Health (D-HH), like businesses across the region, is experiencing the effects of low housing inventory and high costs on the people who work with us. D-HH supports the 402 & 392 Mount Support Road project as one way to help meet the critical housing needs of current and future members of our workforce.

Thanks again

David Duncan
System Vice President Facilities Management
Dartmouth-Hitchcock Health
603-650-5880 | david.f.duncan@hitchcock.org

Dartmouth-Hitchcock

ENGAGEMENT CHAMPION Spring 2021

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Tim Corwin

From: Sherry Boschert <sherry.boschert@gmail.com>
Sent: Friday, January 14, 2022 8:04 PM
To: Tim Corwin
Cc: Rebecca Owens; Tad Montgomery
Subject: [EXTERNAL] Comment on proposed apartments on Mount Support Road

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Dear Mr. Corwin,

I support the 204-unit apartment complex being proposed by Dick Anagnost and Ken Braverman on Mount Support Road if it provides housing at rents that local workers can afford, and with one suggested addition: that they build it to be ready for electric vehicle (EV) charging.
https://www.vnews.com/Manchester-developer-Dick-Anagnost-proposes-204-unit-workforce-housing-complex-in-Lebanon-44508979

Now is the time for the developers to include EV charging for the 184 parking spaces under the buildings and the 206 outdoor parking spaces -- or at the very least, install chargers under the buildings and lay the conduit for charging at outdoor spaces. This will not add much to the construction costs and it will save SO much money to do it now rather than later.

Most of New Hampshire's greenhouse gas emissions come from transportation. It's imperative that we switch to vehicles powered by clean, affordable, domestic electricity as quickly as possible. And in this proposed development, this is an equity issue, since the rentals will be priced for workers earning 60% of the area's median income. Helping lower-income workers shift to money-saving EVs should be a priority. If EV charging isn't installed during construction, there is very little chance it will be added for many years, locking these residents into more polluting, more expensive gasoline vehicles.

I am not a technical expert on EV charging, but here are a few thoughts about how to do this, from my nearly 20 years of experience driving EVs and working with EV advocates.

In the parking spaces under the buildings, adding EV charging could be as simple as installing 240-volt outlets at parking spaces, wired to DCC-9 boxes (which are widely used in Canada) to avoid overloading the main electrical panel.

For the outside parking lots, solar canopies with solar photovoltaic panels on top and EV charging pedestals below would be ideal, especially since Lebanon Community Power will be launching in 2022 and likely will be seeking more solar producers. This may present a potential future revenue stream to the developers if they can sell excess solar electricity to the Community Power Program. (I'm conjecturing about that; it's too soon to say.) But even without solar, simple pedestals with 240-volt outlets at outdoor parking spaces would be better than nothing. At a bare minimum, during construction the developers should lay conduit to allow for the

future addition of wiring and EV chargers. If the conduit isn't included now, the cost of tearing up parking lots to add it later will be prohibitive.

I hope you will work with the developers to obtain an expert's estimate of the cost to add EV chargers to the apartment complex during construction. ReVision Energy could give a good estimate. In my opinion, the City of Lebanon also should consider some financial incentives if necessary to get EV chargers included in this development.

I am a co-founder of the national non-profit organization Plug In America, and have applied to join the Lebanon Energy Advisory Committee. The views in this email are my own and not sent on behalf of those groups. I would appreciate being kept apprised of negotiations on this topic, if that is appropriate and not overly burdensome.

Thank you, and for all the work you do.

Sherry Boschert
337 Mount Support Road #701
Lebanon, NH 03766
415-730-9797

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NEW HAMPSHIRE HOUSING

David Brooks, Director of Planning
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Dear Mr. Brooks:

I am writing in regard to the proposed residential development project on Mount Support Road.

The project's sponsors, Dick Anagnost and Ken Braverman have submitted a financing application under our Tax-Exempt Bond Program Notice of Funding Availability (NOFA). NH Housing is prepared to offer tax-exempt financing as well as make a considerable capital subsidy investment in the project. We believe that projects like the Mount Support proposal, can help address the affordable housing challenges in the Upper Valley.

The developer's funding application is scheduled to be presented to senior leadership on 2/16/22 for a recommendation of capital subsidy. Given the scoring criteria of the NOFA and the other projects under consideration; it is unlikely the project would score competitively unless they have received municipal land-use approvals. Therefore, I wanted to express some level of urgency relating to timing and schedule. Unfortunately, there is a limited amount of capital subsidy remaining in the NOFA. If the project does not score competitively, the limited amount of capital subsidy remaining will likely be allocated to a competing project and not available again until the Summer of 2022. This would cause a meaningful delay and an added level of uncertainty; during a time when the need for additional affordable housing in the Upper Valley is critical.

We are excited about this project, the sponsor's level of experience, the location and proximity to regional employers. Together these components will make for a successful affordable housing project. We hope that City leadership, Board members, and Planning staff share our support for this key project and its timely review.

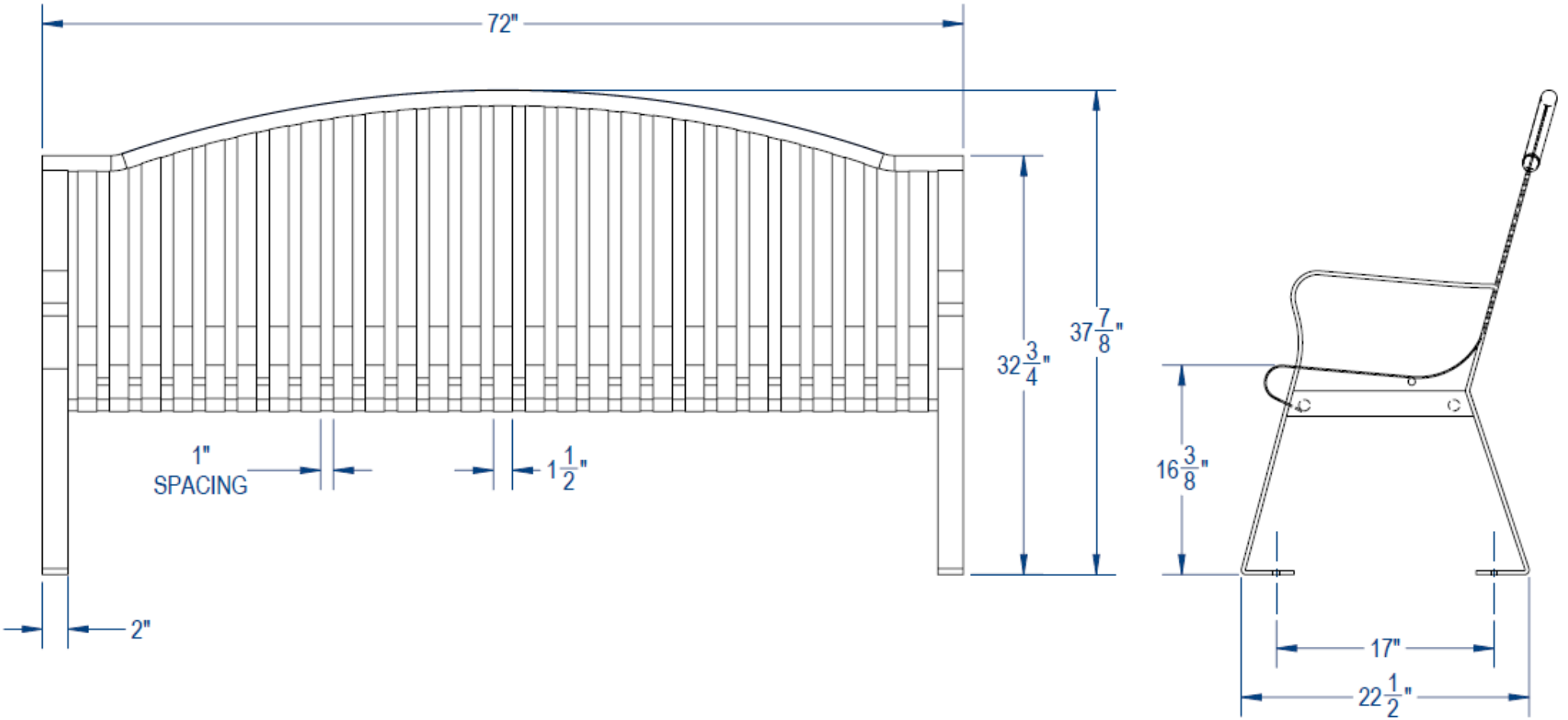
Please do not hesitate to reach-out if you would like to further discuss.

Regards,

DocuSigned by:
Jim Mcnihane
AEEFA6CC9F0C4E7...
Jim Mcnihane

Cc:
Shaun Mulholland, City Manager (by email)
Dick Anagnost, Mount Support Development LLC (by email)
Ken Braverman, Mount Support Development LLC (by email)

6’ Skyline Bench (543-8004)



402 Mt Support Rd
Residential Development
Grafton County, City of Lebanon, NH

Drainage Report
Rev: January 24, 2022

Prepared For:

Mount Support Development LLC
Anagnost Investments
1662 Elm Street
Manchester, NH 03101
&
Braverman Company
214 Barnes Hill Road
Stowe, VT 05672

Prepared By:

Adam Morse, PE
85 Mechanic Street, Suite E2-3
Lebanon, NH 03766
Tel: 603-442-9333

EV Project # 19324

402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

DRAINAGE REPORT

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      ii. Area Listings
      iii. Soil Listings
      iv. Node Listings for 1”, 2-year, 10-year, 25-year, 50-year, and 100-year Storm Events
      v. Full Summaries for the 25-year Storm Event
   b. **POST- CONSTRUCTION HYRDOCAD REPORTS**
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      ii. Area Listings
      iii. Soil Listings
      iv. Node Listings for 1”, 2-year, 10-year, 25-year, 50-year, and 100-year
      v. Full Summaries for the 25-year Storm Event
      vi. Pond Summaries for 50-year and 100-year Storm Event
5. **PIPE SIZING CALCULATIONS**

402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

1. DRAINAGE NARRATIVE

ENGINEERING VENTURES PC

208 Flynn Avenue, Suite 2A, Burlington, VT 05401 · Tel: 802-863-6225 · Fax: 802-863-6306
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 · Tel: 603-442-9333

402 Mt. Support Road – Residential Development
City of Lebanon, NH

Drainage Narrative

EV Project # 19324
January 24, 2022

Stormwater Management

Stormwater management will be accomplished through construction of a gravel wetland system as indicated on the plans. Pretreatment will be provided by a stormwater chamber system to provide flow attenuation to the gravel wetland and filter out sediment through application of an isolator row within the system. Stormwater from the north and west end of the site will be directed to the stormwater chambers through a series of roadside swales, grate drains, yard inlets, catch basins and parking lot curbing. Drainage from the south and east ends of the site will be directed to a precast concrete sediment forebay prior to discharging to the gravel wetland system. The sediment forebay will provide pretreatment and the gravel wetland will then treat and attenuate flows prior to discharging to the existing natural wetlands east of the site.

For further details of existing and proposed drainage catchment please refer to the HydroCAD printout and the Existing and Proposed Drainage maps included at the end of this report.

- WQv = (P)(Rv)(A)
- P = 1” of rainfall (NHDES standard)
- Rv = Runoff Coefficient = 0.05 + (0.9 * I)
- I= % impervious draining to practice
- A = Area draining to practice
- A_I = Impervious area draining to practice

- WQv Calculations for area draining to POI-1:
  - P = 1”
  - A = 6.68 acres
  - A_I = 4.27 acres
  - I = 4.27/6.68 = 0.64
  - Rv = 0.05 + (0.9 * 0.64) = 0.63 unitless
  - WQv = (1”) (0.63) (6.68) = 4.18 ac-in
  - WQv = 15,170 cf (4.18 ac-in * 43,560 sf/ac * 1’/12”)

Stormwater analysis was conducted using HydroCAD Version 10.0 to compute the post-construction conditions for the 1", 2-year, 10-year and 50-year 24-hour storms. This program uses the TR-20 stormwater calculation method.

The following table shows the results of the post-development HydroCAD analysis versus pre-development HydroCAD analysis.

Table 1 – HydroCAD Results

POI 1	1" Storm	1" Storm	2-yr Storm	2-yr Storm	10-yr Storm	10-yr Storm
	cfs	cf	cfs	cf	cfs	cf
Pre-Development	0.01	415	3.70	13,764	8.97	29,917
Post-Development	0.12	5,903	1.50	30,787	8.30	53,153
Δ	0.11	5488.00	-2.20	17,023	-0.67	23,236

POI 1	25-yr Storm	25-yr Storm	50-yr Storm	50-yr Storm	100-yr Storm	100-yr Storm
	cfs	cf	cfs	cf	cfs	cf
Pre-Development	13.60	44,149	18.11	58,166	23.56	75,300
Post-Development	12.90	71,174	16.04	88,208	19.36	108,258
Δ	-0.70	27,025	-2.07	30,042	-4.20	32,958

Soil Erosion and Sedimentation Control

Standard erosion and sedimentation control measures will need to be implemented during construction of the project. Inlet protections will be required around existing culvert and catch basin inlets. Silt fencing is proposed, where indicated. A stone construction entrance will be implemented to prevent vehicles from transporting dirt and soil off the site. Once final grades are established, landscaping features will be installed for the project area.

402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

2. NHDES BMP WORKSHEET

GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **1P Gravel Wetland**

Enter the node name in the drainage analysis if applicable.

6.68 ac	A = Area draining to the practice	
4.27 ac	A_I = Impervious area draining to the practice	
0.64 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.63 unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
4.18 ac-in	WQV= 1" x Rv x A	
15,163 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,516 cf	10% x WQV (check calc for sediment forebay)	
6,823 cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
1,600 cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
8,970 cf	V_{TB1} = Volume of treatment bay 1 [1]	**≥ 45%WQV**
6,774 cf	V_{TB2} = Volume of treatment bay 2 [1]	**≥ 45%WQV**
0.35 cfs	$2Q_{avg}$ = 2* WQV / 24 hrs * (1hr / 3600 sec) [2]	
740.00 ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.32 cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	**< $2Q_{avg}$**
26.32 hours	T_{ED} = Drawdown time of extended detention = 2WQV/Q_{WQV}	**≥ 24-hrs**
2.00 :1	Pond side slopes	**≥ 3:1**
742.00 ft	Elevation of SHWT	
740.00 ft	SHWT - 2 feet	
740.00 ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [3]	**≤ E_{SHWT} - 2 ft**
100.00 ft	Length of the flow path between the inlet and outlet in each cell	**≥ 15 ft**
A removable weir plate is proposed	What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
741.00 ft	Peak elevation of the 50-year storm event (E_{50})	
742.00 ft	Berm elevation of the pond	
YES	E_{50} ≤ the berm elevation?	**← yes**

Qualified professional that developed the planting plan
Name, Profession:

1. Volume stored above the wetland soil and below the high flow by-pass.
2. To ensure orifice is sized so that WQV is released at a relatively stable rate.
3. 4" to 8" below the wetland soil. If lowest orifice is higher than (SHWT - 2 feet), and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes:

A waiver is sought for pond slopes due to 2:1 side slopes in gravel wetland cell #2.

402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

3. 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.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	72.262 degrees West
Latitude	43.670 degrees North
Elevation	0 feet
Date/Time	Thu, 30 Sep 2021 14:44:24 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.66	0.82	1.02	**1yr**	0.71	0.93	1.17	1.44	1.76	2.15	2.41	**1yr**	1.90	2.32	2.69	3.30	3.79	**1yr**
2yr	0.31	0.48	0.59	0.78	0.98	1.22	**2yr**	0.85	1.11	1.40	1.71	2.07	2.50	2.81	**2yr**	2.21	2.70	3.15	3.77	4.31	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.54	**5yr**	1.06	1.41	1.76	2.14	2.57	3.07	3.47	**5yr**	2.71	3.34	3.86	4.55	5.18	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.84	**10yr**	1.26	1.68	2.11	2.55	3.04	3.58	4.08	**10yr**	3.17	3.92	4.51	5.25	5.95	**10yr**
25yr	0.50	0.79	1.00	1.38	1.83	2.32	**25yr**	1.58	2.12	2.65	3.19	3.78	4.40	5.04	**25yr**	3.90	4.85	5.55	6.35	7.16	**25yr**
50yr	0.57	0.91	1.16	1.63	2.18	2.77	**50yr**	1.88	2.53	3.17	3.80	4.45	5.15	5.93	**50yr**	4.56	5.70	6.48	7.33	8.24	**50yr**
100yr	0.64	1.04	1.34	1.90	2.60	3.30	**100yr**	2.24	3.02	3.78	4.51	5.26	6.02	6.97	**100yr**	5.33	6.70	7.58	8.48	9.48	**100yr**
200yr	0.74	1.21	1.57	2.24	3.09	3.94	**200yr**	2.67	3.61	4.51	5.35	6.20	7.05	8.20	**200yr**	6.24	7.88	8.87	9.80	10.91	**200yr**
500yr	0.90	1.47	1.92	2.78	3.90	4.98	**500yr**	3.36	4.58	5.68	6.71	7.71	8.68	10.17	**500yr**	7.68	9.78	10.92	11.88	13.14	**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**	0.65	0.81	1.00	1.19	1.58	1.98	2.23	**1yr**	1.76	2.15	2.50	3.03	3.55	**1yr**
2yr	0.30	0.46	0.57	0.77	0.94	1.11	**2yr**	0.82	1.08	1.24	1.62	2.06	2.45	2.75	**2yr**	2.17	2.65	3.09	3.71	4.23	**2yr**
5yr	0.34	0.53	0.65	0.89	1.14	1.32	**5yr**	0.98	1.30	1.49	1.90	2.41	2.92	3.28	**5yr**	2.59	3.16	3.66	4.31	4.93	**5yr**
10yr	0.38	0.58	0.72	1.00	1.30	1.51	**10yr**	1.12	1.47	1.69	2.16	2.70	3.33	3.76	**10yr**	2.95	3.61	4.17	4.83	5.54	**10yr**
25yr	0.43	0.66	0.82	1.18	1.55	1.78	**25yr**	1.33	1.74	1.98	2.52	3.13	3.97	4.49	**25yr**	3.51	4.32	4.94	5.61	6.45	**25yr**
50yr	0.48	0.73	0.90	1.30	1.75	2.03	**50yr**	1.51	1.98	2.23	2.85	3.52	4.53	5.14	**50yr**	4.01	4.95	5.62	6.27	7.24	**50yr**
100yr	0.53	0.80	1.01	1.45	1.99	2.29	**100yr**	1.72	2.24	2.49	3.19	3.95	5.17	5.88	**100yr**	4.58	5.66	6.40	7.01	8.12	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.60	**200yr**	1.96	2.54	2.80	3.60	4.48	5.91	6.73	**200yr**	5.23	6.47	7.30	7.84	9.11	**200yr**
500yr	0.68	1.01	1.30	1.89	2.69	3.05	**500yr**	2.32	2.98	3.23	4.19	5.26	7.06	8.06	**500yr**	6.25	7.75	8.70	9.08	10.62	**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**	0.77	1.01	1.19	1.51	1.89	2.29	2.59	**1yr**	2.03	2.50	2.86	3.49	3.99	**1yr**
2yr	0.32	0.49	0.61	0.82	1.01	1.19	**2yr**	0.87	1.17	1.36	1.73	2.17	2.56	2.87	**2yr**	2.27	2.76	3.22	3.87	4.40	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.57	**5yr**	1.15	1.53	1.74	2.16	2.70	3.22	3.65	**5yr**	2.85	3.51	4.06	4.77	5.42	**5yr**
10yr	0.48	0.74	0.92	1.28	1.66	1.96	**10yr**	1.43	1.91	2.15	2.60	3.20	3.85	4.39	**10yr**	3.41	4.22	4.86	5.62	6.36	**10yr**
25yr	0.62	0.94	1.17	1.67	2.19	2.63	**25yr**	1.89	2.57	2.86	3.33	4.01	4.87	5.62	**25yr**	4.31	5.40	6.14	6.98	7.86	**25yr**
50yr	0.74	1.13	1.40	2.02	2.72	3.29	**50yr**	2.35	3.21	3.57	4.00	4.77	5.81	6.77	**50yr**	5.14	6.51	7.34	8.25	9.25	**50yr**
100yr	0.90	1.36	1.70	2.45	3.37	4.13	**100yr**	2.91	4.03	4.47	4.83	5.67	6.94	8.17	**100yr**	6.14	7.86	8.78	9.75	10.88	**100yr**
200yr	1.09	1.63	2.07	3.00	4.18	5.18	**200yr**	3.61	5.06	5.59	5.83	6.76	8.28	9.85	**200yr**	7.33	9.47	10.51	11.54	12.80	**200yr**
500yr	1.41	2.10	2.70	3.92	5.57	7.02	**500yr**	4.81	6.86	7.53	7.46	8.47	10.49	12.63	**500yr**	9.29	12.15	13.33	14.44	15.90	**500yr**

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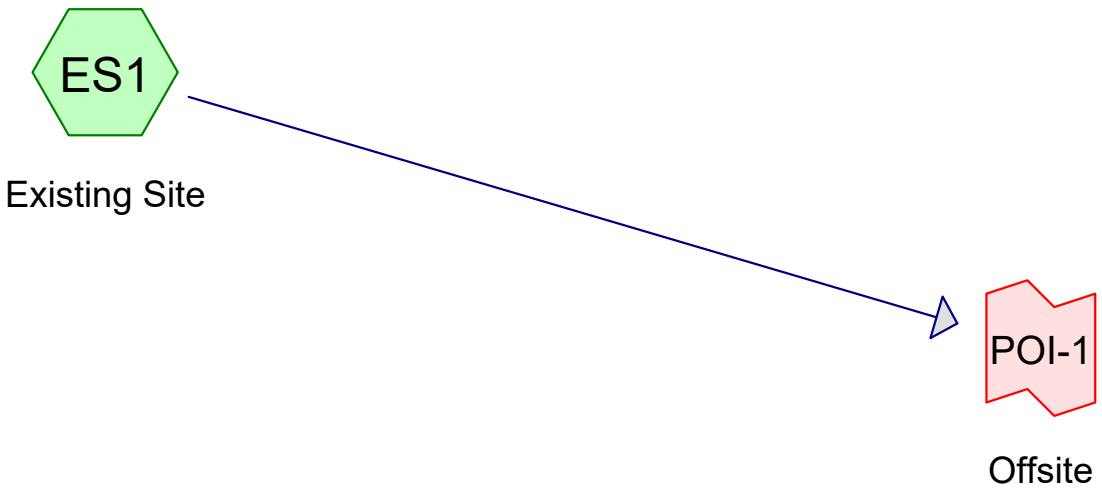
402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

4. DRAINAGE ANALYSIS



Subcat Reach Pond Link

Routing Diagram for 19324 Pre
Prepared by {enter your company name here}, Printed 1/24/2022
HydroCAD® 10.10-7a s/n 02524 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
131,578	71	Meadow, non-grazed, HSG C (ES1)
1,526	78	Meadow, non-grazed, HSG D (ES1)
10,037	98	Paved parking, HSG C (ES1)
1,206	98	Paved parking, HSG D (ES1)
81,263	70	Woods, Good, HSG C (ES1)
65,384	77	Woods, Good, HSG D (ES1)
290,994	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
222,878	HSG C	ES1
68,116	HSG D	ES1
0	Other	
290,994		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=0.02"
Flow Length=465' Tc=19.3 min CN=73 Runoff=0.01 cfs 415 cf

Link POI-1: Offsite Inflow=0.01 cfs 415 cf
Primary=0.01 cfs 415 cf

Total Runoff Area = 290,994 sf Runoff Volume = 415 cf Average Runoff Depth = 0.02"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=0.57"
Flow Length=465' Tc=19.3 min CN=73 Runoff=3.70 cfs 13,764 cf

Link POI-1: Offsite Inflow=3.70 cfs 13,764 cf
Primary=3.70 cfs 13,764 cf

Total Runoff Area = 290,994 sf Runoff Volume = 13,764 cf Average Runoff Depth = 0.57"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=1.23"
Flow Length=465' Tc=19.3 min CN=73 Runoff=8.97 cfs 29,917 cf

Link POI-1: Offsite Inflow=8.97 cfs 29,917 cf
Primary=8.97 cfs 29,917 cf

Total Runoff Area = 290,994 sf Runoff Volume = 29,917 cf Average Runoff Depth = 1.23"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=1.82"
Flow Length=465' Tc=19.3 min CN=73 Runoff=13.60 cfs 44,149 cf

Link POI-1: Offsite Inflow=13.60 cfs 44,149 cf
Primary=13.60 cfs 44,149 cf

Total Runoff Area = 290,994 sf Runoff Volume = 44,149 cf Average Runoff Depth = 1.82"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=2.40"
Flow Length=465' Tc=19.3 min CN=73 Runoff=18.11 cfs 58,166 cf

Link POI-1: Offsite Inflow=18.11 cfs 58,166 cf
Primary=18.11 cfs 58,166 cf

Total Runoff Area = 290,994 sf Runoff Volume = 58,166 cf Average Runoff Depth = 2.40"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=290,994 sf 3.86% Impervious Runoff Depth=3.11"
Flow Length=465' Tc=19.3 min CN=73 Runoff=23.56 cfs 75,300 cf

Link POI-1: Offsite Inflow=23.56 cfs 75,300 cf
Primary=23.56 cfs 75,300 cf

Total Runoff Area = 290,994 sf Runoff Volume = 75,300 cf Average Runoff Depth = 3.11"
96.14% Pervious = 279,751 sf 3.86% Impervious = 11,243 sf

Summary for Subcatchment ES1: Existing Site

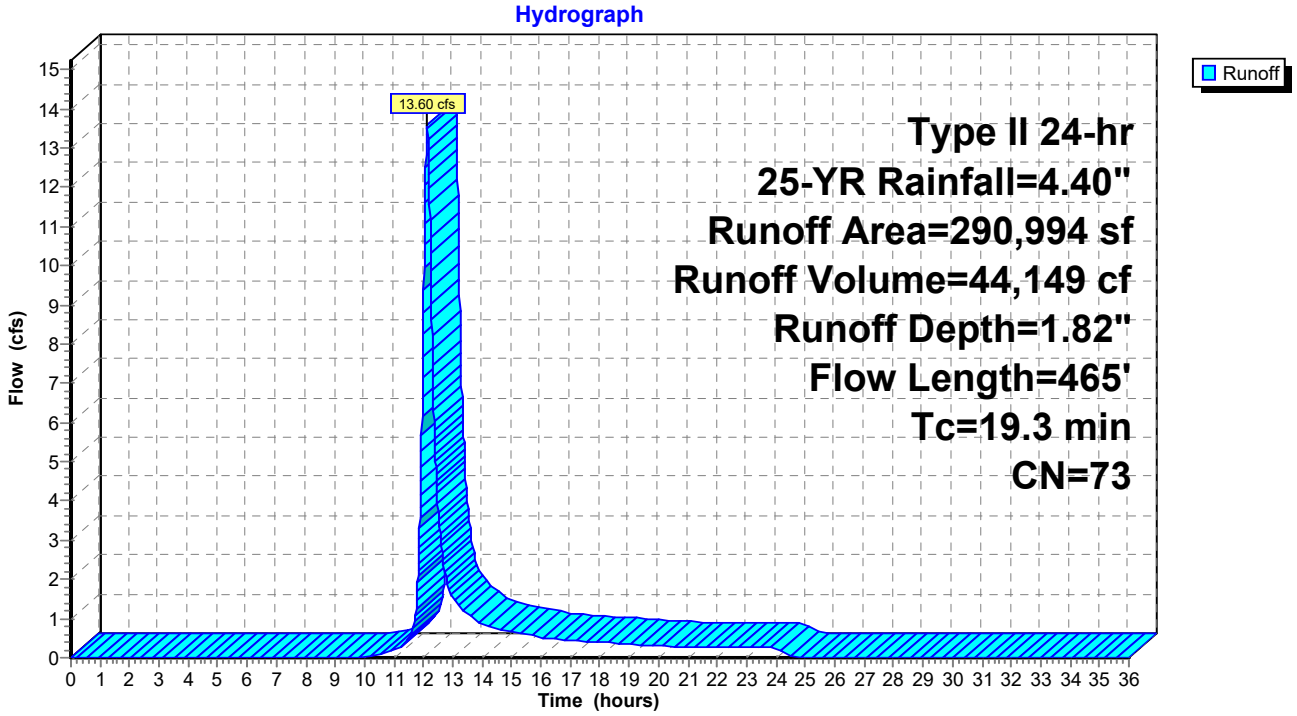
Runoff = 13.60 cfs @ 12.12 hrs, Volume= 44,149 cf, Depth= 1.82"
Routed to Link POI-1 : Offsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=4.40"

Area (sf)	CN	Description
131,578	71	Meadow, non-grazed, HSG C
81,263	70	Woods, Good, HSG C
10,037	98	Paved parking, HSG C
1,526	78	Meadow, non-grazed, HSG D
65,384	77	Woods, Good, HSG D
1,206	98	Paved parking, HSG D
290,994	73	Weighted Average
279,751		96.14% Pervious Area
11,243		3.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		**Sheet Flow,** Range n= 0.130 P2= 2.50"
13.6	365	0.0080	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.3	465	Total			

Subcatchment ES1: Existing Site

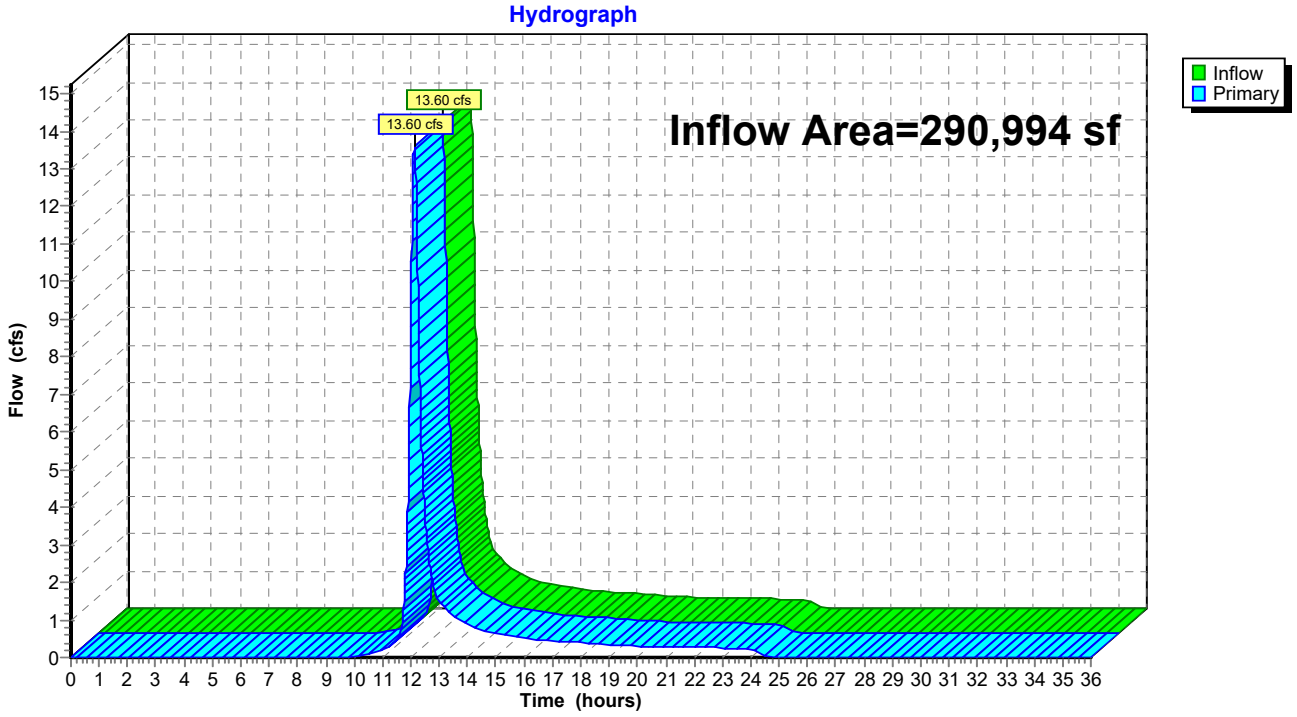


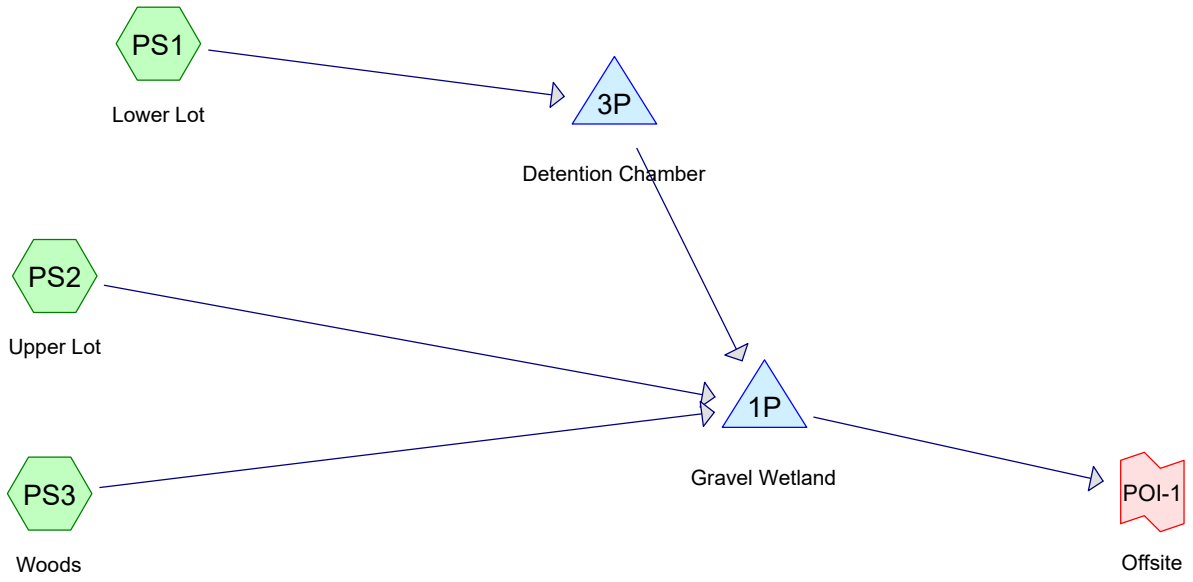
Summary for Link POI-1: Offsite

Inflow Area = 290,994 sf, 3.86% Impervious, Inflow Depth = 1.82" for 25-YR event
Inflow = 13.60 cfs @ 12.12 hrs, Volume= 44,149 cf
Primary = 13.60 cfs @ 12.12 hrs, Volume= 44,149 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link POI-1: Offsite





Subcat Reach Pond Link

Routing Diagram for 19324 Post gravel wetland
Prepared by {enter your company name here}, Printed 1/24/2022
HydroCAD® 10.10-7a s/n 02524 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
71,314	71	Meadow, non-grazed, HSG C (PS1, PS2, PS3)
8,223	78	Meadow, non-grazed, HSG D (PS1, PS2)
151,567	98	Paved parking, HSG C (PS1, PS2, PS3)
34,544	98	Paved parking, HSG D (PS2)
25,349	77	Woods, Good, HSG D (PS3)
290,997	**89**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
222,881	HSG C	PS1, PS2, PS3
68,116	HSG D	PS1, PS2, PS3
0	Other	
290,997		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=93 Runoff=2.92 cfs 5,688 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=0.36"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=0.69 cfs 2,334 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=0.05"
Tc=5.0 min CN=77 Runoff=0.02 cfs 245 cf

Pond 1P: Gravel Wetland Peak Elev=738.37' Storage=6,589 cf Inflow=0.84 cfs 6,403 cf
Outflow=0.12 cfs 5,903 cf

Pond 3P: Detention Chamber Peak Elev=750.96' Storage=2,894 cf Inflow=2.92 cfs 5,688 cf
Outflow=0.21 cfs 3,824 cf

Link POI-1: Offsite Inflow=0.12 cfs 5,903 cf
Primary=0.12 cfs 5,903 cf

Total Runoff Area = 290,997 sf Runoff Volume = 8,267 cf Average Runoff Depth = 0.34"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=93 Runoff=10.92 cfs 22,473 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=1.61"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=3.19 cfs 10,462 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=0.74"
Tc=5.0 min CN=77 Runoff=1.92 cfs 3,793 cf

Pond 1P: Gravel Wetland Peak Elev=740.19' Storage=21,571 cf Inflow=8.85 cfs 34,852 cf
Outflow=1.50 cfs 30,787 cf

Pond 3P: Detention Chamber Peak Elev=752.10' Storage=8,690 cf Inflow=10.92 cfs 22,473 cf
Outflow=5.03 cfs 20,597 cf

Link POI-1: Offsite Inflow=1.50 cfs 30,787 cf
Primary=1.50 cfs 30,787 cf

Total Runoff Area = 290,997 sf Runoff Volume = 36,728 cf Average Runoff Depth = 1.51"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=2.81"
Tc=5.0 min CN=93 Runoff=16.76 cfs 35,517 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=2.62"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=5.11 cfs 17,001 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=1.49"
Tc=5.0 min CN=77 Runoff=3.92 cfs 7,635 cf

Pond 1P: Gravel Wetland Peak Elev=740.56' Storage=25,098 cf Inflow=14.00 cfs 58,273 cf
Outflow=8.30 cfs 53,153 cf

Pond 3P: Detention Chamber Peak Elev=752.86' Storage=12,410 cf Inflow=16.76 cfs 35,517 cf
Outflow=7.21 cfs 33,637 cf

Link POI-1: Offsite Inflow=8.30 cfs 53,153 cf
Primary=8.30 cfs 53,153 cf

Total Runoff Area = 290,997 sf Runoff Volume = 60,154 cf Average Runoff Depth = 2.48"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=3.61"
Tc=5.0 min CN=93 Runoff=21.15 cfs 45,593 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=3.40"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=6.57 cfs 22,099 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=2.13"
Tc=5.0 min CN=77 Runoff=5.58 cfs 10,912 cf

Pond 1P: Gravel Wetland Peak Elev=740.77' Storage=27,189 cf Inflow=17.76 cfs 76,721 cf
Outflow=12.90 cfs 71,174 cf

Pond 3P: Detention Chamber Peak Elev=753.48' Storage=15,272 cf Inflow=21.15 cfs 45,593 cf
Outflow=8.58 cfs 43,711 cf

Link POI-1: Offsite Inflow=12.90 cfs 71,174 cf
Primary=12.90 cfs 71,174 cf

Total Runoff Area = 290,997 sf Runoff Volume = 78,604 cf Average Runoff Depth = 3.24"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=4.35"
Tc=5.0 min CN=93 Runoff=25.13 cfs 54,879 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=4.13"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=7.90 cfs 26,817 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=2.75"
Tc=5.0 min CN=77 Runoff=7.16 cfs 14,085 cf

Pond 1P: Gravel Wetland Peak Elev=740.97' Storage=29,282 cf Inflow=21.18 cfs 93,896 cf
Outflow=16.04 cfs 88,208 cf

Pond 3P: Detention Chamber Peak Elev=754.12' Storage=17,940 cf Inflow=25.13 cfs 54,879 cf
Outflow=9.79 cfs 52,995 cf

Link POI-1: Offsite Inflow=16.04 cfs 88,208 cf
Primary=16.04 cfs 88,208 cf

Total Runoff Area = 290,997 sf Runoff Volume = 95,780 cf Average Runoff Depth = 3.95"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Lower Lot Runoff Area=151,555 sf 80.02% Impervious Runoff Depth=5.20"
Tc=5.0 min CN=93 Runoff=29.73 cfs 65,703 cf

Subcatchment PS2: Upper Lot Runoff Area=77,959 sf 73.22% Impervious Runoff Depth=4.98"
Flow Length=330' Slope=0.0200 '/' Tc=20.0 min CN=91 Runoff=9.43 cfs 32,332 cf

Subcatchment PS3: Woods Runoff Area=61,483 sf 12.61% Impervious Runoff Depth=3.50"
Tc=5.0 min CN=77 Runoff=9.03 cfs 17,915 cf

Pond 1P: Gravel Wetland Peak Elev=741.23' Storage=32,025 cf Inflow=25.80 cfs 114,065 cf
Outflow=19.36 cfs 108,258 cf

Pond 3P: Detention Chamber Peak Elev=755.14' Storage=20,903 cf Inflow=29.73 cfs 65,703 cf
Outflow=13.08 cfs 63,818 cf

Link POI-1: Offsite Inflow=19.36 cfs 108,258 cf
Primary=19.36 cfs 108,258 cf

Total Runoff Area = 290,997 sf Runoff Volume = 115,950 cf Average Runoff Depth = 4.78"
36.04% Pervious = 104,886 sf 63.96% Impervious = 186,111 sf

Summary for Subcatchment PS1: Lower Lot

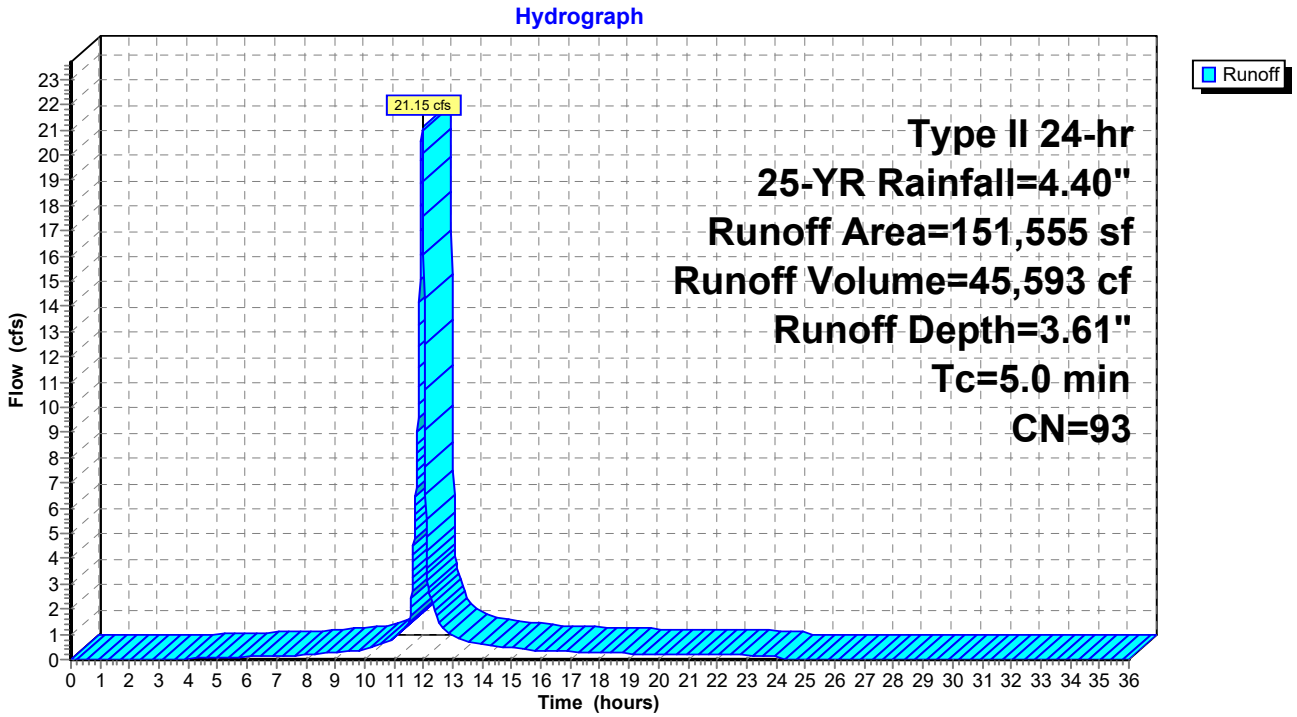
Runoff = 21.15 cfs @ 11.96 hrs, Volume= 45,593 cf, Depth= 3.61"
Routed to Pond 3P : Detention Chamber

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=4.40"

Area (sf)	CN	Description
30,114	71	Meadow, non-grazed, HSG C
0	70	Woods, Good, HSG C
121,275	98	Paved parking, HSG C
166	78	Meadow, non-grazed, HSG D
0	77	Woods, Good, HSG D
0	98	Paved parking, HSG D
151,555	93	Weighted Average
30,280		19.98% Pervious Area
121,275		80.02% Impervious Area

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

Subcatchment PS1: Lower Lot



Summary for Subcatchment PS2: Upper Lot

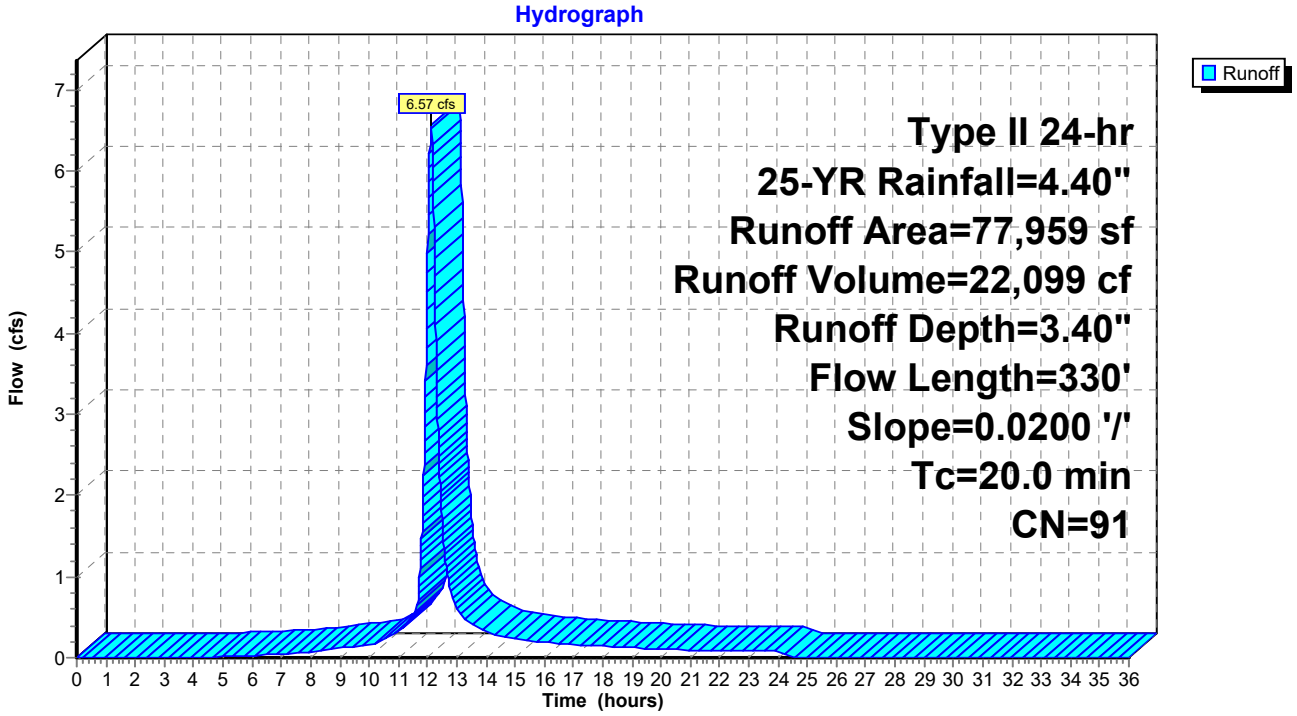
Runoff = 6.57 cfs @ 12.11 hrs, Volume= 22,099 cf, Depth= 3.40"
Routed to Pond 1P : Gravel Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=4.40"

Area (sf)	CN	Description
12,817	71	Meadow, non-grazed, HSG C
0	70	Woods, Good, HSG C
22,541	98	Paved parking, HSG C
8,057	78	Meadow, non-grazed, HSG D
0	77	Woods, Good, HSG D
34,544	98	Paved parking, HSG D
77,959	91	Weighted Average
20,874		26.78% Pervious Area
57,085		73.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.50"
3.9	230	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.0	330	Total			

Subcatchment PS2: Upper Lot



Summary for Subcatchment PS3: Woods

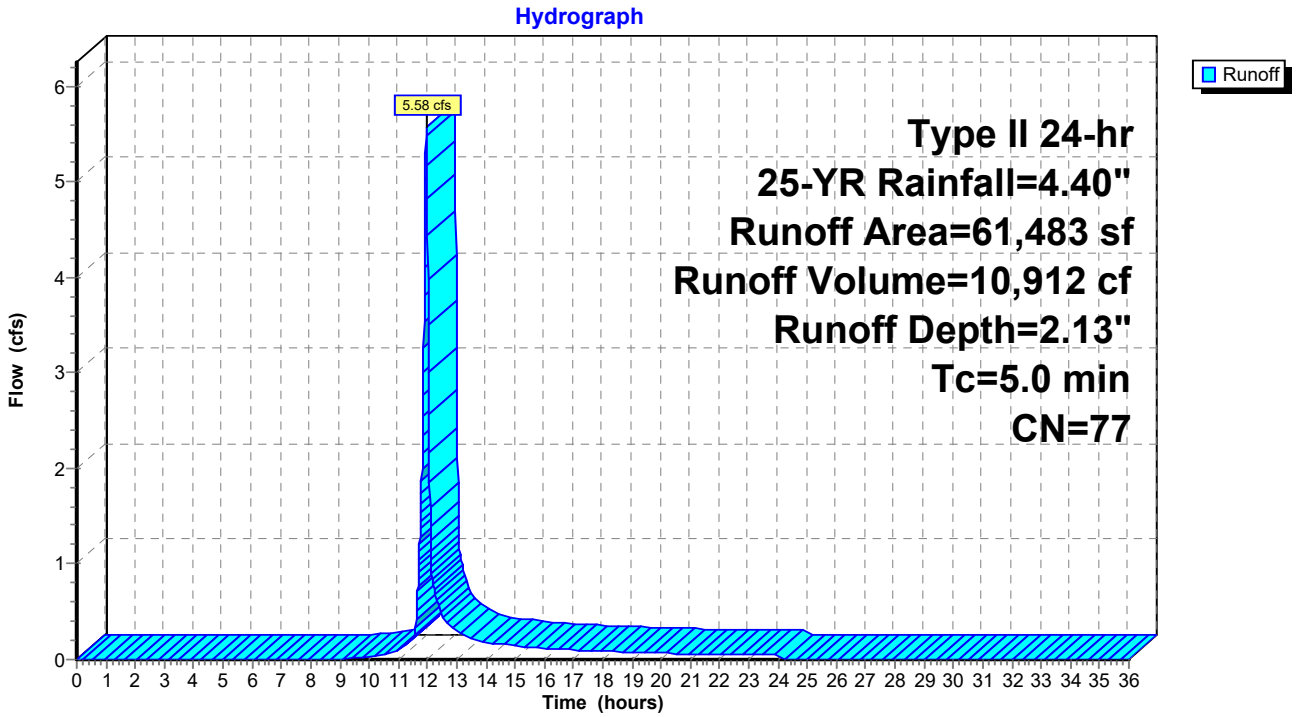
Runoff = 5.58 cfs @ 11.96 hrs, Volume= 10,912 cf, Depth= 2.13"
Routed to Pond 1P : Gravel Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-YR Rainfall=4.40"

Area (sf)	CN	Description
28,383	71	Meadow, non-grazed, HSG C
0	70	Woods, Good, HSG C
7,751	98	Paved parking, HSG C
0	78	Meadow, non-grazed, HSG D
25,349	77	Woods, Good, HSG D
0	98	Paved parking, HSG D
61,483	77	Weighted Average
53,732		87.39% Pervious Area
7,751		12.61% Impervious Area

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

Subcatchment PS3: Woods



Summary for Pond 1P: Gravel Wetland

Inflow Area = 290,997 sf, 63.96% Impervious, Inflow Depth > 3.16" for 25-YR event
Inflow = 17.76 cfs @ 12.00 hrs, Volume= 76,721 cf
Outflow = 12.90 cfs @ 12.24 hrs, Volume= 71,174 cf, Atten= 27%, Lag= 14.1 min
Primary = 12.90 cfs @ 12.24 hrs, Volume= 71,174 cf
Routed to Link POI-1 : Offsite

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 738.00' Surf.Area= 6,645 sf Storage= 4,034 cf
Peak Elev= 740.77' @ 12.24 hrs Surf.Area= 10,166 sf Storage= 27,189 cf (23,156 cf above start)

Plug-Flow detention time= 267.3 min calculated for 67,140 cf (88% of inflow)
Center-of-Mass det. time= 184.0 min (1,009.3 - 825.3)

Volume	Invert	Avail.Storage	Storage Description
#1	736.00'	23,479 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	736.00'	17,287 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		40,766 cf	Total Available Storage

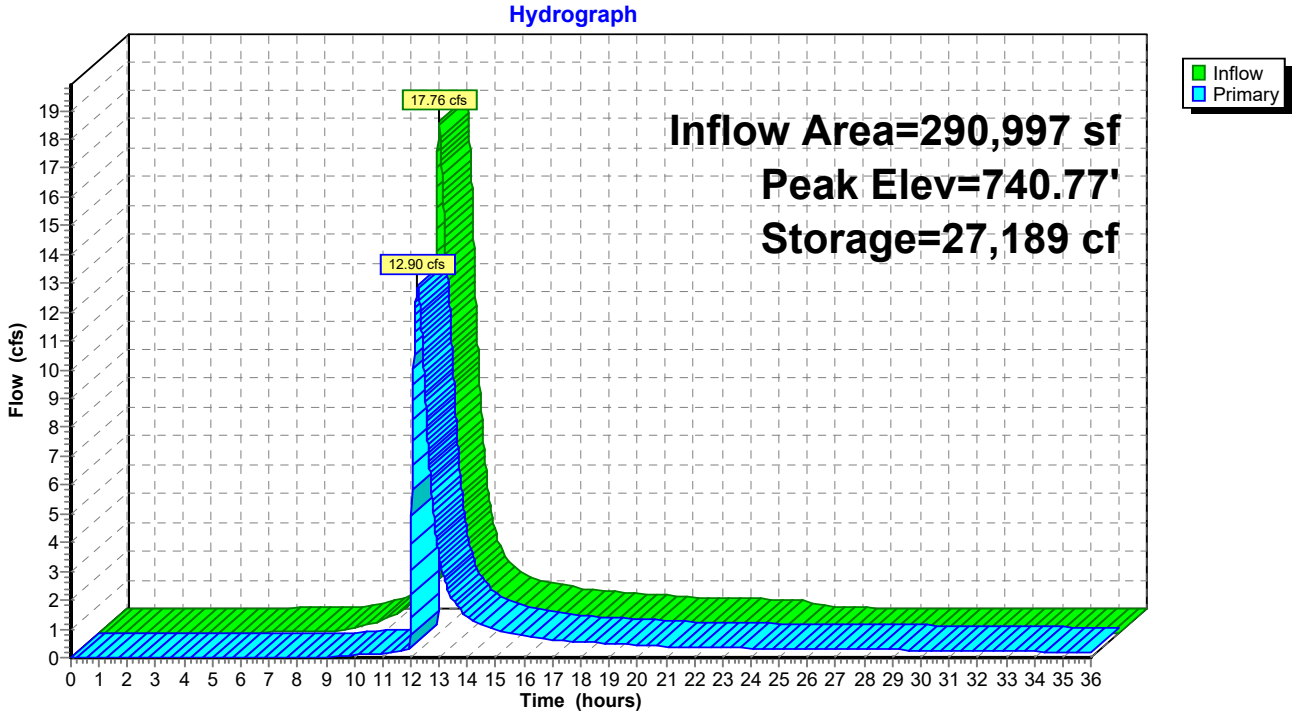
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	3,717	0.0	0	0
737.99	3,717	30.0	2,219	2,219
738.00	3,717	100.0	37	2,256
739.00	4,474	100.0	4,096	6,352
740.00	5,274	100.0	4,874	11,226
741.00	6,116	100.0	5,695	16,921
742.00	7,000	100.0	6,558	23,479

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	2,928	0.0	0	0
737.99	2,928	30.0	1,748	1,748
738.00	2,928	100.0	29	1,777
739.00	3,380	100.0	3,154	4,931
740.00	3,859	100.0	3,620	8,551
741.00	4,362	100.0	4,111	12,661
742.00	4,890	100.0	4,626	17,287

Device	Routing	Invert	Outlet Devices
#1	Primary	738.00'	**36.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 738.00' / 733.00' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	741.70'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	740.00'	**10.0" Vert. Orifice/Grate X 8.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	738.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.93 cfs @ 12.24 hrs HW=740.77' (Free Discharge)
└**1=Culvert** (Passes 12.93 cfs of 38.61 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 12.55 cfs @ 2.98 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.83 fps)

Pond 1P: Gravel Wetland



Summary for Pond 3P: Detention Chamber

Inflow Area = 151,555 sf, 80.02% Impervious, Inflow Depth = 3.61" for 25-YR event
Inflow = 21.15 cfs @ 11.96 hrs, Volume= 45,593 cf
Outflow = 8.58 cfs @ 12.05 hrs, Volume= 43,711 cf, Atten= 59%, Lag= 5.8 min
Primary = 8.58 cfs @ 12.05 hrs, Volume= 43,711 cf
Routed to Pond 1P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 753.48' @ 12.05 hrs Surf.Area= 6,081 sf Storage= 15,272 cf

Plug-Flow detention time= 82.7 min calculated for 43,699 cf (96% of inflow)
Center-of-Mass det. time= 58.2 min (836.1 - 777.9)

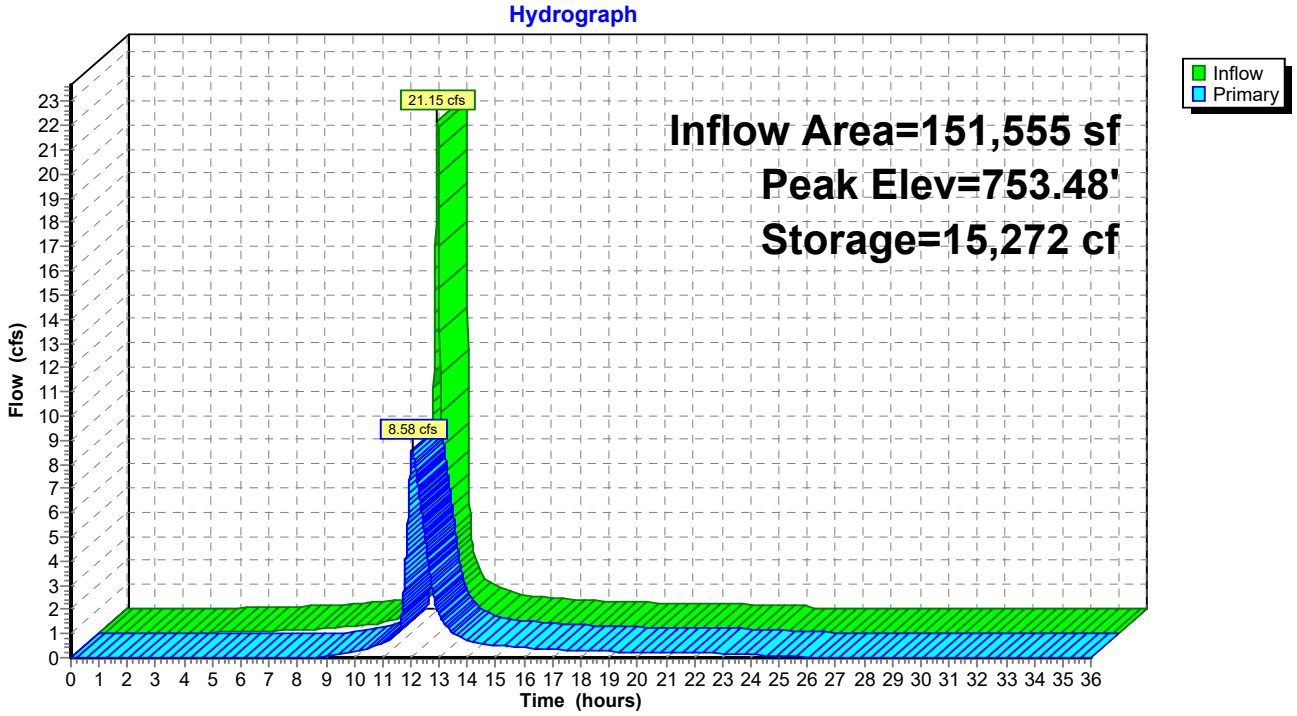
Volume	Invert	Avail.Storage	Storage Description
#1A	750.00'	8,385 cf	**30.25'W x 201.03'L x 5.75'H Field A** 34,967 cf Overall - 14,005 cf Embedded = 20,962 cf x 40.0% Voids
#2A	750.75'	14,005 cf	**Cultec R-902HD** x 216 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 216 Chambers in 4 Rows Cap Storage= 2.8 cf x 2 x 4 rows = 22.1 cf
		22,390 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	750.75'	**36.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.75' / 745.00' S= 0.0261 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	755.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	750.75'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=8.58 cfs @ 12.05 hrs HW=753.48' (Free Discharge)
└─**1=Culvert** (Passes 8.58 cfs of 38.02 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 8.58 cfs @ 6.99 fps)

Pond 3P: Detention Chamber

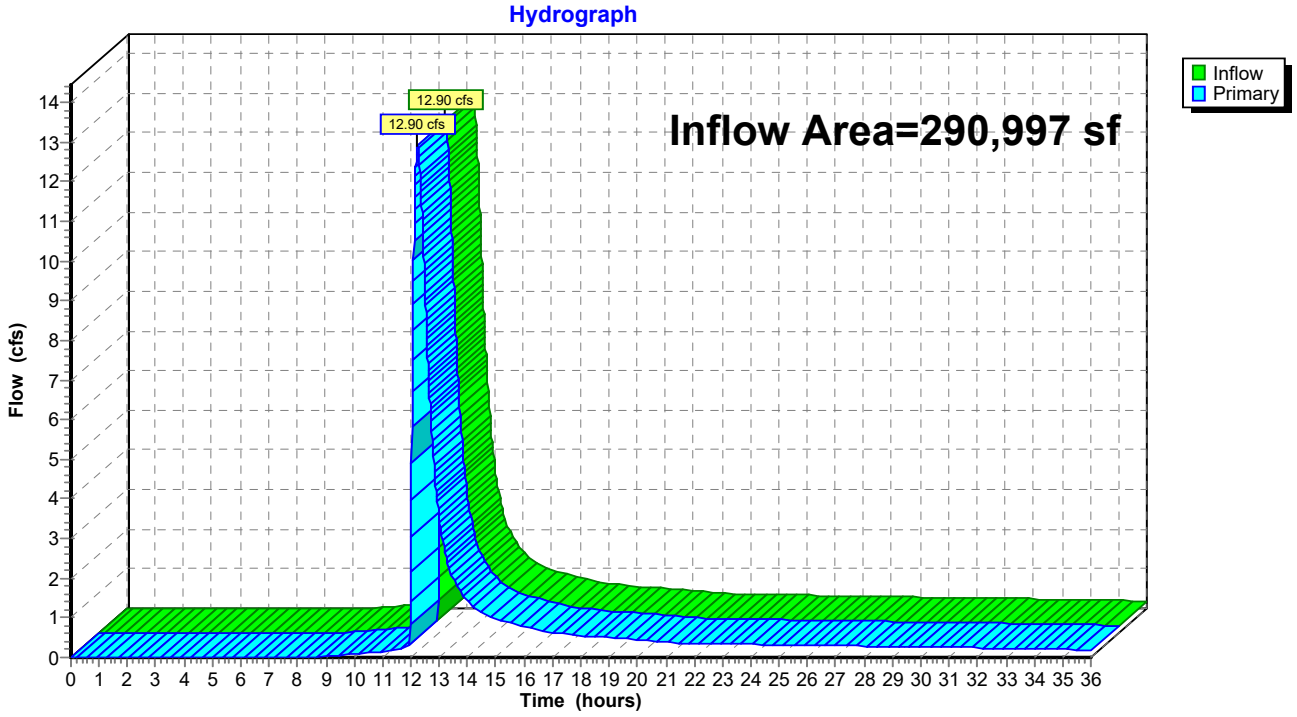


Summary for Link POI-1: Offsite

Inflow Area = 290,997 sf, 63.96% Impervious, Inflow Depth > 2.94" for 25-YR event
Inflow = 12.90 cfs @ 12.24 hrs, Volume= 71,174 cf
Primary = 12.90 cfs @ 12.24 hrs, Volume= 71,174 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link POI-1: Offsite



Summary for Pond 1P: Gravel Wetland

Inflow Area = 290,997 sf, 63.96% Impervious, Inflow Depth > 3.87" for 50-YR event
Inflow = 21.18 cfs @ 12.00 hrs, Volume= 93,896 cf
Outflow = 16.04 cfs @ 12.21 hrs, Volume= 88,208 cf, Atten= 24%, Lag= 12.9 min
Primary = 16.04 cfs @ 12.21 hrs, Volume= 88,208 cf
Routed to Link POI-1 : Offsite

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 738.00' Surf.Area= 6,645 sf Storage= 4,034 cf
Peak Elev= 740.97' @ 12.21 hrs Surf.Area= 10,439 sf Storage= 29,282 cf (25,248 cf above start)

Plug-Flow detention time= 223.8 min calculated for 84,152 cf (90% of inflow)
Center-of-Mass det. time= 153.9 min (972.0 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	736.00'	23,479 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	736.00'	17,287 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		40,766 cf	Total Available Storage

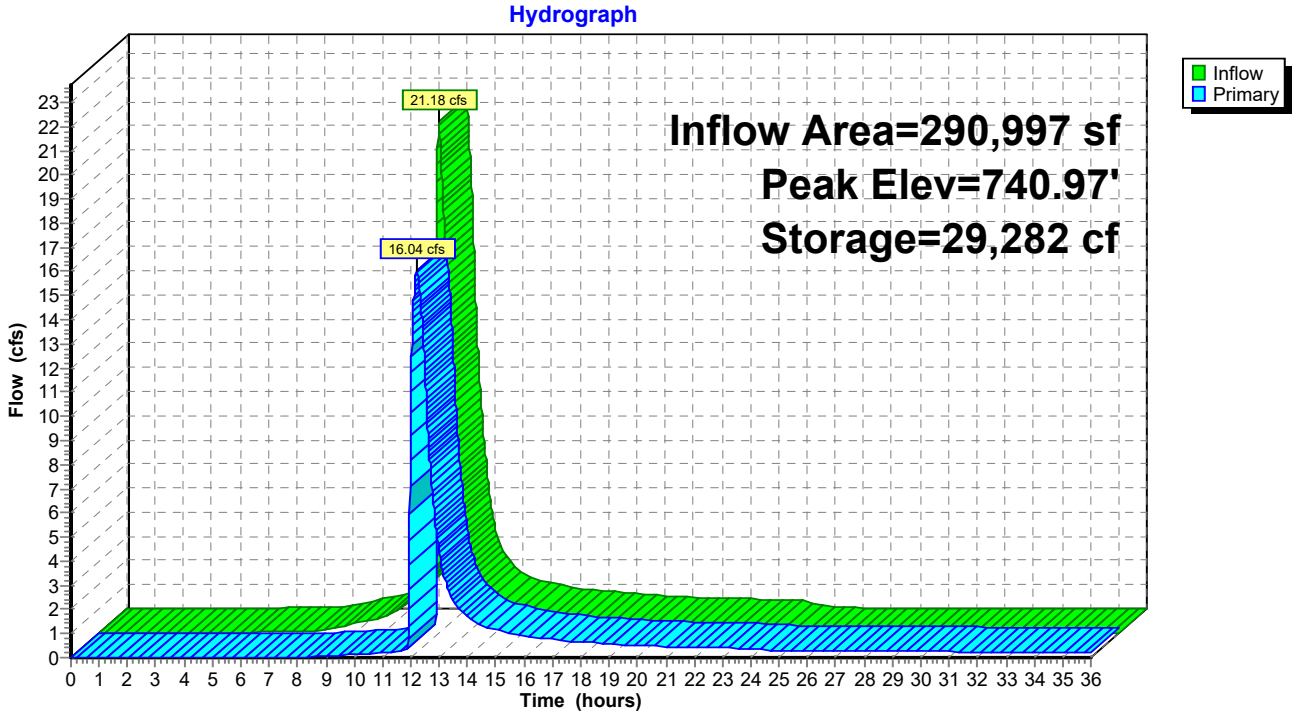
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	3,717	0.0	0	0
737.99	3,717	30.0	2,219	2,219
738.00	3,717	100.0	37	2,256
739.00	4,474	100.0	4,096	6,352
740.00	5,274	100.0	4,874	11,226
741.00	6,116	100.0	5,695	16,921
742.00	7,000	100.0	6,558	23,479

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	2,928	0.0	0	0
737.99	2,928	30.0	1,748	1,748
738.00	2,928	100.0	29	1,777
739.00	3,380	100.0	3,154	4,931
740.00	3,859	100.0	3,620	8,551
741.00	4,362	100.0	4,111	12,661
742.00	4,890	100.0	4,626	17,287

Device	Routing	Invert	Outlet Devices
#1	Primary	738.00'	**36.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 738.00' / 733.00' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	741.70'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	740.00'	**10.0" Vert. Orifice/Grate X 8.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	738.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.04 cfs @ 12.21 hrs HW=740.97' (Free Discharge)
└**1=Culvert** (Passes 16.04 cfs of 41.42 cfs potential flow)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Orifice Controls 15.64 cfs @ 3.59 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.12 fps)

Pond 1P: Gravel Wetland



Summary for Pond 3P: Detention Chamber

Inflow Area = 151,555 sf, 80.02% Impervious, Inflow Depth = 4.35" for 50-YR event
Inflow = 25.13 cfs @ 11.96 hrs, Volume= 54,879 cf
Outflow = 9.79 cfs @ 12.06 hrs, Volume= 52,995 cf, Atten= 61%, Lag= 5.9 min
Primary = 9.79 cfs @ 12.06 hrs, Volume= 52,995 cf
Routed to Pond 1P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 754.12' @ 12.06 hrs Surf.Area= 6,081 sf Storage= 17,940 cf

Plug-Flow detention time= 76.0 min calculated for 52,995 cf (97% of inflow)
Center-of-Mass det. time= 55.0 min (828.0 - 773.0)

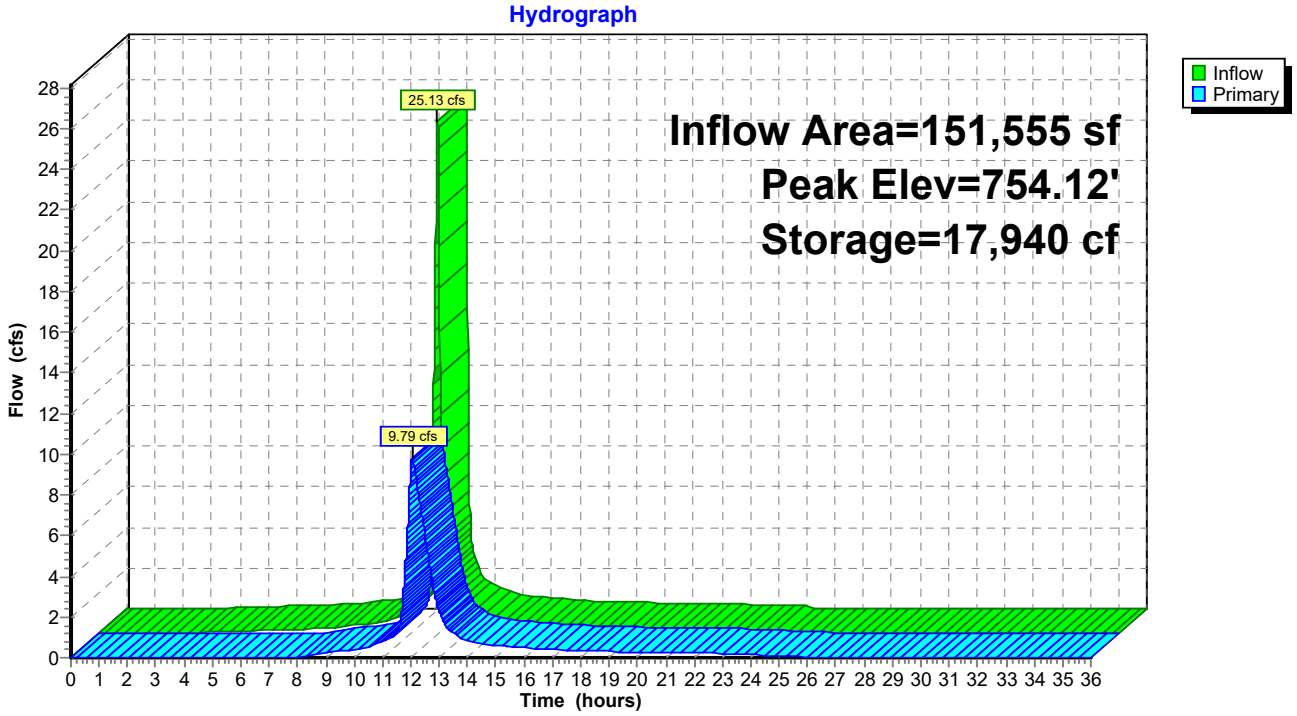
Volume	Invert	Avail.Storage	Storage Description
#1A	750.00'	8,385 cf	**30.25'W x 201.03'L x 5.75'H Field A** 34,967 cf Overall - 14,005 cf Embedded = 20,962 cf x 40.0% Voids
#2A	750.75'	14,005 cf	**Cultec R-902HD** x 216 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 216 Chambers in 4 Rows Cap Storage= 2.8 cf x 2 x 4 rows = 22.1 cf
		22,390 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	750.75'	**36.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.75' / 745.00' S= 0.0261 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	755.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	750.75'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.79 cfs @ 12.06 hrs HW=754.12' (Free Discharge)
└─**1=Culvert** (Passes 9.79 cfs of 46.52 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 9.79 cfs @ 7.97 fps)

Pond 3P: Detention Chamber



Summary for Pond 1P: Gravel Wetland

Inflow Area = 290,997 sf, 63.96% Impervious, Inflow Depth > 4.70" for 100-YR event
Inflow = 25.80 cfs @ 12.04 hrs, Volume= 114,065 cf
Outflow = 19.36 cfs @ 12.20 hrs, Volume= 108,258 cf, Atten= 25%, Lag= 9.3 min
Primary = 19.36 cfs @ 12.20 hrs, Volume= 108,258 cf
Routed to Link POI-1 : Offsite

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 738.00' Surf.Area= 6,645 sf Storage= 4,034 cf
Peak Elev= 741.23' @ 12.20 hrs Surf.Area= 10,802 sf Storage= 32,025 cf (27,991 cf above start)

Plug-Flow detention time= 191.1 min calculated for 104,224 cf (91% of inflow)
Center-of-Mass det. time= 131.2 min (942.6 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	736.00'	23,479 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	736.00'	17,287 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		40,766 cf	Total Available Storage

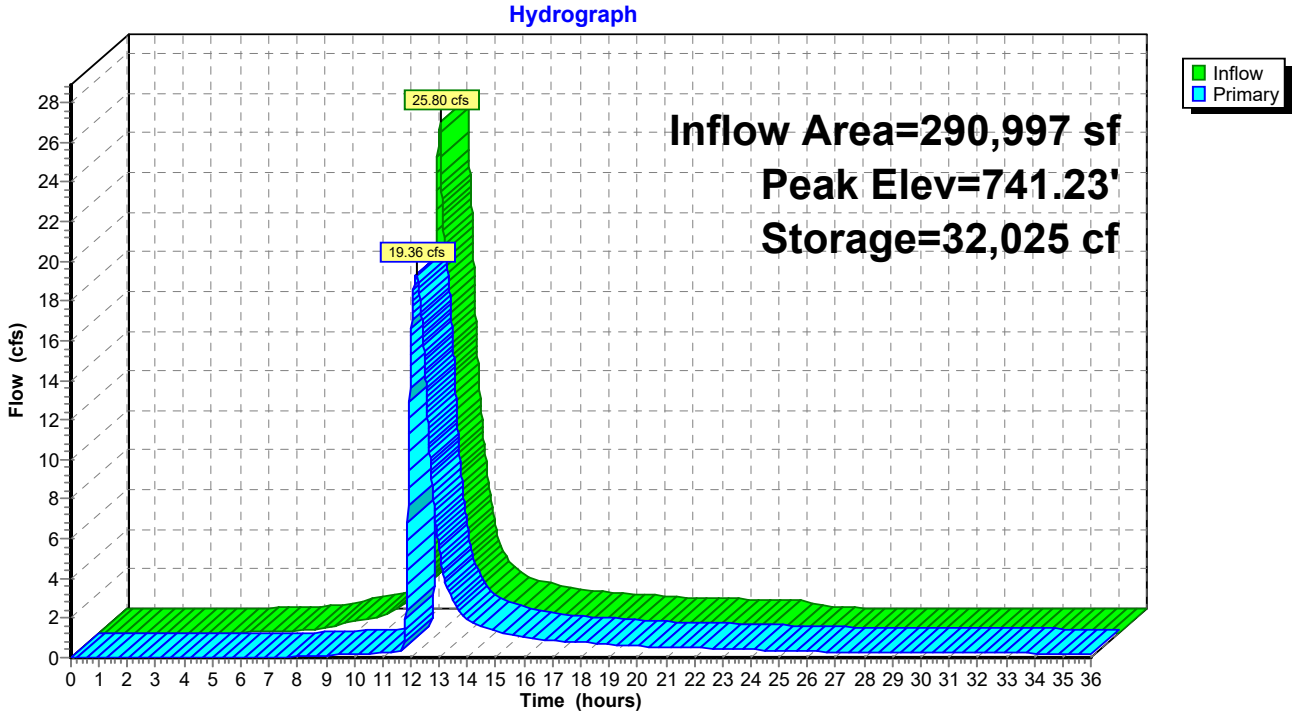
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	3,717	0.0	0	0
737.99	3,717	30.0	2,219	2,219
738.00	3,717	100.0	37	2,256
739.00	4,474	100.0	4,096	6,352
740.00	5,274	100.0	4,874	11,226
741.00	6,116	100.0	5,695	16,921
742.00	7,000	100.0	6,558	23,479

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
736.00	2,928	0.0	0	0
737.99	2,928	30.0	1,748	1,748
738.00	2,928	100.0	29	1,777
739.00	3,380	100.0	3,154	4,931
740.00	3,859	100.0	3,620	8,551
741.00	4,362	100.0	4,111	12,661
742.00	4,890	100.0	4,626	17,287

Device	Routing	Invert	Outlet Devices
#1	Primary	738.00'	**36.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 738.00' / 733.00' S= 0.1250 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	741.70'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	740.00'	**10.0" Vert. Orifice/Grate X 8.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	738.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.36 cfs @ 12.20 hrs HW=741.23' (Free Discharge)
└─**1=Culvert** (Passes 19.36 cfs of 44.76 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Orifice Controls 18.94 cfs @ 4.34 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.48 fps)

Pond 1P: Gravel Wetland



Summary for Pond 3P: Detention Chamber

Inflow Area = 151,555 sf, 80.02% Impervious, Inflow Depth = 5.20" for 100-YR event
Inflow = 29.73 cfs @ 11.96 hrs, Volume= 65,703 cf
Outflow = 13.08 cfs @ 12.05 hrs, Volume= 63,818 cf, Atten= 56%, Lag= 5.6 min
Primary = 13.08 cfs @ 12.05 hrs, Volume= 63,818 cf
Routed to Pond 1P : Gravel Wetland

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 755.14' @ 12.05 hrs Surf.Area= 6,081 sf Storage= 20,903 cf

Plug-Flow detention time= 69.7 min calculated for 63,800 cf (97% of inflow)
Center-of-Mass det. time= 51.9 min (820.4 - 768.4)

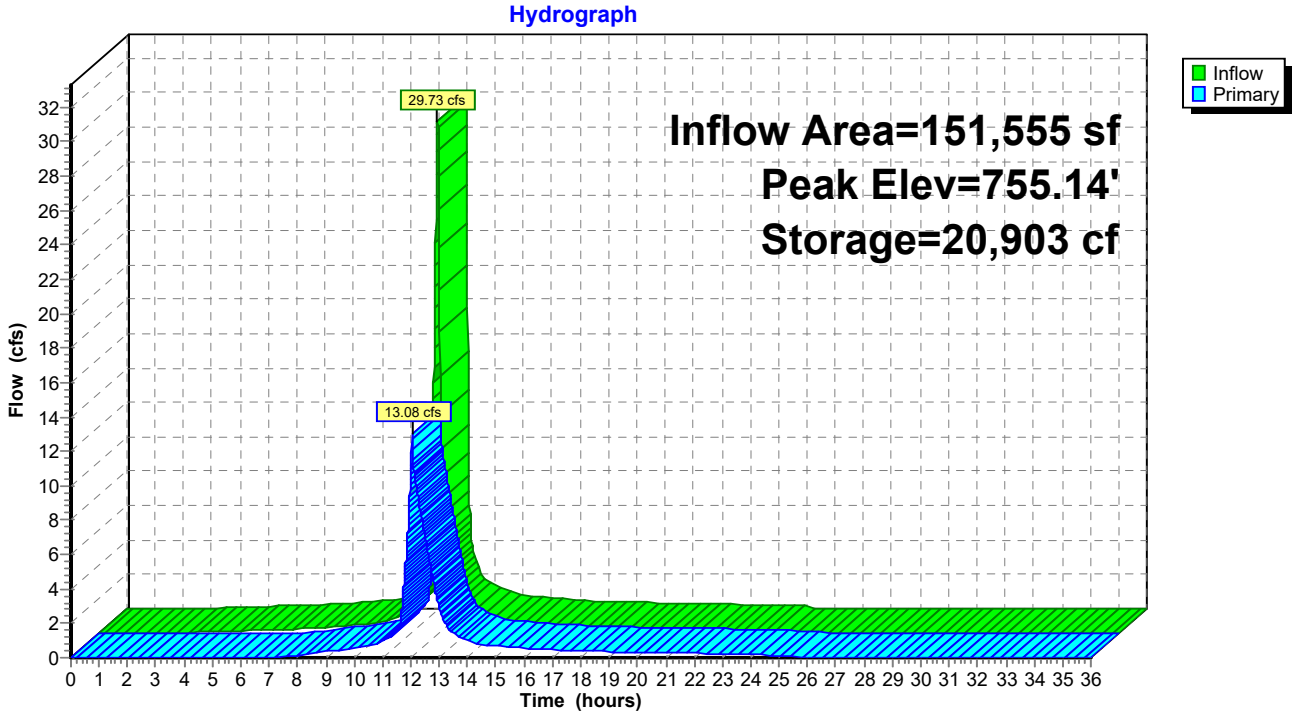
Volume	Invert	Avail.Storage	Storage Description
#1A	750.00'	8,385 cf	**30.25'W x 201.03'L x 5.75'H Field A** 34,967 cf Overall - 14,005 cf Embedded = 20,962 cf x 40.0% Voids
#2A	750.75'	14,005 cf	**Cultec R-902HD** x 216 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap 216 Chambers in 4 Rows Cap Storage= 2.8 cf x 2 x 4 rows = 22.1 cf
		22,390 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	750.75'	**36.0" Round Culvert** L= 220.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.75' / 745.00' S= 0.0261 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	755.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	750.75'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.04 cfs @ 12.05 hrs HW=755.14' (Free Discharge)
└**1=Culvert** (Passes 13.04 cfs of 57.84 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 1.58 cfs @ 1.21 fps)
  └**3=Orifice/Grate** (Orifice Controls 11.46 cfs @ 9.34 fps)

Pond 3P: Detention Chamber



402 MT SUPPORT RD
RESIDENTIAL DEVELOPMENT
GRAFTON COUNTY, CITY OF LEBANON, NH

5. PIPE SIZING CALCULATIONS

402 Mount Support

EV Project #: 19324

Date: 12/14/2021

Pipe Capacity Analysis

Item	Pipe Name	Dia (in.)	n	s	Q25	Qmax	%Qmax
1	D9-D8	12	0.020	0.038	1.92	4.86	39.40
2	D8-D7	15	0.020	0.043	2.93	9.37	31.32
2	D7-D6	15	0.020	0.068	3.51	11.78	29.80
3	D6-D5	18	0.020	0.040	3.92	14.69	26.72
4	D5-3P	24	0.020	0.012	6.89	17.33	39.78
5	D15-D14	12	0.020	0.012	2.15	2.73	78.89
6	D14-D13	15	0.020	0.022	4.15	6.7	61.89
7	D13-D10	24	0.020	0.010	6.74	15.82	42.62
8	D10-3P	24	0.020	0.019	8.95	21.8	41.05
9	D4-3P	24	0.020	0.012	1.82	17.33	10.50
10	D19-D20	12	0.020	0.012	2.14	2.73	78.40
11	D22-D21	12	0.020	0.015	2.17	3.05	71.05
12	D18-D24	15	0.020	0.064	4.31	11.43	37.69
13	D17-1P	15	0.020	0.201	7.44	20.25	36.73
14	1P-D46	24	0.020	0.095	25.45	48.75	52.20

Qmax: http://www.hawsedc.com/engcalcs/Manning-Pipe-Flow.php

Inlet Grate Capacity of EJCO 5520M5 (weir flow)

WATER DEPTH (IN):	FLOW CAPACITY (CFS):
1	0.6
2	1.8
3	3.3

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D9-D8

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.574 acres

Runoff Coefficient, **C** = 0.544

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min
(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **1.92** cfs

	sf	ac	C
A-total	*25,000*	0.574	
A-imperv	*10,500*	0.241	0.95
A-pervious	*14,500*	0.333	0.25
		Weighted C =	0.544

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D8-D7

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.253 acres

Runoff Coefficient, **C** = 0.658

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **1.02** cfs

	sf	ac	C
A-total	*11,000*	0.253	
A-imperv	*7,000*	0.161	0.95
A-pervious	*5,000*	0.115	0.25
		Weighted C =	0.658

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D7-D6

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.099 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **0.58** cfs

	sf	ac	C
A-total	*4,300*	0.099	
A-imperv	*4,300*	0.099	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D6-D5

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.071 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **0.41** cfs

	sf	ac	C
A-total	*3,100*	0.071	
A-imperv	*3,100*	0.071	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D5-3P

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.510 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.97** cfs

	sf	ac	C
A-total	*22,200*	0.510	
A-imperv	*22,200*	0.510	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D15-D14

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.370 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.15** cfs

	sf	ac	C
A-total	*16,100*	0.370	
A-imperv	*16,100*	0.370	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D14-D13

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.342 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **1.99** cfs

	sf	ac	C
A-total	*14,900*	0.342	
A-imperv	*14,900*	0.342	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D13-D10

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.445 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.60** cfs

	sf	ac	C
A-total	*19,400*	0.445	
A-imperv	*19,400*	0.445	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D10-3P

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.379 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.21** cfs

	sf	ac	C
A-total	*16,500*	0.379	
A-imperv	*16,500*	0.379	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D4-3P

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.312 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **1.82** cfs

	sf	ac	C
A-total	*13,600*	0.312	
A-imperv	*13,600*	0.312	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D20-D19

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.592 acres

Runoff Coefficient, **C** = 0.589

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.14** cfs

	sf	ac	C
A-total	*25,800*	0.592	
A-imperv	*12,500*	0.287	0.95
A-pervious	*13,300*	0.305	0.25
		Weighted C =	0.589

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D22-D21

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.372 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.17** cfs

	sf	ac	C
A-total	*16,200*	0.372	
A-imperv	*16,200*	0.372	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D18-D24

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.680 acres

Runoff Coefficient, **C** = 0.891

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **3.71** cfs

	sf	ac	C
A-total	*29,600*	0.680	
A-imperv	*27,100*	0.622	0.95
A-pervious	*2,500*	0.057	0.25
		Weighted C =	0.891

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D17-1P

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 0.165 acres

Runoff Coefficient, **C** = 0.950

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **0.96** cfs

	sf	ac	C
A-total	*7,200*	0.165	
A-imperv	*7,200*	0.165	0.95
A-pervious	-	0.000	0.25
		Weighted C =	0.950

Design Rainfall Intensity and Peak Storm Water Runoff Rate

D9-D8

(for specified return period and storm duration)

Inputs

Drainage Area, **A** = 1.411 acres

Runoff Coefficient, **C** = 0.250

Design Return Period = *25* yrs

Design Storm Duration, **d** = *5* min

(= time of concentration)

IDF (intensity-duration-frequency) data from http://precip.eas.cornell.edu/ for the design location

Input i, in/hr	Input d, min	Calculated 1/i, hr/in
6.18	*5*	0.16
4.7	*10*	0.21
3.9	*15*	0.26

Calculation of equation constants (**a** & **b**) using linear regression:

slope = 0.009460 = 1/**a**

a = 1/slope = **106**

intercept = 0.1157 = **b**/**a**

b = **a***intercept = **12.2**

Calculation of Design Rainfall Intensity, i, using the equation: **i = a/(d + b)**:

(using the value for storm duratin, **d**, specified above)

Design Rainfall Intensity, **i** = **6.13** in/hr

Calculation of Design Peak Storm Water Runoff Rate, **Q**, using the equation: **Q = CiA**

Design Peak Storm Water Runoff Rate, **Q** = **2.16** cfs

	sf	ac	C
A-total	*61,483*	1.411	
A-imperv		0.000	0.95
A-pervious	*61,483*	1.411	0.25
		Weighted C =	0.250

PLOTTED: 10/4/2022 11:33 AM

DRAINAGE LEGEND

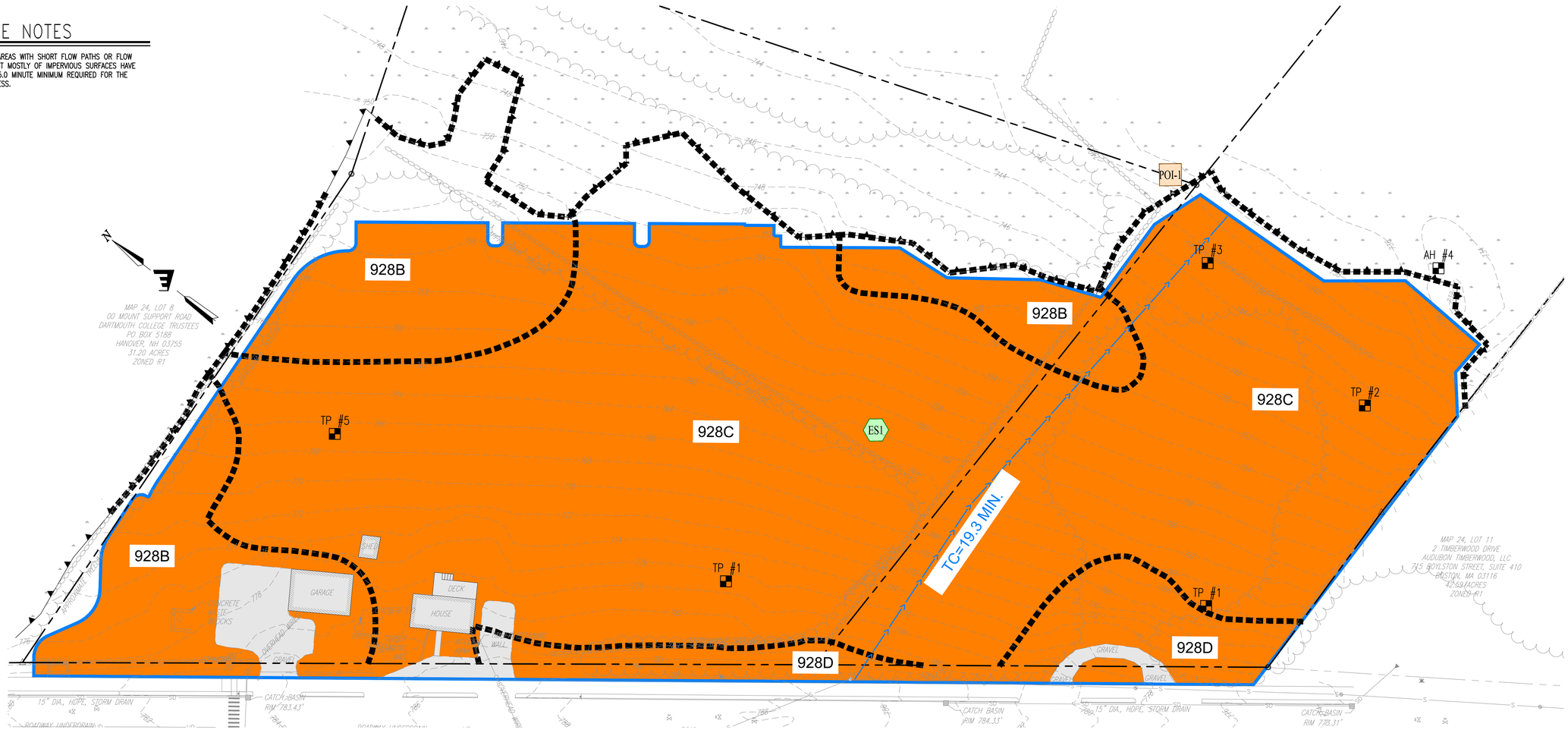
- ES1 – SUBCATCHMENT DESIGNATION
- – TIME OF CONCENTRATION (Tc) PATH
- – SUBCATCHMENT BOUNDARIES
- PoI-# – POINT OF INTEREST
- C# – POINT OF INTEREST / CB

DRAINAGE NOTES

* – Tc IN SMALL AREAS WITH SHORT FLOW PATHS OR FLOW PATHS THAT CONSIST MOSTLY OF IMPERVIOUS SURFACES HAVE BEEN SET AT THE 5.0 MINUTE MINIMUM REQUIRED FOR THE CALCULATION PROCESS.

EXISTING DRAINAGE AREAS

	ES1	Total
Meadow, non-grazed, HSG C	133,104	133,104
Woods, good, HSG C	146,647	146,647
Paved Parking, HSG C	11,243	11,243
Total	290,994	290,994



GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.
for sheet size 24" x 36"

SOILS MAPPING LEGEND

SSSM – SITE SPECIFIC SOILS MAPPING

- 130A – SSSM SOIL MAP UNIT SYMBOL
- – SSSM HYDROLOGIC SOIL GROUP "A"
- – SSSM HYDROLOGIC SOIL GROUP "B"
- – SSSM HYDROLOGIC SOIL GROUP "C"
- – SSSM HYDROLOGIC SOIL GROUP "D"
- – IMPERVIOUS
- – SSSM SOILS BOUNDARY

NRCS – NATURAL RESOURCES CONSERVATION SERVICE

- 1324 – NRCS SOIL MAP UNIT SYMBOL
- – NRCS HYDROLOGIC SOIL GROUP "A"
- – NRCS HYDROLOGIC SOIL GROUP "B"
- – NRCS HYDROLOGIC SOIL GROUP "C"
- – NRCS HYDROLOGIC SOIL GROUP "D"
- – IMPERVIOUS
- – NRCS SOIL BOUNDARY

Stamp

No.	Description	Date

ENGINEERING VENTURES PC
208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-6225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9353
414 Union Street, Schenectady, NY 12305 • 518-639-9814
www.engineeringventures.com

MT SUPPORT DEVELOPMENT, LLC
ANAGNOST INVESTMENTS
& THE BRAVERMAN COMPANY
214 BARNES HILL ROAD
STOWE, VT 05672
802-343-6330

Sheet Title: EXISTING DRAINAGE BOUNDARY AND SITE SPECIFIC SOILS MAPPING

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	AM
Checked By:	NAF
Scale:	1" = 20'
Date:	11/18/21

D1.1

S:\PROJECTS\2-2019\19324 402 MT. SUPPORT RD\DWG\SHEET FILES\19324 D1.1 DRAINAGE AND SITE SPECIFIC SOILS.DWG

PLOTTED: 12/4/2022 11:34 AM

DRAINAGE LEGEND

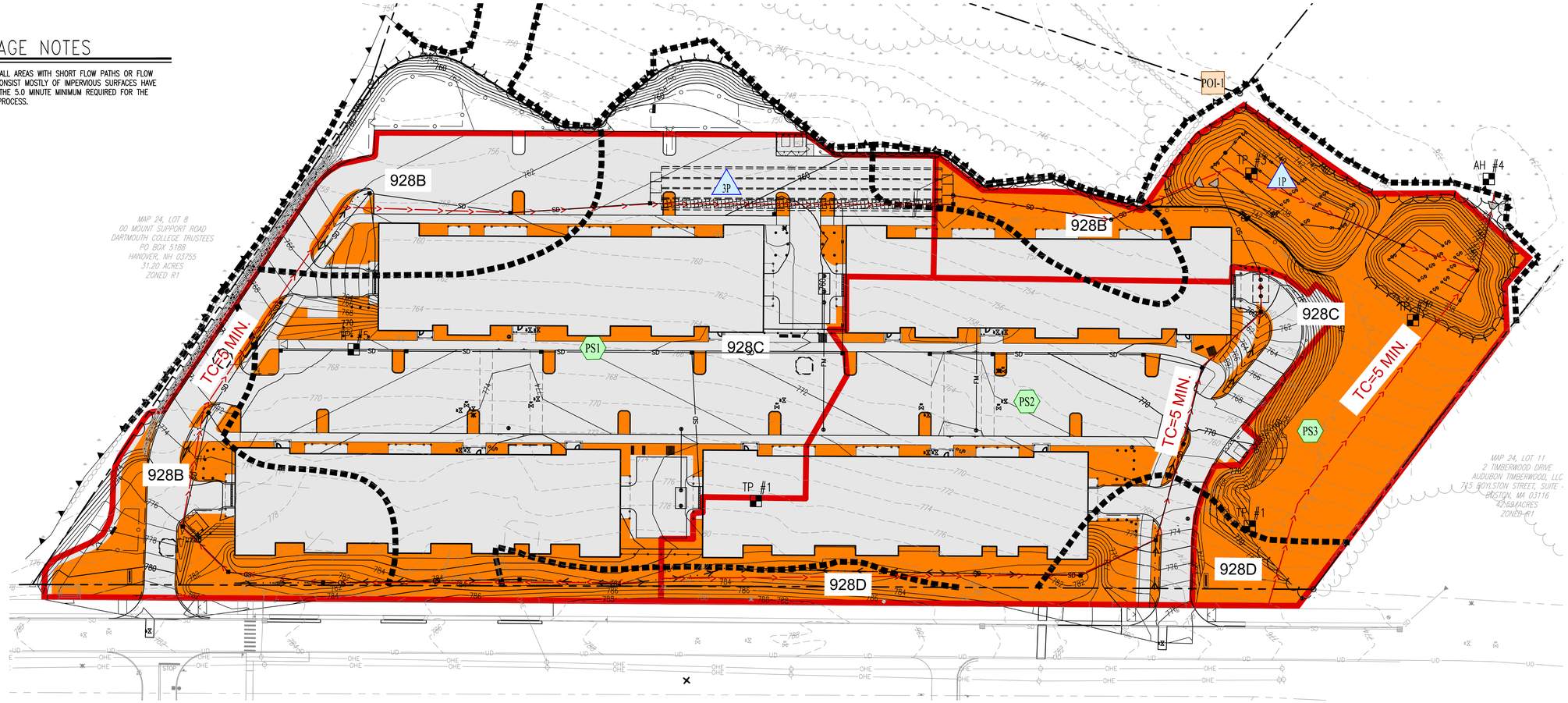
- PS# – SUBCATCHMENT DESIGNATION
- – TIME OF CONCENTRATION (Tc) PATH
- – SUBCATCHMENT BOUNDARIES
- ### – D1: BRENTWOOD STORM CHAMBERS
- DMH#: DRAINAGE MANHOLE
- CB#: CATCH BASIN
- PoI-# – POINT OF INTEREST

DRAINAGE NOTES

* – Tc IN SMALL AREAS WITH SHORT FLOW PATHS OR FLOW PATHS THAT CONSIST MOSTLY OF IMPERVIOUS SURFACES HAVE BEEN SET AT THE 5.0 MINUTE MINIMUM REQUIRED FOR THE CALCULATION PROCESS.

PROPOSED DRAINAGE AREAS

	PS1	PS2	PS3	Total
Meadow, non-grazed, HSG C	30280	20874	28383	79536
Woods, good, HSG C	0	0	25349	25349
Paved Parking, HSG C	121275	57084	7751	186111
Total	151555	77958	61482	290995



N

GRAPHIC SCALE

40 0 20 40 80 160

1 inch = 40 ft.
for sheet size 24" x 36"

SOILS MAPPING LEGEND

SSSM – SITE SPECIFIC SOILS MAPPING

- 130A – SSSM SOIL MAP UNIT SYMBOL
- – SSSM HYDROLOGIC SOIL GROUP "A"
- – SSSM HYDROLOGIC SOIL GROUP "B"
- – SSSM HYDROLOGIC SOIL GROUP "C"
- – SSSM HYDROLOGIC SOIL GROUP "D"
- – IMPERVIOUS
- – SSSM SOILS BOUNDARY

NRCS – NATURAL RESOURCES CONSERVATION SERVICE

- *130A* – NRCS SOIL MAP UNIT SYMBOL
- – NRCS HYDROLOGIC SOIL GROUP "A"
- – NRCS HYDROLOGIC SOIL GROUP "B"
- – NRCS HYDROLOGIC SOIL GROUP "C"
- – NRCS HYDROLOGIC SOIL GROUP "D"
- – IMPERVIOUS
- – NRCS SOIL BOUNDARY

Stamp

No.	Description	Date

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STOWE, VT 05672
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Sheet Title: PROPOSED DRAINAGE BOUNDARY AND SITE SPECIFIC SOILS MAPPING

Project Title: 402 MT SUPPORT ROAD RESIDENTIAL DEVELOPMENT
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	19324
Drawn By:	AM
Checked By:	NAF
Scale:	1" = 20'
Date:	11/18/21

D1.2

S:\PROJECTS\D-2018\19324 402 MT. SUPPORT RD\DWG\SHEET FILES\19324 D1.1 DRAINAGE AND SITE SPECIFIC SOILS.DWG

Doiron Environmental LLC
720 Browns Ridge Road
Ossipee, NH 03864
(603) 581-4478

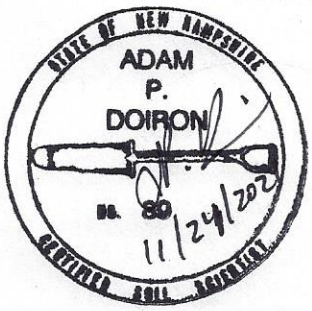
SOIL EVALUATION REPORT
Tax Map 24, Lots 9 & 10
402 Mount Support Road
Lebanon, New Hampshire

TEST PIT # 1 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
^Au	0-7	10YR3/1, fine sandy loam, <2% coarse fragments, moderate fine granular, friable, common fine & medium roots, artifacts include bricks, wiring, & glass (Fill material & mixing)
2Ap	7-14	10YR3/1, loam, <5% gravel & cobbles, moderate fine granular, friable, few fine roots (some mixing)
2Bg	14-24	5Y4/2, loam, 5% gravel, strong medium subangular blocky, friable, few fine roots, common prominent 7.5YR3/3 redoximorphic concentrations
2Cdg1	24-35	5Y4/2, loam, 5% gravel, massive, firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations
2Cdg2	35-82	5Y4/2, loam, 5% gravel, massive, very firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations, common distinct 10Y4/1 redoximorphic depletions

Estimated Seasonal High Water Table @ 14 inches — Observed Water Table @ 27 inches
Restrictive @ 24 inches — Refusal @ None — Roots @ 22 inches

Notes: 1. Soil Map Unit Name: Pittstown Variant (Somewhat Poorly Drained)
2. Surface dominated by Japanese knotweed (*Reynoutria japonica*).
3. No surface stones.



Doiron Environmental LLC
720 Browns Ridge Road
Ossipee, NH 03864
(603) 581-4478

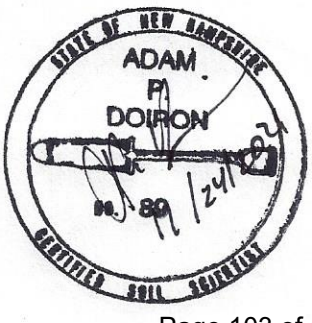
SOIL EVALUATION REPORT
Tax Map 24, Lots 9 & 10
402 Mount Support Road
Lebanon, New Hampshire

TEST PIT # 2 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
Ap1	0-13	10YR3/1, loam, 5% gravel, moderate fine granular, friable, many very fine to very coarse roots
Ap2	13-18	5Y3/2, loam, 5% gravel & cobbles, moderate medium granular, friable, common very fine to very coarse roots
Bg	18-27	5Y4/2, loam, 5% gravel & cobbles, moderate medium subangular blocky, friable, common very fine to very coarse roots, common prominent 7.5YR3/3 redoximorphic concentrations
Cdg	27-41	2.5Y4/2, fine sandy loam, 5% gravel & cobbles, massive, firm, no roots, common distinct 7.5YR3/3 redoximorphic concentrations
Cd	41-74	5Y3/2, loam, 5% gravel & cobbles, massive, firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations

Estimated Seasonal High Water Table @ 18 inches
Restrictive @ 27 inches Refusal @ None
Observed Water Table @ 32 inches
Roots @ 27 inches

Notes: 1. Soil Map Unit Name: Pittstown
2. Overgrown field.
3. No surface stones.



Doiron Environmental LLC
720 Browns Ridge Road
Ossipee, NH 03864
(603) 581-4478

SOIL EVALUATION REPORT
Tax Map 24, Lots 9 & 10
402 Mount Support Road
Lebanon, New Hampshire

TEST PIT # 3 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
Ap1	0-11	10YR3/1, loam, 5% gravel, moderate fine granular, friable
Ap2	11-14	5Y2.5/2, loam, <5% gravel & cobbles, moderate fine granular, very friable, common prominent 7.5YR3/3 redoximorphic concentrations
Bg	14-35	2.5Y4/1, loam, <5% gravel & cobbles, massive, friable, common prominent 7.5YR3/3 redoximorphic concentrations
Cdg	35-68	5Y4/2, loam, <5% gravel & cobbles, massive, firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations, common distinct 10Y4/1 redoximorphic depletions

Estimated Seasonal High Water Table @ 11 inches — Observed Water Table @ 32 inches
Restrictive @ 35 inches — Refusal @ None — Roots @ 35 inches

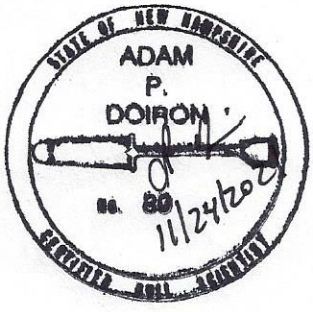
Notes: 1. Soil Map Unit Name: Pittstown Variant (Somewhat Poorly Drained)
2. Overgrown field.
3. No surface stones.

TEST PIT # 4 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
Ap1	0-11	10YR3/1, loam, <2% coarse fragments, weak fine granular, very friable, common very fine to fine roots
Ap2	11-21	10YR3/2, loam, <5% coarse fragments, weak medium granular, friable, few very fine to fine roots, common distinct 5Y4/1 redoximorphic depletions
Bg	21-32	5Y4/2, loam, <5% coarse fragments, strong medium subangular blocky, friable, few very fine to fine roots, common prominent 7.5YR3/3 redoximorphic concentrations, common distinct 10Y4/1 redoximorphic depletions
Cdg	32-67	5Y4/1, loam, <5% coarse fragments, massive, firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations

Estimated Seasonal High Water Table @ 11 inches — Observed Water Table @ 28 inches
Restrictive @ 32 inches — Refusal @ None — Roots @ 27 inches

Notes: 1. Soil Map Unit Name: Pittstown Variant (Somewhat Poorly Drained)
2. Maintained field.
3. No surface stones.



Doiron Environmental LLC
720 Browns Ridge Road
Ossipee, NH 03864
(603) 581-4478

SOIL EVALUATION REPORT
Tax Map 24, Lots 9 & 10
402 Mount Support Road
Lebanon, New Hampshire

TEST PIT # 5 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
Ap	0-13	10YR3/1, loam, <2% coarse fragments, weak fine granular, very friable, common very fine to fine roots
Bg	13-22	5Y4/1, loam, <5% coarse fragments, weak medium granular, friable, few very fine to fine roots, common prominent 7.5YR3/3 redoximorphic concentrations
Cdg1	22-28	5Y3/2, loam, <5% coarse fragments, massive, firm, no roots, common prominent 10Y4/1 redoximorphic depletions
Cdg2	28-60	5Y4/1, loam, <5% coarse fragments, massive, firm, no roots, common prominent 7.5YR3/3 redoximorphic concentrations

Estimated Seasonal High Water Table @ 13 inches
Restrictive @ 22 inches Refusal @ None
Observed Water Table @ 22 inches
Roots @ 22 inches

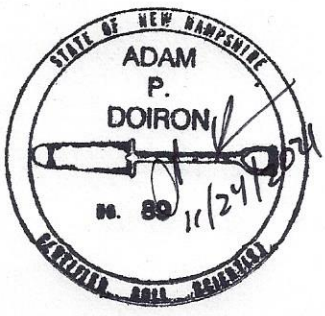
Notes: 1. Soil Map Unit Name: Pittstown Variant (Somewhat Poorly Drained)
2. Maintained field.
3. No surface stones.

AUGER HOLE # 4 Date Evaluated: 11/4/2021

Horizon	Depth (in)	Description
Ap	0-11	10YR2/1, loam, weak fine granular, very friable, common distinct 7.5YR3/3 redoximorphic concentrations
Bg	11-20	5Y4/1, loam, moderate medium subangular blocky, friable, common prominent 10YR4/4 redoximorphic concentrations

Estimated Seasonal High Water Table @ surface
Restrictive @ None
Observed Water Table @ 6 inches
Refusal @ None

Notes: 1. Soil Map Unit Name: Stissing
2. Jurisdictional forested wetland.
3. Surface is very stony.



Agenda
Planning Board
February 14, 2022

Agenda Item #3B
Public Hearing Items

Trustees of Dartmouth College, 56 Etna Road (Tax Map 50, Lot 28), zoned IND-L

PB2022-03-SPR

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-03-SPR – *postponed from 1/10/22*

APPLICATION INFORMATION

Agenda Item: 3.B

Application Type:
Site Plan Review to construct a +/- 19,672 sq. ft. library storage building

Property Location & Tax Map:
56 Etna Road (Tax Map 50, Lot 28)

Applicant/Property Owner:
Trustees of Dartmouth College

Zoning District: Light Residential (IND-L)

Overlay Districts:
Wetlands Conservation District

Future Land Use Map:
Mixed Use

LEGAL NOTICE

Trustees of Dartmouth College, 56 Etna Road (Tax Map 50, Lot 28), zoned IND-L: Request for Site Plan Review to construct a +/-19,672 sq. ft. library storage building and related site improvements. PB2022-03-SPR

PLANS AND APPLICATION MATERIALS

- Application form (1 page)
- Letter dated December 8, 2021, from Jason A Rouillard, of Dartmouth College (project description; 3 pages)
- Application for Waivers (3 pages)
- Site Plan Review Regulations Technical Checklist (10 pages)
- Plan set titled "Dartmouth College Library Depository & Records Management Facility," dated December 8, 2021, revised January 12, 2022, prepared by Russel Scott Steedle & Capone Architects Inc. (Cover Sheet and Site Layout and Materials Plan)

On file at the Planning and Development Department and available for review upon request:

- Drainage Design Report for Dartmouth Library Storage Facility Project, dated December 2, 2021, revised January 12, 2022 prepared by Rist-Frost-Shumway Engineering, RFS 18-8750 (30 pages)
- Stormwater Management System Inspection & Maintenance Manual, dated December 2021, revised January 2022 (10 pages)

COMPLETENESS REVIEW & STAFF COMMENTS

On January 10, 2022, the Planning Board found that the application is complete enough to accept jurisdiction and to commence review.

APPLICATION OVERVIEW

The subject property is a +/-11.54-acre parcel owned by Dartmouth College, and is currently improved with a +/-86,208 sq. ft. commercial building constructed in 1965, according the City's assessing records. The applicant proposes to construct a second building on the property to be used as library storage for Dartmouth College. The new building will be located in approximately the area depicted by the yellow star in Figure 1 below. Proposed site improvements associated with the construction of the new building includes parking, utilities, stormwater management, landscaping and lighting.

Figure 1. Bird's Eye View of Subject Property (*looking north*).



©2021 Eagleview (image taken 4/4/2021)

STAFF COMMENTS

PLANNING

1. SITE PLAN REVIEW REGULATIONS:

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.

Waiver Requests

Pursuant to Section 7.1 ("Waiver of Regulations"), the applicant has requested waivers from certain provisions of Article VI ("Design and Construction Requirements") of the Site Plan Review Regulations. Please see attached Application for Waivers for a discussion of each.

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.

SECTION 5 –SUBMISSION REQUIREMENTS

5.1 (Drawings and Other Submittals): The applicant has provided the attached materials in accordance with the submission requirements of Section 5.1 of the Site Plan Review Regulations.

SECTION 6 – 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 (except as noted below). The type, quantity, and location of proposed trees and shrubs are shown on Sheet 24 of the plan set.

6.4 (Fees and Assessments in Effect at time of Connection): New construction will be subject to the City's Impact Fee Ordinance and fee schedule adopted by the Board on October 12, 2021.

6.5 (Coordination of Roads, Parking, Loading, Recreation, and Safety): Section 6.5.D.5 requires the installation of sidewalks along the property's frontages. However, there is currently no sidewalk along Etna Road. Therefore, rather than constructing a sidewalk along the Etna Road frontage resulting in a "sidewalk to nowhere", staff recommends that an amount equal to the cost of construction of the sidewalk be placed into escrow for use by the City in designing and constructing future pedestrian improvements along Etna Road. Staff also recommends that the applicant provide an easement along its Labombard Road frontage to allow the possibility of future construction of a sidewalk by the City.

Staff also recommends that the Board consider whether the plans satisfy the Section 6.5.C 3 of the Site Plan Review Regulations which provides that, "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. [...]"

6.6 (Stormwater Management): The applicant has submitted a drainage plan in accordance with Section 5.1.E.17 of the Site Plan Review Regulations and the stormwater management design standards set forth in Section 6.6. All comments of the City Engineer have been satisfactorily addressed.

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 (except as noted below). The type, quantity, and location of proposed of proposed lighting fixtures are shown on the plan which is Sheet 26 of the plan set.

6.8 (Off-Site Improvements): The applicant does not propose any off-site improvements.

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 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.

2. ZONING ORDINANCE:

The proposed use of the site complies with the zoning regulations of the Light Industrial (IND-L) District.

CITY ASSESSOR
No comment at this time.

BUILDING INSPECTOR
No comment at this time.

ENGINEERING/PUBLIC WORKS
No comment at this time.

FIRE DEPARTMENT
Planning staff has provided the plans to the Fire Department and anticipates receiving written comment prior to the February 14th hearing.

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.

Conditions to be Satisfied Prior to Application for a Building Permit

1. 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.

2. All engineering review fees shall be paid in full as required by Section 4.7.E.1 of the Subdivision Regulations.

3. Prior to the start of any construction activities on the property, the applicant shall provide two (2) revised plans sets depicting the following revisions to the satisfaction of the Planning & Development Department, as follows:
    a) Identify date and nature of plan revisions.
    b) Remove architectural renderings and update the table of contents and sheet numbering accordingly.

The applicant shall provide the Planning & Development Department with a digital copy of the revised plan set saved in a PDF-A format for archival purposes.

Conditions to be Satisfied Prior to the Issuance of a Building Permit

4. 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 the construction of sewer and water both on-site and work within the City's right-of-way (water, sewer, road, drainage), in accordance with Chapters 136 and 182 of the City Code and 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. 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 applicant shall sign a Water & Sewer Extension and Infrastructure Inspection Agreement in accordance with Chapters 136 and 182 of the City Code.

5. The development shall be subject to City of Lebanon Impact Fees, pursuant to Section 213 of the Zoning Ordinance. The Impact Fee shall be calculated at the time of Building Permit issuance based on the Impact Fee Schedule adopted on October 12, 2021. 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.

6. All water and sewer fees shall be paid.

7. All water and sewer fees shall be paid as set forth in City Code Chapter 68.

8. Prior to the start of any construction activities on the property, the applicant shall obtain or update (if appropriate) any required State approvals.

Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy

9. The impact fee calculated pursuant to Condition of Approval #5 shall be paid.

10. 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 prior to acceptance of any utility improvements by the City.

11. 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.

General Conditions

12. The applicant shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.

Attachments
cc: Jason A. Rouillard, Dartmouth College (via e-mail)

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: Trustees of Dartmouth College c/o Jason Rouillard TEL.# 603.646.2431

MAILING ADDRESS: 4 Currier Place, Suite 306, Hanover NH 03755

E-MAIL ADDRESS: Jason.a.rouillard@dartmouth.edu

CO-APPLICANT, AGENT, OR LESSEE:

NAME: TEL.#:

MAILING ADDRESS:

E-MAIL ADDRESS:

PROJECT LOCATION:

TAX MAP #: 50 LOT#: 28 PLOT #: ZONE: IND-L

STREET ADDRESS OF PROJECT: 56 Etna Road

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☒ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

SCOPE OF PROJECT:

New 19,672 SF building to serve as the central storage for library books and records 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 January 10, 2022, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: _____ DATE: 12/08/2021

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 #
12-8-21	50/28	PB2022-03 SPR	1891.04	12-8-21	185760

(Last Revised 4/04/18)

DARTMOUTH
Project Management Services

December 8, 2021

David Brooks
Lebanon Director of Planning & Development
51 N. Park Street
5th Floor
Lebanon, NH 03766

Re: New building at 56 Etna Road, Lebanon N.H.

Dear Mr. Brooks,
Dartmouth College is proposing to build a new library collection storage facility on the 56 Etna Road lot (Tax Map 50; Lot #28). The new structure will be the central storage facility for all library books that are not regularly used on the College's Hanover campus and for our Records Management Department.

The new building is designed to have two separate sections: A high section nearly 41 feet tall that will serve as high bay storage and mechanical space, consisting of roughly 12,420 SF. The second part of the building will be almost 20 feet tall and will serve as office space, a loading dock, and a processing area, roughly 7,252 SF. The total size of the building is proposed to be 19,672 SF.

The building will be constructed of precast concrete structural walls on the exterior and well-insulated interior partitions for a R30 assembly. The rubber roof will have the appearance to be flat although it will have a slight pitch and also will be well-insulated for a R56 rating. The exterior south façade will have a decorative metal scrim of multiple colors simulating the appearance of books on a shelf.

The new facility's footprint will share the 11.54 acre lot with an existing building. This existing building is owned by Dartmouth College and has various Dartmouth and non-Dartmouth tenants. The new building will be positioned primarily on the existing parking lot, resulting in a zero increase in the impervious surface. All new utilities are proposed for the building. Coming from Etna Road, new 6" fire and 4" domestic water services are proposed along with a 6" sewer line to be gravity-fed back to Etna Road. Underground propane will be installed for the mechanical systems and backup generator.

Currently, the existing power and telecommunications pole that feed the existing building is in the way of the new building footprint. These services will need to be relocated before the construction can commence. New power and telecommunication will be provided overhead to the edge of Etna Road, then underground to the building.

Due to the type of soil conditions on the lot, the area where the new building will be located will have to be "pre-charged" prior to the start of construction. Pre-charging the soil means that we will pile additional soil on top of the ground, roughly 5-7 feet high, to compress the existing soil. This process will make it suitable for constructing a building on it.

The parking lot will be reconfigured to meet the parking requirements for the existing building and the

new. 146 parking spaces are required for the existing building and 20 spaces for the new. We will provide 168 total parking spaces for both buildings. There will be new lighting for the parking lot and a very much improved landscape design.

Per request of the Fire/Rescue department, we will include an emergency parking space for an ambulance to accommodate a dialysis company located in the existing building.

Attached are two waiver requests for the project. One waiver request is for the 6 pre-existing parking spaces to remain that will be in the front of the new building. The second waiver request is to provide the minimum number of bike rack locations.

Pre-existing Parking: There are currently 6 pre-existing parking spaces in the front of the new building location that we would like to remain. Although slightly reconfigured, these parking spaces are the most obvious accessible parking spaces closest to the front door of the building. Placing the accessible parking in any other location on the site creates a longer accessible route and poses a bigger safety risk.

Minimum Bike Racks: Section 6.5.I.3.a requires short-term bicycle parking for at least ten (10) percent of the number of automobile parking stalls approved by the planning board. Alternatively, provide spaces for at least 5 percent of building occupants (measured at average daily peak). Whichever is greater, but in no case may the total be less than two (2) rack spaces. This project includes renovating the parking area and restriping a large number of spaces that serve the existing building North of the proposed project area. There are approximately 119 re-designed and restriped spaces within the project area. 119 project parking spaces requires 12 bike rack spaces; However, the project is a "Library Storage Facility" with only 4 FTE's and approximately 3 visitors per day = 7 building occupants maximum for the project. It is important to note that the "Alternative bike rack space requirements" are met for at least 5 percent of the building occupants and we are providing the required minimum 2 spaces (see sheet L1.7). Because this is a partial-development project, we hereby request relief from section 6.5.I.3.a to provide the alternative required spaces at 5% of building occupants in lieu of the 10% of the total number of parking spaces approved with the project.

Dartmouth anticipates starting the project in early Spring of 2022 and will be completed in late summer of 2023

We look forward to working with you on this project and we are available to provide more information or answer questions as needed.

Thank you for your time.
Sincerely,

DARTMOUTH

Project Management Services



Jason A. Rouillard

City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: Dartmouth College

Project Name: Library Depository and Records Management

Project Address: 56 Etna Road, Lebanon, NH 03766

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).]

1. **Section** 6.5.I.3.a **of the (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because** Section 6.5.I.3.a requires short-term bicycle parking for at least ten (10) percent of the number of automobile parking stalls approved by the planning board. Alternatively, provide spaces for at least 5 percent of building occupants (measured at average daily peak). Whichever is greater, but in no case may the total be less than two (2) rack spaces.

   This project includes renovating the parking area and restriping a large number of spaces that serve the existing building North of the proposed project area. There are approximately 119 re-designed and restriped spaces within the project area. 119 project parking spaces requires 12 bike rack spaces; However, the project is a "Library Storage Facility" with only 4 FTE's and approximately 3 visitors per day = 7 building occupants maximum for the project. It is important to note that the "Alternative bike rack space requirements" are met for at least 5 percent of the building occupants and we are providing the required minimum 2 spaces (see sheet L1.7). Because this is a partial-development project, we hereby request relief from section 6.5.I.3.a to provide the alternative required spaces at 5% of building occupants in lieu of the 10% of the total number of parking spaces approved with the project.

City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: Trustees of Dartmouth College

Project Name: Dartmouth College Library Storage

Project Address: 56 Etna Road

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).]

1. Section 6.5E7 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

There are currently 6 pre-existing parking spaces in the front of the new building location that we would like to remain. Although slightly reconfigured, these parking spaces are the most obvious accessible parking spaces closest to the front door of the building. Placing the accessible parking in any other location on the site creates a longer accessible route and poses a bigger safety risk.

2. Section ___ of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

3. Section ___ of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

_____

_____

_____

4. Section ___ of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this 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: _____ Date: 12/8/2021

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: Dartmouth Library Storage	
APPLICANT: Dartmouth College	**DATE:** 12-03-2021
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.

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]

Plan Requirements	Info. Provided	Waiver Sought
5.1.E(1) - Vicinity sketch (suggested scale: 1" = 500').	☒	N/A
5.1.E(2) - Names and mailing addresses of Applicant; Owner(s) of Record of site; Owners of abutting properties; and Holders of any easements, rights-of-way, or other restrictions.	☒	N/A
5.1.E(3) - 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 to the Board.	☒	N/A
5.1.E(4) - The following information shall be provided on the first page (or cover page, if applicable) of the Site Plan:		
a. Name of the City and County in which the development is proposed;	☒	N/A
b. North arrow;	☒	N/A
c. Scale of the plan;	☒	N/A
d. Date of the plan and of any revisions to the plan; (NOTE: The date on the plan at the time of initial submission for application review shall be included on all subsequent submissions to the City. Any subsequent change(s) to the plan shall include a revision date and description of the revision(s).)	☒	N/A
e. The following basic site information in TABLE FORM:		
1. Zoning designation for subject property;	☒	N/A
2. Tax Map and Lot number(s) for subject property;	☒	N/A
3. Area of lot;	☒	N/A
4. Gross floor area of existing and proposed buildings/additions;	☒	N/A
5. Number of existing and proposed on- and off-street parking spaces as a table. The table must identify (i) the number of required (minimum) parking spaces and the permitted (maximum) number of parking spaces and the calculations for each, (ii) future proposed, and (iii) existing parking capacity. If the site is part of an existing development or subdivision, the master table must provide such information for all related sites and phases, individually and as a project total;	☒	N/A
6. Number of existing and proposed short- and long-term bicycle storage spaces;	☒	N/A
7. Number of existing and proposed loading spaces;	☒	N/A
8. Height of existing and proposed buildings/additions;	☒	N/A
9. Number of stories and gross square footage of each;	☒	N/A
10. Proposed use;	☒	N/A
11. Required and proposed front, side, and rear yard setbacks	☒	N/A
12. Maximum allowable lot coverage with existing and proposed calculations;	☒	N/A
13. Indication of whether or not the property is subject to any City Overlay districts (for example, the Wetlands Conservation District or Flood Plain District) or to NHDES Shoreland Water Quality Protection jurisdiction.	☒	N/A
5.1.E(5) - Current survey certified by a land surveyor licensed in NH, depicting perimeter boundaries of the lot(s), with compass bearings, distances, and lot areas, and depicting the location of existing improvements on property.	☒	☐
5.1.E(5) - Width and location of rights-of-way and/or easements on property.	☒	☐

Plan Requirements (cont.)	**Info. Provided**	**Waiver Sought**
5.1.E(6) - Existing and proposed grades, including topographic contours with spot elevations, (referenced to USGS or FEMA Flood Insurance Rate Map datums, as appropriate) prepared by a professional engineer or land surveyor licensed in NH. (Where grades are less than 20%, contours shall be at 2 ft. intervals; otherwise they shall be at 5 ft. intervals.)	☒	☐
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, if any, 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. *(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.)*	☒	☐

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, 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) - 100-yr flood elevation, floodway, and floodplain limits, where relevant.	☒	☐
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, where necessary.	☒	☐
5.1.E(17) - Drainage plans prepared by a professional engineer registered in NH, whose seal and signature shall appear on plan(s).	☒	☐
5.1.E(18) – Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☒	☐
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.	☒	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
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 is granted by the City Engineer.	☐ N/A	☐
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.	☐ N/A	☐
5.1.E(23) - For multi-family structures, plans for on-site recreational facilities.	☐ N/A	☐
5.1.E(24) - Plans for fire protection including emergency vehicle turn radius diagrams, if requested by the Lebanon Fire Department.	☒	☐
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.	☐ N/A	☐
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.	☐ N/A	☐

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: _____ Jason Rouillard
Dartmouth College
(Last Revised 4/19/2021)

CITY OF LEBANON, NH **STORMWATER REVIEW REGULATIONS** **TECHNICAL CHECKLIST**	
PROJECT NAME: Dartmouth Library Storage	
APPLICANT: Dartmouth College	**DATE:** 12-03-2021

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]

→ Note: This is a fairly unique project in that this project results in a decrease in impervious surfaces from pre- to post- development conditions of 7300 square feet, with a corresponding decrease in stormwater runoff rate and volume. Additionally, a large swath of parking area (source of pollutants) is being replaced by a clean roof. Therefore, some of the items on this checklist are not applicable and these have been indicated as such on the checklist. Some of the information on this checklist is only shown on the plan set or other documents submitted for site plan review.

Plan Requirements	Info. Provided	Waiver Sought
6.6.C.1 (1) - 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)	N/A ☐	☐
d. Watershed boundaries	N/A ☐	☐
e. Buffer zones	N/A ☐	☐
f. Topographic contours with minimum 2-foot intervals	☒	☐
g. Buildings / structures	X ☒	☐
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).	N/A ☐	☐
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	☒	☐
6.6.C.1 (2) - 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	N/A ☐	☐
f. Septic systems, if applicable	N/A ☐	☐

Plan Requirements (cont.)	**Info. Provided**	**Waiver Sought**
g. Plan references and notes (including sequence of soil disturbance)	☒	☐
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.	☒	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate.	N/A ☐	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. 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. *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*	☒	☐

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)	☒	☐
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).	☒	☐
6.6.D - 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.	☒	☐

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: Joanne K Coppinger Joanne Coppinger, P.E.
RFS Engineering, P.C.

(Last Revised 04/19/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

DARTMOUTH COLLEGE

LIBRARY STORAGE & RECORDS MANAGEMENT FACILITY

56 ETNA ROAD
LEBANON, NH 03766

DRAWING LIST

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RUSSELL SCOTT STEEDLE & CAPONE ARCHITECTS INC.

DECEMBER 08, 2021

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

COVER SHEET

Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647
24 Federal Street, 3rd Floor • Boston, MA 02110 • 617-494-1464 • www.rfsengineering.com
82 Hanover Street, Suite 2 • Portland, ME 04101 • 207-761-4647 • RFS Project #: 8750.001

Russell Scott Steedle & Capone Architects Inc.
763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Date: November 5, 2021
Rev: 1 01/12/2022 (sheet added)
Scale:

1803
TS

printed 01-20-2022

8750C PLANNING BOARD SET 12-03-2021 Rev.01-12-2022

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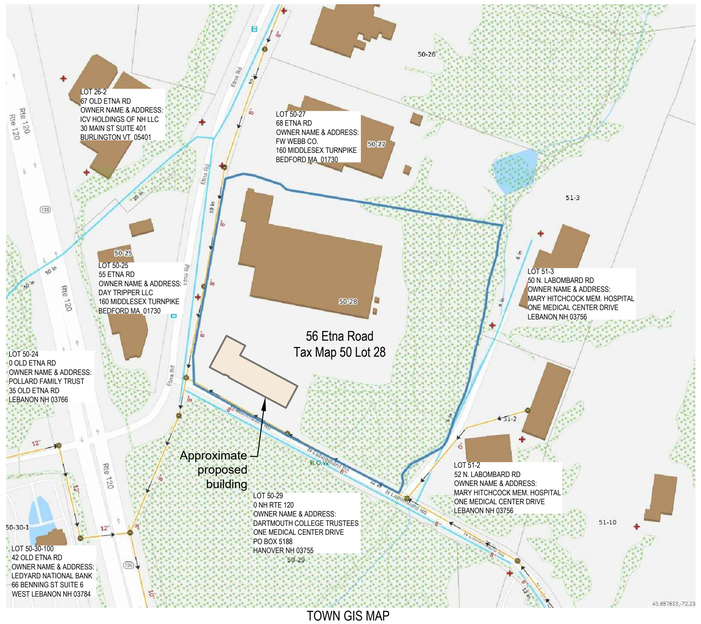
CIVIL SYMBOLS

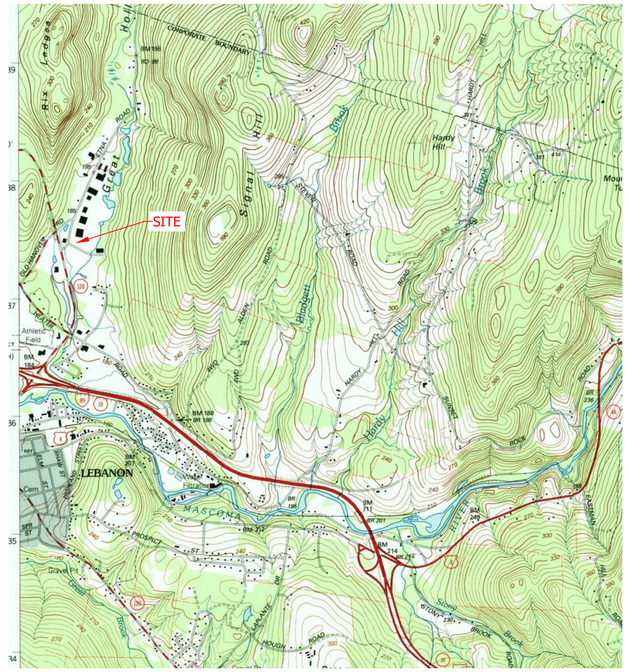
- ASPHALT
- CATCH BASIN
- COMMUNICATION VAULT / HANDHOLE
- COMMUNICATION PULLBOX
- CONCRETE
- 50 — CONTOUR INTERVAL
- DRAIN MANHOLE / CLEANOUT
- D — DRAINAGE LINE
- EDGE OF VEGETATION
- ELECTRICAL VAULT / HANDHOLE
- ELECTRICAL PULLBOX
- FIRE HYDRANT
- F — FIRE SERVICE
- GAS METER
- G — GAS MAIN
- GATE VALVE
- GUARD RAIL
- LOAM AND SEED
- LOAM, SEED, AND IRRIGATION
- SEWER MANHOLE
- S — SEWER LINE
- SF — SILT FENCE
- 50.00 — SPOT GRADE
- STEEL FENCING
- TREE LINE
- TRANSFORMER
- UGC — UNDERGROUND COMMUNICATIONS LINES
- UGE — UNDERGROUND ELECTRIC
- W — WATER MAIN
- WOOD FENCING
- YD — YARD DRAIN
- WETLAND BOUNDARY

CIVIL ABBREVIATIONS

BM	BENCHMARK
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BND	BOUND
TV	CABLE TELEVISION
CB	CATCH BASIN
CMH	COMMUNICATIONS MANHOLE
CONC.	CONCRETE
C.C.S.	CONCRETE CURB STOP
CMP	CORRUGATED METAL PIPE
CP	CORRUGATED PLASTIC PIPE
D	DIAMETER
DS	DOOR SILL
DH	DRILL HOLE
E	ELECTRIC
EMH	ELECTRIC MANHOLE
ELEV	ELEVATION
EXIST.	EXISTING
FT.	FEET
FF ELEV	FINISH FLOOR ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV	INVERT
LT.	LEFT
LF	LINEAR FEET
L.P.	LIQUID PETROLEUM
PE	POLYETHYLENE
PVI	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RT.	RIGHT
SMH	SEWER MANHOLE
S	SLOPE
STA	STATION
STMH	STEAM MANHOLE
TEL	TELEPHONE
TC	TOP OF CURB
TW	TOP OF WALL
TYP.	TYPICAL
U. POLE	UTILITY POLE
WV	WATER VALVE
W/	WITH
VC	VERTICAL CURVE
V.G.C.	VERTICAL GRANITE CURB
WF	WETLAND FLAG



TOWN GIS MAP
SCALE: 1" = 200'



USGS LOCATION MAP
SCALE: 1" = 2000'

Project Description:

1. This project consists of constructing a new 18,550± SF storage facility to house Dartmouth College archival library materials. The existing library storage facility is located on the same site in the existing building. The library materials will be transferred from the existing building to the new building, and the vacated space in the existing building will be leased out.

2. The site is located at 56 Etna Road, Lebanon, NH, Tax Map #50, Lot #28. The site owner information is as follows:

TRUSTEES OF DARTMOUTH COLLEGE
PO Box 5188
Hanover, NH 03755

Consultant List:

Architects:	Russell Scott Steedle & Capone Architects, Inc. 763 Massachusetts Ave. Cambridge, MA 02138 617.661.7775 Studio Nexus Architects & Planners 46 South Main Street White River Junction, VT 05001
Engineer:	Rist-Frost-Shumway Engineering, P.C. 71 Water Street Laconia, NH 03246 603.832.9032
Landscape Architect:	Park Architecture 3 Schoolhouse Lane, Suite #1 Etna, NH 03750 603.643.3400
Land Surveyor:	Horizons Engineering 34 School Street Littleton, NH 603.444.4111
Wetland Scientist:	Stoney Ridge Environmental, LLC 229 Prospect Mountain Road Alton, NH 03809 603.776.5825

Site Information

Tax Map & Lot Number	Map 50 Lot 28	
Zoning District	Light Industrial (IND-L)	
Existing Use	Industrial Warehouse	
Area of Lot	11.54 acres (502,682 square feet)	
	Existing Building	**Proposed 2nd Building Library Warehouse**
Gross Floor Area of Building	82,600 square feet	19,672 square feet
Building Setbacks		
Front (40')	58 feet	40 feet
Side (20')	60 feet	20 feet
Rear (20')	250 feet	No change
Building Height (65')	24 feet	39 feet
Number of Stories	1 & 2 stories	1 ½ stories
Impervious Cover (entire site)	204,308 square feet (41%)	197,004 square feet (39%)
Building Coverage (50% maximum)	81,000 square feet (16%)	99,550 square feet (20%)
Number of bicycle storage spaces	0	2 → waiver requested
Applicable Overlay District	None	None
Number of loading docks	4	1 → Total = 5

Parking Calculations

Existing Use	Area (GSF)	Existing # of Spaces Reqired by Zoning	Proposed # of Spaces Required by Zoning
Office		**(1 space/250 sf)**	
1st floor offices (Fresenius – Dialysis Clinic)	13,400	54	
2nd floor offices (vacant)	5,700	23	
Subtotal		**77**	
Warehouse		**(1 space/1000 sf)**	
Records Management	16,200	16	
Museum Storage	11,900	12	
Library Storage 1 (Dana)	7,100	7	
Library Storage 2 (Baker)	6,300	6	
Data Center	3,900	4	
Geisel Freezer Farm	2,700	3	
Vacant	6,400	6	
New High Bay Storage	19,672		**20**
Subtotal		**54**	
Industrial		**(1 space/600 sf)**	
USDA Milk Lab	4,900	8	
Endyne (water lab)	4,100	7	
Subtotal		**15**	
Required Zoning Total		**146**	**20** → Total required= 166 spaces Total provided= 168 spaces



AERIAL VIEW
SCALE: 1" = 200'±

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

CONTEXT PLAN

Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647
24 Federal Street, 3rd Floor • Boston, MA 02110 • 617-494-1464 • www.rfsengineering.com
82 Hanover Street, Suite 2 • Portland, ME 04101 • 207-761-4647 • RFS Project #: 8750.001

Russell Scott Steedle & Capone Architects Inc.
763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Date: November 5, 2021
1803
Rev: 1 01/12/2022
(drawing list removed)
C0.1
Scale: N/A

printed 01-20-2022

8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022

EXISTING BUILDING / EXISTING
LIBRARY STORAGE FACILITY

ETNA ROAD

LABOMBARD ROAD

TO ROUTE 120

Property Line

Building Setback

16" BIRCH

FLAG POLE

CANOPY

CONCRETE SIDEWALK

16" SPRUCE

GENERATOR

HANDICAP PARKING SIGNS

SIGN

STOP SIGN

SMH RIM= 600.23
12" PVC INV IN= 587.53 (N)
12" PVC INV OUT= 587.32 (S)

INV= 598.34

BM SPIKE
ELEVATION= 601.49
DATUM - NADV88

UNKNOWN TERMINUS

15" CMP

INV= 597.69

4"X4" CONCRETE HIGHWAY BOUND 0.4 BELOW GRADE

WETLAND AREA
PFO1E

INV= 594.42

SMH RIM= 599.97
12" PVC INV IN= 586.38 (N)
12" PVC INV IN= 586.85 (E)
12" PVC INV OUT= 595.97 (SW)

18" HDPE

DMH RIM= 599.46
18" HDPE INV IN= 592.95 (N)
18" HDPE INV OUT= 592.87 (SE)

INV= 593.32

SMH RIM= 600.36
12" PVC INV IN= 585.45 (NE)
12" PVC INV IN= 586.59 (W)
12" PVC INV OUT= 585.35 (SW)

FFE 602.51'

FFE 602.56'

FFE 602.55'

FFE 602.46'

FFE 602.46'

FFE 602.48'

FFE 602.41'

FFE DOCK
599.42'

LOADING

RAMP

POST INDICATOR VALVE

ELECTRIC TRANSFORMER ON CONCRETE PAD

BOLLARD (TYP.)

LOADING DOCK
FFE 602.44'

DMH RIM= 599.41
INV IN= 596.50 (NE)

BM PAINT ON CON. PAD
ELEVATION = 600.16
DATUM - NADV88

BM SPIKE
ELEVATION= 597.48
DATUM - NADV88

(NOT CURRENTLY STRIPED)

PAVED

GRASS

CROSSWALK

100 LF 12" RCP
S=0.0050

OHE

GUY WIRES

PAVED PARKING

BM SPIKE
ELEVATION= 596.01
DATUM - NADV88

BM SPIKE
ELEVATION= 596.45
DATUM - NADV88

BM SPIKE
ELEVATION= 595.21
DATUM - NADV88

INV= 593.38

INV= 592.67

SMH RIM= 595.92
12" PVC INV IN= 589.02 (SE)
12" PVC INV OUT= 589.01 (NW)

INV= 592.85'

BOT DITCH (TYP)

WETLAND AREA
PEM1E

WETLAND AREA
PEM1Ex

THIS AREA WAS SUPPLEMENTED WITH LIDAR ELEVATIONS DUE TO WETLANDS/DENSE VEGETATION

20" SPRUCE

12" PVC

Plan Notes:

1. Property lines and existing features as shown are based on a boundary & topographic plan by Horizons Engineering dated July 9, 2019.

2. The wetlands boundaries as shown hereon were field delineated by Deidra Benjamin, CWS, of Stoney Ridge Environmental, LLC.

3. The site is located at 56 Etna Road, Lebanon, NH, Tax Map #50, Lot #28. The site owner information is as follows:

TRUSTEES OF DARTMOUTH COLLEGE
PO Box 5188
Hanover, NH 03755

GRAPHIC SCALE

0 20 40 60 100

(IN FEET)
1 INCH = 20 FT.

Jurisdictional Wetlands were delineated by Stoney Ridge Environmental LLC in June 2019 utilizing the following standards:

1) United States Department of Agriculture, Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States*, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
2) *Field Indicators for Identifying Hydric Soils In New England*. Version 4. May 2017. New England Hydric Soils Technical Committee.
3) *North American Digital Flora: National Wetland Plant List, version 2.1.0 (http://wetland_plants.usace.army.mil)*. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapen Hill.
4) *The National Wetland Plant List: 2016 wetland ratings.* Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
5) *Corps of Engineers Wetlands Delineation Manual*. January 1987. Wetlands Research Program Technical Report Y-87-1.
6) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual:* Northcentral and Northeast Region. January 2012, version 2. U.S. Army Corps of Engineers. Environmental Laboratory ERDC/EL TR-12-1.
7) *Classification of Wetlands and Deepwater Habitats of the United States*. December 1979. L. Cowardin, V. Carter, F. Golet, and E. LaRoe. US Department of the Interior. Fish and Wildlife Service. FWS/OBS-79/31.

Stoney Ridge Environmental LLC, 229 Prospect Mountain Road, Alton, NH 03809
(p): 603-776-5825, (f) 603-776-5826, info@stoneyridgeenv.com

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

EXISTING CONDITIONS PLAN

Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647
24 Federal Street, 3rd Floor • Boston, MA 02110 • 617-494-1464 • www.rfsengineering.com
82 Hanover Street, Suite 2 • Portland, ME 04101 • 207-761-4647 • RFS Project #: 8750.001

Russell Scott Steedle & Capone Architects Inc.
763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Date: November 5, 2021
Rev:
Scale: 1" = 20'

1803

C1.1

printed 01-20-2022

8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022

FW WEBB COMPANY
LEBANON MAP 50 LOT 27

SMH RIM= 602.55
8" PVC INV IN= 589.38 (N)
8" PVC INV IN= 589.35 (W)
12" PVC INV OUT= 589.31 (S)

1/2" PIPE
0.8' ABOVE GRADE

1/2" PIPE
AT GRADE

N 73°56'22" E
51.16'

2" DECIDUOUS TREES

S 80°58'33" E
32.34'

5/8" REBAR
0.2' BELOW GRADE

S 69°51'39" E
76.20'

5/8" REBAR
0.2' BELOW GRADE

S 45°49'40" E
20.04'

CURB LINE

GUARDRAIL

BLOCK RET WALL

S 78°54'16" E
599.19'

SMH RIM= 599.29
6" PVC INV IN= 594.28 (SE)
8" PVC INV OUT= 594.14 (W)

INV= 598.58

SIGN

SIGN

INV= 597.63

12" ASH

12" CMP

ASSUMED LOCATION - NOT OBSERVED WITH GPR

TO HANOVER

6" DECIDUOUS

TRANSFORMER
ON CONCRETE PAD

INV= 596.11

PEM1E

POST INDICATOR VALVE

SHRUBBERY

FFE 602.46'

SHRUBBERY

6" DECIDUOUS

PAVED PARKING

12" MAPLE

FFE 602.51'

BM PAINT ON CON. PAD
ELEVATION = 600.53
DATUM - NADV88

SMH RIM= 600.57
6" PVC INV IN= 595.23 (SE)
6" PVC INV OUT= 594.90 (NW)

DMH RIM= 601.10
INV IN= 596.16 (S)
INV OUT= 596.19 (E)

6" DECIDUOUS

6" DECIDUOUS

PAVED

SMH RIM= 600.75
INV IN= 595.73 (S)
6" PVC INV OUT= 595.47 (NW)

BM PAINT ON CON. PAD
ELEVATION = 598.94
DATUM - NADV88

LOADING DOCK
EL 601.47'

4" DECIDUOUS

FFE 602.49'

PAVED

BM PAINT ON CON. PAD
ELEVATION = 602.78
DATUM - NADV88

CONCRETE PAD

CONCRETE PAD

MECHANICAL

FFE 602.47'

FFE 602.53'

FFE 602.48'

DOOR 604.31'

FFE 602.51'

PAVED

12"
CHERRY

R=1859.86'
L=130.60'
D=04°01'24"

CEDAR
HEDGES

4"X4" CONCRETE
HIGHWAY BOUND
0.4 BELOW GRADE

MULCH AREA

SHRUBBERY

STEPS

FFE 602.48

PROPANE TANK

ETNA ROAD

WETLAND AREA

PEM1Ex

PEM1Ex

TRUSTEES OF
DARTMOUTH COLLEGE
BOOK 3159, PAGE 64
BOOK 3287 PAGE 855
LEBANON MAP 50 LOT 28
11.5 ACRES±

FFE 602.51'

16" MAPLE

BM PAINT ON CON. PAD
ELEVATION = 601.95'
DATUM - NADV88

FFE 602.51'

FFE 602.51'

CEDAR HEDGE

FLAG POLE

16" BIRCH

FFE 602.51'

CANOPY

CONCRETE SIDEWALK

GAS

STEPS

FFE 602.36'

SMH RIM= 600.23
12" PVC INV IN= 587.53 (N)
12" PVC INV OUT= 587.32 (S)

N 10°40'04" E
369.53'

SIGN

16" SPRUCE

GENERATOR

FFE 602.55'

FFE 602.55'

FFE 602.46'

FFE 602.46'

FFE 602.48'

RAMP

FFE 602.41'

FFE DOCK
599.42'

POST INDICATOR VALVE

HANDICAP
PARKING SIGNS

ELECTRIC
TRANSFORMER ON
CONCRETE PAD

BOLLARD (TYP.)

LOADING DOCK
FFE 602.44'

12" PVC

12" PVC

INV= 598.34

BM SPIKE
ELEVATION= 601.49
DATUM - NADV88

STOP
SIGN

UNKNOWN
TERMINUS

D

D

D

D

DMH RIM= 599.41
INV IN= 596.50 (NE)

BM PAINT ON CON. PAD
ELEVATION = 600.16
DATUM - NADV88

PAVED

TO ROUTE 120

15" CMP

CROSSWALK

0 10' 20' 40' 80'

SCALE IN FEET

STAMPED SURVEY PLAN

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horizons Engineering
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FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

horizons Engineering
Littleton NH • New London NH • Newport VT • Pomfret VT
603-444-4111 603-877-0116 802-334-6434 802-457-3151

PLAN SHOWING A BOUNDARY, TOPOGRAPHIC AND
EXISTING CONDITIONS SURVEY MADE FOR

TRUSTEES OF DARTMOUTH COLLEGE

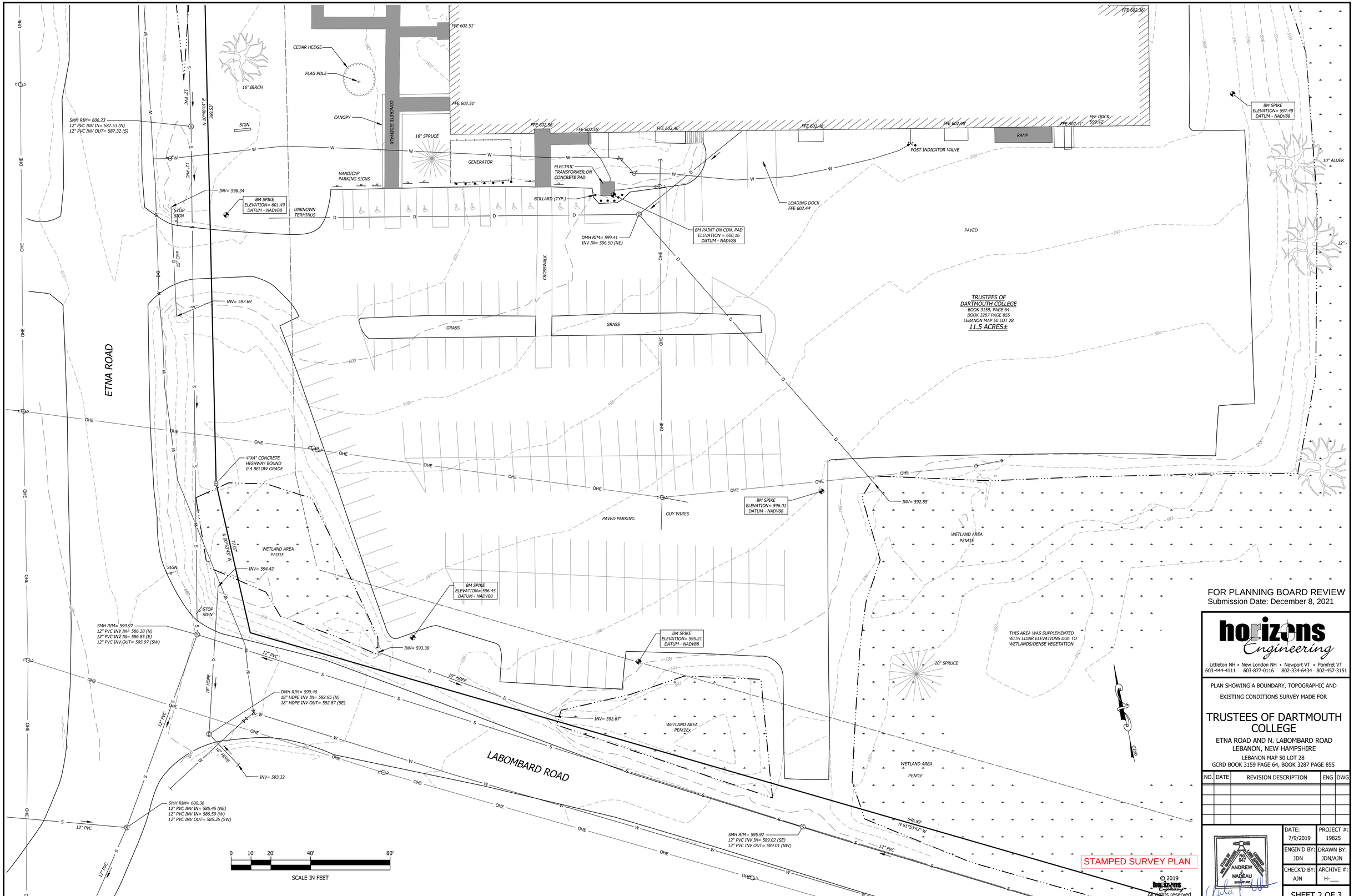
ETNA ROAD AND N. LABOMBARD ROAD
LEBANON, NEW HAMPSHIRE
LEBANON MAP 50 LOT 28
GCRD BOOK 3159 PAGE 64, BOOK 3287 PAGE 855

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

NH 947 ANDREW J. NADEAU SIGNATURE

DATE: 7/9/2019	PROJECT #: 19825
SURV'D BY: JDN	DRAWN BY: JDN/AJN
CHECK'D BY: AJN	ARCHIVE #: H-___

SHEET 1 OF 3



FOR PLANNING BOARD REVIEW
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603-444-4111 603-877-0116 802-334-6434 802-457-3151

PLAN SHOWING A BOUNDARY, TOPOGRAPHIC AND EXISTING CONDITIONS SURVEY MADE FOR

TRUSTEES OF DARTMOUTH COLLEGE

ETNA ROAD AND N. LABOMBARD ROAD
LEBANON, NEW HAMPSHIRE
LEBANON MAP 50 LOT 28
GCRD BOOK 3159 PAGE 64, BOOK 3287 PAGE 855

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE No. 947 ANDREW J. NADEAU LICENSED LAND SURVEYOR SIGNATURE

DATE: 7/9/2019	PROJECT #: 19825
ENGIN'D BY: JDN	DRAWN BY: JDN/AJN
CHECK'D BY: AJN	ARCHIVE #: H-___

SHEET 2 OF 3

LEGEND

- IRON ROD OR PIPE FOUND (SEE PLAN FOR DESCRIPTION)
- HIGHWAY BOUND FOUND
- DECIDUOUS TREE
- CONIFEROUS TREE
- DRAIN MANHOLE
- WATER GATEVALVE
- HYDRANT
- SEWER MANHOLE
- UTILITY POLE
- LIGHT POLE
- CATCH BASIN
- CONCRETE
- PAVEMENT
- CHAINLINK FENCE
- PROPERTY BOUNDARY
- BUILDING SETBACK LINE
- TREELINE
- D — DRAIN LINE
- OHE — OVERHEAD UTILITIES
- S — SEWER LINE
- UGE — UNDERGROUND ELECTRIC LINE
- UGU — UNDERGROUND CABLE
- W — WATER LINE
- WETLAND
- CONTOUR, MAJOR INTERVAL
- CONTOUR, MINOR INTERVAL

GENERAL NOTES

1. *OWNER OF RECORD:*
   TRUSTEES OF DARTMOUTH COLLEGE
   P. O. BOX 5188
   HANOVER, NH 03755

2. *REFERENCE DEEDS:*

   (A) *NJA REALTY CORP TO TRUSTEES OF DARTMOUTH COLLEGE DATED JUNE 30, 2005 AND RECORDED IN GRAFTON COUNTY REGISTRY OF DEEDS BOOK 3159 PAGE 64.*

   (B) *NEW HAMPSHIRE INDUSTRIES, INC. TO TRUSTEES OF DARTMOUTH COLLEGE DATED MAY 31, 2006 AND RECORDED IN GCRD BOOK 3287 PAGE 855.*

3. *REFERENCE PLANS:*

   (A) *"BOUNDARY SURVEY NEW JERSEY MACHINE OF N.H., INC." DATED DECEMBER 9, 1993, SURVEYED BY K. A. LECLAIR ASSOC., INC. AND RECORDED IN GCRD PLAN NO. 7812.*

   (B) *"BOUNDARY LINE ADJUSTMENT FOR NEW HAMPSHIRE INDUSTRIES, INC. & TRUSTEES OF DARTMOUTH COLLEGE" DATED DECEMBER 12, 2005, SURVEYED BY PATHWAYS CONSULTING, LLC AND RECORDED IN GCRD PLAN NO. 12280.*

4. *THIS PLAN IS BASED ON A FIELD SURVEY COMPLETED IN JULY OF 2019.*

5. *THE BEARINGS SHOWN HEREON REFER TO GRID NORTH AND ARE BASED ON THE NEW HAMPSHIRE COORDINATE SYSTEM AS DERIVED FROM STATIC GPS OBSERVATIONS.*

6. *THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).*

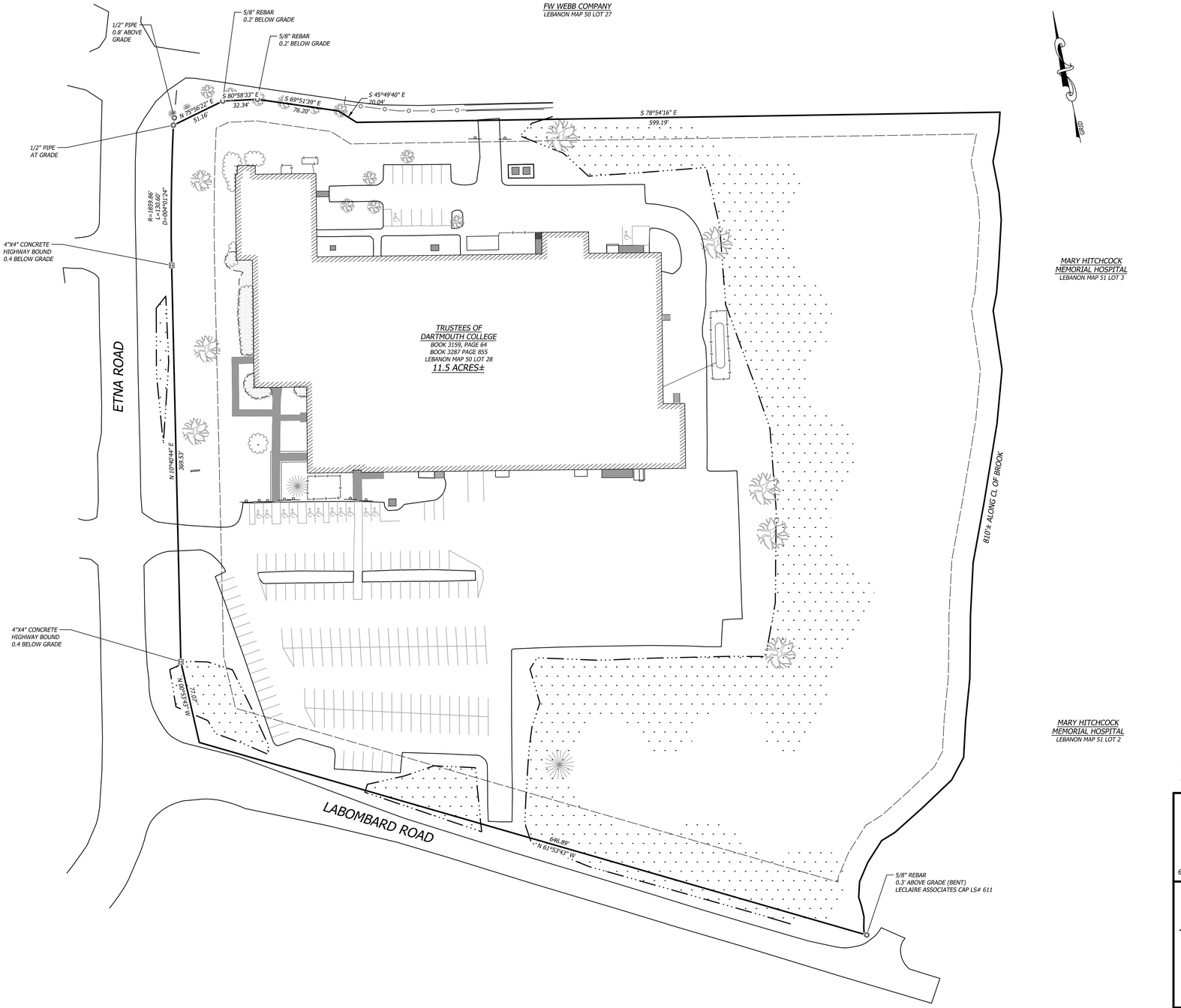
7. *THE WETLANDS AS SHOWN HEREON WERE DELINEATED BY STONEY RIDGE ENVIRONMENTAL, LLC AND FIELD LOCATED BY HORIZONS ENGINEERING, INC..*

8. *PREMISES ARE LOCATED IN THE LIGHT INDUSTRIAL DISTRICT (IND-L) PER TOWN OF LEBANON ZONING.*

   MINIMUM LOT SIZE = 2 ACRES.
   MINIMUM ROAD FRONTAGE = 200 FEET.
   FRONT YARD SETBACK = 40 FEET.
   SIDE AND REAR YARD SETBACK = 20 FEET.
   BUILDING COVERAGE = 50%

9. *THE WORD "CERTIFY" OR "CERTIFICATION" AS SHOWN AND USED HEREON MEANS COMPLIANCE WITH APPLICABLE LAND SURVEY LAWS AND RULES AND AN EXPRESSION OF PROFESSIONAL OPINION BASED ON THE FACTS OF THE SURVEY, PRINCIPLES OF BOUNDARY RETRACEMENT AND LOCAL STANDARD OF CARE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED.*

10. *UTILITY LOCATIONS ARE BASED ON THE BEST AVAILABLE INFORMATION. HORIZONS ENGINEERING, INC. DOCUMENTED EXISTING UNDERGROUND DRAINAGE, SEWER, WATER, COMMUNICATIONS, AND ELECTRICAL UTILITIES WITHIN THE SURVEY LIMITS IN JULY, 2019. MANHOLES WERE OPENED AND UTILITY DEPTH, ORIENTATION, AND SIZE WAS VERIFIED FROM THE GROUND SURFACE. A SURFACE-BASED UNDERGROUND UTILITY ASSESSMENT USING ELECTRONIC UNDERGROUND UTILITY LOCATION EQUIPMENT AND GROUND PENETRATING RADAR WAS ALSO USED TO ASSIST IN UTILITY LOCATION. DUE TO THE INHERENT LIMITATIONS OF NON-INVASIVE ELECTRONIC UTILITY LOCATING METHODS, THE EFFECTIVENESS OF THESE METHODS WAS LIMITED BY SUBSURFACE CONDITIONS SUCH AS SOIL CONDUCTIVITY, PIPE MATERIALS, ETC. FURTHER IDENTIFICATION, INCLUDING MECHANICAL EXPLORATION MAY BE WARRANTED.*



0 25 50 100 200

SCALE IN FEET

CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON A TOTAL STATION CLOSED LOOP SURVEY AND IS CLASSIFIED URBAN.

ANDREW J. NADEAU — *DATE* 7/10/2019

STAMPED SURVEY PLAN

DATE OF PRINT
JULY 10 2019
HORIZONS ENGINEERING

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FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

horizons Engineering
Littleton NH • New London NH • Newport VT • Pomfret VT
603-444-4111 603-877-0116 802-334-6434 802-457-3151

PLAN SHOWING A BOUNDARY, TOPOGRAPHIC AND EXISTING CONDITIONS SURVEY MADE FOR

TRUSTEES OF DARTMOUTH COLLEGE

ETNA ROAD AND N. LABOMBARD ROAD
LEBANON, NEW HAMPSHIRE
LEBANON MAP 50 LOT 28
GCRD BOOK 3159 PAGE 64, BOOK 3287 PAGE 855

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE — LICENSED LAND SURVEYOR — No. 947 — ANDREW J. NADEAU — SIGNATURE

DATE: 7/9/2019	PROJECT #: 19825
ENGIN'D BY: JDN	DRAWN BY: JDN/AJN
CHECK'D BY: AJN	ARCHIVE #: H-___

SHEET 3 OF 3

EXISTING BUILDING / EXISTING LIBRARY STORAGE FACILITY

Existing Tenant/ Dialysis Center

Existing Parking for Dialysis Center

Existing Parking

Existing Parking

Existing Parking

PAVED

PAVED PARKING

GRASS

GRASS

CROSSWALK

CONCRETE SIDEWALK

RAMP

ETNA ROAD

LABOMBARD ROAD

TO ROUTE 120

Property Line

Property Line

Building Setback

TRUSTEES OF DARTMOUTH COLLEGE
BOOK 3159, PAGE 64
BOOK 3287 PAGE 855
LEBANON MAP 50 LOT 28
11.5 ACRES±

FFE 602.51'
FFE 602.56'
FFE 602.55'
FFE 602.46'
FFE 602.46'
FFE 602.48'
FFE 602.41'
FFE DOCK 599.42'
LOADING DOCK FFE 602.44'

16" BIRCH
16" SPRUCE
20" SPRUCE
FLAG POLE
CANOPY
SIGN
SIGN
STOP SIGN
STOP SIGN
HANDICAP PARKING SIGNS
GENERATOR
ELECTRIC TRANSFORMER ON CONCRETE PAD
BOLLARD (TYP.)
POST INDICATOR VALVE
UNKNOWN TERMINUS
GUY WIRES
4"X4" CONCRETE HIGHWAY BOUND 0.4 BELOW GRADE

SMH RIM= 600.23
12" PVC INV IN= 587.53 (N)
12" PVC INV OUT= 587.32 (S)

INV= 598.34

BM SPIKE ELEVATION= 601.49 DATUM - NADV88

DMH RIM= 599.41
INV IN= 596.50 (NE)

BM PAINT ON CON. PAD ELEVATION = 600.16 DATUM - NADV88

BM SPIKE ELEVATION= 597.48 DATUM - NADV88

INV= 597.69

INV= 594.42

INV= 593.38

INV= 592.67

INV= 592.85

BM SPIKE ELEVATION= 596.45 DATUM - NADV88

BM SPIKE ELEVATION= 596.01 DATUM - NADV88

BM SPIKE ELEVATION= 595.21 DATUM - NADV88

SMH RIM= 599.97
12" PVC INV IN= 586.38 (N)
12" PVC INV IN= 586.85 (E)
12" PVC INV OUT= 595.97 (SW)

DMH RIM= 599.46
18" HDPE INV IN= 592.95 (N)
18" HDPE INV OUT= 592.67 (SE)

SMH RIM= 600.36
12" PVC INV IN= 585.45 (NE)
12" PVC INV IN= 586.59 (W)
12" PVC INV OUT= 585.35 (SW)

SMH RIM= 595.92
12" PVC INV IN= 589.02 (SE)
12" PVC INV OUT= 589.01 (NW)

WETLAND AREA PEM1E

WETLAND AREA PEM1Ex

WETLAND AREA PEM1E

WETLAND AREA PEM1E

12" PVC
18" HDPE
15" CMP
OHE
OHU

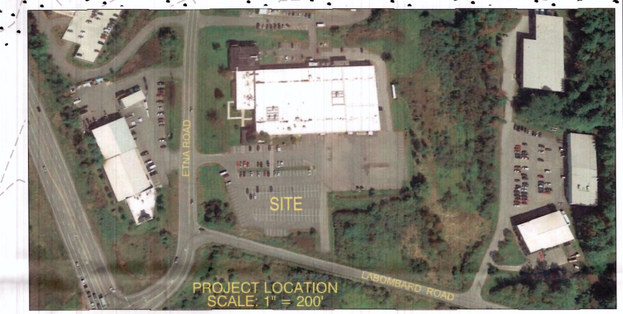
Jurisdictional Wetlands were delineated by Stoney Ridge Environmental LLC on June 2019 utilizing the following standards:

1) United States Department of Agriculture, Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States*, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
2) *Field Indicators for Identifying Hydric Soils In New England*. Version 4. May 2017. New England Hydric Soils Technical Committee.
3) *North American Digital Flora: National Wetland Plant List, version 2.1.0 (http://wetland_plants.usace.army.mil)*. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapen Hill.
4) *The National Wetland Plant List: 2016 wetland ratings*. Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
5) *Corps of Engineers Wetlands Delineation Manual*. January 1987. Wetlands Research Program Technical Report Y-87-1.
6) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: Northcentral and Northeast Region. January 2012, version 2. U.S. Army Corps of Engineers. Environmental Laboratory ERDC/EL TR-12-1.
7) *Classification of Wetlands and Deepwater Habitats of the United States*. December 1979. L. Cowardin, V. Carter, F. Golet, and E. LaRoe. US Department of the Interior. Fish and Wildlife Service. FWS/OBS-79/31.

Stoney Ridge Environmental LLC, 229 Prospect Mountain Road, Alton, NH 03809
(p): 603-776-5825, (f) 603-776-5826, info@stoneyridgenv.com

STATE OF NEW HAMPSHIRE
CYNTHIA M. BENJAMIN
No. 061
CERTIFIED WETLAND SCIENTIST
10/9/19

GRAPHIC SCALE
0 20 40 60 100
(IN FEET)
1 INCH = 20 FT.



PROJECT LOCATION
SCALE: 1" = 200'

Plan Notes:

1. This plan is not a boundary survey. Property lines and existing features as shown are based on a boundary & topographic plan by Horizons Engineering dated July 9, 2019.
2. The wetlands boundaries as shown hereon were field delineated by Deidra Benjamin, CWS, of Stoney Ridge Environmental, LLC.
3. The site is located at 56 Etna Road, Lebanon, NH, Tax Map #50, Lot #28. The site owner information is as follows:

TRUSTEES OF DARTMOUTH COLLEGE
PO Box 5188
Hanover, NH 03755

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

STAMPED WETLANDS DELINEATION

50% SCHEMATIC DESIGN: 09-13-19

PLAN FOR WETLANDS PERMIT

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

EXISTING CONDITIONS

Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647

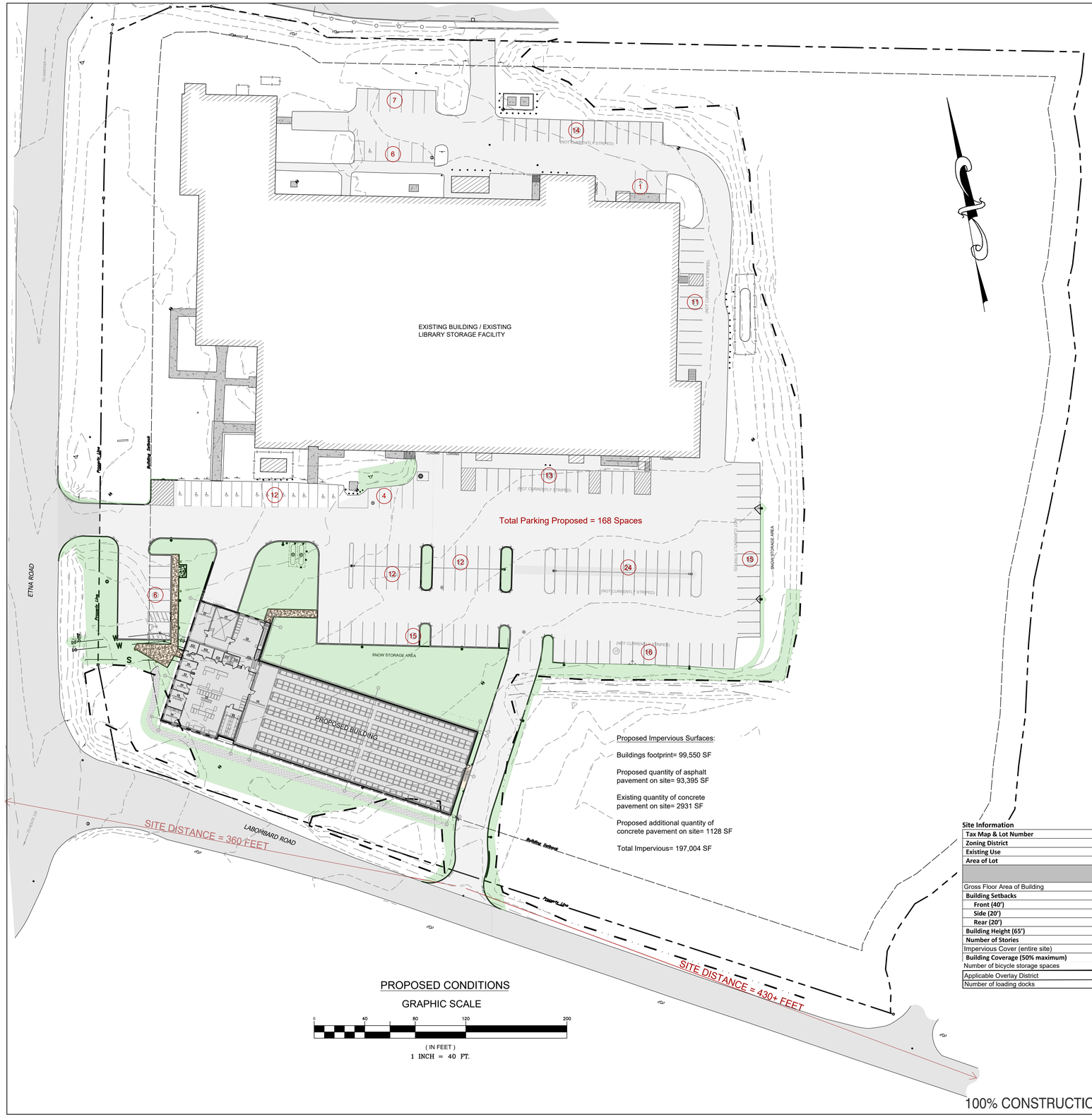
Russell Scott Steedle & Capone Architects Inc.
763 Massacusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Date: September 13, 2019
Rev:
Scale: 1" = 20'

8750

1 of 2

8750C Wetlands Permit PLAN.dwg

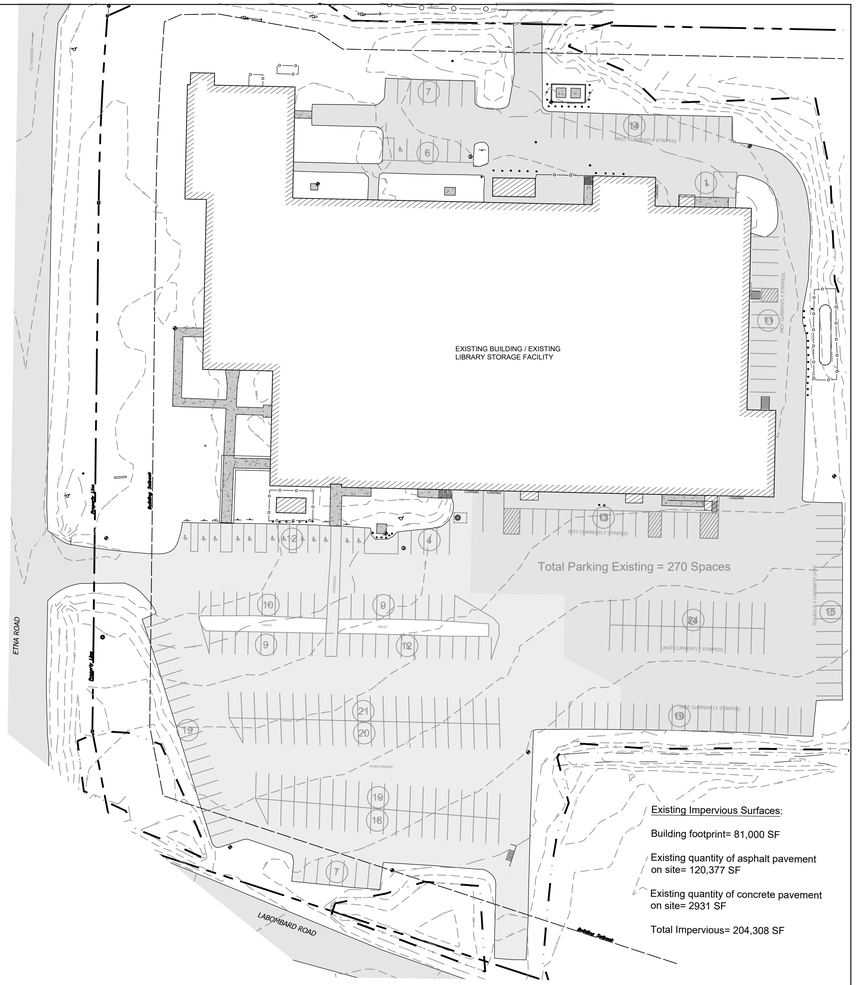


PROPOSED CONDITIONS

GRAPHIC SCALE

0 40 80 120 200

(IN FEET)
1 INCH = 40 FT.



EXISTING CONDITIONS

GRAPHIC SCALE

0 50 100 150 250

(IN FEET)
1 INCH = 50 FT.

Site Information

Tax Map & Lot Number	Map 50 Lot 28	
Zoning District	Light Industrial (IND-L)	
Existing Use	Industrial Warehouse	
Area of Lot	11.54 acres (502,682 square feet)	
	Existing Building	**Proposed 2nd Building Library Warehouse**
Gross Floor Area of Building	82,600 square feet	19,672 square feet
Building Setbacks		
Front (40')	58 feet	40 feet
Side (20')	60 feet	20 feet
Rear (20')	250 feet	No change
Building Height (65')	24 feet	39 feet
Number of Stories	1 & 2 stories	1 ½ stories
Impervious Cover (entire site)	204,308 square feet (41%)	197,004 square feet (39%)
Building Coverage (50% maximum)	81,000 square feet (16%)	99,550 square feet (20%)
Number of bicycle storage spaces	0	2 → waiver requested
Applicable Overlay District	None	None
Number of loading docks	4	1 → Total = 5

Parking Calculations

Existing Use	Area (GSF)	Existing # of Spaces Reqired by Zoning	Proposed # of Spaces Required by Zoning
Office		**(1 space/250 sf)**	
1st floor offices (Fresenius –Dialysis Clinic)	13,400	54	
2nd floor offices (vacant)	5,700	23	
Subtotal		**77**	
Warehouse		**(1 space/1000 sf)**	
Records Management	16,200	16	
Museum Storage	11,900	12	
Library Storage 1 (Dana)	7,100	7	
Library Storage 2 (Baker)	6,300	6	
Data Center	3,900	4	
Geisel Freezer Farm	2,700	3	
Vacant	6,400	6	
New High Bay Storage	**19,672**		**20**
Subtotal		**54**	
Industrial		**(1 space/600 sf)**	
USDA Milk Lab	4,900	8	
Endyne (water lab)	4,100	7	
Subtotal		**15**	
Required Zoning Total		**146**	**20** → Total required= 166 spaces Total provided= 168 spaces

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

OVERALL SITE PLAN

Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647
24 Federal Street, 3rd Floor • Boston, MA 02110 • 617-494-1464 • www.rfsengineering.com
82 Hanover Street, Suite 2 • Portland, ME 04101 • 207-761-4647 • RFS Project #: 8750.001

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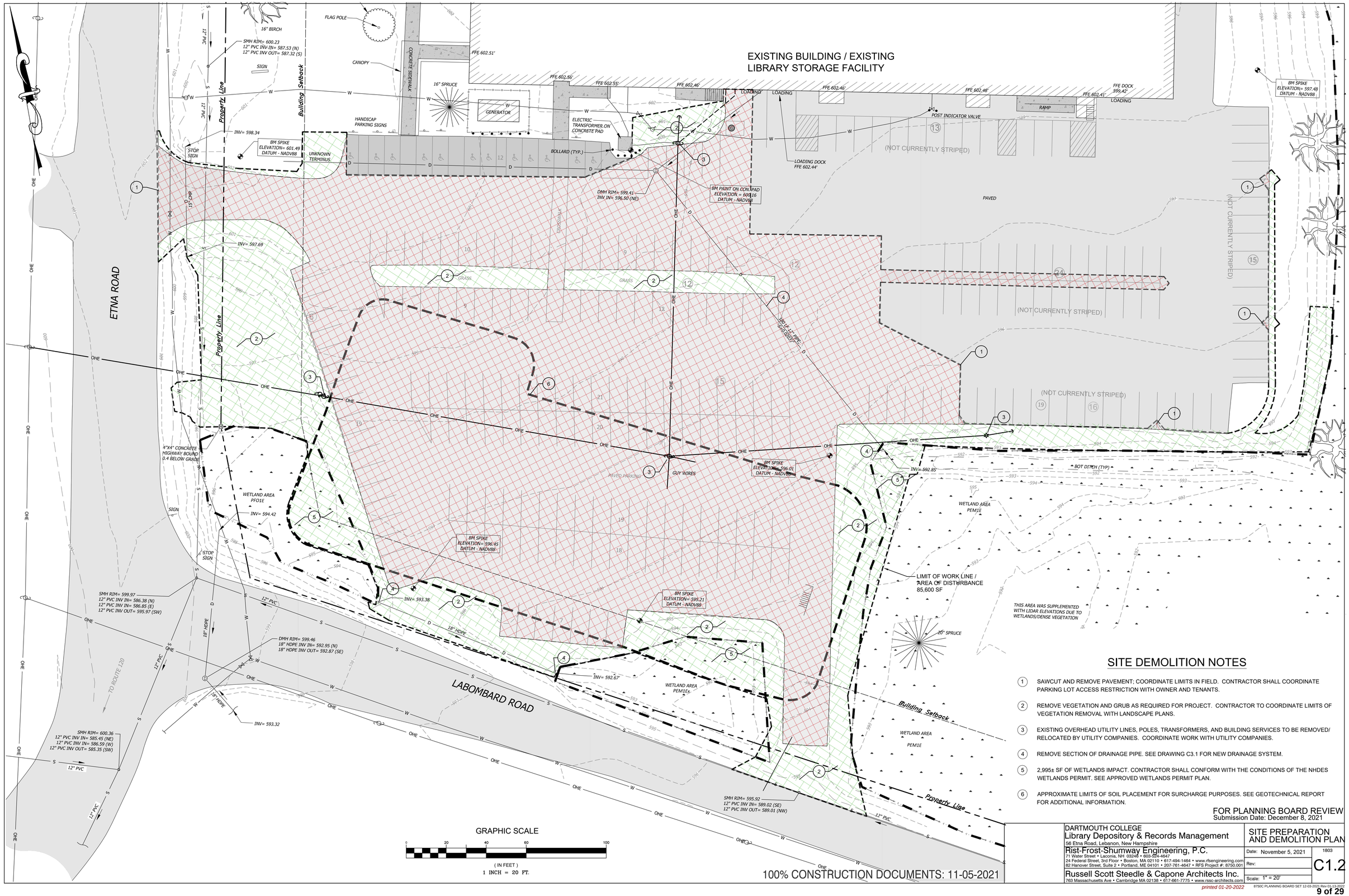

SITE DEMOLITION NOTES

1. SAWCUT AND REMOVE PAVEMENT; COORDINATE LIMITS IN FIELD. CONTRACTOR SHALL COORDINATE PARKING LOT ACCESS RESTRICTION WITH OWNER AND TENANTS.
2. REMOVE VEGETATION AND GRUB AS REQUIRED FOR PROJECT. CONTRACTOR TO COORDINATE LIMITS OF VEGETATION REMOVAL WITH LANDSCAPE PLANS.
3. EXISTING OVERHEAD UTILITY LINES, POLES, TRANSFORMERS, AND BUILDING SERVICES TO BE REMOVED/ RELOCATED BY UTILITY COMPANIES. COORDINATE WORK WITH UTILITY COMPANIES.
4. REMOVE SECTION OF DRAINAGE PIPE. SEE DRAWING C3.1 FOR NEW DRAINAGE SYSTEM.
5. 2,995± SF OF WETLANDS IMPACT. CONTRACTOR SHALL CONFORM WITH THE CONDITIONS OF THE NHDES WETLANDS PERMIT. SEE APPROVED WETLANDS PERMIT PLAN.
6. APPROXIMATE LIMITS OF SOIL PLACEMENT FOR SURCHARGE PURPOSES. SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

FOR PLANNING BOARD REVIEW
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100% CONSTRUCTION DOCUMENTS: 11-05-2021

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SITE PREPARATION AND DEMOLITION PLAN

Date: November 5, 2021
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Scale: 1" = 20'
1803
C1.2

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8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022

EXISTING BUILDING / EXISTING
LIBRARY STORAGE FACILITY

ETNA ROAD

LABOMBARD ROAD

PROPOSED BUILDING

SNOW STORAGE AREA

(NOT CURRENTLY STRIPED)

PAVED

LIMIT OF WORK LINE /
AREA OF DISTURBANCE
85,600 SF

GRAPHIC SCALE

0 20 40 60 100

(IN FEET)

1 INCH = 20 FT.

SITE MATERIALS NOTES

1. NEW DARTMOUTH COLLEGE LIBRARY DEPOSITORY & RECORDS MANAGEMENT BUILDING. COORDINATE EXCAVATION REQUIREMENTS WITH ARCHITECTURAL & STRUCTURAL DRAWINGS.
2. INSTALL PAVEMENT AS SHOWN. INSTALL FULL BASE GRAVEL LAYERS IN AREA OF UTILITY TRENCHING AND NEW PAVEMENT AREAS.
3. INSTALL VERTICAL GRANITE CURB. VERIFY CURB REVEAL WITH GRADING PLAN; TYPICAL REVEAL 6".
3a. INSTALL FLUSH GRANITE CURB IN LOCATIONS AS SHOWN.
3b. INSTALL CURB RAMP FOR ADA ACCESS PER DETAIL ON SHEET C6.2.
3c. INSTALL ADA PARKING SIGN PER DETAIL ON SHEET C6.1. NOTE ADA ACCESSIBLE ROUTE. 1
4. INSTALL WALKWAY AS SHOWN. SEE LANDSCAPE DRAWINGS FOR ADDITIONAL INFORMATION.
5. INSTALL STONE DRIPLINE TRENCH AS SHOWN. SEE DETAIL ON SHEET C 6.1 AND DRAWING C3.1 FOR ADDITIONAL INFORMATION.
6. MARK PAVEMENT AS SHOWN.
7. LOAM AND SEED AREA. IN EXISTING PAVED AREAS LOOSEN COMPACTED GRAVEL AND INSTALL 6" OF LOAM. COORDINATE LOAM AND SEED AREA WITH LANDSCAPE DRAWINGS.
8. NEW CONCRETE LOADING DOCK /RETAINING WALL. COORDINATE EXCAVATION REQUIREMENTS WITH ARCHITECTURAL & STRUCTURAL DRAWINGS.
9. NEW BUILDING EXIT STAIRWAY. COORDINATE EXCAVATION REQUIREMENTS WITH ARCHITECTURAL & STRUCTURAL DRAWINGS.
10. INSTALL EMERGENCY VEHICLE PARKING ONLY SIGN AND PAVEMENT MARKINGS.
11. REMOVE EXISTING CULVERT & CREATE NEW WETLANDS ADJACENT TO EXISTING WETLANDS (2,750 SF) BY EXCAVATING TO ELEVATION 594 AND REPLANTING PER SHEET L3, SITE LANDSCAPE PLAN.
12. CREATE NEW WETLANDS ADJACENT TO EXISTING WETLANDS (250 SF) BY EXCAVATING TO ELEVATION 592 AND REPLANTING PER SHEET L3, SITE LANDSCAPE PLAN.
13. INSTALL REINFORCED STONE SLOPE: 4" MINUS RIP RAP PLACED 8" DEEP UNDERLAID WITH NONWOVEN GEOTEXTILE FABRIC.
14. INSTALL STOP SIGN PER DETAIL ON SHEET C6.1. 1

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

SITE LAYOUT AND MATERIALS PLAN

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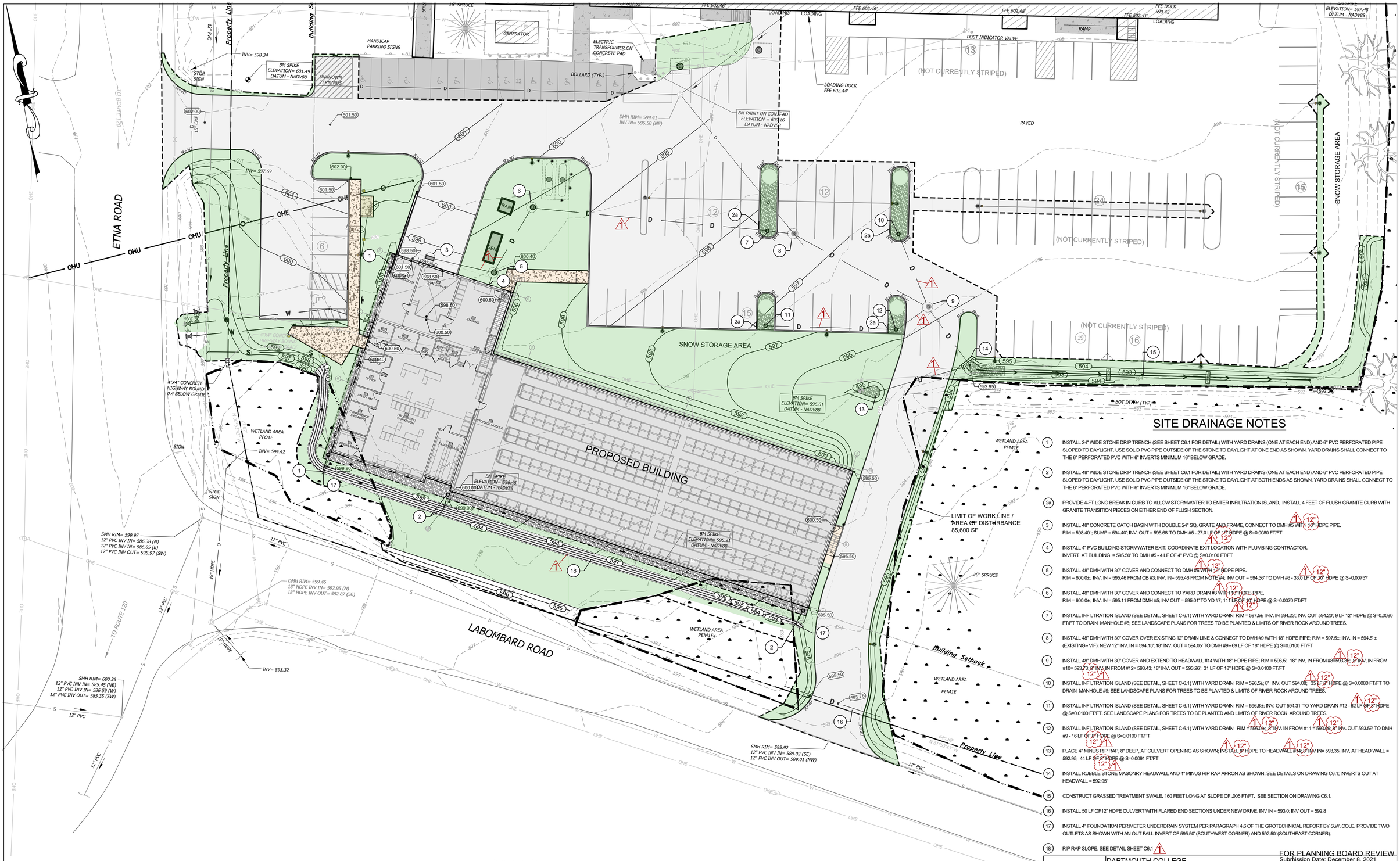

SITE DRAINAGE NOTES

1. INSTALL 24" WIDE STONE DRIP TRENCH (SEE SHEET C6.1 FOR DETAIL) WITH YARD DRAINS (ONE AT EACH END) AND 6" PVC PERFORATED PIPE SLOPED TO DAYLIGHT. USE SOLID PVC PIPE OUTSIDE OF THE STONE TO DAYLIGHT AT ONE END AS SHOWN. YARD DRAINS SHALL CONNECT TO THE 6" PERFORATED PVC WITH 6" INVERTS MINIMUM 16" BELOW GRADE.
2. INSTALL 48" WIDE STONE DRIP TRENCH (SEE SHEET C6.1 FOR DETAIL) WITH YARD DRAINS (ONE AT EACH END) AND 6" PVC PERFORATED PIPE SLOPED TO DAYLIGHT. USE SOLID PVC PIPE OUTSIDE OF THE STONE TO DAYLIGHT AT BOTH ENDS AS SHOWN. YARD DRAINS SHALL CONNECT TO THE 6" PERFORATED PVC WITH 6" INVERTS MINIMUM 16" BELOW GRADE.
2a. PROVIDE 4-FT LONG BREAK IN CURB TO ALLOW STORMWATER TO ENTER INFILTRATION ISLAND. INSTALL 4 FEET OF FLUSH GRANITE CURB WITH GRANITE TRANSITION PIECES ON EITHER END OF FLUSH SECTION.
3. INSTALL 48" CONCRETE CATCH BASIN WITH DOUBLE 24" SQ. GRATE AND FRAME. CONNECT TO DMH #5 WITH 18" HDPE PIPE. RIM = 598.40' ; SUMP = 594.40'; INV. OUT = 595.68' TO DMH #5 - 27.0 LF OF 18" HDPE @ S=0.0080 FT/FT
4. INSTALL 4" PVC BUILDING STORMWATER EXIT. COORDINATE EXIT LOCATION WITH PLUMBING CONTRACTOR. INVERT AT BUILDING = 595.50' TO DMH #5 - 4 LF OF 4" PVC @ S=0.0100 FT/FT
5. INSTALL 48" DMH WITH 30" COVER AND CONNECT TO DMH #6 WITH 18" HDPE PIPE. RIM = 600.0±; INV. IN = 595.46 FROM CB #3; INV. IN= 595.46 FROM NOTE #4; INV OUT = 594.36' TO DMH #6 - 33.0 LF OF 18" HDPE @ S=0.0075'
6. INSTALL 48" DMH WITH 30" COVER AND CONNECT TO YARD DRAIN #3 WITH 18" HDPE PIPE. RIM = 600.0±; INV. IN = 595.11 FROM DMH #5; INV OUT = 595.01' TO YD #7; 111 LF OF 18" HDPE @ S=0.0070 FT/FT
7. INSTALL INFILTRATION ISLAND (SEE DETAIL, SHEET C-6.1) WITH YARD DRAIN: RIM = 597.5± INV. IN 594.23'; INV. OUT 594.20'; 9 LF 12" HDPE @ S=0.0080 FT/FT TO DRAIN MANHOLE #8; SEE LANDSCAPE PLANS FOR TREES TO BE PLANTED & LIMITS OF RIVER ROCK AROUND TREES.
8. INSTALL 48" DMH WITH 30" COVER OVER EXISTING 12" DRAIN LINE & CONNECT TO DMH #9 WITH 18" HDPE PIPE; RIM = 597.5±; INV. IN = 594.8' ± (EXISTING - VIF); NEW 12" INV. IN = 594.15'; 18" INV. OUT = 594.05' TO DMH #9 - 69 LF OF 18" HDPE @ S=0.0100 FT/FT
9. INSTALL 48" DMH WITH 30" COVER AND EXTEND TO HEADWALL #14 WITH 18" HDPE PIPE; RIM = 596.5'; 18" INV. IN FROM #8=593.36', 8" INV. IN FROM #10= 593.73',8" INV. IN FROM #12= 593.43; 18" INV. OUT = 593.26'; 31 LF OF 18" HDPE @ S=0.0100 FT/FT
10. INSTALL INFILTRATION ISLAND (SEE DETAIL, SHEET C-6.1) WITH YARD DRAIN: RIM = 596.5±; 8" INV. OUT 594.08; 35 LF 8" HDPE @ S=0.0080 FT/FT TO DRAIN MANHOLE #9; SEE LANDSCAPE PLANS FOR TREES TO BE PLANTED & LIMITS OF RIVER ROCK AROUND TREES.
11. INSTALL INFILTRATION ISLAND (SEE DETAIL, SHEET C-6.1) WITH YARD DRAIN: RIM = 596.8±; INV. OUT 594.31' TO YARD DRAIN #12 - 62 LF OF 8" HDPE @ S=0.0100 FT/FT. SEE LANDSCAPE PLANS FOR TREES TO BE PLANTED AND LIMITS OF RIVER ROCK AROUND TREES.
12. INSTALL INFILTRATION ISLAND (SEE DETAIL, SHEET C-6.1) WITH YARD DRAIN: RIM = 596.0±; 8" INV. IN FROM #11 = 593.89; 8" INV. OUT 593.59' TO DMH #9 - 16 LF OF 8" HDPE @ S=0.0100 FT/FT
13. PLACE 4" MINUS RIP RAP, 8" DEEP, AT CULVERT OPENING AS SHOWN; INSTALL 8" HDPE TO HEADWALL #14; 8" INV IN= 593.35; INV. AT HEAD WALL = 592.95; 44 LF OF 8" HDPE @ S=0.0091 FT/FT
14. INSTALL RUBBLE STONE MASONRY HEADWALL AND 4" MINUS RIP RAP APRON AS SHOWN, SEE DETAILS ON DRAWING C6.1; INVERTS OUT AT HEADWALL = 592.95'
15. CONSTRUCT GRASSED TREATMENT SWALE, 160 FEET LONG AT SLOPE OF .005 FT/FT. SEE SECTION ON DRAWING C6.1.
16. INSTALL 50 LF OF12" HDPE CULVERT WITH FLARED END SECTIONS UNDER NEW DRIVE. INV IN = 593.0; INV OUT = 592.8
17. INSTALL 4" FOUNDATION PERIMETER UNDERDRAIN SYSTEM PER PARAGRAPH 4.6 OF THE GROTECHNICAL REPORT BY S.W. COLE. PROVIDE TWO OUTLETS AS SHOWN WITH AN OUT FALL INVERT OF 595.50' (SOUTHWEST CORNER) AND 592.50' (SOUTHEAST CORNER),
18. RIP RAP SLOPE, SEE DETAIL SHEET C6.1

GRAPHIC SCALE

0 20 40 60 100

(IN FEET)

1 INCH = 20 FT.

100% CONSTRUCTION DOCUMENTS: 11-05-2021

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

SITE GRADING AND DRAINAGE PLAN

Rist-Frost-Shumway Engineering, P.C.
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Date: November 5, 2021
Rev: 1 01/12/2022
1803
C3.1

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EXISTING BUILDING / EXISTING
LIBRARY STORAGE FACILITY

SNOW STORAGE AREA

PROPOSED BUILDING

(NOT CURRENTLY STRIPED)

PAVED

SNOW STORAGE AREA

WATER SYSTEM NOTES

1. INSTALL 10" x 6" TAPPING SLEEVE AND VALVE & 6" DI WATER MAIN TO BUILDING FOR NEW FIRE SERVICE. INSTALL SEPARATE 10" x 4" TAPPING SLEEVE AND VALVE & 4" DI WATER MAIN TO BUILDING FOR NEW DOMESTIC SERVICE. NOTE EXISTING MAIN IS CAST IRON (CI). COORDINATE WITH TOWN OF LEBANON WATER DEPARTMENT.
2. INSTALL 6" GATE VALVE AND 6" DI PIPE INTO BUILDING FOR NEW FIRE PROTECTION SERVICE. COORDINATE INSTALLATION WITH FIRE PROTECTION CONTRACTOR AND TOWN WATER DEPARTMENT.
3. INSTALL 4" DI CAP WITH 2 ¾" TAP ON PIPE CAP AND 2 ¾" COPPER INTO BUILDING FOR NEW DOMESTIC SERVICE. COORDINATE WITH PLUMBING CONTRACTOR AND TOWN WATER DEPARTMENT.
4. INSTALL 6" x 6" TEE, 5 LF OF 6" DI, 6" GATE VALVE AND NEW FIRE HYDRANT . COORDINATE WITH TOWN OF LEBANON WATER DEPARTMENT.

SEWER SYSTEM NOTES

1. INSTALL 6" GRAVITY SEWER SERVICE WITH CLEANOUT FROM BUILDING TO EXISTING 12" MUNICIPAL SEWER. INV. OUT AT BUILDING= 595.5'; 75± LF OF 6" PVC @ S=0.1167 FT/FT ; INV IN AT MUNICIPAL SEWER MAIN= 586.75±

TELECOM SYSTEM NOTES

1. INSTALL TELECOM SERVICE CONDUITS FROM SERVICE RISER POLE TO TELECOM ROOM. COORDINATE INSTALLATION WITH TELECOM CONTRACTOR AND/OR PROVIDER. SEE TELECOM DRAWINGS FOR ADDITIONAL INFORMATION.
2. INSTALL NEW TELECOM PATHWAY CONDUITS FROM SERVICE RISER POLE TO NEW INTERCEPTION VAULT. COORDINATE INSTALLATION WITH TELECOM CONTRACTOR AND/OR PROVIDER. SEE TELECOM DRAWINGS FOR ADDITIONAL INFORMATION.

ELECTRICAL SYSTEM NOTES

1. NEW OVERHEAD UTILITY LINES, POLES, TRANSFORMERS, PRIMARY PATHWAYS AND PRIMARY INTERCEPTION VAULT TO BE INSTALLED BY UTILITY COMPANIES. COORDINATE WORK WITH UTILITY COMPANIES.
2. INSTALL NEW UNDERGROUND SERVICE TO TRANSFORMERS.
3. INSTALL NEW LED SITE LIGHTS. SEE LANDSCAPE DRAWINGS FOR DETAILS. SITE LIGHTS TO BE POWERED WITH A 1" CONDUIT SYSTEM ORIGINATING FROM THE ELECTRICAL ROOM.
4. INSTALL NEW ELECTRICAL FROM TRANSFORMER AND GENERATOR TO MAIN ROOM. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR AND/OR PROVIDER. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

GAS SYSTEM NOTES

1. INSTALL PROPANE TANKS, 6 BOLLARDS AS SHOWN, AND GAS MAIN FOR NEW BUILDING SERVICE. COORDINATE WITH GAS COMPANY. ALTHOUGH TWO TANKS ARE SHOWN, GAS COMPANY REQUIREMENTS MAY DIFFER, AND IT IS IMPERATIVE TO CONTACT THE GAS CO. TO DETERMINE THE EXACT NUMBER OF TANKS REQUIRED.

GRAPHIC SCALE
0 20 40 60 100
(IN FEET)
1 INCH = 20 FT.

100% CONSTRUCTION DOCUMENTS: 11-05-2021

FOR PLANNING BOARD REVIEW

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Submission Date: December 8, 2021

SITE UTILITIES PLAN

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Date: November 5, 2021 | 1803
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8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022

12 of 29

EXISTING BUILDING / EXISTING
LIBRARY STORAGE FACILITY

PROPOSED BUILDING

SNOW STORAGE AREA

SNOW STORAGE AREA

ETNA ROAD

LABOMBARD ROAD

TO ROUTE 120

Property Line

Building Setback

(NOT CURRENTLY STRIPED)

TRUSTEES OF DARTMOUTH COLLEGE
BOOK 1150, PAGE 64
BOOK 3287 PAGE 855
LEBANON MAP 50 LOT 28
11.5 ACRES±

WETLAND AREA PFO1E

WETLAND AREA PEM1E

WETLAND AREA PEM1Ex.

LIMIT OF WORK LINE / AREA OF DISTURBANCE 85,600 SF

*** IMPORTANT NOTE: DISTURBING AREAS OUTSIDE OF THE PROJECT LIMITS (OTHER THAN AREAS TO BE RE-PAVED ONLY) COULD TRIGGER THE NEED FOR AN AoT PERMIT FOR THE PROJECT, AND THEREFORE SHOULD BE AVOIDED.**

EROSION AND SEDIMENTATION CONTROL NOTES

1. INSTALL INLET/ OUTLET PROTECTION AT NEW CATCH BASINS AND DRAINAGE INLETS/ OUTLETS. SEE ADDITIONAL INFORMATION ON DRAWING C.5.2.
2. INSTALL SILT FENCE (TYPICAL) - SUGGESTED LOCATION. CONTRACTOR TO DETERMINE EXACT LOCATIONS AS DICTATED BY FIELD CONDITIONS. SEE ADDITIONAL INFORMATION ON DRAWING C.5.2.
3. INSTALL TEMPORARY CONSTRUCTION EXIT. SEE ADDITIONAL INFORMATION ON DRAWING C.5.2.
4. INSTALL STONE CHECK DAM (TYPICAL). TO BE DETERMINED BY CONTRACTOR IF NEEDED. SEE ADDITIONAL INFORMATION ON DRAWING C.5.2.
5. EROSION AND SEDIMENTATION CONTROLS SHOWN ARE TO BE CONSIDERED A MINIMUM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING A STORMWATER POLLUTION PREVENTION PLAN AND MAINTAINING INSPECTION REPORTS THROUGHOUT THE PROJECT AS REQUIRED BY US EPA STORMWATER NPDES PERMIT.

GRAPHIC SCALE
0 20 40 60 100
(IN FEET)
1 INCH = 20 FT.

100% CONSTRUCTION DOCUMENTS: 11-05-2021

FOR PLANNING BOARD REVIEW
~~Submission Date: December 8, 2021~~

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

EROSION CONTROL PLAN

Rist-Frost-Shumway Engineering, P.C.
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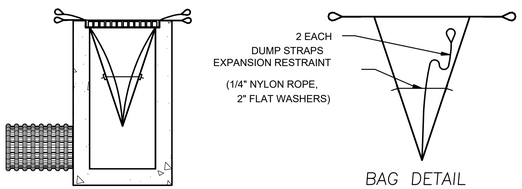
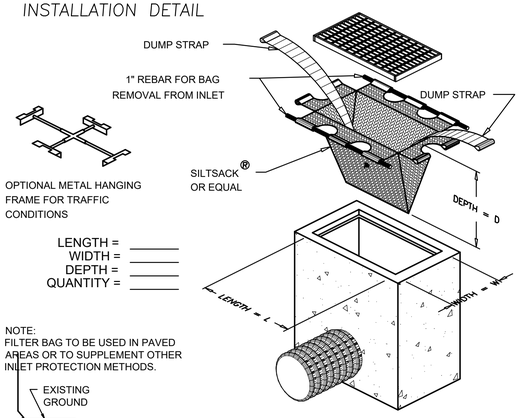
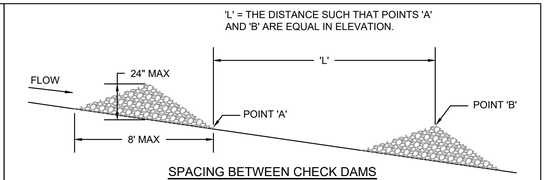
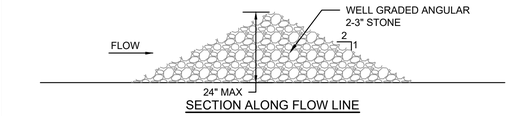




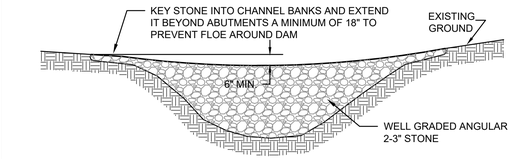
INLET PROTECTION DETAIL
(FILTER BAG METHOD)
NOT TO SCALE



SPACING BETWEEN CHECK DAMS



SECTION ALONG FLOW LINE

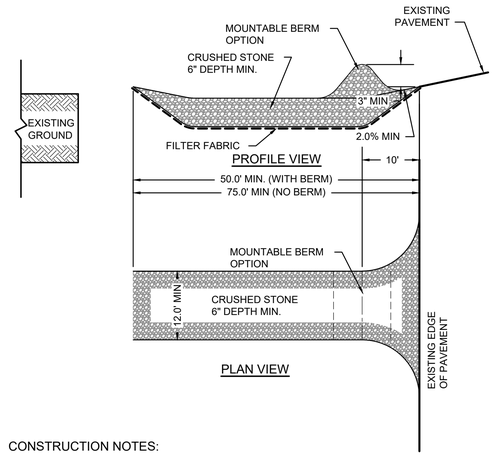


SECTION PERPENDICULAR TO FLOW LINE

CONSTRUCTION NOTES:

1. CARE SHALL BE TAKEN WHEN PLACING STONE TO ENSURE THAT THE CENTER IS 6" BELOW TO TOP OF THE DITCH.
2. STONE SHALL BE REMOVED AND REPLACED AS NEEDED.

STONE CHECK DAM TYPICAL
NOT TO SCALE

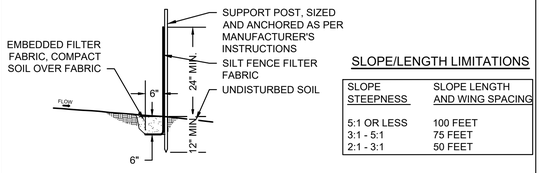


PLAN VIEW

CONSTRUCTION NOTES:

1. PLACE FILTER FABRIC OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
2. PLACE 3" CRUSHED STONE. MINIMUM 12' WIDE, THE PAD SHALL EXTEND THE FULL WIDTH OF THE CONSTRUCTION ACCESS ROAD OR 12 FEET, WHICHEVER IS GREATER.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. REPLENISH OR REPLACE STONE AS REQUIRED TO MAINTAIN ABILITY TO RETAIN SOIL PARTICLES.

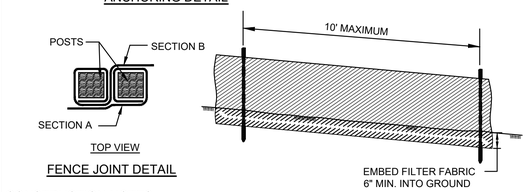
TEMPORARY CONSTRUCTION EXIT DETAIL
NOT TO SCALE



ANCHORING DETAIL

SLOPE/LENGTH LIMITATIONS

SLOPE STEEPNESS	SLOPE LENGTH AND WING SPACING
5:1 OR LESS	100 FEET
3:1 - 5:1	75 FEET
2:1 - 3:1	50 FEET



FENCE JOINT DETAIL

PERSPECTIVE DETAIL

CONSTRUCTION NOTES

1. SECURELY FASTEN FILTER FABRIC TO FENCE POSTS WITH WIRE TIES OR STAPLES, UNLESS PRE-ASSEMBLED.
2. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP SECTIONS BY 6 INCHES, FOLD, AND STAPLE AT A POST.
3. PLACE SILT FENCE 6 FEET MINIMUM DOWNGRADIENT FROM THE TOE OF SLOPE. SILT FENCE SHALL BE PLACED ALONG THE CONTOUR. IF THE FENCE CANNOT BE PLACED ALONG THE CONTOUR THE FENCE SHALL BE INSTALLED WITH PERPENDICULAR WINGS TO BREAK VELOCITY OF WATER FLOWING ALONG THE FENCE. PERPENDICULAR WINGS SHALL ALSO BE PLACED AT THE END OF THE SILT FENCE RUNS.
4. PROVIDE CLOSER FENCE POST SPACING IN AREAS WHERE HIGH RUNOFF VOLUMES ARE ANTICIPATED, OR IN LOW SPOTS WHERE SEDIMENT WILL BE COLLECTED.
5. MAINTAIN SILT FENCE UNTIL ALL UPSLOPE SOILS ARE STABILIZED.
6. SEDIMENT DEPOSITION SHALL BE REMOVED, AT A MINIMUM WHEN IT HAS ACCUMULATED TO ONE-THIRD OF THE FENCE HEIGHT.

SILT FENCE DETAIL
NOT TO SCALE

CONSTRUCTION SEQUENCE

1. INSTALL SEDIMENTATION CONTROL (DEVICES) IN LOCATIONS SHOWN ON PLANS AND ANY OTHER LOCATION DEEMED NECESSARY PRIOR TO ANY EARTH MOVING ACTIVITY OR BLASTING OPERATION.
2. REMOVE TOPSOIL AND STOCKPILE AWAY FROM ANY WETLAND. STABILIZE STOCKPILE IMMEDIATELY BY SEEDING OR COVERING. STOCKPILE SHALL BE ENCLOSED WITH SILT FENCE OR OTHER SUITABLE EROSION CONTROL DEVICE.
3. CONSTRUCT DITCHES AND TREATMENT SWALES PRIOR TO ANY EARTH MOVING OPERATION THAT WILL INFLUENCE STORMWATER RUNOFF. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
4. REMOVE EXISTING STRUCTURES AND IMPROVEMENTS NECESSARY TO PERMIT CONSTRUCTION AND OTHER SITE WORK AS SHOWN ON THE PLANS.
5. INSTALL DRAINAGE PIPES AND STRUCTURES. STABILIZE IMMEDIATELY PER THE EROSION CONTROL NOTES. RUNOFF SHALL NOT BE DIRECTED TOWARDS PERMANENT EROSION CONTROL STRUCTURES UNTIL THEY HAVE BEEN STABILIZED.
6. INSTALL SEDIMENTATION CONTROL AT NEW CATCH BASINS ACCORDING TO DETAILS. INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A DAILY BASIS AND AFTER ANY STORMS.
7. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, CULVERT, DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
8. ROUGH GRADE SITE.
9. CONSTRUCT BUILDING AND OTHER SITE IMPROVEMENTS.
10. PERFORM FINISH GRADING TO PREPARE FOR PAVING AND LOAMING. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS AFTER FINAL GRADING. ALL CUT AND FILL SLOPES SHALL BE LOAMED AND SEEDED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
11. PERMANENT SEEDING SHALL BE PERFORMED UPON COMPLETION OF PAVING PER EROSION CONTROL NOTES.
12. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WHEN ALL DISTURBED AREAS HAVE BEEN STABILIZED.

SEDIMENT CONTROL METHODS

(SOURCE NHDES ALTERATION OF TERRAIN RULES Env-Wq 1506.04-1506.10)

1. SILT FENCES:
   a. FENCES SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY UP STREAM OF THE FENCE.
   b. THE MAXIMUM CONTRIBUTING DRAINAGE AREA UP STREAM OF THE FENCE SHALL BE LESS THAN 1/4 ACRE PER 100 LINEAR FEET OF FENCE.
   c. THE MAXIMUM LENGTH OF SLOPE ABOVE THE FENCE SHALL BE 100 FEET.
   d. THE MAXIMUM SLOPE ABOVE THE FENCE SHALL BE 2:1.
   e. FENCES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
   f. FENCES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
2. EROSION CONTROL BERM MIX:
   a. BERMS SHALL BE USED IN AREAS WHERE EROSION WILL ONLY OCCUR IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BERM.
   b. THE BERM SHALL BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSE AS POSSIBLE.
   c. THE BERMS SHALL NO BE USED UNLESS THE AREA UPSLOPE OF THE BERM HAS A SLOPE OF LESS THAN 5%.
   d. THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 25% AND 65%, DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS.
   e. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS ORGANIC MATERIAL.
   f. THE MIX SHALL NOT CONTAIN SILTS, CLAYS, OR FINE SANDS.
   g. THE MIX HALL HAVE A PARTICLE SIZE BY WEIGHT OF

SIEVE SIZE	% PASSING
3" SCREEN	100%
1" SCREEN	90-100%
3/4" SCREEN	70-100%
1/4" SCREEN	30-75%

   h. THE MIX SHALL HAVE A PH BETWEEN 5.0 AND 8.0.
   i. THE BERM SHALL BE AT LEAST 12" HIGH AND 24" WIDE.
3. STRAW OR HAY BALE BARRIERS:
   a. THE BARRIERS SHALL BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE BARRIER.
   b. THE MAXIMUM LENGTH OF SLOPE ABOVE THE FENCE SHALL BE 100 FEET.
   c. THE MAXIMUM SLOPE ABOVE THE FENCE SHALL BE 2:1.
   d. THE BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
   f. THE BARRIERS SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
4. TEMPORARY STONE CHECK DAMS:
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA ABOVE THE CHECK DAM SHALL BE LESS THAN 1ACRE.
   b. THE CHECK DAMS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
   c. THE CHECK DAMS SHALL NOT BE USED IN FLOWING STREAMS.
   d. THE BARRIERS SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
5. TEMPORARY CATCH BASIN INLET PROTECTION:
   a. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE CATCH BASIN SHALL BE LESS THAN 1ACRE.
   b. ACCEPTABLE METHODS OF INLET PROTECTION ARE GRAVEL AND WIRE MESH FILTER, FILTER BAG, OR FIBER LOG.
   c. THE INLET PROTECTION METHOD SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON THIS SHEET.
   d. THE INLET PROTECTION METHOD SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
6. TEMPORARY CONSTRUCTION EXIT:
   a. THE TEMPORARY CONSTRUCTION EXIT(S) SHALL BE INSTALLED IN ALL AREAS WHERE TRACKING OF SEDIMENT OFF THE CONSTRUCTION SITE IS POSSIBLE.
   b. THE TEMPORARY CONSTRUCTION EXIT SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON THIS SHEET.
   c. THE TEMPORARY CONSTRUCTION EXIT SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.
7. TEMPORARY SEDIMENT TRAP:
   a. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE.
   b. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE CATCH BASIN SHALL BE LESS THAN 5 ACRES.
   c. THE TEMPORARY SEDIMENT TRAP SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON THIS SHEET.
   d. THE TEMPORARY SEDIMENT TRAP SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE DETAIL ON THIS SHEET.

EROSION CONTROL METHODS

(SOURCE NHDES ALTERATION OF TERRAIN RULES Env-Wq 1506.01-1506.03)

1. TEMPORARY AND PERMANENT MULCHING:
   a. HAY AND STRAW MULCHES SHALL BE ANCHORED WITH MULCH NETTING, TACKIFIER, SO THAT THEY ARE NOT BLOWN AWAY BY WIND OR WASHED AWAY BY FLOWING WATER.
   b. MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR; ALL MULCH MATERIALS SHALL BE APPROVED BY ENGINEER.
   c. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF 1.5 TO 2 TONS PER ACRE OR 70 TO 90 LBS PER 1000 SQUARE FEET.
   d. WOOD CHIPS OR GROUND BARK SHALL BE APPLIED AT 2 TO 6 INCHES DEEP AT A RATE OF 10 TO 20 TONS PER ACRES OR 460 TO 920 LBS PER 1000 SQUARE FEET.
   e. JUTE AND FIBROUS MATS AND WOOD EXCELSIOR SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
   f. EROSION CONTROL MIX SHALL BE PLACED AT A MINIMUM THICKNESS OF 2 INCHES.
2. VEGETATION:
   a. STONES AND TRASH SHALL BE REMOVED SO AS NOT TO INTERFERE WITH SEEDING AREA.
   b. ON SLOPES 4:1 OR STEEPER THE FINAL PREPARATION SHALL INCLUDE TRACKING TO CREATE HORIZONTAL GROOVES PERPENDICULAR TO THE SLOPE TO CATCH SEED AND REDUCE RUNOFF EROSION POTENTIAL.
   c. FERTILIZER AND ORGANIC SOIL AMENDMENTS SHALL BE APPLIED DURING THE GROWING SEASON AS PER SPECIFICATIONS. ONLY LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER CAN BE APPLIED WITHIN 100 FEET OF ANY RIVER, STREAM, POND, OR LAKE.
   d. RUNOFF SHALL BE DIVERTED FROM THE SEEDED AREA.
   e. SEEDING SHALL OCCUR PRIOR SEPTEMBER 15TH (IN THE SAME YEAR OF DISTURBANCE.)
   f. AREAS SEEDED BETWEEN MAY 15TH TO AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH AS INDICATED ABOVE.
   g. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHALL BE ACHIEVED PRIOR TO OCTOBER 15TH.
3. TEMPORARY EROSION CONTROL BLANKETS:
   a. BLANKETS SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS.
   b. BLANKETS SHALL BE PLACED WITHIN 24 HOURS AFTER SOWING SEED IN THAT AREA.
   c. BLANKETS SHALL BE ANCHORED AT THE TOP OF THE SLOPE IN A TRENCH PER MANUFACTURER'S INSTRUCTIONS.
   d. BLANKETS SHALL BE UNROLLED IN THE DIRECTION OF THE WATER FLOW, OVERLAPPING EDGES AND STAPLING PER MANUFACTURER'S INSTRUCTIONS.
   e. BLANKETS SHALL BE LAID LOOSELY OVER THE SOILS, MAINTAINING CONTACT WITH THE SOIL, AND NOT STRETCHED.

EROSION & SEDIMENTATION CONTROL NOTES

1. THE CONTRACTOR SHALL PREPARE A STORMWATER POLLUTION PREVENTION (SWPPP) PLAN AND FILE A NOTICE OF INTENT (NOI) PRIOR TO STARTING CONSTRUCTION. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED AS SHOWN ON THE CONSTRUCTION DOCUMENTS OR AS MODIFIED BY THE STORMWATER POLLUTION PREVENTION (SWPPP) PLAN.
2. EROSION AND SEDIMENTATION CONTROL METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.
3. EROSION AND SEDIMENTATION CONTROL METHODS SHALL BE INSPECTED WEEKLY OR WITHIN 24 HOURS OF ANY 0.5" OR GREATER RAINFALL EVENT.
4. WEEKLY INSPECTION LOGS SHALL BE MAINTAINED ON SITE AND SHALL BE MADE AVAILABLE TO FEDERAL, STATE, OR LOCAL OFFICIALS.
5. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. ALL NON-ACTIVE DISTURBED AREAS (CLEARED FOR CONSTRUCTION BUT NOT CURRENTLY UNDERGOING CONSTRUCTION) SHALL BE STABILIZED WITHIN 14 DAYS OF DISTURBANCE. MAXIMUM EXPOSED AREA AT ANY TIME SHALL BE LIMITED TO 47,000 SF OR LESS (APPROXIMATE AREA WITHIN LIMITS OF DISTURBANCE AS SHOWN ON THESE PLANS.)
6. DISTURBED SLOPES GREATER THAN 2:1 SHALL BE PROTECTED WITH JUTE MATTING UNTIL STABILIZED.
7. THE CONTRACTOR SHALL LIMIT THE AREAS OF EXPOSURE TO 45 DAYS MAXIMUM WITHOUT FINAL STABILIZATION.
8. 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 INCHES OF NON-EROSION MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED.
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9. PERMANENT SEEDING AND LOAMING SHALL CONFORM TO THE PROJECT SPECIFICATIONS MANUAL, THE LANDSCAPE PLANS. SEED SPECIFICATIONS SHALL NOT INCLUDE REED CANARY GRASS.
10. ALL EROSION CONTROL DEVICES SHOWN ON THESE PLANS ARE THE MINIMUM RECOMMENDED. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING ADDITIONAL EROSION CONTROL DEVICES AS DEEMED NECESSARY.
11. DETENTION PONDS AND TREATMENT SWALES SHALL BE CONSTRUCTED PRIOR TO ANY EARTH MOVING OPERATION THAT WILL INFLUENCE STORMWATER RUNOFF.
12. THIS PROJECT SHALL BE MANAGED IN A MANNER CONSISTENT WITH RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

COLD WEATHER STABILIZATION MEASURES

(SOURCE NHDES ALTERATION OF TERRAIN RULES Env-Wq 1505.05)

1. COLD WEATHER STABILIZATION TECHNIQUES APPLY FROM OCTOBER 15 THROUGH MAY 1.
2. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO ONE ACRE AND SHALL BE PROTECTED AGAINST EROSION BY METHODS INDICATED ON THE PLANS PRIOR TO TO ANY THAW OR SPRING MELT EVENT.
3. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% 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.
4. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH 3 AND 4 ABOVE, SHALL BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THE OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
5. ALL DITCHES AND SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% 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, AS DETERMINED BY THE DESIGN ENGINEER.
6. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF CRUSHED GRAVEL MEETING NHDOT ITEM NO. 304.3.

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

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EROSION CONTROL NOTES AND DETAILS

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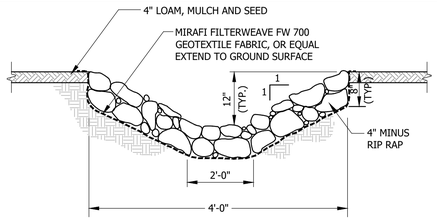
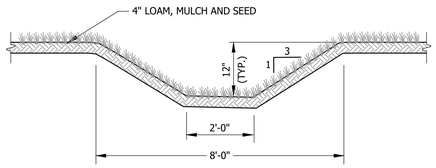


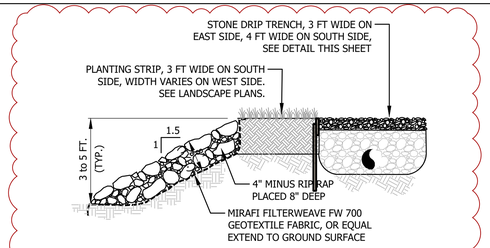
STONE LINED SWALE/ OUTLET APRON DETAIL

NOT TO SCALE



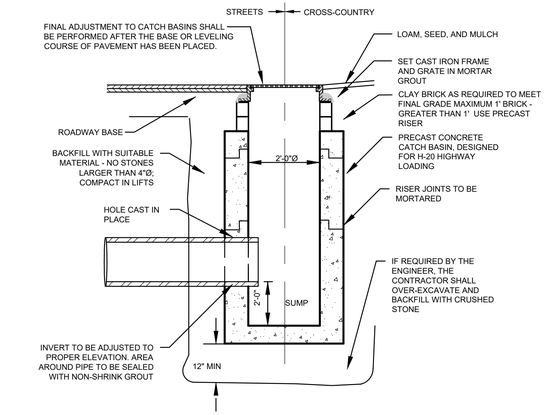
GRASSED TREATMENT SWALE

NOT TO SCALE



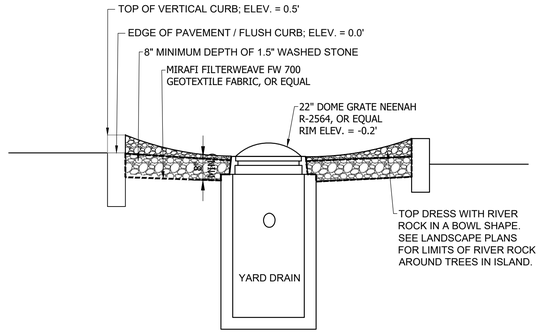
1 RIP RAP SLOPE DETAIL

SCHEMATIC - NOT TO SCALE



TYPICAL CONCRETE YARD DRAIN DETAIL

NOT TO SCALE



INFILTRATION ISLAND

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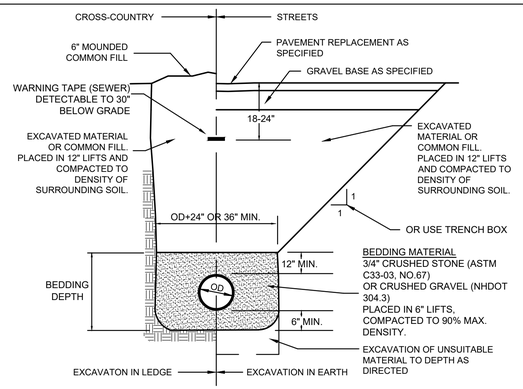
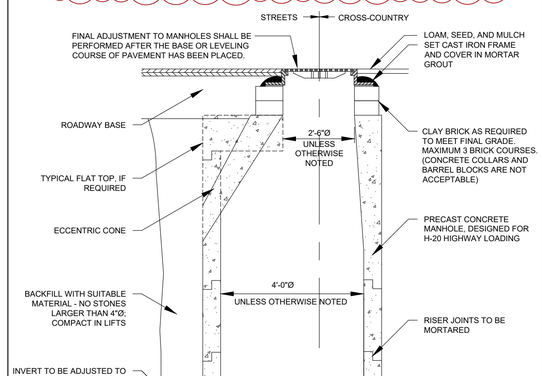


OD= MAXIMUM OUTSIDE PIPE DIAMETER

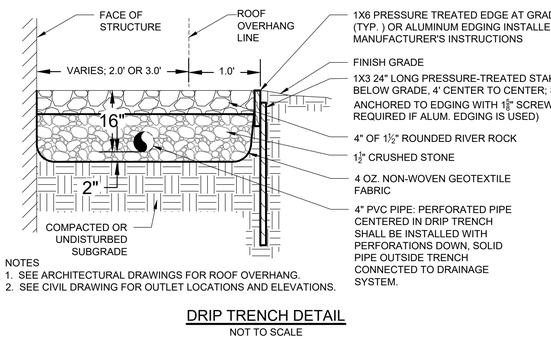
TYPICAL SEWER TRENCH DETAIL

NOT TO SCALE



TYPICAL DRAIN MANHOLE DETAIL

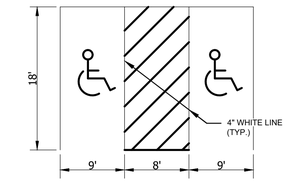
NOT TO SCALE



NOTES
1. SEE ARCHITECTURAL DRAWINGS FOR ROOF OVERHANG.
2. SEE CIVIL DRAWING FOR OUTLET LOCATIONS AND ELEVATIONS.

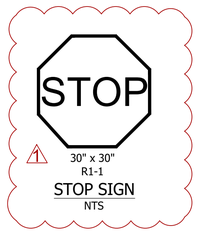
DRIP TRENCH DETAIL

NOT TO SCALE



90° ACCESSIBLE VAN LAYOUT DETAIL

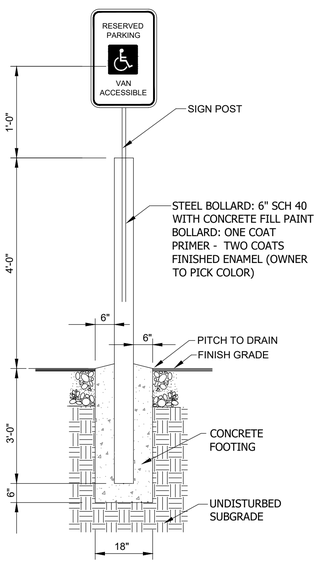
NOT TO SCALE



1 30" x 30" R1-1

STOP SIGN

NTS



NOTES:
CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS
USE WHERE SIGNS ARE PLACED IN PAVED AREAS.



12" x 18" R7-8

ADA PARKING SIGN

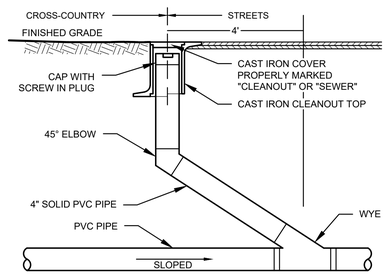
NOT TO SCALE



12" x 18"

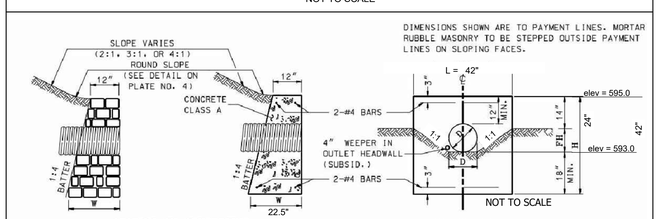
EMERGENCY VEHICLES ONLY SIGN)

NOT TO SCALE



TYPICAL CLEANOUT DETAIL

NOT TO SCALE

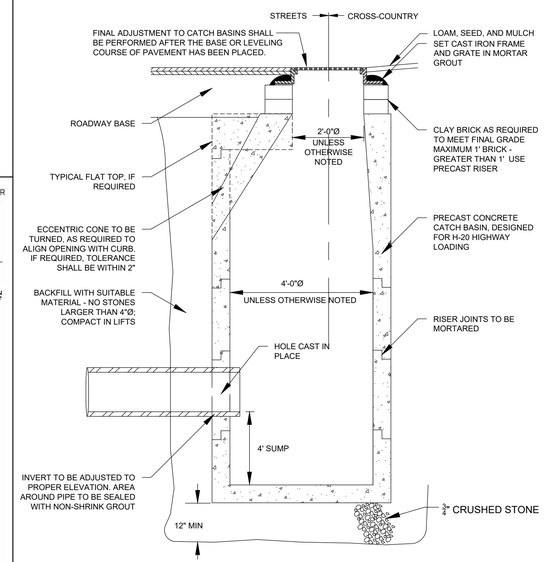


NOTE: STEEL QUANTITIES ARE FOR CONCRETE HEADWALLS ONLY.

DIAMETER D INCHES	MASONRY PER FOOT OF WALL CU. YD	MASONRY PER STANDARD HEADER CU. YD.	STEEL PER STANDARD HEADER LB.	LENGTH OF BARS	EXC. FOR 1' DEPTH CU. YD.	HEADER LENGTH L	HEADER HEIGHT H	FILL HEIGHT FH	WIDTH AT BOTTOM OF HEADER W	"L" HEADWALL MASONRY IN CORNER FRUSTUM CU. YD.	"L" HEADWALL EXC. FOR 1' DEPTH CU. YD.
12	0.186	0.61	9	3'-2"	0.789	3'-6"	3'-6"	0'-10"	1' $10^{1}/_{2}$"	0.28	1.067
15	0.262	0.85	11	3-10	0.947	4-6	3-9	1-1	1-$11^{1}/_{2}$	0.31	1.232
18	0.222	1.13	14	5-2	1.111	5-6	4-0	1-4	2-0	0.35	1.406
24	0.260	1.78	20	7-2	1.451	7-6	4-6	1-10	2-$1^{1}/_{2}$	0.42	1.776
30	0.301	2.58	25	9-2	1.810	9-6	5-0	2-4	2-3	0.51	2.164
36	0.344	3.53	31	11-2	2.187	11-6	5-6	2-10	2-$4^{1}/_{2}$	0.61	2.572
42	0.389	4.65	36	13-2	2.581	13-6	6-0	3-4	2-6	0.72	3.000
48	0.436	5.95	42	15-2	3.000	15-6	6-6	3-10	2-$7^{1}/_{2}$	0.84	3.447
54	0.486	7.44	47	17-2	3.432	17-6	7-0	4-4	2-9	0.98	3.914
60	0.538	9.13	52	19-2	3.882	19-6	7-6	4-10	2-$10^{1}/_{2}$	1.12	4.401
66	0.593	11.04	58	21-2	4.350	21-6	8-0	5-4	3-0	1.28	4.907
72	0.649	13.17	63	23'-2"	4.638	23'-6"	8'-6"	5'-10"	3'-$1^{1}/_{2}$"	1.46	5.433

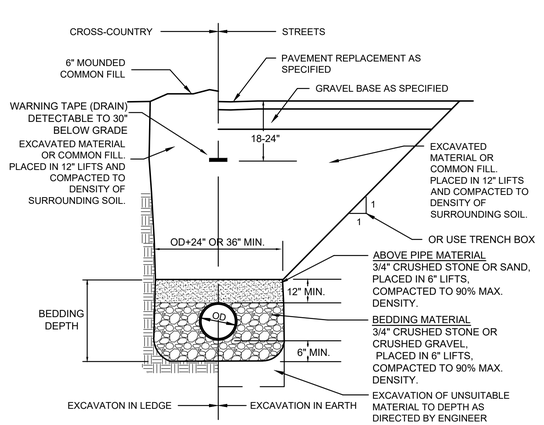
DIMENSIONAL DETAIL FOR CONCRETE OR STONE MASONRY HEADWALLS

NOT TO SCALE



TYPICAL CATCH BASIN DETAIL

NOT TO SCALE



OD= MAXIMUM OUTSIDE PIPE DIAMETER

TYPICAL DRAINAGE TRENCH DETAIL

NOT TO SCALE

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

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SITE DETAILS

Date: November 5, 2021
Rev: 1 01/12/2022

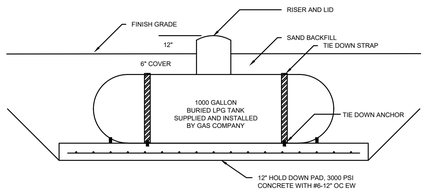
1803

C6.1

Scale: 1" = 20'

printed 01-20-2022

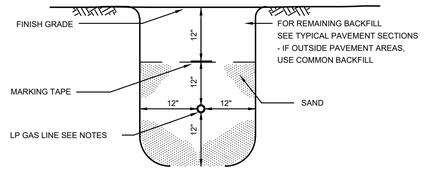
8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022



NOTE

1. CONTRACTOR SHALL PROVIDE EXCAVATION, HOLD DOWN PAD AND SAND BACKFILL.
2. GAS COMPANY TO PROVIDE AND INSTALL LPG TANKS, HOLD DOWN STRAPS AND PIPING.
3. HOLD DOWN STRAPS PER MANUFACTURERS RECOMMENDATIONS. CONTACT GAS COMPANY FOR BOLT PATTERN.
4. CONTRACTOR SHALL COORDINATE INSTALLATION WITH GAS COMPANY.

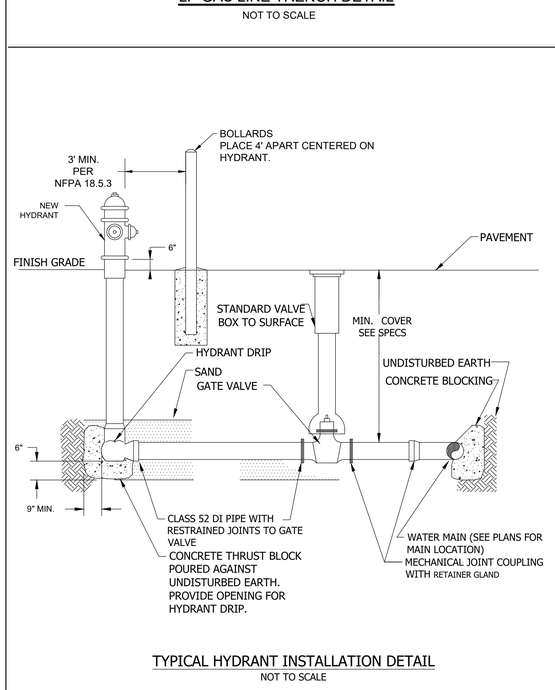
TYPICAL UNDERGROUND PROPANE TANK DETAIL
NOT TO SCALE



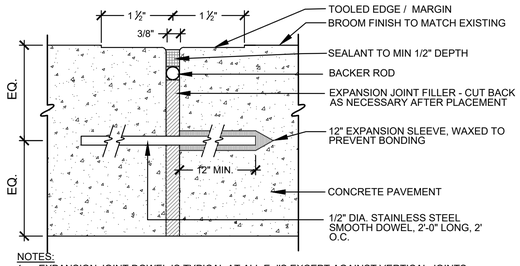
NOTE

1. CONTRACTOR SHALL PROVIDE EXCAVATION AND SAND BACKFILL.
2. LPG COMPANY TO PROVIDE AND INSTALL LP GAS PIPE AND MARKING TAPE.
3. CONTRACTOR SHALL COORDINATE WITH THE LP GAS COMPANY.

LP GAS LINE TRENCH DETAIL
NOT TO SCALE

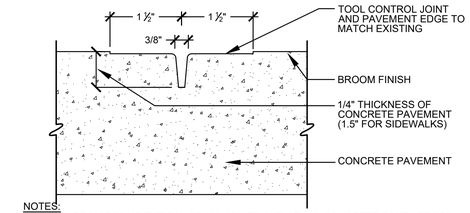


TYPICAL HYDRANT INSTALLATION DETAIL
NOT TO SCALE



NOTES:
1. EXPANSION JOINT DOWEL IS TYPICAL AT ALL E-J'S EXCEPT AGAINST VERTICAL JOINTS WITH WALLS, CURBS OR SITE IMPROVEMENTS UNLESS SHOWN OTHERWISE ON PLANS.

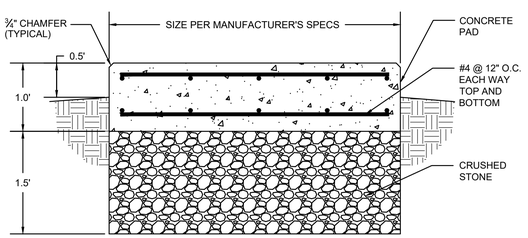
EXPANSION JOINT



NOTES:
1. TOOLED MARGIN IS TYPICAL AT ALL JOINTS AND AT ALL CONCRETE PANEL EDGES.

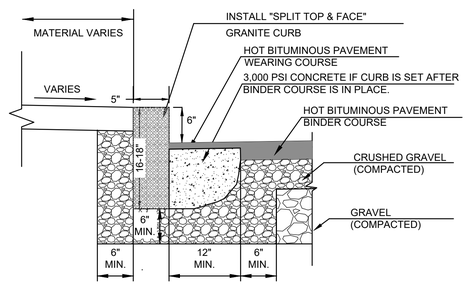
TOOLED CONTROL JOINT

CONCRETE JOINT DETAILS
NOT TO SCALE



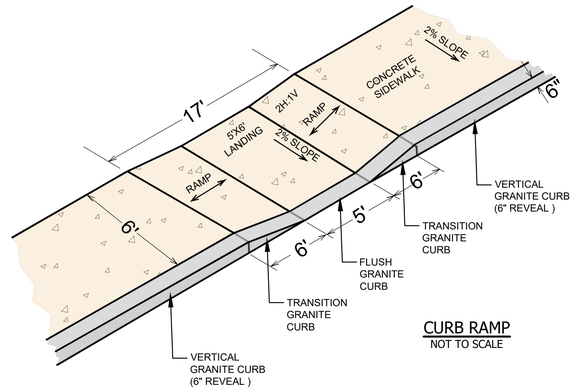
EXTERIOR EQUIPMENT PAD
NOT TO SCALE

NOTE:
ANCHOR EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS

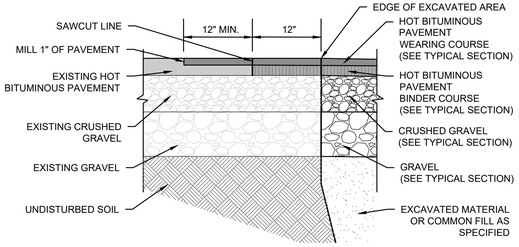


NOTE
1. SEE ROAD SECTION FOR MATERIAL THICKNESSES.

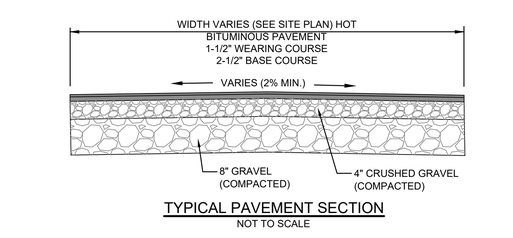
VERTICAL GRANITE CURB DETAIL
NOT TO SCALE



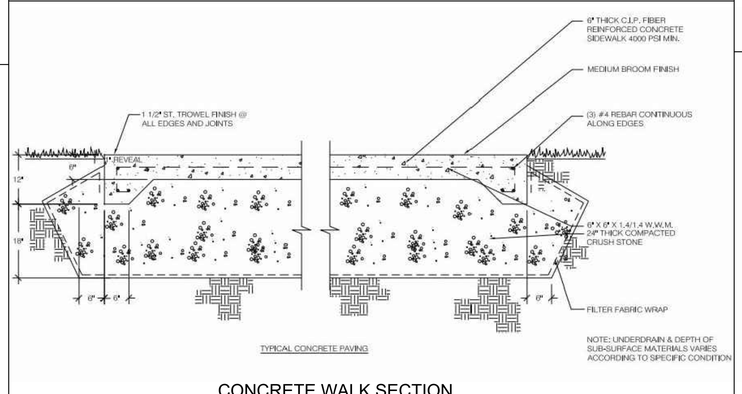
CURB RAMP
NOT TO SCALE



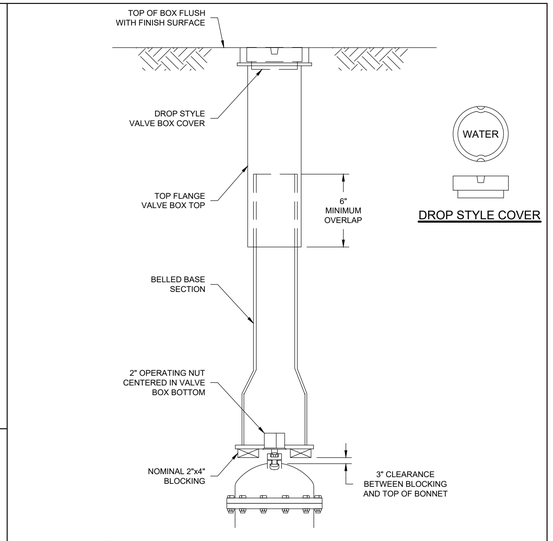
EXISTING PAVEMENT INTERFACE DETAIL
NOT TO SCALE



TYPICAL PAVEMENT SECTION
NOT TO SCALE

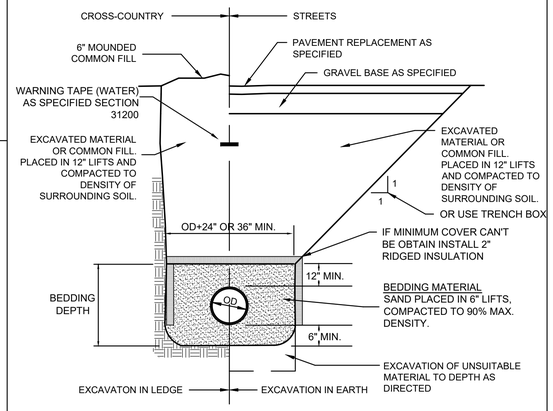


CONCRETE WALK SECTION
NOT TO SCALE



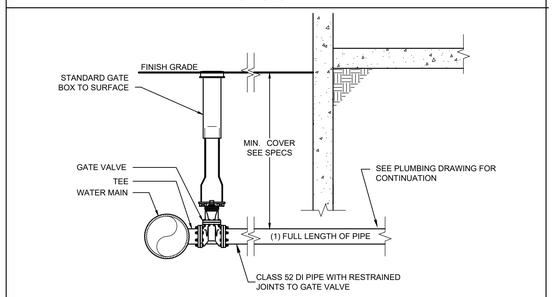
NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO LOCAL WATER DEPARTMENT TECHNICAL SPECIFICATIONS.
2. COVER MUST BE MARKED "WATER".

WATER VALVE BOX DETAIL
NOT TO SCALE



OD= MAXIMUM OUTSIDE PIPE DIAMETER

TYPICAL WATER TRENCH DETAIL
NOT TO SCALE



TVPICAL WATER ENTRANCE DETAIL
NOT TO SCALE

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

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SITE DETAILS

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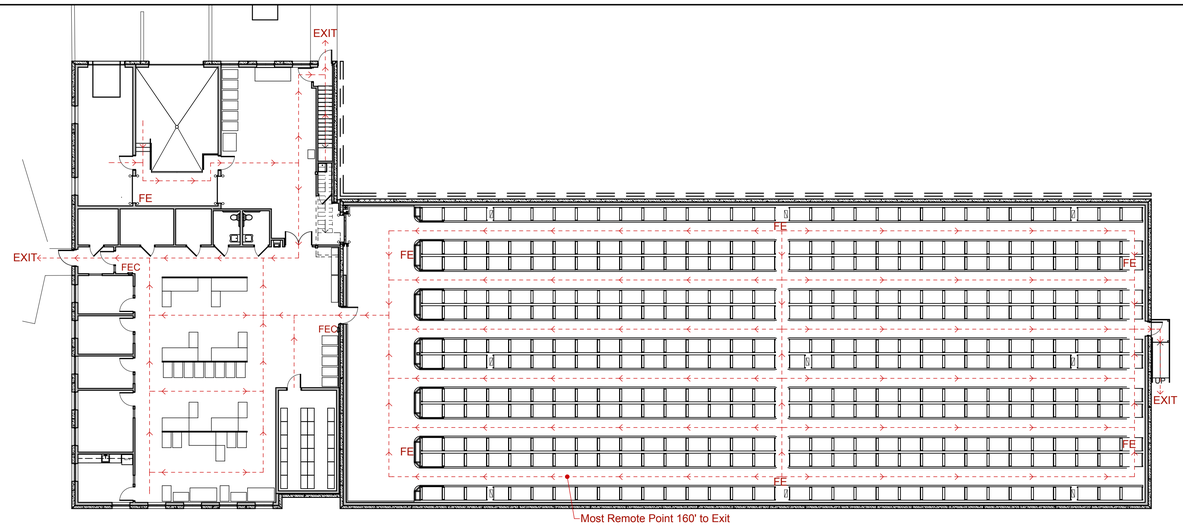
Date: November 5, 2021
1803
Rev:
C6.2
Scale: 1" = 20'

printed 01-20-2022

8750C PLANNING BOARD SET 12-03-2021 Rev 01-13-2022

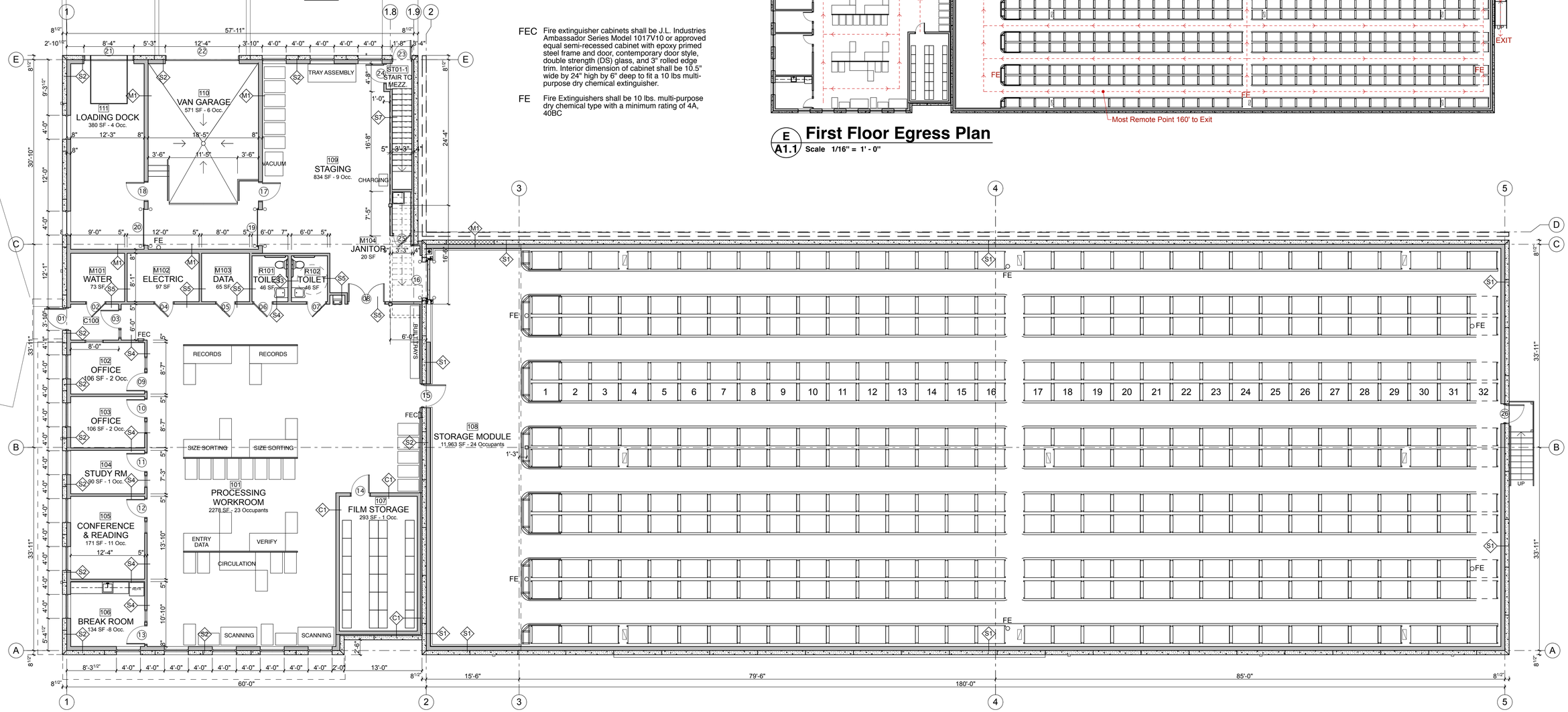


E / A1.1 First Floor Egress Plan

Scale 1/16" = 1' - 0"

FEC Fire extinguisher cabinets shall be J.L. Industries Ambassador Series Model 1017V10 or approved equal semi-recessed cabinet with epoxy primed steel frame and door, contemporary door style, double strength (DS) glass, and 3" rolled edge trim. Interior dimension of cabinet shall be 10.5" wide by 24" high by 6" deep to fit a 10 lbs multi-purpose dry chemical extinguisher.

FE Fire Extinguishers shall be 10 lbs. multi-purpose dry chemical type with a minimum rating of 4A, 40BC



1 / A1.1 First Floor Plan

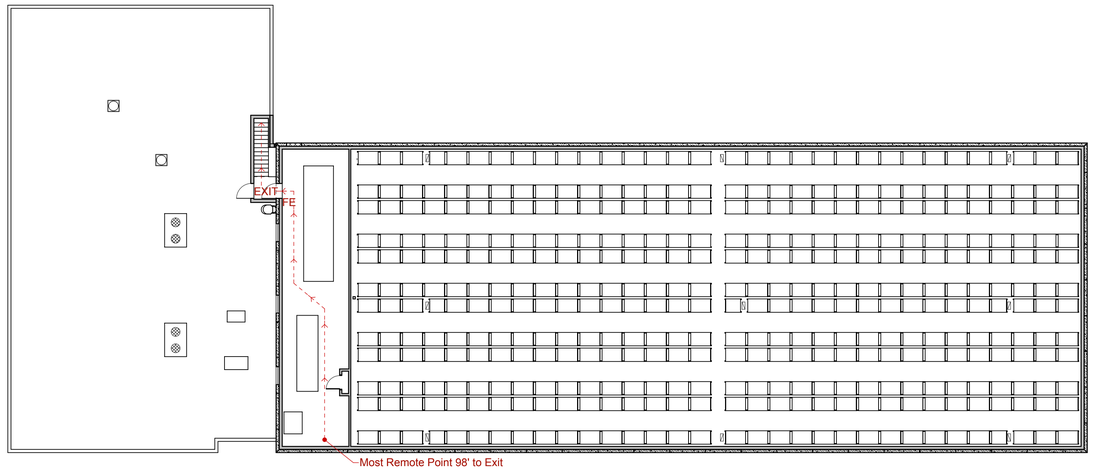
Scale 1/8" = 1' - 0"

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE Library Depository & Records Management 56 Etna Road, Lebanon, New Hampshire	First Floor Plans	
Russell Scott Steedle & Capone Architects Inc. 763 Massacusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com	Date: November 5, 2021 Rev: Scale: 1/8" = 1'-0"	1803 A1.1 56 Etna Rd-G.pln

printed 01-20-2022

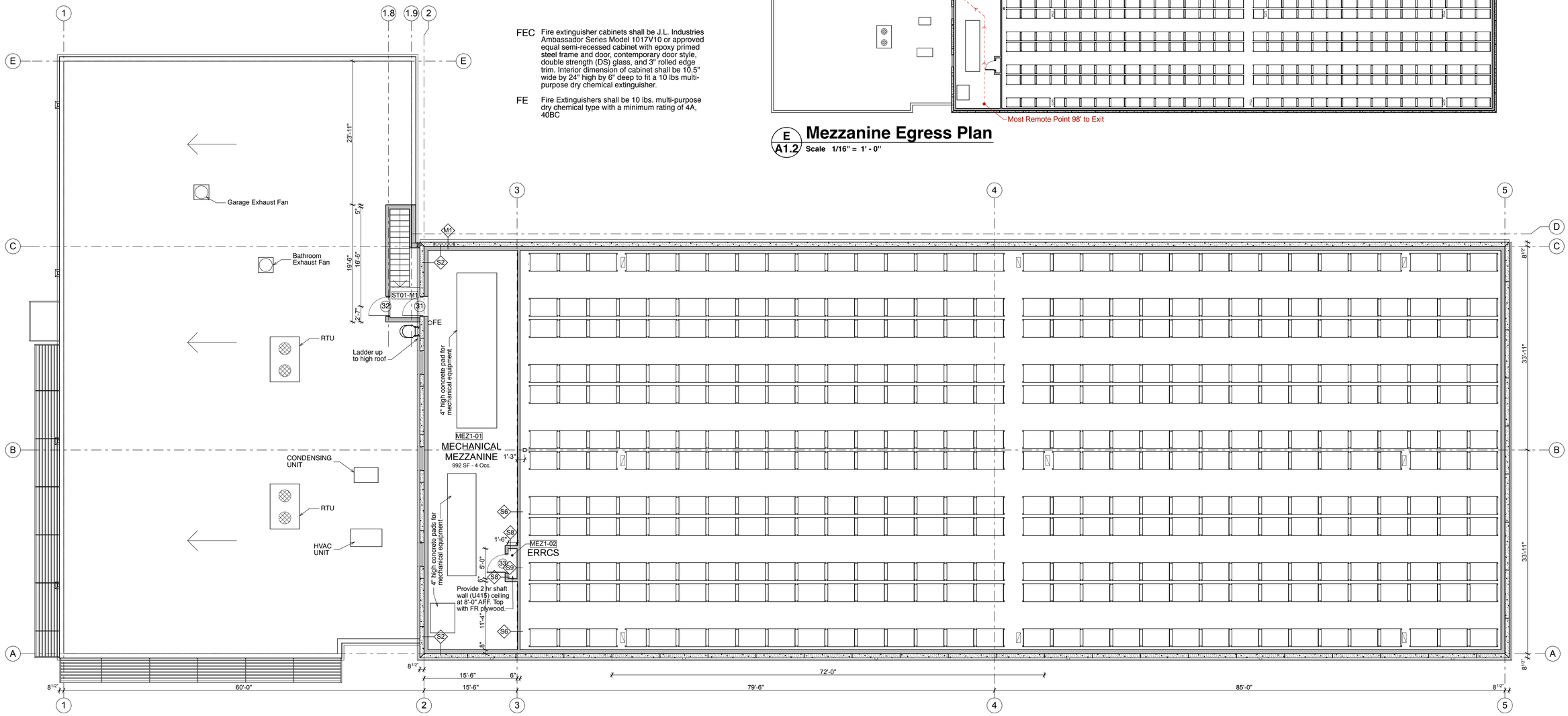


E A1.2 Mezzanine Egress Plan

Scale 1/16" = 1' - 0"

FEC Fire extinguisher cabinets shall be J.L. Industries Ambassador Series Model 1017V10 or approved equal semi-recessed cabinet with epoxy primed steel frame and door, contemporary door style, double strength (DS) glass, and 3" rolled edge trim. Interior dimension of cabinet shall be 10.5" wide by 24" high by 6" deep to fit a 10 lbs multi-purpose dry chemical extinguisher.

FE Fire Extinguishers shall be 10 lbs. multi-purpose dry chemical type with a minimum rating of 4A, 40BC



M A1.2 Mezzanine Plan

Scale 1/8" = 1' - 0"

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Mezzanine Plan

Date: November 5, 2021
Rev:
Scale: 1/8" = 1'-0"

1803
A1.2
56 Etna Rd-G.pln

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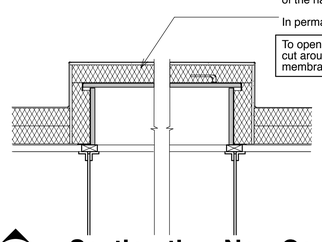
printed 01-20-2022

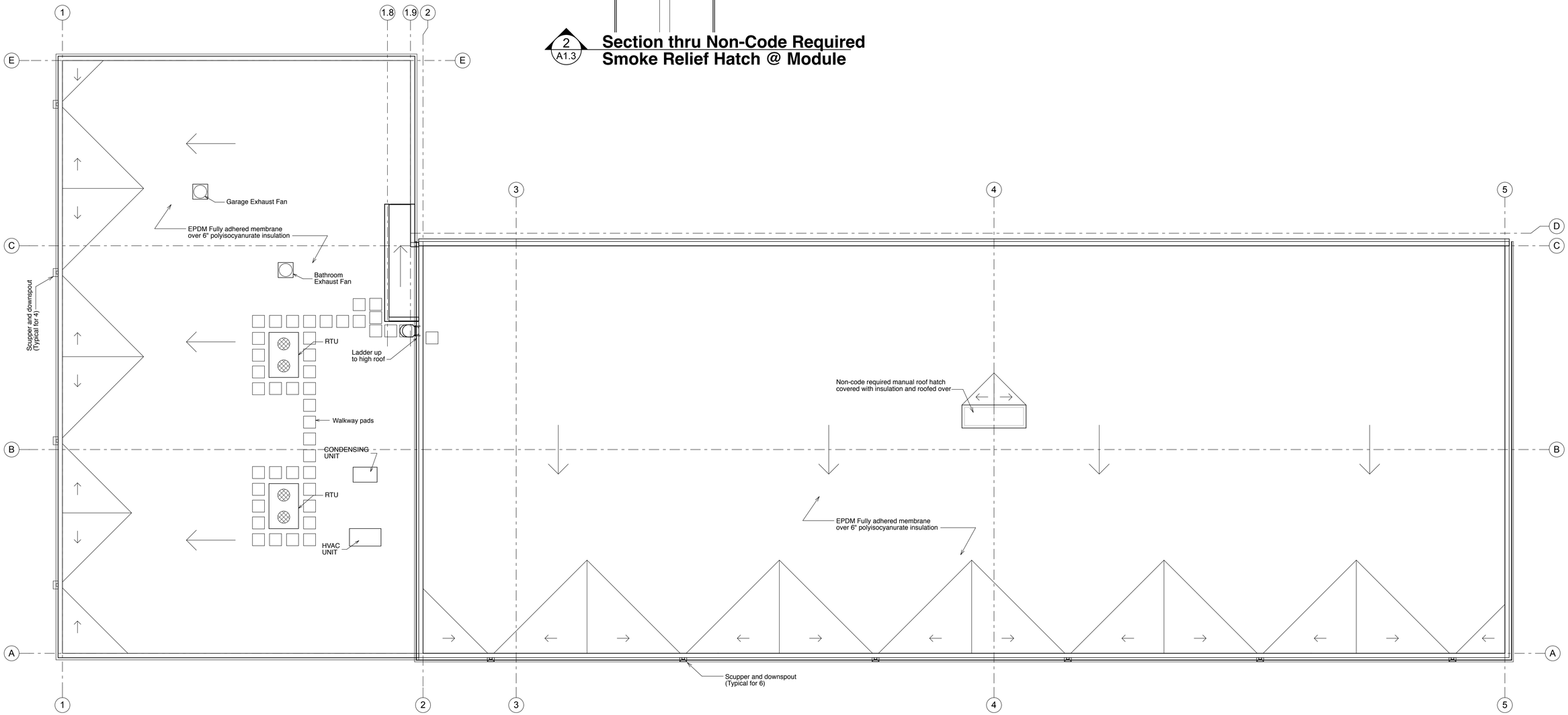
New roof hatch where shown on roof plan. Adhere 4" closed cell insulation over top and sides covering all metal including the operating handle. Adhere EPDM membrane up and over the top of the hatch to form unbroken seal.

In permanant magic marker, write the following on hatch:

To open this non-code required smoke relief hatch after a fire, cut around perimeter 6 inches below the top. Remove roof membrane and insulation and open the hatch to vent smoke."



2 / A1.3 **Section thru Non-Code Required Smoke Relief Hatch @ Module**



R / A1.3 **Roof Plan**
Scale 1/8" = 1' - 0"

100% CONSTRUCTION DOCUMENTS: 12-15-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Roof Plan & Details

Date: December 15, 2021
Rev: 1 01-12-2022 (sheet added)

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Scale: 1/8" = 1'-0"

1803
A1.3
56 Etna Rd-G.pln

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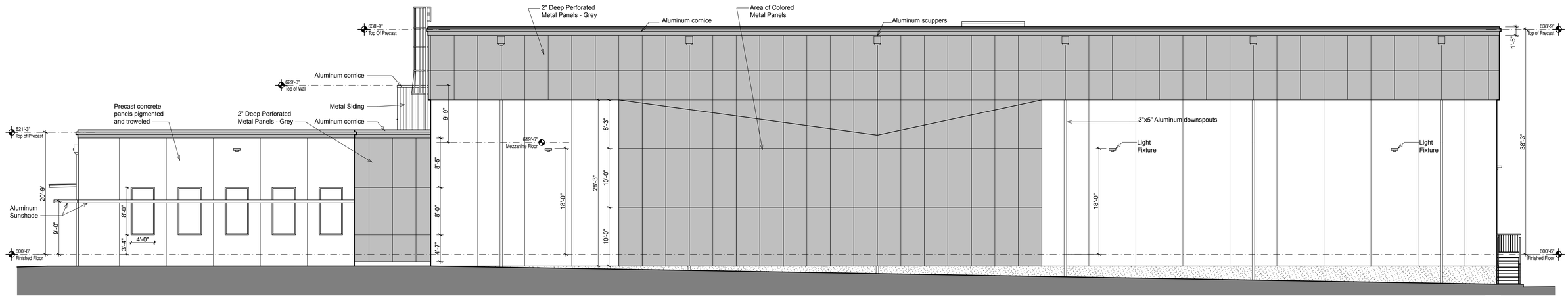
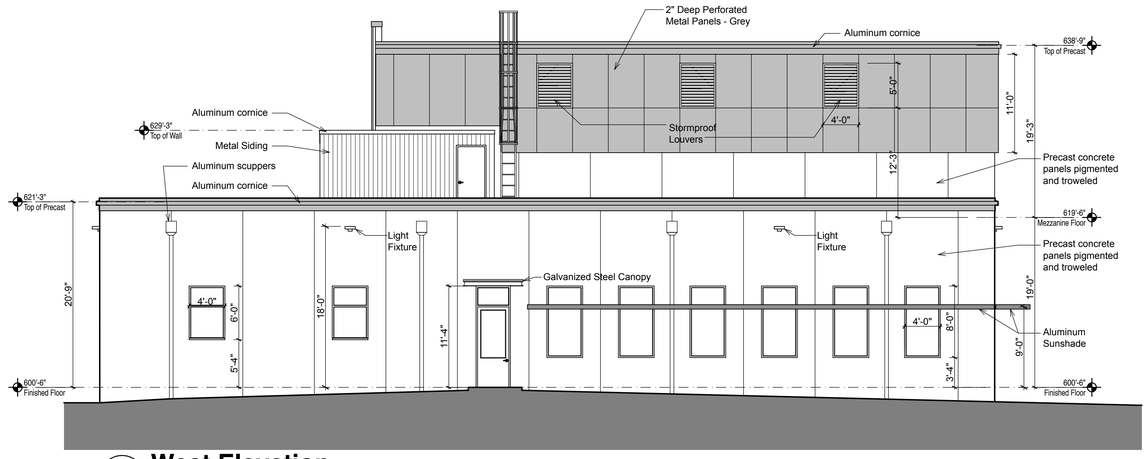


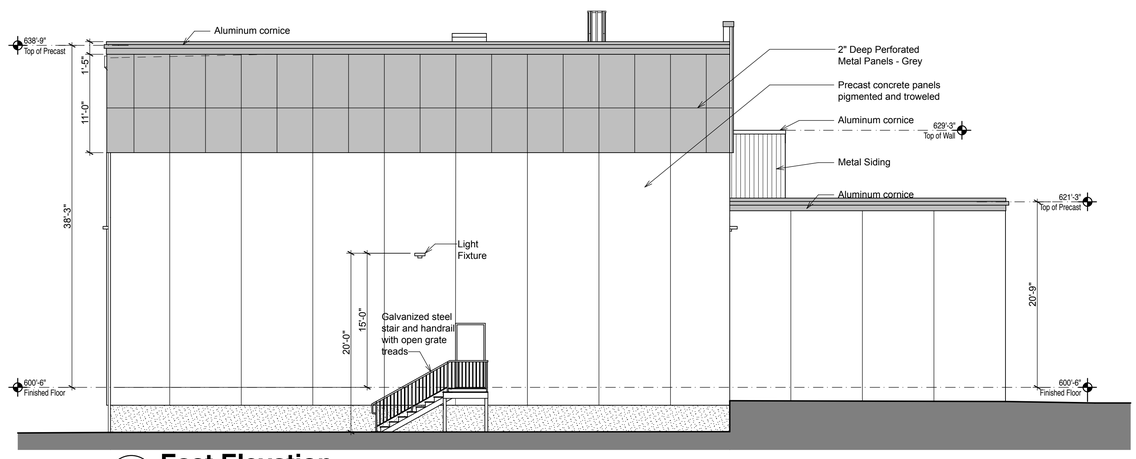
1 A2.1 South Elevation

Scale 1/8" = 1' - 0"



2 A2.1 West Elevation

Scale 1/8" = 1' - 0"



3 A2.1 East Elevation

Scale 1/8" = 1' - 0"

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Exterior Elevations

Date: November 5, 2021
Rev:

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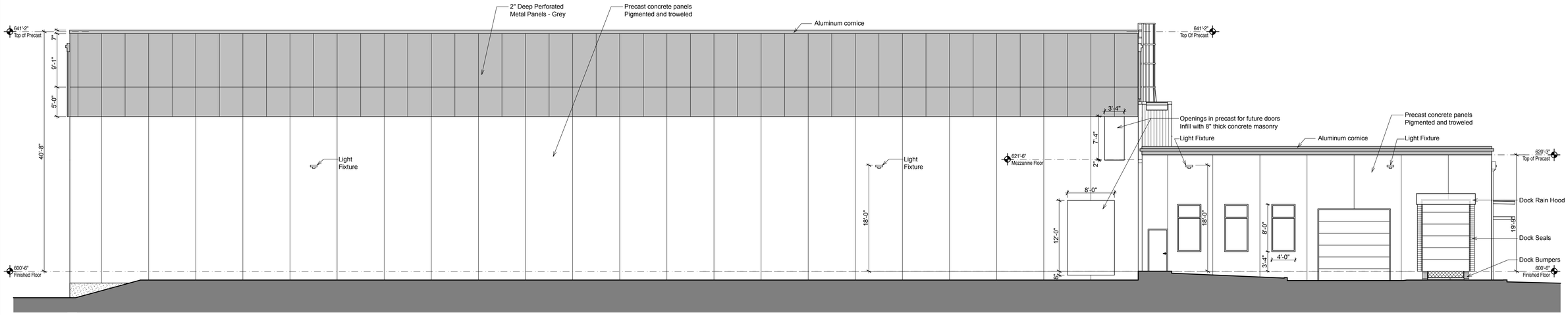
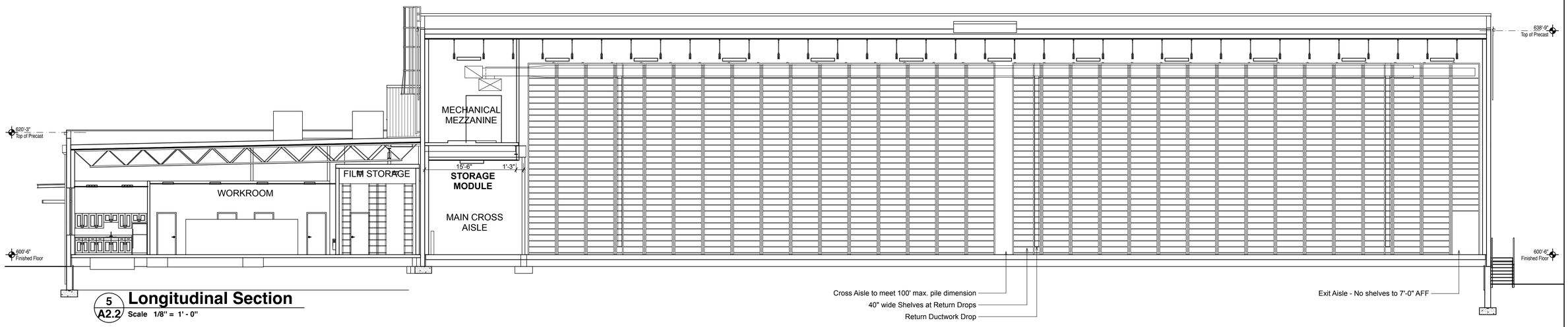
Scale: 1/8" = 1'-0"

1803
A2.1
56 Etna Rd-G.pln

printed 01-20-2022



1 / A2.2 North Elevation
Scale 1/8" = 1' - 0"



5 / A2.2 Longitudinal Section
Scale 1/8" = 1' - 0"

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Exterior Elevations & Building Sections

Date: November 5, 2021
Rev:
Scale: 1/8" = 1'-0"

1803
A2.2
56 Etna Rd-G.pln

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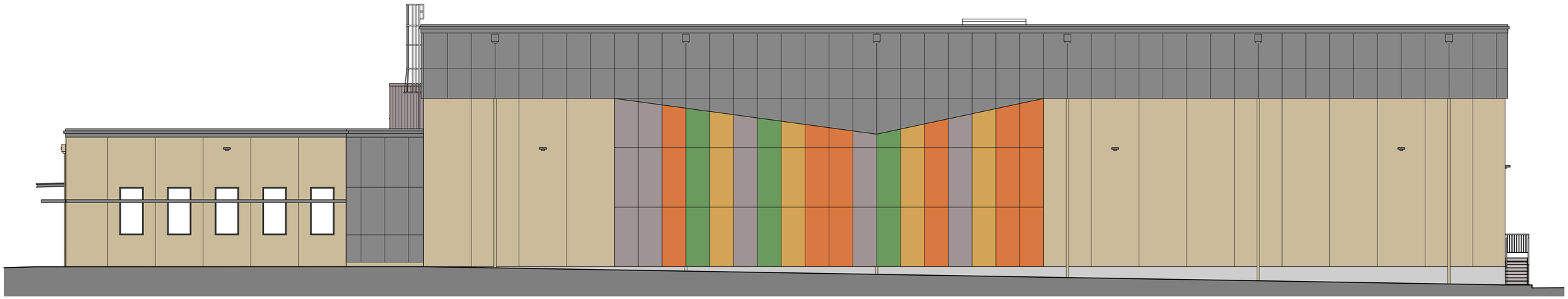
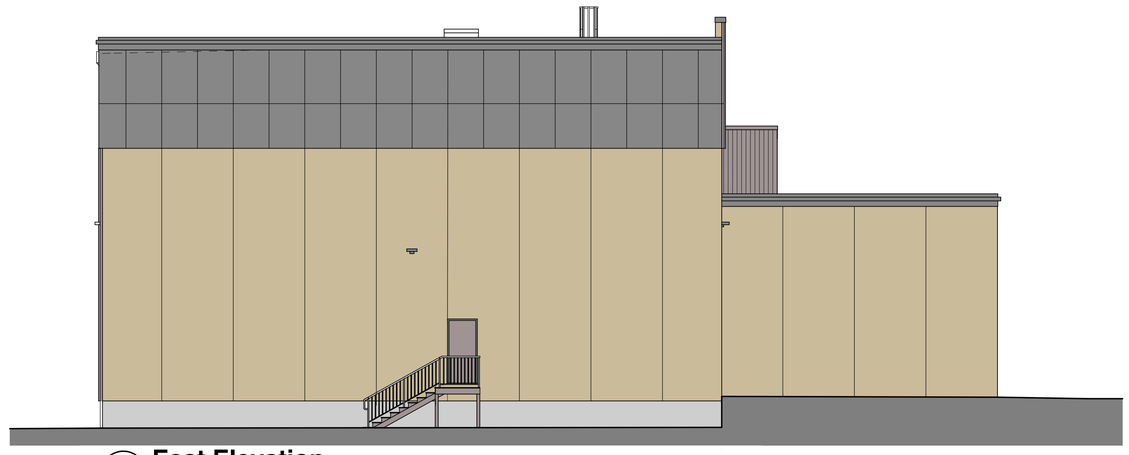


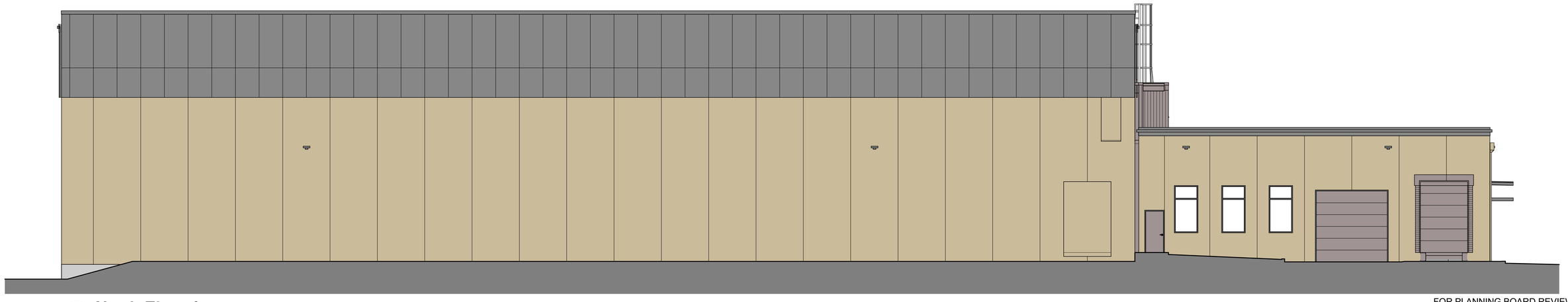
1 A2.3 **South Elevation**
Scale 1/8" = 1' - 0"



2 A2.3 **West Elevation**
Scale 1/8" = 1' - 0"



3 A2.3 **East Elevation**
Scale 1/8" = 1' - 0"



4 A2.3 **North Elevation**
Scale 1/8" = 1' - 0"

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CONSTRUCTION DOCUMENTS: 11-05-2021

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Exterior Color Elevations

Date: November 5, 2021
Rev:

1803
A2.3
56 Etna Rd-G.pln

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Scale: 1/8" = 1'-0"

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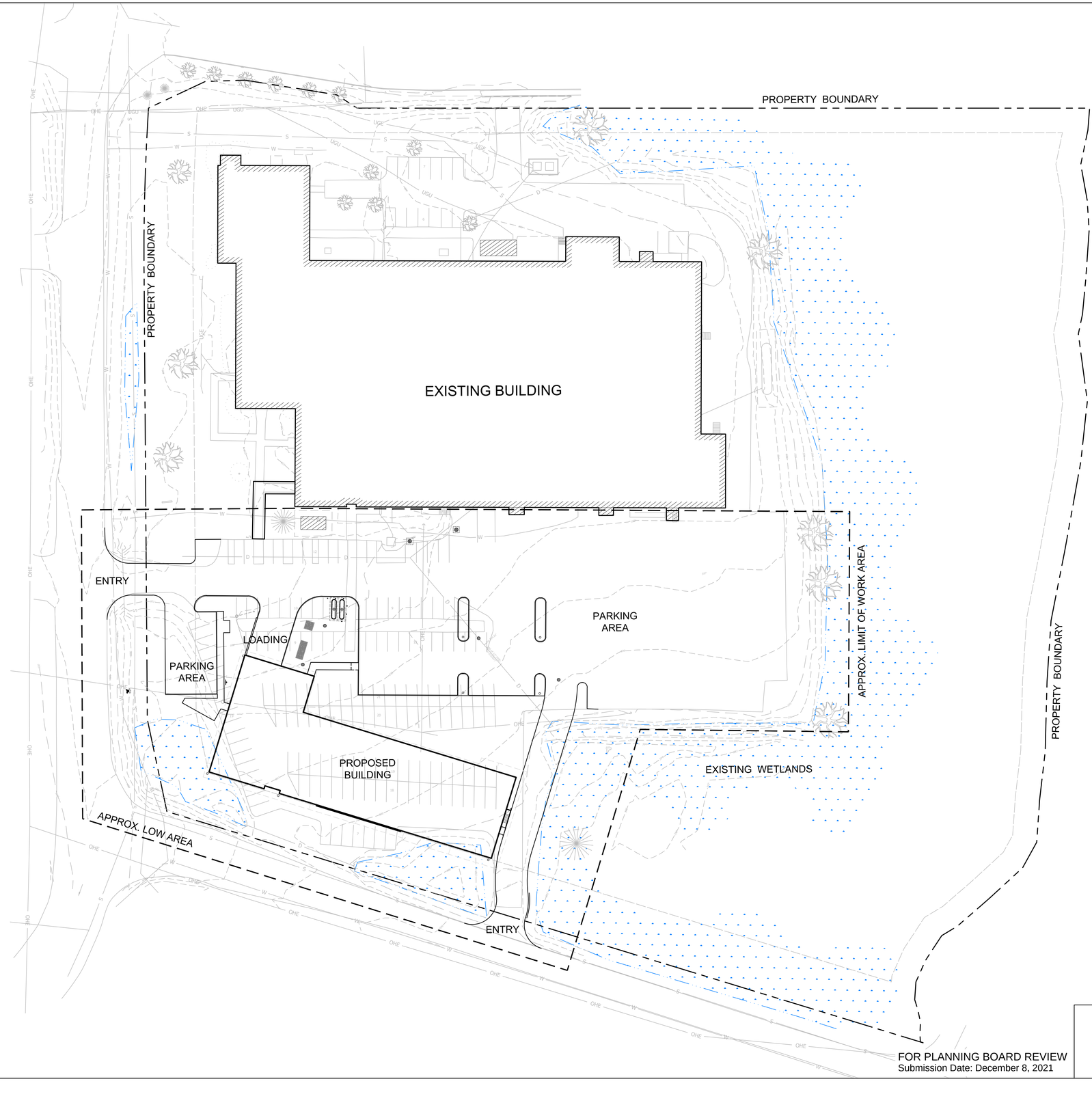
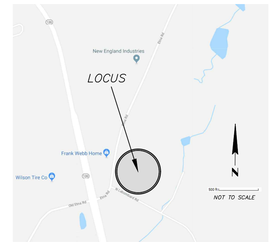
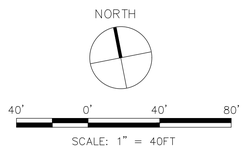


Vicinity Sketch:





FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

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AREA CONTEXT PLAN

Park Architecture Landscape Architects
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Date: December 01, 2021
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Scale: 1" = 40'

1912
L1.1
FileName.dwg

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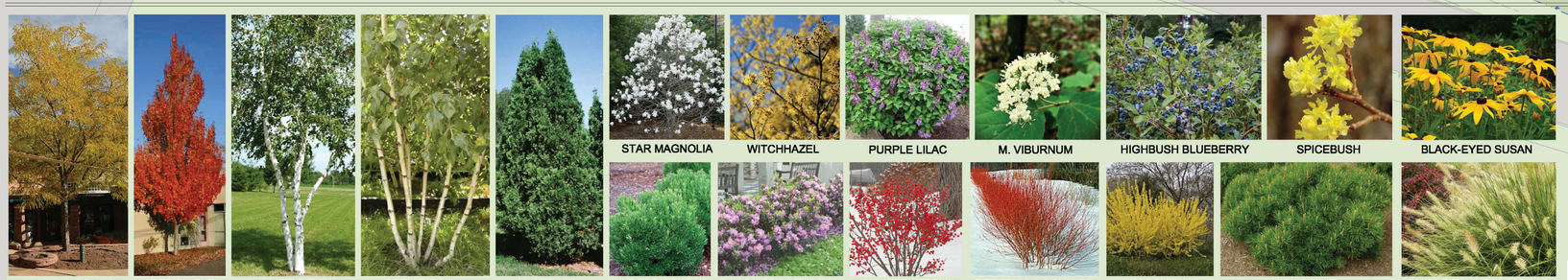
PROPOSED PLANT MATERIAL IMAGES:



CITY PLANTING REQUIREMENTS

5.1.E (15) 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.

PERIMETER LANDSCAPE REQUIREMENTS

5.1.E (15) CALCULATIONS FOR SQUARE FOOTAGE OF PERIMETER LANDSCAPING:

PERIMETER LANDSCAPING SHALL BE PLANTED AT A MINIMUM WITH ONE (1) SHADE TREE PLUS A MIX OF SHRUBS AND UNDERSTORY TREES TOTALING AT LEAST 5 PLANTS FOR EACH 600 SQUARE FEET, UNLESS THE PLANNING BOARD DETERMINES THAT A SEMI-OPAQUE OR AN OPAQUE BUFFER IS REQUIRED.

AT THE TIME OF PLANTING, ALL DECIDUOUS TREES SHALL BE A MINIMUM 2.5" TO 3" INCH CALIPER, MEASURED 6 INCHES ABOVE THE FINISH GRADE LEVEL; ALL EVERGREEN TREES SHALL BE A MINIMUM OF 6 TO 7 FEET IN HEIGHT.

SHRUBS SHALL BE PLANTED AS A MIX, RANGING FROM 50% TO 70% FLOWERING, WITH THE REMAINDER BEING EVERGREEN. AT THE TIME OF PLANTING, ALL SHRUBS WHETHER DECIDUOUS OR EVERGREEN, SHALL BE 24 TO 30 INCHES IN HEIGHT AND/OR 18 TO 24 INCHES IN SPREAD.

(PA 1) WEST

W PERIMETER AREA 1: ± 2,781 SF

PA 1 TREES REQUIRED: 5 TREES PROPOSED: 7 PT

PA 1 SHRUBS REQUIRED: 24 SHRUBS PROPOSED: 32

MIN. # OF PERIMETER FLOWERING SHRUBS REQUIRED: 14 (60%)
MIN. # OF PERIMETER EVERGREEN SHRUBS REQUIRED: 10 (40%)

NUMBER OF PERIMETER FLOWERING SHRUBS PROPOSED: 16 PF } 32
NUMBER OF PERIMETER EVERGREEN SHRUBS PROPOSED: 16 PE

(PA 2) SOUTH

S PERIMETER AREA 2: ± 4,825 SF

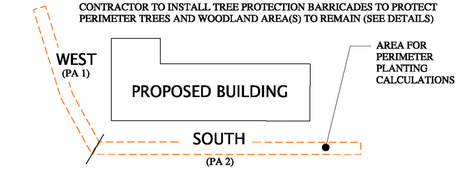
PA 2 TREES REQUIRED: 8 NEW TREES PROPOSED: 8 PT

PA 2 SHRUBS REQUIRED: 40 SHRUBS PROPOSED: 42

MIN. # OF PERIMETER FLOWERING SHRUBS REQUIRED: 21 (60%)
MIN. # OF PERIMETER EVERGREEN SHRUBS REQUIRED: 14 (40%)

NUMBER OF PERIMETER FLOWERING SHRUBS PROPOSED: 28 PF } 42
NUMBER OF PERIMETER EVERGREEN SHRUBS PROPOSED: 14 PE

CONTRACTOR TO INSTALL TREE PROTECTION BARRICADES TO PROTECT PERIMETER TREES AND WOODLAND AREA(S) TO REMAIN (SEE DETAILS)



PARKING AREA SHADING REQUIREMENTS

5.1.E (15) PARKING LOT SHADING CALCULATIONS SHALL BE PROVIDED BY DEPICTING NEW TREES AND SHRUBS AT 10-YEAR CROWN SIZE.

AREA OF NEW PARKING LOT: ±22,515 SF X 30% = 6,755 SF SHADING REQUIREMENT

SHADING PROVIDED: 6 FULL SHADE TREES (707) = 4242 SF
8 HALF SHADE TREES (353) = 2824 SF

TOTAL: 7,066 SF > 30%



SHADE PLANTING KEY

ST = SHADE TREE

REQUIRED SHADE TREE PLANTINGS FOR PARKING AREA SHADING REQUIREMENTS

PERIMETER PLANTING KEY

PT = PERIMETER TREE
PF = PERIMETER FLOWERING SHRUB
PE = PERIMETER EVERGREEN SHRUB

SITE LIGHTING

W	QTY: ±11	LED WALL PACK FIXTURES MOUNTED 18FT HIGH FROM FIRST FLOOR ELEV.
LP	QTY: ± 15	LED LIGHT POST FIXTURES MOUNTED 20FT HIGH (SEE LIGHTING PLAN FOR TYPE)
B	QTY: ± 4	LED BOLLARD LIGHT POSTS
D	QTY: ± 1	ENTRY CANOPY LIGHT FIXTURE

LIGHTING NOTES

1. FIXTURE SYMBOLS ARE NOT TO SCALE.
2. SEE SHEET L1.4 FOR ADDITIONAL LIGHTING DATA AND LIGHTING SPECIFICATIONS.
3. ALL FIXTURES ON THIS PLAN SHALL MEET IESNA QUALIFICATIONS (FULLY-SHIELDED).
4. REFER TO CIVIL PLANS FOR UTILITY LOCATIONS.
5. 20FT FIXTURE MOUNTING HEIGHT CALCULATED FROM FINISH GRADE. (POLE + LIGHT POLE BASE = FIXTURE MOUNTING HT.)
6. 18FT WALL PACK FIXTURE MOUNTING HEIGHT CALCULATED FROM FIRST FLOOR ELEVATION.
7. ELECTRICAL ENGINEERING DESIGN, PANEL LOCATION, AND CONDUIT BY OTHERS.
8. CONTRACTOR SHALL COORDINATE LOCATION OF ALL FIXTURES WITH LANDSCAPE ARCHITECT.

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FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

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LANDSCAPE REQUIREMENTS PLAN

Date: December 01, 2021 | 1912
Rev:
Scale: 1" = 20'

L1.2

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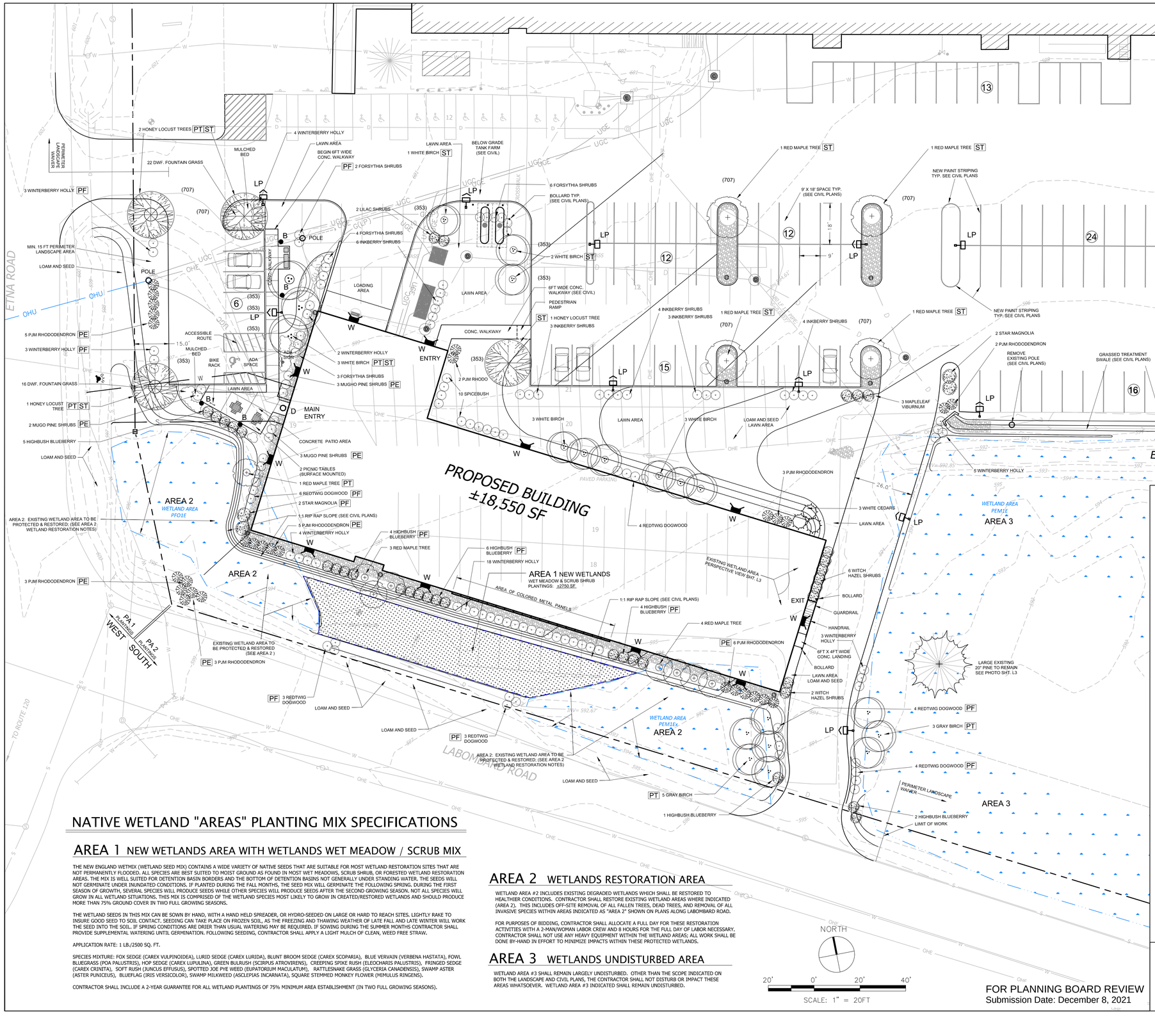

LANDSCAPE PLANTING SCHEDULE

QTY	BOTANICAL NAME	COMMON NAME	SIZE
DECIDUOUS TREES			
4	GLEDITSIA TRIACANTHOS V. INERMIS	*IMPERIAL HONEYLOCUST*	3" – 3.5" CALIPER
12	ACER X FREEMANII 'ARMSTRONG'	*COLUMNAR RED MAPLE*	3.5" – 4" CALIPER
12	BETULA PAPYRIFERA	*WHITE BIRCH*	CLUMP 10'–12' HT.
8	BETULA POPULIFOLIA	*GRAY BIRCH*	CLUMP 10'–12' HT.
3	THUJA OCCIDENTALIS	*NORTHERN WHITE CEDAR*	CLUMP 10'–12' HT.
SHRUBS			
4	MAGNOLIA STELLATA	*STAR MAGNOLIA*	48"–60" HT, B&B
8	HAMAMELIS VIRGINIANA	*AMERICAN WITCH HAZEL*	30"–36" HT, 7 GAL
2	SYRINGA VULGARIS	*COMMON PURPLE LILAC*	30"–36" HT, 7 GAL
7	VIBURNUM ACERIFOLIUM	*MAPLELEAF VIBURNUM*	30"–36" HT, 7 GAL
20	VACCINIUM CORYMBOSUM	*HIGHBUSH BLUEBERRY*	30"–36" HT, 7 GAL
10	LINDERA BENZOIN	*SPICEBUSH*	24"–30" HT, 5 GAL
20	ILEX GLABRA 'COMPACTA'	*COMPACT INKBERRY*	24"–30" HT, 5 GAL
29	RHODODENDRON 'PJM ELITE'	*PJM RHODODENDRON*	24"–30" HT, 5 GAL
49	ILEX VERTICILLATA 'WINTER RED'	*WINTER RED WINTERBERRY*	24"–30" HT, 5 GAL
33	CORNUS STOLONIFERA	*RED TWIG DOGWOOD*	24"–30" HT, 5 GAL
15	FORSYTHIA X INTERMEDIA	*FORSYTHIA*	24"–30" HT, 5 GAL
8	PINUS MUGO	*MUGO PINE*	18"–24" HT, 7 GAL
PERENNIALS			
52	PENNISETUM ALOPECUROIDES	*DWARF FOUNTAIN GRASS*	12"–18" HT, 2 GAL
16	RUDBECKIA FULGIDA	*BLACK EYED SUSAN*	12"–18" HT, 2 GAL

EXISTING WETLAND AREA

PERSPECTIVE



VIEW OF EXISTING WETLAND TO REMAIN EAST OF PROPOSED BUILDING

NATIVE WETLAND "AREAS" PLANTING MIX SPECIFICATIONS

AREA 1 NEW WETLANDS AREA WITH WETLANDS WET MEADOW / SCRUB MIX

THE NEW ENGLAND WETMIX (WETLAND SEED MIX) CONTAINS A WIDE VARIETY OF NATIVE SEEDS THAT ARE SUITABLE FOR MOST WETLAND RESTORATION SITES THAT ARE NOT PERMANENTLY FLOODED. ALL SPECIES ARE BEST SUITED TO MOIST GROUND AS FOUND IN MOST WET MEADOWS, SCRUB SHRUB, OR FORESTED WETLAND RESTORATION AREAS. THE MIX IS WELL SUITED FOR DETENTION BASIN BORDERS AND THE BOTTOM OF DETENTION BASINS NOT GENERALLY UNDER STANDING WATER. THE SEEDS WILL NOT GERMINATE UNDER INUNDATED CONDITIONS. IF PLANTED DURING THE FALL MONTHS, THE SEED MIX WILL GERMINATE THE FOLLOWING SPRING. DURING THE FIRST SEASON OF GROWTH, SEVERAL SPECIES WILL PRODUCE SEEDS WHILE OTHER SPECIES WILL PRODUCE SEEDS AFTER THE SECOND GROWING SEASON. NOT ALL SPECIES WILL GROW IN ALL WETLAND SITUATIONS. THIS MIX IS COMPRISED OF THE WETLAND SPECIES MOST LIKELY TO GROW IN CREATED/RESTORED WETLANDS AND SHOULD PRODUCE MORE THAN 75% GROUND COVER IN TWO FULL GROWING SEASONS.

THE WETLAND SEEDS IN THIS MIX CAN BE SOWN BY HAND, WITH A HAND HELD SPREADER, OR HYDRO-SEEDED ON LARGE OR HARD TO REACH SITES. LIGHTLY RAKE TO INSURE GOOD SEED TO SOIL CONTACT. SEEDING CAN TAKE PLACE ON FROZEN SOIL, AS THE FREEZING AND THAWING WEATHER OF LATE FALL AND LATE WINTER WILL WORK THE SEED INTO THE SOIL. IF SPRING CONDITIONS ARE DRIER THAN USUAL WATERING MAY BE REQUIRED. IF SOWING DURING THE SUMMER MONTHS CONTRACTOR SHALL PROVIDE SUPPLEMENTAL WATERING UNTIL GERMINATION. FOLLOWING SEEDING, CONTRACTOR SHALL APPLY A LIGHT MULCH OF CLEAN, WEED FREE STRAW.

APPLICATION RATE: 1 LB./2500 SQ. FT.

SPECIES MIXTURE: FOX SEDGE (CAREX VULPINOIDEA), LURID SEDGE (CAREX LURIDA), BLUNT BROOM SEDGE (CAREX SCOPARIA), BLUE VERVAIN (VERBENA HASTATA), FOWL BLUEGRASS (POA PALUSTRIS), HOP SEDGE (CAREX LUPULINA), GREEN BULRUSH (SCIRPUS ATROVIRENS), CREEPING SPIKE RUSH (ELEOCHARIS PALUSTRIS), FRINGED SEDGE (CAREX CRINITA), SOFT RUSH (JUNCUS EFFUSUS), SPOTTED JOE PYE WEED (EUPATORIUM MACULATUM), RATTLESNAKE GRASS (GLYCERIA CANADENSIS), SWAMP ASTER (ASTER PUNICEUS), BLUEFLAG (IRIS VERSICOLOR), SWAMP MILKWEED (ASCLEPIAS INCARNATA), SQUARE STEMMED MONKEY FLOWER (MIMULUS RINGENS).

CONTRACTOR SHALL INCLUDE A 2-YEAR GUARANTEE FOR ALL WETLAND PLANTINGS OF 75% MINIMUM AREA ESTABLISHMENT (IN TWO FULL GROWING SEASONS).

AREA 2 WETLANDS RESTORATION AREA

WETLAND AREA #2 INCLUDES EXISTING DEGRADED WETLANDS WHICH SHALL BE RESTORED TO HEALTHIER CONDITIONS. CONTRACTOR SHALL RESTORE EXISTING WETLAND AREAS WHERE INDICATED (AREA 2). THIS INCLUDES OFF-SITE REMOVAL OF ALL FALLEN TREES, DEAD TREES, AND REMOVAL OF ALL INVASIVE SPECIES WITHIN AREAS INDICATED AS "AREA 2" SHOWN ON PLANS ALONG LABOMBARD ROAD.

FOR PURPOSES OF BIDDING, CONTRACTOR SHALL ALLOCATE A FULL DAY FOR THESE RESTORATION ACTIVITIES WITH A 2-MAN/WOMAN LABOR CREW AND 8 HOURS FOR THE FULL DAY OF LABOR NECESSARY. CONTRACTOR SHALL NOT USE ANY HEAVY EQUIPMENT WITHIN THE WETLAND AREAS; ALL WORK SHALL BE DONE BY-HAND IN EFFORT TO MINIMIZE IMPACTS WITHIN THESE PROTECTED WETLANDS.

AREA 3 WETLANDS UNDISTURBED AREA

WETLAND AREA #3 SHALL REMAIN LARGELY UNDISTURBED. OTHER THAN THE SCOPE INDICATED ON BOTH THE LANDSCAPE AND CIVIL PLANS, THE CONTRACTOR SHALL NOT DISTURB OR IMPACT THESE AREAS WHATSOEVER. WETLAND AREA #3 INDICATED SHALL REMAIN UNDISTURBED.

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CD

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SITE LANDSCAPE PLAN

Park Architecture Landscape Architects
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Date: December 01, 2021
Rev:

1912
L1.3

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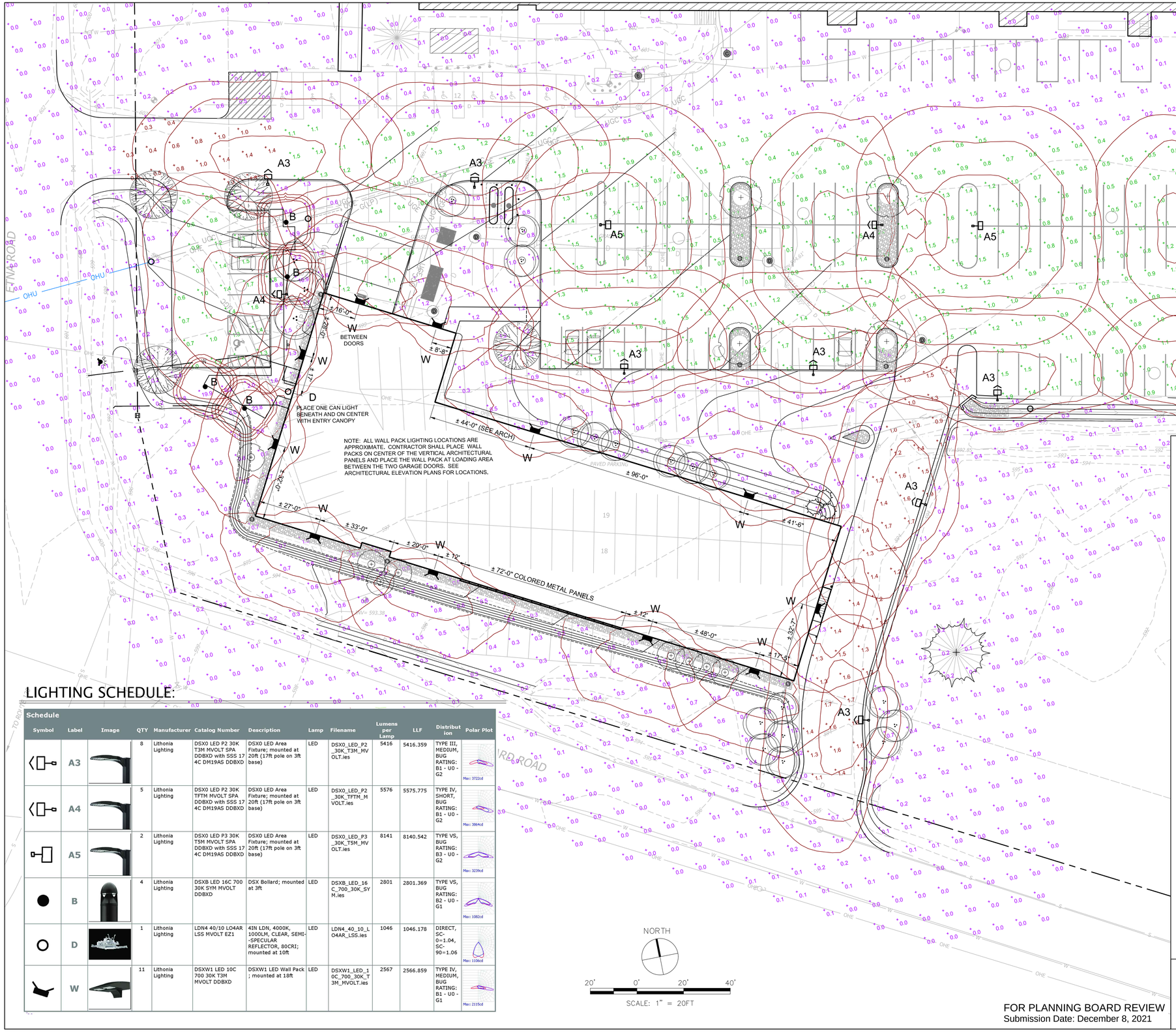

LIGHTING SCHEDULE:

Schedule

Symbol	Label	Image	QTY	Manufacturer	Catalog Number	Description	Lamp	Filename	Lumens per Lamp	LLF	Distribution	Polar Plot
	A3		8	Lithonia Lighting	DSX0 LED P2 30K T3M MVOLT SPA DDBXD with SSS 17 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (17ft pole on 3ft base)	LED	DSX0_LED_P2_30K_T3M_MVOLT.ies	5416	5416.359	TYPE III, MEDIUM, BUG RATING: B1 - U0 - G2	Max: 3722cd
	A4		5	Lithonia Lighting	DSX0 LED P2 30K TFTM MVOLT SPA DDBXD with SSS 17 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (17ft pole on 3ft base)	LED	DSX0_LED_P2_30K_TFTM_MVOLT.ies	5576	5575.775	TYPE IV, SHORT, BUG RATING: B1 - U0 - G2	Max: 3864cd
	A5		2	Lithonia Lighting	DSX0 LED P3 30K T5M MVOLT SPA DDBXD with SSS 17 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft (17ft pole on 3ft base)	LED	DSX0_LED_P3_30K_T5M_MVOLT.ies	8141	8140.542	TYPE VS, BUG RATING: B3 - U0 - G2	Max: 3239cd
	B		4	Lithonia Lighting	DSXB LED 16C 700 30K SYM MVOLT DDBXD	DSX Bollard; mounted at 3ft	LED	DSXB_LED_16C_700_30K_SYM.ies	2801	2801.369	TYPE VS, BUG RATING: B2 - U0 - G1	Max: 1082cd
	D		1	Lithonia Lighting	LDN4 40/10 LO4AR LSS MVOLT EZ1	4IN LDN, 4000K, 1000LM, CLEAR, SEMI--SPECULAR REFLECTOR, 80CRI; mounted at 10ft	LED	LDN4_40_10_LO4AR_LSS.ies	1046	1046.178	DIRECT, SC-0=1.04, SC-90=1.06	Max: 1106cd
	W		11	Lithonia Lighting	DSXW1 LED 10C 700 30K T3M MVOLT DDBXD	DSXW1 LED Wall Pack ; mounted at 18ft	LED	DSXW1_LED_10C_700_30K_T3M_MVOLT.ies	2567	2566.859	TYPE IV, MEDIUM, BUG RATING: B1 - U0 - G1	Max: 2195cd

CITY LIGHTING REQUIREMENTS

6.7.B. GENERAL REQUIREMENTS. OUTDOOR LIGHTING SHALL BE LOCATED, MOUNTED, AIMED, AND SHIELDED IN SUCH A WAY THAT ADJACENT USES ARE SUITABLY PROTECTED FROM LIGHT TRESPASS. SUCH LIGHTING SHALL NOT INTERFERE WITH TRAFFIC ON NEARBY HIGHWAYS. THE STANDARDS AND GUIDELINES CONTAINED IN THE MOST CURRENT EDITION OF THE ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA (IESNA) LIGHTING HANDBOOK SHALL BE UTILIZED TO DETERMINE THE APPROPRIATENESS OF EXTERIOR LIGHTING LEVELS AND CONFORMITY WITH THESE REGULATIONS.

STANDARDS FOR PARKING LOT LIGHTING

6.7.3.a. LIGHTING OF PARKING LOTS. AREAS DESIGNATED AS PARKING LOTS, PASSIVE VEHICULAR STORAGE AREAS, OR EXTERIOR DISPLAY/SALES AREAS SHALL BE ILLUMINATED SO THAT THE AVERAGE HORIZONTAL ILLUMINANCE AT GRADE LEVEL IS NO MORE THAN 5.0 FOOT-CANDLES. THE UNIFORMITY RATIO (RATIO OF AVERAGE TO MINIMUM ILLUMINANCE) SHALL BE NO GREATER THAN 4:1. THE AVERAGE AND MINIMUM SHALL BE COMPUTED FOR ONLY THAT AREA DESIGNATED AS PARKING LOTS, PASSIVE VEHICULAR STORAGE AREAS, AND EXTERIOR DISPLAY/SALES AREAS.

PARKING LOT LIGHTING REQUIREMENTS	REQUIRED	PROVIDED
UNIFORMITY RATIO	AVERAGE / MINIMUM NO GREATER THAN 4:1	
MINIMUM ILLUMINATION LEVEL *(AT DARKEST SPOT ON THE PARKING AREA)*	MINIMUM NO LESS THAN 0.3 FC	
AVERAGE HORIZONTAL ILLUMINATION LEVEL *(MEASURED AT GRADE LEVEL OF PARKING AREA)*	AVERAGE NO MORE THAN 5.0 FC	

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Driveway (Etna Rd)	+	0.9 fc	1.8 fc	0.3 fc	6.0:1	3.0:1
Driveway (Labombard Rd)	+	1.4 fc	1.9 fc	0.9 fc	2.1:1	1.6:1
Outside of Parking area	+	0.3 fc	23.8 fc	N/A	N/A	N/A
Project area Parking Lot	+	1.1 fc	3.8 fc	0.3 fc	12.7:1	3.7:1

NOTES:

1. LIGHTING DESIGN BY VISIBLE LIGHT, INC.
2. FIXTURE SYMBOLS ARE NOT TO SCALE
3. ALL FIXTURES ON THIS PLAN MEET IESNA QUALIFICATIONS.
4. REFER TO CIVIL PLANS FOR UTILITY LOCATIONS.
5. REFER TO ARCHITECTURAL ELEVATIONS FOR SPECIFIC WALL PACK LOCATIONS AND MOUNTING HEIGHTS. (WALL PACKS 18FT FROM FFE)
6. 20FT LIGHT POLE FIXTURE MOUNTING HEIGHT CALCULATED FROM FINISH GRADE. (POLE + LIGHT POLE BASE = FIXTURE MOUNTING HT.)
7. ELECTRICAL ENGINEERING DESIGN, PANEL LOCATION, OPERATING SWITCH PLATES AND CONDUIT BY OTHERS.
8. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT ON-SITE TO VERIFY LOCATION OF ALL LIGHT FIXTURES WALL PACKS AND LIGHT POLES PRIOR TO PLACEMENT AND INSTALLATION.

100% CD

Lighting by: Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

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SITE LIGHTING PLAN

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Date: December 01, 2021
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LIGHT POLE SPECIFICATION



D-Series Size 0
LED Area Luminaire

d-series

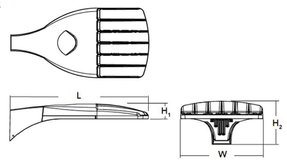
Buy American

Catalog Number	
Notes	
Type	Label A3 A4 & A5

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height$_1$:	3" (7.62 cm)
Height$_2$:	7" (17.8 cm)
Weight (max):	16 lbs (7.26 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

BOLLARD LIGHTING SPECIFICATION



D-Series
LED Bollard

Buy American

d-series

Catalog Number	
Notes	
Type	Label B

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Diameter:	8" Round (20.3 cm)
Height:	42" (106.7 cm)
Weight (max):	27 lbs (12.25 kg)



Introduction

The D-Series LED Bollard is a stylish, energy-saving, long-life solution designed to perform the way a bollard should—with zero uplight. An optical leap forward, this full cut-off luminaire will meet the most stringent of lighting codes. The D-Series LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

WALL PACK LIGHTING SPECIFICATION



D-Series Size 1
LED Wall Luminaire

Buy American

d-series

Catalog Number	
Notes	
Type	Label W

Hit the Tab key or mouse over the page to see all interactive elements.

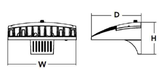
Specifications

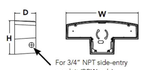
Luminaire

Width:	13-3/4" (34.9 cm)	Weight:	12 lbs (5.4 kg)
Depth:	10" (25.4 cm)		
Height:	6-3/8" (16.2 cm)		

Back Box (BBW, E20WC)

Width:	13-3/4" (34.9 cm)	BBW Weight:	5 lbs (2.3 kg)
Depth:	4" (10.2 cm)	E20WC Weight:	10 lbs (4.5 kg)
Height:	6-3/8" (16.2 cm)		





Introduction

The D-Series Wall luminaire is a stylish, fully integrated LED solution for building-mount applications. It features a sleek, modern design and is carefully engineered to provide long-lasting, energy-efficient lighting with a variety of optical and control options for customized performance.

With an expected service life of over 20 years of nighttime use and up to 74% in energy savings over comparable 250W metal halide luminaires, the D-Series Wall is a reliable, low-maintenance lighting solution that produces sites that are exceptionally illuminated.

LIGHT FIXTURE NOTES:

CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR APPROVAL FOR ALL LIGHTING MATERIALS, FIXTURES, POLES AND INSTALLATION METHODS TO LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION AND INSTALLATION. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT ON SITE TO VERIFY AND MARK LOCATION OF ALL PROPOSED FIXTURES INCLUDING LIGHT POLES, WALL PACKS AND BOLLARDS PRIOR TO INSTALLATION.

LANDSCAPE NOTES

1. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE IS PROVIDED IN THE PLANT LIST FOR CONTRACTORS CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LIST AND THE NUMBER SHOWN ON THE DRAWING, THE GREATER NUMBER SHALL APPLY.

2. THE CONTRACTOR SHALL SUPPLY PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING AS SHOWN.

3. ALL PLANT MATERIAL SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT OR THE OWNER'S REPRESENTATIVE PRIOR TO ARRIVAL ON SITE.

4. ALL PLANT BEDS WILL BE TOP-DRESSED WITH 3" SHREDDED BARK MULCH.

5. THE CONTRACTOR SHALL LOCATE AND MARK ALL UTILITIES PRIOR TO PLANTING. ANY CONFLICTS BETWEEN PLANTING AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER SO THAT ALTERNATIVE PLANTING LOCATIONS CAN BE DETERMINED.

7. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER OR LANDSCAPE ARCHITECT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTS AGAINST DAMAGE FROM ON-GOING CONSTRUCTION. PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL FORMAL ACCEPTANCE OF ALL PLANTINGS.

9. ALL OTHER DISTURBED AREAS NOT OTHERWISE INDICATED SHALL BE LOAMED AND SEEDED.

10. CONTRACTOR SHALL PRESERVE EXISTING TREES AND WETLAND AREAS WHERE INDICATED.

11. CONTRACTOR SHALL RESTORE EXISTING WETLAND AREAS WHERE INDICATED. THIS INCLUDES REMOVAL OF FALLEN TREES, DEAD TREES AND REMOVAL OF ALL INVASIVE SPECIES WITHIN AREA #2 AS SHOWN ON PLANS.

12. CONTRACTOR SHALL PROVIDE A 2-YEAR GUARANTEE ON ALL INSTALLED PLANT MATERIAL.

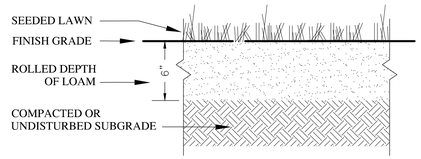
13. ALL PROPOSED TREES SHALL BE PLACED A MINIMUM OF 10FT FROM EXISTING AND PROPOSED UTILITIES.

14. ALL TREES SPECIFIED WILL BE OF GOOD QUALITY AND IN COMPLIANCE WITH THE MOST RECENT EDITION OF ANSI Z60.1 AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY AMERICANHORT.

15. SPECIAL ATTENTION SHALL BE PAID TO THE SITE PREPARATION AND SOILS FOR ALL PLANTING AREAS TO ENSURE THE HEALTH AND VIGOROUS GROWTH OF PLANTINGS (ESPECIALLY TREES AND SHRUBS). CONTRACTOR SHALL PROVIDE ADEQUATE SOIL VOLUME AS DEPICTED IN THE TREE AND SHRUB PLANTING DETAILS HEREIN.

TURF PLANTING DETAIL

NOT TO SCALE



NOTES:

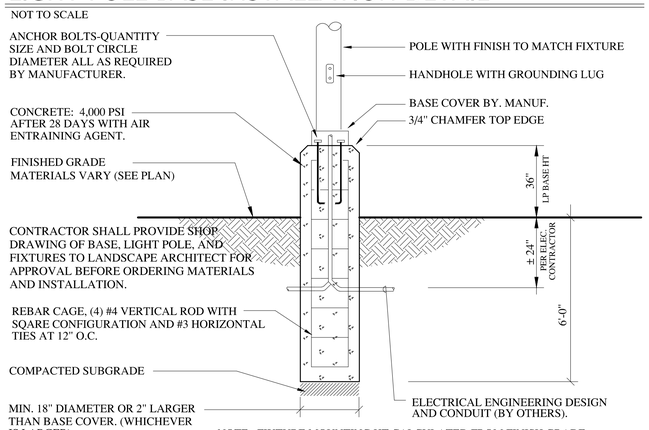
SEED ALL IDENTIFIED AREAS FOR LAWN AND ALL DISTURBED AREAS WITHIN 48 HOURS OF FINAL GRADING.
SEED AFTER APRIL 15TH AND BEFORE SEPTEMBER 15TH IN ORDER TO ESTABLISH BEFORE FREEZING TEMPERATURES.

CONTRACTOR IS RESPONSIBLE TO WATER AND ESTABLISH SEEDED LAWN AREAS. WARRANTY SHALL BE 9 WEEKS FOLLOWING INSTALLATION PERIOD.

CONTRACTOR TO INCLUDE NECESSARY TOUCH-UP / RESEEDING FOR ANY AREAS WHERE GRASS SEED DOES NOT GERMINATE DURING THE WARRANTY PERIOD.

LIGHT POLE BASE INSTALLATION DETAIL

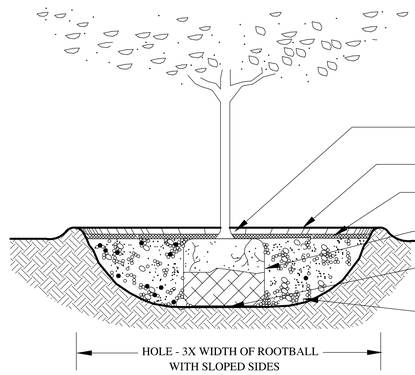
NOT TO SCALE



NOTE: FIXTURE MOUNTING HT CALCULATED FROM FINISH GRADE (17FT POLE + 3FT LIGHT POLE BASE = 20FT FIXTURE MOUNTING HT)
MOUNTING HEIGHT OF THE LIGHT FIXTURE (FROM GRADE) SHALL BE 20FT

TREE PLANTING DETAIL

NOT TO SCALE



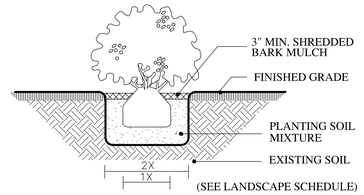
LANDSCAPE CONTRACTOR TO PROVIDE A 2 YEAR GUARANTEE ON ALL TREE AND SHRUB PLANTINGS.

GUARANTEE PERIOD BEGINS FOLLOWING 100% COMPLETION OF THE WORK AND FINAL SIGN-OFF BY THE LANDSCAPE ARCHITECT DURING THE CONSTRUCTION ADMINISTRATION PHASE.

NOTE:
REMOVE BURLAP ROPE AND WIRE FROM TOP & SIDES OF ALL BALLS. ADD MULCH AS SHOWN ON PLAN

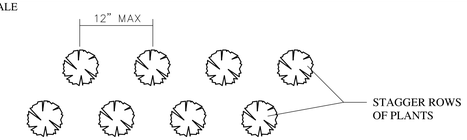
SHRUB PLANTING DETAIL

NOT TO SCALE



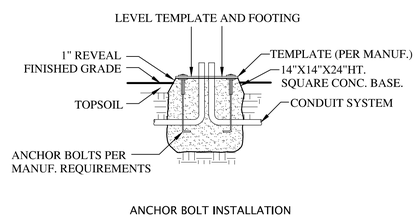
GROUNDCOVER SPACING DETAIL

NOT TO SCALE

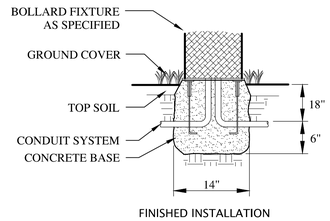


BOLLARD LIGHT BASE INSTALLATION DETAIL

NOT TO SCALE



ANCHOR BOLT INSTALLATION



FINISHED INSTALLATION

NOTE: CONTRACTOR TO PROVIDE SHOP DRAWING OF BOLLARD, CONCRETE BASE, AND INSTALLATION METHODS TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO ORDERING AND INSTALLATION.

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

100% CD

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

LANDSCAPE AND LIGHTING DETAILS

Park Architecture Landscape Architects
3 School House Lane, Suite #1 • Etna, NH 03750 • 603-643-3400

Date: December 01, 2021
Rev:
1912
L1.5

Russell Scott Steedle & Capone Architects Inc.
763 Massacusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Scale: AS NOTED

printed 01-20-2022

SITE ENLARGEMENT PLAN – ENTRY AREA

SCALE: 1" = 5'-0"

4 FORSYTHIA SHRUBS
MULCHED BED
22 DWARF FOUNTAIN GRASS
ECHO_BCH_24-6
SILVER 72X24X18 SEAT
POWDER COATED BASE
SURFACE MOUNTED
2 FORSYTHIA SHRUBS
ECHO_BCH_24-2
SILVER 24X24X18 SEAT
POWDER COATED BASE
SURFACE MOUNTED
BOLLARD LIGHT
4 WINTERBERRY HOLLY
1 HONEYLOCUST TREE
POST LIGHT
MULCHED BED
22 DWARF FOUNTAIN GRASS
1 HONEYLOCUST TREE
MULCHED BED
(SEE TREE PLANTING DETAIL)
CONTRACTOR SHALL SPADE
EDGE ALL MULCH BED AREAS TYPICAL.
LOADING AREA
LAWN AREA
10.0'
WHITE BIRCH
WHITE BIRCH
CONCRETE WALKWAY
(SEE CIVIL PLANS)
CONCRETE WALKWAY
FLUSH CURB
BOLLARD
LIGHT
POST LIGHT
(SEE LIGHTING PLAN)
8FT WIDE
ADA ACCESS
AISLE
(SEE CIVIL PLANS)
ADA PARKING
SPACE
(SEE CIVIL PLANS)
PARKING AREA
LAWN AREA
TABLE WN6-1231
SURFACE MOUNTED
TABLE WN6-1241
SURFACE MOUNTED
CONCRETE PATIO AREA
(SEE CONC. PATIO PAVEMENT DETAIL)
1 BIKE RACK
(SURFACE MOUNTED)
2 MUGO PINE SHRUBS
MULCHED BED
12 BLACK-EYED SUSAN
1 HONEYLOCUST TREE
MULCHED BED
(SEE TREE PLANTING DETAIL)
3 WINTERBERRY HOLLY SHRUBS
3 WINTERBERRY HOLLY SHRUBS
5 PJM RHODODENDRONS
6.5'
LAWN AREA
WALL PACK LIGHTING
CENTER BETWEEN DOORS
(SEE ARCH. ELEVATIONS)
2 WINTERBERRY HOLLY
WHITE BIRCH
MULCHED BED
14 DWARF FOUNTAIN GRASS
WALL PACK LIGHTING
(SEE ARCH. ELEVATIONS)
3 MUGO PINES
ADA SIGN
SEE ARCHITECTURAL
ELEVATIONS FOR PLACEMENT
OF ALL WALL PACK LIGHTING
BUILDING ENTRY
SEE ARCHITECTURAL PLANS
3 MUGO PINES
MULCHED BED
WALL PACK LIGHTING
(SEE ARCH. ELEVATIONS)
SPADE EDGING
LAWN
1:1 SLOPE RIP RAP
(SEE CIVIL PLANS)
1 RED MAPLE TREE
4 BLACK-EYED SUSAN
BOLLARD LIGHT
5 HIGHBUSH BLUEBERRY SHRUBS
BOLLARD LIGHT
SPADE EDGING
WETLAND AREA
SLOPED LAWN

NORTH
5' 0' 5' 10'
SCALE: 1" = 5FT

100% CD

FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

DARTMOUTH COLLEGE Library Depository & Records Management 56 Etna Road, Lebanon, New Hampshire	SITE ENLARGEMENT PLAN	
Park Architecture Landscape Architects 3 School House Lane, Suite #1 • Etna, NH 03750 • 603-643-3400	Date: December 01, 2021 Rev:	1912 L1.6
Russell Scott Steedle & Capone Architects Inc. 763 Massacusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com	Scale: 1" = 5'	FileName.dwg

printed 01-20-2022

PATIO TABLE & BENCH DETAILS

SCALE: NTS

SITESCAPES
WYNNE TABLE & BENCHES

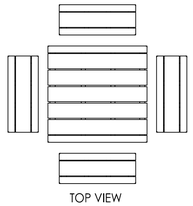
SURFACE MOUNT
MODEL: WN6-1231 & WN6-1241

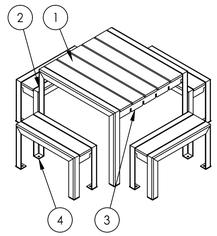
FINISH:

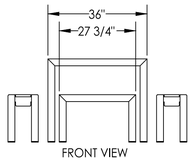
SILVER WITH SLATE GREY SLATS

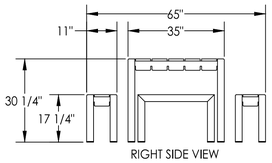
NOTES:
1. PROVIDE 1 WN6-1231 ADA ACCESSIBLE SERIES
2. PROVIDE 1 WN6-1241
3. COLORS AND FINISH BY LANDSCAPE ARCHITECT
4. MANUF. BY: SITESCAPES TEL: 402-421-9464
   WEBSITE: www.sitescapesonline.com
   EMAIL: info@sitescapesonline.com

MATERIALS LIST:
(1) Table/Bench Slats - 1" x 6" Nominal Ipe Wood
(2) Frame - 2 1/2" x 1/4" Steel Angle
(3) Support Plates - 1/4" Steel Plate
(4) Surface Plates - 1/4" Stainless Steel Plate













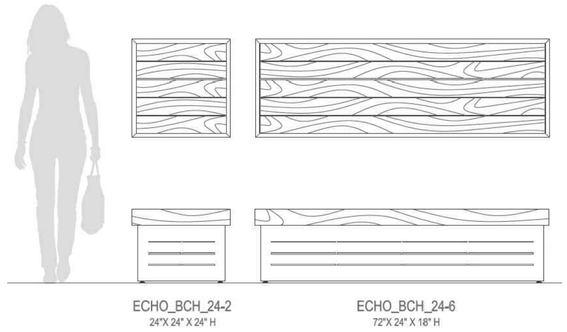
ENTRY BENCH SEATING DETAILS

SCALE: NTS

FORM & FIBER
ECHO BENCH SERIES
SURFACE MOUNT

FORM AND FIBER
contract outdoor accessories
P.O. Box 2102 | Mabank TX 75147

NOTES:
1. PROVIDE 1 ECHO BCH 24-2 24X24X18 SILVER BENCH
2. PROVIDE 1 ECHO BCH 24-6 72X24X18 SILVER BENCH
3. INCLUDE STEEL POWDER COATED BASE
4. INCLUDE "IPE OIL" PROTECTANT APPLICATION
5. SURFACE MOUNTED TO CONCRETE WALKWAY
6. MANUF. BY: FORM & FIBER TEL: 888-314-8852
   WEBSITE: www.formandfiber.com
   EMAIL: info@formandfiber.com



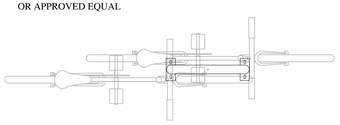


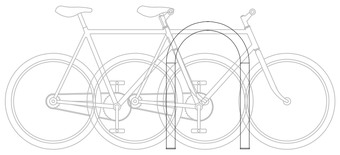


BIKE RACK INSTALLATION DETAIL



NOTE:
BIKE RACK SHALL BE STAINLESS STEEL BY DERO / HEAVY DUTY OR APPROVED EQUAL



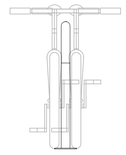




CONTRACTOR TO SURFACE MOUNT



COLOR: STAINLESS STEEL



FOR PLANNING BOARD REVIEW
Submission Date: December 8, 2021

GENERAL NOTES:

PRIOR TO ORDERING OF MATERIALS AND INSTALLATION, CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO LANDSCAPE ARCHITECT FOR APPROVAL OF ALL SITE FURNISHINGS, EXTERIOR TABLES, SEATING BENCHES AND BIKE RACKS. THIS SHALL INCLUDE FINISHES AND INSTALLATION METHODS.

BIKE RACK CALCULATION REQUIREMENTS

6.5.I.3.a NON-RESIDENTIAL DEVELOPMENT. OTHER USES, INCLUDING MUNICIPALLY OWNED BUILDINGS, MUST PROVIDE EXCEPT WHERE OTHERWISE NOTED:

a. SECURE SHORT-TERM BICYCLE PARKING OR LONG-TERM BICYCLE PARKING FOR AT LEAST TEN (10) PERCENT OF THE NUMBER OF AUTOMOBILE PARKING STALLS APPROVED BY THE PLANNING BOARD. ALTERNATIVELY, PROVIDE SPACES FOR AT LEAST 5 PERCENT OF BUILDING OCCUPANTS (MEASURED AT AVERAGE DAILY PEAK). WHICHEVER IS GREATER, BUT IN NO CASE MAY THE TOTAL BE LESS THAN TWO (2) RACK SPACES.

BIKE RACK SPACE REQUIREMENTS:

NUMBER OF PARKING SPACES (WITHIN PROJECT AREA)	REQUIRED BIKE RACK SPACES	PROVIDED
± 119 APPROX.	10% OF PARKING STALLS: 11.9 REQUIRED MINIMUM SPACES: 12.0	2

NOTE: NUMBER OF PARKINGS SPACES (119) INCLUDES RE-STRIPED SPACES SERVING AJACENT BUILDING NORTH.

WAIVER REQUESTED

ALTERNATIVE BIKE RACK SPACE REQUIREMENTS:

BUILDING OCCUPANTS (MEASURED AT AVERAGE DAILY PEAK)	REQUIRED BIKE RACK SPACES	PROVIDED
± 7 APPROX.	5% OF BUILDING OCCUPANTS: 0.35 REQUIRED MINIMUM SPACES: 2.00	2

4 FTE + APPROX. 3 VISITORS PER DAY = 7 BUILDING OCCUPANTS MAX.

ALT. BIKE PARKING REQUIREMENTS MET

100% CD

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

LANDSCAPE DETAILS

Park Architecture Landscape Architects
3 School House Lane, Suite #1 • Etna, NH 03750 • 603-643-3400

Date: December 01, 2021
Rev:

1912
L1.7

Russell Scott Steedle & Capone Architects Inc.
763 Massacusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

Scale: AS NOTED

printed 01-20-2022

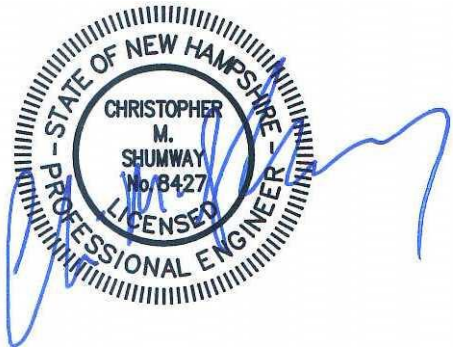
DRAINAGE DESIGN REPORT

for:

Dartmouth Library Storage Facility Project
56 Etna Road
Lebanon, NH 03766

Prepared by:

Rist-Frost-Shumway Engineering
71 Water Street
Laconia, NH 03246



November 02, 2021
Revised January 12, 2022

RFS 18-8750

Stormwater Design/ Analysis
and Inspection & Maintenance Manual
for
Dartmouth Library Storage Facility
Project Location: 56 Etna Road, Lebanon, NH

Background

Dartmouth College currently operates a Library Storage Facility (LSF) located at 56 Etna Road in Lebanon, NH, which provides climate-controlled storage for archived library materials and museum artifacts. The college is in need of expanded storage capacity, and proposes to construct a new freestanding facility at the 56 Etna Road site, located adjacent to the existing building over an area that is currently paved parking. Once constructed, the college will move its entire inventory to the new building, and lease the vacated space in the existing building to a new tenant.

Project Plans

A set of plans, consisting of a pre-development plan, a post-development plan, and a closed drainage system design plan, accompanies this report. These plans show project conditions, stormwater runoff direction, drainage areas analyzed, and the stormwater runoff mitigation measures proposed to address the Town of Lebanon's stormwater management regulations.

Stormwater Runoff Mitigation

Because the building site is mostly located over existing pavement, a slight decrease in impervious surface area will result from this project, which translates to a slight decrease in stormwater runoff from the site. Stormwater runoff from the roof will be managed by utilizing stone-filled dripline trenches to capture roof runoff in locations where scuppers discharge. These trenches allow the runoff from the roof to infiltrate into the ground. The runoff from the site will continue to flow to the wetland area located in the southeast corner of the site. The parking area runoff will be connected to the existing closed drainage system, which outlets to a proposed treatment swale adjacent to the wetland area.

Computer Stormwater Runoff Modeling

Rainfall data utilized was from the Northeast Regional Climate Center. Hydrocad modeling software was utilized in the design of the stormwater management system, and the results are summarized below:

FLOWRATE IN CUBIC FEET PER SECOND							
2-YEAR		25-YEAR		50-YEAR		100-YEAR	
Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev
1.89	1.43	4.04	3.27	4.90	4.03	5.89	4.90

RUNOFF VOLUME IN ACRE-FEET							
2-YEAR		25-YEAR		50-YEAR		100-YEAR	
Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	Pre-Dev	Post-Dev
0.298	0.276	0.648	0.614	0.793	0.756	0.961	0.921

The complete Hydrocad report, along with supporting data, is attached.

Water Quality

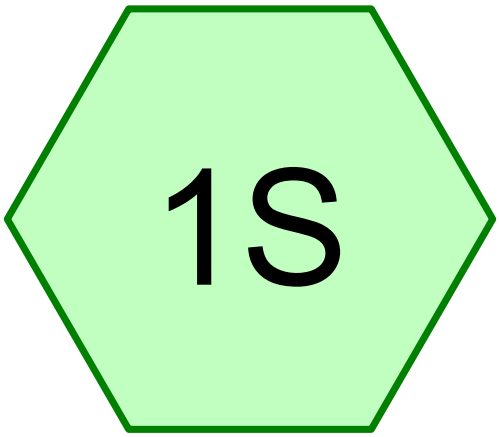
The proposed treatment swale will slow down stormwater, allowing sediment to settle out and trapping pollutants, thereby improving water quality. The parking area surface is the biggest source of sediment and pollutants emanating from this site, so treatment of the parking area stormwater effectively mitigates any negative impacts on water quality that could reasonably be expected. The parking area that exists is larger than the proposed parking area, so adding a treatment swale to the equation will result in an improvement in water quality.

Groundwater Recharge

Groundwater recharge is accomplished in general by directing stormwater runoff to areas where it is allowed to infiltrate back into the ground. Groundwater recharge for this project is accomplished by directing the roof runoff to dripline infiltration trenches.

Additions/ changes to report 01-12-2022 per Town Engineer/ Planning Board staff review

Analyses of the roof drainage system and infiltration islands were not originally included in this report. This is because the infiltration islands have small catchment areas and infiltration is not needed from a regulatory standpoint. In regard to the roof, the drip line trench that captures the runoff from the entire roof would function effectively even if it were to overflow, as the runoff would simply flow into the adjacent wetland over the rip rap slope, and roof runoff is generally considered clean. Note that infiltration was not modeled for the infiltration islands, as an appropriate infiltration rate is not easy to determine, so the intent of the updated analysis is to show that the islands do not overflow even if they don't infiltrate any stormwater at all. Additionally, the closed drainage system analysis has been updated to reflect a minimum pipe size of 12" diameter.



to Design Point 1

Pre-Development

Subcat Reach Pond Link

Routing Diagram for 8750 DLS pre-dev
Prepared by Rist-Frost-Shumway, Printed 1/13/2022
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Summary for Subcatchment 1S: to Design Point 1

Runoff = 1.89 cfs @ 12.64 hrs, Volume= 0.298 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.50"

	Area (sf)	CN	Description
	35,420	74	>75% Grass cover, Good, HSG C
*	66,380	98	Paved parking & roofs, HSG C
	101,800	90	Weighted Average
	35,420		34.79% Pervious Area
	66,380		65.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 1S: to Design Point 1

Runoff = 4.04 cfs @ 12.62 hrs, Volume= 0.648 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=4.43"

	Area (sf)	CN	Description
	35,420	74	>75% Grass cover, Good, HSG C
*	66,380	98	Paved parking & roofs, HSG C
	101,800	90	Weighted Average
	35,420		34.79% Pervious Area
	66,380		65.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 1S: to Design Point 1

Runoff = 4.90 cfs @ 12.62 hrs, Volume= 0.793 af, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=5.20"

	Area (sf)	CN	Description
	35,420	74	>75% Grass cover, Good, HSG C
*	66,380	98	Paved parking & roofs, HSG C
	101,800	90	Weighted Average
	35,420		34.79% Pervious Area
	66,380		65.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

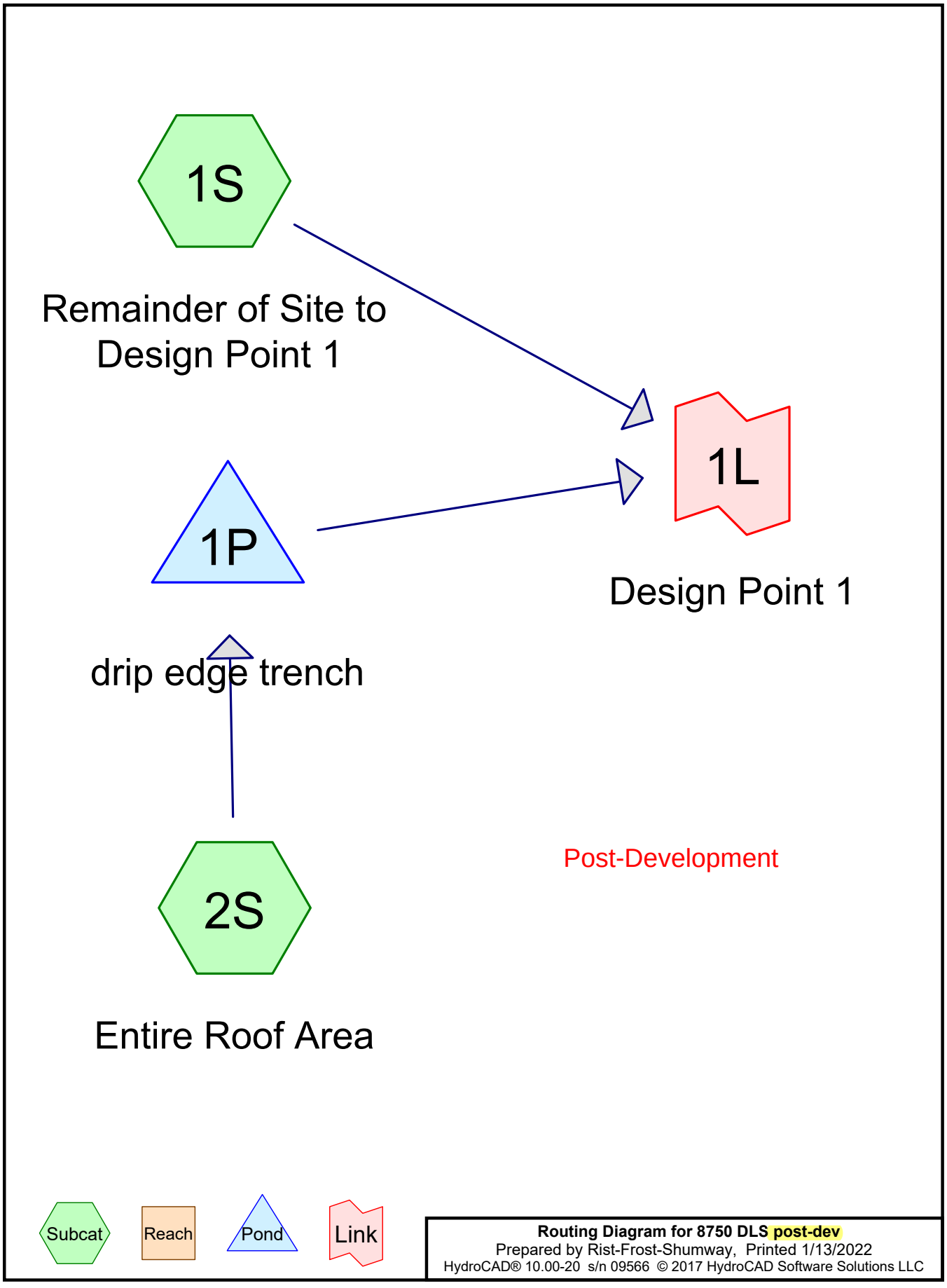
Summary for Subcatchment 1S: to Design Point 1

Runoff = 5.89 cfs @ 12.62 hrs, Volume= 0.961 af, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.09"

	Area (sf)	CN	Description
	35,420	74	>75% Grass cover, Good, HSG C
*	66,380	98	Paved parking & roofs, HSG C
	101,800	90	Weighted Average
	35,420		34.79% Pervious Area
	66,380		65.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			



Routing Diagram for 8750 DLS post-dev
Prepared by Rist-Frost-Shumway, Printed 1/13/2022
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Summary for Subcatchment 1S: Remainder of Site to Design Point 1

Runoff = 1.25 cfs @ 12.66 hrs, Volume= 0.198 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.50"

	Area (sf)	CN	Description
	42,969	74	>75% Grass cover, Good, HSG C
*	40,331	98	Paved parking & roofs, HSG C
	83,300	86	Weighted Average
	42,969		51.58% Pervious Area
	40,331		48.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 2S: Entire Roof Area

Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=2.50"

	Area (sf)	CN	Description
*	18,500	98	Paved parking & roofs, HSG C
	18,500		100.00% Impervious Area

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

Summary for Pond 1P: drip edge trench

Inflow Area = 0.425 ac,100.00% Impervious, Inflow Depth = 2.27" for 2-Year event
Inflow = 1.00 cfs @ 12.09 hrs, Volume= 0.080 af
Outflow = 0.91 cfs @ 12.12 hrs, Volume= 0.078 af, Atten= 9%, Lag= 2.2 min
Primary = 0.91 cfs @ 12.12 hrs, Volume= 0.078 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 593.56' @ 12.12 hrs Surf.Area= 1,280 sf Storage= 316 cf

Plug-Flow detention time= 44.3 min calculated for 0.078 af (97% of inflow)

Center-of-Mass det. time= 25.5 min (787.4 - 761.9)

Volume	Invert	Avail.Storage	Storage Description
#1	593.00'	741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 1,920 cf Overall - 68 cf Embedded = 1,852 cf x 40.0% Voids
#2	593.20'	68 cf	**6.0" Round perf pipe in drip edge** Inside #1 L= 345.0'
		809 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.00	1,280	695.0	0	0	1,280
594.50	1,280	695.0	1,920	1,920	2,323

Device	Routing	Invert	Outlet Devices
#1	Primary	593.20'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=0.89 cfs @ 12.12 hrs HW=593.55' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.89 cfs @ 2.02 fps)

Summary for Link 1L: Design Point 1

Inflow Area = 2.337 ac, 57.79% Impervious, Inflow Depth = 1.42" for 2-Year event
Inflow = 1.43 cfs @ 12.58 hrs, Volume= 0.276 af
Primary = 1.43 cfs @ 12.58 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: Remainder of Site to Design Point 1

Runoff = 2.96 cfs @ 12.63 hrs, Volume= 0.468 af, Depth= 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=4.43"

	Area (sf)	CN	Description
	42,969	74	>75% Grass cover, Good, HSG C
*	40,331	98	Paved parking & roofs, HSG C
	83,300	86	Weighted Average
	42,969		51.58% Pervious Area
	40,331		48.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 2S: Entire Roof Area

Runoff = 1.79 cfs @ 12.09 hrs, Volume= 0.148 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=4.43"

	Area (sf)	CN	Description
*	18,500	98	Paved parking & roofs, HSG C
	18,500		100.00% Impervious Area

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

Summary for Pond 1P: drip edge trench

Inflow Area = 0.425 ac,100.00% Impervious, Inflow Depth = 4.19" for 25-Year event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 0.148 af
Outflow = 1.60 cfs @ 12.13 hrs, Volume= 0.146 af, Atten= 11%, Lag= 2.5 min
Primary = 1.60 cfs @ 12.13 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 593.77' @ 12.13 hrs Surf.Area= 1,280 sf Storage= 434 cf

Plug-Flow detention time= 28.3 min calculated for 0.146 af (98% of inflow)

Center-of-Mass det. time= 18.2 min (768.3 - 750.1)

Volume	Invert	Avail.Storage	Storage Description
#1	593.00'	741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 1,920 cf Overall - 68 cf Embedded = 1,852 cf x 40.0% Voids
#2	593.20'	68 cf	**6.0" Round perf pipe in drip edge** Inside #1 L= 345.0'
		809 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.00	1,280	695.0	0	0	1,280
594.50	1,280	695.0	1,920	1,920	2,323

Device	Routing	Invert	Outlet Devices
#1	Primary	593.20'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=1.57 cfs @ 12.13 hrs HW=593.76' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.57 cfs @ 2.67 fps)

Summary for Link 1L: Design Point 1

Inflow Area = 2.337 ac, 57.79% Impervious, Inflow Depth = 3.15" for 25-Year event
Inflow = 3.27 cfs @ 12.58 hrs, Volume= 0.614 af
Primary = 3.27 cfs @ 12.58 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: Remainder of Site to Design Point 1

Runoff = 3.66 cfs @ 12.63 hrs, Volume= 0.582 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=5.20"

	Area (sf)	CN	Description
	42,969	74	>75% Grass cover, Good, HSG C
*	40,331	98	Paved parking & roofs, HSG C
	83,300	86	Weighted Average
	42,969		51.58% Pervious Area
	40,331		48.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 2S: Entire Roof Area

Runoff = 2.11 cfs @ 12.09 hrs, Volume= 0.176 af, Depth= 4.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=5.20"

	Area (sf)	CN	Description
*	18,500	98	Paved parking & roofs, HSG C
	18,500		100.00% Impervious Area

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

Summary for Pond 1P: drip edge trench

Inflow Area = 0.425 ac,100.00% Impervious, Inflow Depth = 4.96" for 50-Year event
Inflow = 2.11 cfs @ 12.09 hrs, Volume= 0.176 af
Outflow = 1.86 cfs @ 12.13 hrs, Volume= 0.173 af, Atten= 12%, Lag= 2.7 min
Primary = 1.86 cfs @ 12.13 hrs, Volume= 0.173 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 593.88' @ 12.13 hrs Surf.Area= 1,280 sf Storage= 491 cf

Plug-Flow detention time= 26.1 min calculated for 0.173 af (99% of inflow)

Center-of-Mass det. time= 16.5 min (763.9 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1	593.00'	741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 1,920 cf Overall - 68 cf Embedded = 1,852 cf x 40.0% Voids
#2	593.20'	68 cf	**6.0" Round perf pipe in drip edge** Inside #1 L= 345.0'
		809 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.00	1,280	695.0	0	0	1,280
594.50	1,280	695.0	1,920	1,920	2,323

Device	Routing	Invert	Outlet Devices
#1	Primary	593.20'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=1.83 cfs @ 12.13 hrs HW=593.87' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.83 cfs @ 3.10 fps)

Summary for Link 1L: Design Point 1

Inflow Area = 2.337 ac, 57.79% Impervious, Inflow Depth = 3.88" for 50-Year event
Inflow = 4.03 cfs @ 12.57 hrs, Volume= 0.756 af
Primary = 4.03 cfs @ 12.57 hrs, Volume= 0.756 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: Remainder of Site to Design Point 1

Runoff = 4.48 cfs @ 12.62 hrs, Volume= 0.716 af, Depth= 4.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.09"

	Area (sf)	CN	Description
	42,969	74	>75% Grass cover, Good, HSG C
*	40,331	98	Paved parking & roofs, HSG C
	83,300	86	Weighted Average
	42,969		51.58% Pervious Area
	40,331		48.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0400	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.9	135	0.0296	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.4	157	0.0001	0.07		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
47.0	392	Total			

Summary for Subcatchment 2S: Entire Roof Area

Runoff = 2.48 cfs @ 12.09 hrs, Volume= 0.207 af, Depth= 5.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.09"

	Area (sf)	CN	Description
*	18,500	98	Paved parking & roofs, HSG C
	18,500		100.00% Impervious Area

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

Summary for Pond 1P: drip edge trench

Inflow Area = 0.425 ac,100.00% Impervious, Inflow Depth = 5.85" for 100-Year event
Inflow = 2.48 cfs @ 12.09 hrs, Volume= 0.207 af
Outflow = 2.14 cfs @ 12.14 hrs, Volume= 0.205 af, Atten= 13%, Lag= 2.9 min
Primary = 2.14 cfs @ 12.14 hrs, Volume= 0.205 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs
Peak Elev= 594.02' @ 12.14 hrs Surf.Area= 1,280 sf Storage= 563 cf

Plug-Flow detention time= 23.4 min calculated for 0.205 af (99% of inflow)

Center-of-Mass det. time= 15.0 min (759.9 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	593.00'	741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 1,920 cf Overall - 68 cf Embedded = 1,852 cf x 40.0% Voids
#2	593.20'	68 cf	**6.0" Round perf pipe in drip edge** Inside #1 L= 345.0'
		809 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
593.00	1,280	695.0	0	0	1,280
594.50	1,280	695.0	1,920	1,920	2,323

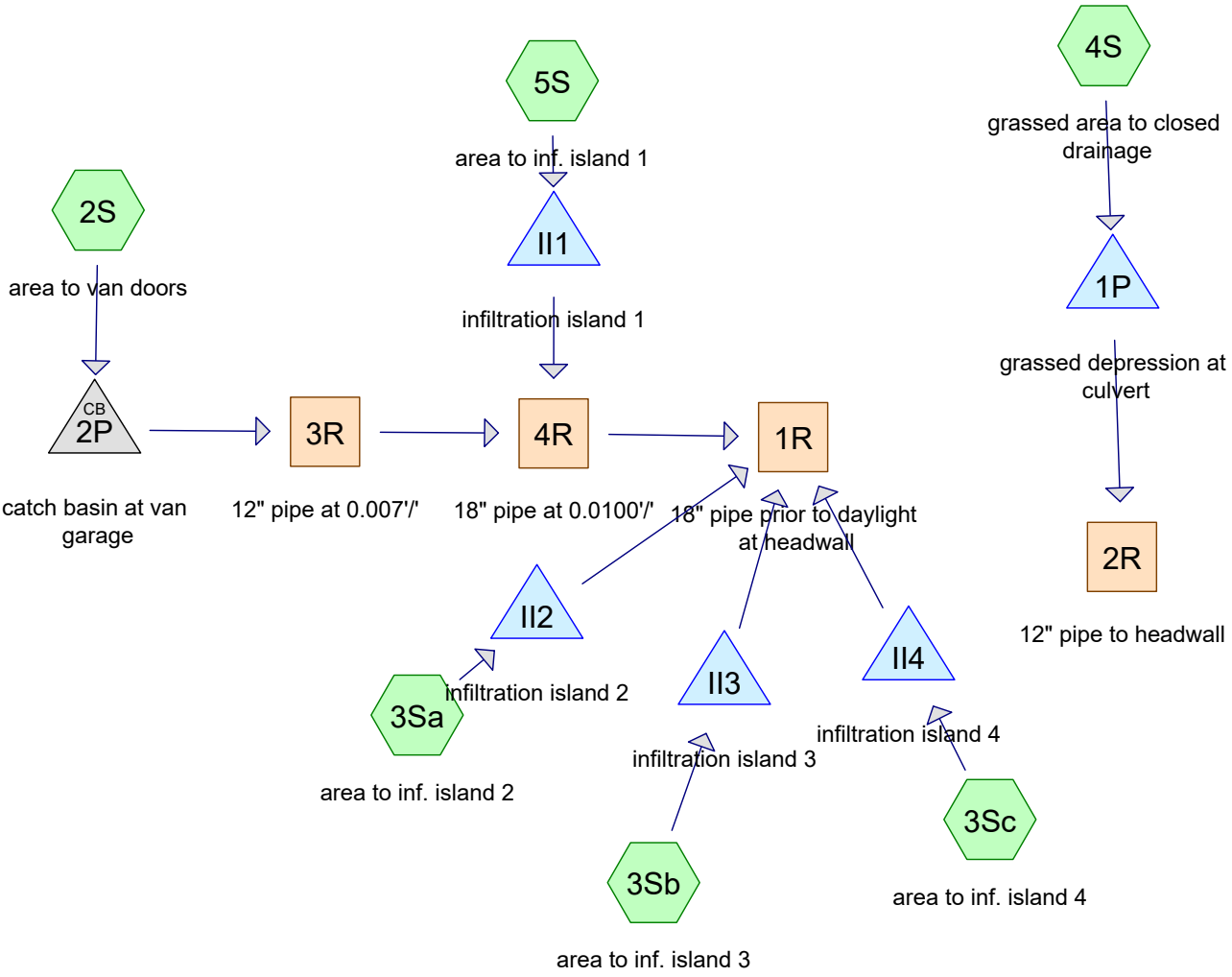
Device	Routing	Invert	Outlet Devices
#1	Primary	593.20'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=2.11 cfs @ 12.14 hrs HW=594.00' (Free Discharge)
1=Orifice/Grate (Orifice Controls 2.11 cfs @ 3.59 fps)

Summary for Link 1L: Design Point 1

Inflow Area = 2.337 ac, 57.79% Impervious, Inflow Depth = 4.73" for 100-Year event
Inflow = 4.90 cfs @ 12.57 hrs, Volume= 0.921 af
Primary = 4.90 cfs @ 12.57 hrs, Volume= 0.921 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.05 hrs



Dartmouth Library Storage
Closed Drainage System Design
Revised January 13, 2022

Subcat Reach Pond Link

Routing Diagram for Closed Drainage Design
Prepared by Rist-Frost-Shumway, Printed 1/13/2022
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Summary for Subcatchment 2S: area to van doors

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
1,175	74	>75% Grass cover, Good, HSG C
5,615	98	Paved parking, HSG C
6,790	94	Weighted Average
1,175		17.30% Pervious Area
5,615		82.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	25	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
1.0	75	0.0200	1.26		**Sheet Flow, asphalt** Smooth surfaces n= 0.011 P2= 3.00"
0.1	30	0.0533	4.69		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.5	130	Total			

Summary for Subcatchment 3Sa: area to inf. island 2

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 5.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
430	74	>75% Grass cover, Good, HSG C
3,978	98	Paved parking, HSG C
4,408	96	Weighted Average
430		9.75% Pervious Area
3,978		90.25% Impervious Area

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

Summary for Subcatchment 3Sb: area to inf. island 3

Runoff = 1.48 cfs @ 12.08 hrs, Volume= 0.116 af, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
1,565	74	>75% Grass cover, Good, HSG C
9,455	98	Paved parking, HSG C
11,020	95	Weighted Average
1,565		14.20% Pervious Area
9,455		85.80% Impervious Area

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

Summary for Subcatchment 3Sc: area to inf. island 4

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 0.073 af, Depth= 5.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
350	74	>75% Grass cover, Good, HSG C
6,260	98	Paved parking, HSG C
6,610	97	Weighted Average
350		5.30% Pervious Area
6,260		94.70% Impervious Area

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

Summary for Subcatchment 4S: grassed area to closed drainage

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
270	98	Paved parking, HSG C
10,865	74	>75% Grass cover, Good, HSG C
11,135	75	Weighted Average
10,865		97.58% Pervious Area
270		2.42% Impervious Area

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

Summary for Subcatchment 5S: area to inf. island 1

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 4.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=6.09"

Area (sf)	CN	Description
1,209	74	>75% Grass cover, Good, HSG C
1,516	98	Paved parking, HSG C
2,725	87	Weighted Average
1,209		44.37% Pervious Area
1,516		55.63% Impervious Area

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

Summary for Reach 1R: 18" pipe prior to daylight at headwall

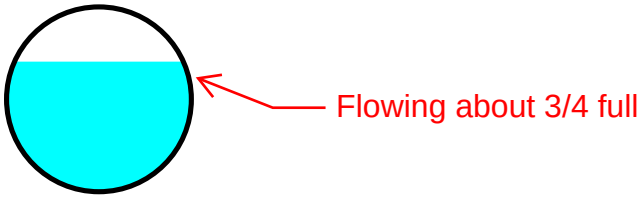
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach 4R OUTLET depth by 0.26' @ 12.09 hrs

Inflow Area = 0.724 ac, 85.01% Impervious, Inflow Depth > 744.72" for 100-Year event
Inflow = 9.61 cfs @ 12.09 hrs, Volume= 44.953 af
Outflow = 9.60 cfs @ 12.09 hrs, Volume= 44.952 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 7.22 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.37 fps, Avg. Travel Time= 0.1 min

Peak Storage= 41 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.06'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 11.38 cfs

18.0" Round Pipe
n= 0.012
Length= 31.0' Slope= 0.0100 '/'
Inlet Invert= 593.26', Outlet Invert= 592.95'



Summary for Reach 2R: 12" pipe to headwall

(pipe from grassed depression to headwall)

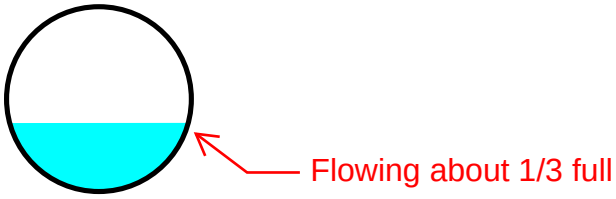
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.256 ac, 2.42% Impervious, Inflow Depth = 3.36" for 100-Year event
Inflow = 1.00 cfs @ 12.10 hrs, Volume= 0.072 af
Outflow = 0.99 cfs @ 12.11 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.76 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.6 min

Peak Storage= 12 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.40 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 44.0' Slope= 0.0091 '/'
Inlet Invert= 592.00', Outlet Invert= 591.60'



Summary for Reach 3R: 12" pipe at 0.007'/'

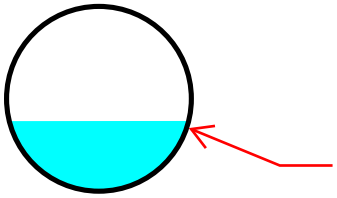
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.156 ac, 82.70% Impervious, Inflow Depth = 5.39" for 100-Year event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.070 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 3.34 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 1.7 min

Peak Storage= 30 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.99 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 111.0' Slope= 0.0070 '/'
Inlet Invert= 595.01', Outlet Invert= 594.23'



Summary for Reach 4R: 18" pipe at 0.0100'/'

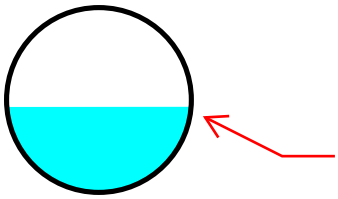
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach 3R OUTLET depth by 0.44' @ 0.08 hrs

Inflow Area = 0.218 ac, 74.94% Impervious, Inflow Depth > 57.05" for 100-Year event
Inflow = 6.64 cfs @ 12.09 hrs, Volume= 44.725 af, Incl. 5.40 cfs Base Flow
Outflow = 6.64 cfs @ 12.10 hrs, Volume= 44.720 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 8.30 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 7.87 fps, Avg. Travel Time= 0.1 min

Peak Storage= 55 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.17 cfs

18.0" Round Pipe
n= 0.009 Corrugated PE, smooth interior
Length= 69.0' Slope= 0.0100 '/'
Inlet Invert= 594.05', Outlet Invert= 593.36'



Summary for Pond 1P: grassed depression at culvert

Inflow Area = 0.256 ac, 2.42% Impervious, Inflow Depth = 3.36" for 100-Year event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.072 af
Outflow = 1.00 cfs @ 12.10 hrs, Volume= 0.072 af, Atten= 1%, Lag= 0.7 min
Primary = 1.00 cfs @ 12.10 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 594.14' @ 12.10 hrs Surf.Area= 50 sf Storage= 22 cf
Top of grassed depression= 595.0, so does not overtop
Plug-Flow detention time= 0.5 min calculated for 0.072 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (826.3 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	593.35'	94 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
593.35	10	0	0
594.00	40	16	16
595.00	115	78	94

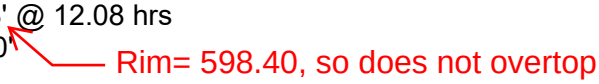
Device	Routing	Invert	Outlet Devices
#1	Primary	593.35'	**8.0" Round Culvert** L= 44.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 593.35' / 592.95' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=1.00 cfs @ 12.10 hrs HW=594.14' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.00 cfs @ 2.86 fps)

Summary for Pond 2P: catch basin at van garage

Inflow Area = 0.156 ac, 82.70% Impervious, Inflow Depth = 5.39" for 100-Year event
Inflow = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af
Outflow = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.08 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 596.28' @ 12.08 hrs
Flood Elev= 598.40'



Device	Routing	Invert	Outlet Devices
#1	Primary	595.68'	**10.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 595.68' / 595.46' S= 0.0081 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Primary	598.40'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.92 cfs @ 12.08 hrs HW=596.28' TW=595.28' (TW follows 1.00' below HW)
└**1=Culvert** (Barrel Controls 0.92 cfs @ 3.07 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond II1: infiltration island 1

Inflow Area = 0.063 ac, 55.63% Impervious, Inflow Depth = 4.60" for 100-Year event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.2 min
Primary = 0.33 cfs @ 12.09 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 597.57' @ 12.09 hrs Surf.Area= 225 sf Storage= 60 cf

Plug-Flow detention time= 45.5 min calculated for 0.023 af (95% of inflow)
Center-of-Mass det. time= 16.7 min (810.8 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	596.90'	72 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 180 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.90	225	80.0	0	0	225
597.70	225	80.0	180	180	289

Device	Routing	Invert	Outlet Devices
#1	Primary	597.50'	**22.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 12.09 hrs HW=597.57' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.33 cfs @ 0.85 fps)

Summary for Pond II2: infiltration island 2

Inflow Area = 0.101 ac, 90.25% Impervious, Inflow Depth = 5.62" for 100-Year event
Inflow = 0.60 cfs @ 12.08 hrs, Volume= 0.047 af
Outflow = 0.60 cfs @ 12.09 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.2 min
Primary = 0.60 cfs @ 12.09 hrs, Volume= 0.046 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 596.60' @ 12.09 hrs Surf.Area= 225 sf Storage= 63 cf

Plug-Flow detention time= 30.3 min calculated for 0.046 af (97% of inflow)
Center-of-Mass det. time= 13.9 min (771.8 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1	595.90'	72 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 180 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
595.90	225	80.0	0	0	225
596.70	225	80.0	180	180	289

Device	Routing	Invert	Outlet Devices
#1	Primary	596.50'	**22.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.09 hrs HW=596.60' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.59 cfs @ 1.03 fps)

Summary for Pond II3: infiltration island 3

Inflow Area = 0.253 ac, 85.80% Impervious, Inflow Depth = 5.50" for 100-Year event
Inflow = 1.48 cfs @ 12.08 hrs, Volume= 0.116 af
Outflow = 1.48 cfs @ 12.08 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.1 min
Primary = 1.48 cfs @ 12.08 hrs, Volume= 0.115 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 596.98' @ 12.08 hrs Surf.Area= 95 sf Storage= 30 cf

Plug-Flow detention time= 5.8 min calculated for 0.115 af (100% of inflow)
Center-of-Mass det. time= 2.8 min (766.1 - 763.3)

Volume	Invert	Avail.Storage	Storage Description
#1	596.20'	30 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 76 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.20	95	48.0	0	0	95
597.00	95	48.0	76	76	133

Device	Routing	Invert	Outlet Devices
#1	Primary	596.80'	**22.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.48 cfs @ 12.08 hrs HW=596.98' (Free Discharge)
↑**1=Orifice/Grate** (Weir Controls 1.48 cfs @ 1.40 fps)

Summary for Pond II4: infiltration island 4

Inflow Area = 0.152 ac, 94.70% Impervious, Inflow Depth = 5.73" for 100-Year event
Inflow = 0.90 cfs @ 12.08 hrs, Volume= 0.073 af
Outflow = 0.90 cfs @ 12.08 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.1 min
Primary = 0.90 cfs @ 12.08 hrs, Volume= 0.072 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 596.13' @ 12.08 hrs Surf.Area= 95 sf Storage= 28 cf

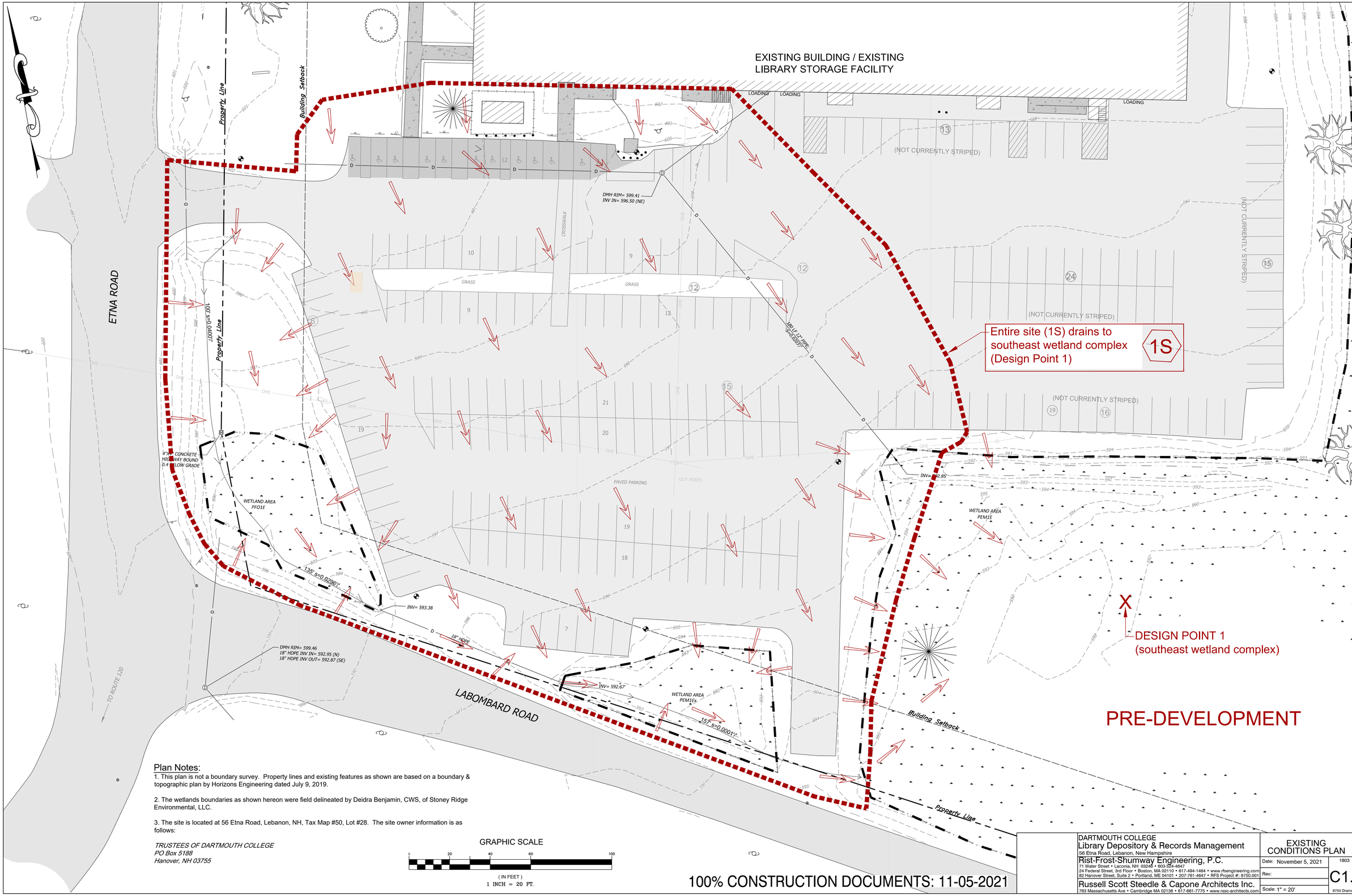
Plug-Flow detention time= 9.5 min calculated for 0.072 af (99% of inflow)
Center-of-Mass det. time= 4.6 min (756.5 - 751.9)

Volume	Invert	Avail.Storage	Storage Description
#1	595.40'	30 cf	**Custom Stage Data (Irregular)**Listed below (Recalc) 76 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
595.40	95	48.0	0	0	95
596.20	95	48.0	76	76	133

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**22.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.90 cfs @ 12.08 hrs HW=596.13' (Free Discharge)
↑—**1=Orifice/Grate** (Weir Controls 0.90 cfs @ 1.19 fps)



Plan Notes:

1. This plan is not a boundary survey. Property lines and existing features as shown are based on a boundary & topographic plan by Horizons Engineering dated July 9, 2019.

2. The wetlands boundaries as shown hereon were field delineated by Deidra Benjamin, CWS, of Stoney Ridge Environmental, LLC.

3. The site is located at 56 Etna Road, Lebanon, NH, Tax Map #50, Lot #28. The site owner information is as follows:

TRUSTEES OF DARTMOUTH COLLEGE
PO Box 5188
Hanover, NH 03755

100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE Library Depository & Records Management 56 Etna Road, Lebanon, New Hampshire	EXISTING CONDITIONS PLAN	
Rist-Frost-Shumway Engineering, P.C. 71 Water Street • Laconia, NH 03246 • 603-524-4647 24 Federal Street, 3rd Floor • Boston, MA 02110 • 617-494-1464 • www.rfsengineering.com 82 Hanover Street, Suite 2 • Portland, ME 04101 • 207-761-4647 • RFS Project #: 8750.001	Date: November 5, 2021	1803
	Rev:	C1.1
Russell Scott Steedle & Capone Architects Inc. 763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com	Scale: 1" = 20'	8750 Drainage Design.dwg



100% CONSTRUCTION DOCUMENTS: 11-05-2021

DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire

Rist-Frost-Shumway Engineering, P.C.
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Russell Scott Steedle & Capone Architects Inc.
763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com

SITE GRADING AND DRAINAGE PLAN

Date: November 5, 2021

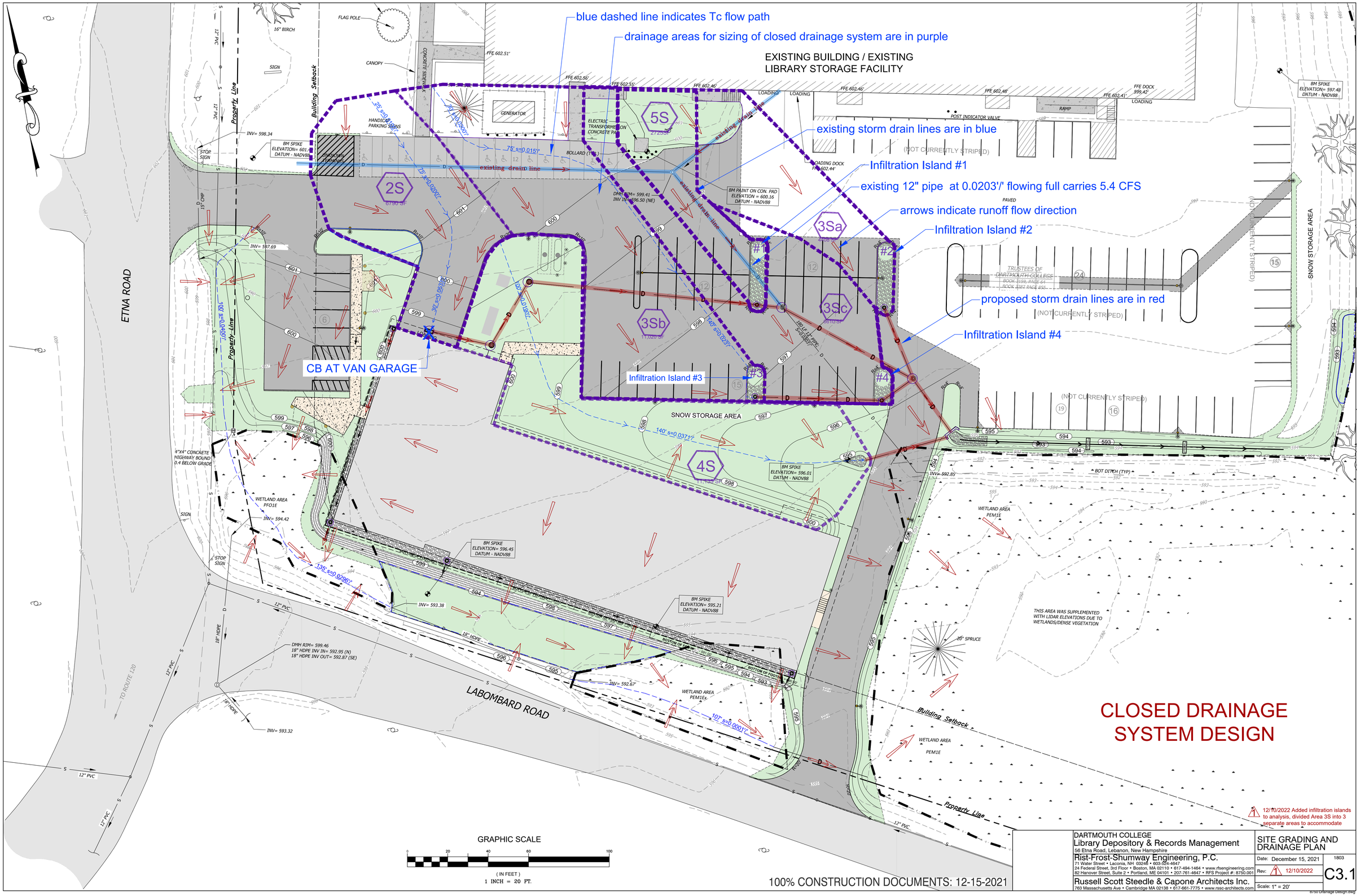
Rev:

Scale: 1" = 20'

1803

C3.1

8750 Drainage Design.dwg


blue dashed line indicates Tc flow path
drainage areas for sizing of closed drainage system are in purple
EXISTING BUILDING / EXISTING LIBRARY STORAGE FACILITY
existing storm drain lines are in blue
Infiltration Island #1
existing 12" pipe at 0.0203'/' flowing full carries 5.4 CFS
arrows indicate runoff flow direction
Infiltration Island #2
proposed storm drain lines are in red
Infiltration Island #4
Infiltration Island #3
CB AT VAN GARAGE
ETNA ROAD
LABOMBARD ROAD
SNOW STORAGE AREA
Building Setback
Property Line
2S
3Sa
3Sb
3Sc
4S
5S
#1
#2
#3
#4
CLOSED DRAINAGE SYSTEM DESIGN
GRAPHIC SCALE
(IN FEET)
1 INCH = 20 FT.
100% CONSTRUCTION DOCUMENTS: 12-15-2021
12/10/2022 Added infiltration islands to analysis, divided Area 3S into 3 separate areas to accommodate
DARTMOUTH COLLEGE
Library Depository & Records Management
56 Etna Road, Lebanon, New Hampshire
Rist-Frost-Shumway Engineering, P.C.
71 Water Street • Laconia, NH 03246 • 603-524-4647
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Russell Scott Steedle & Capone Architects Inc.
763 Massachusetts Ave • Cambridge MA 02138 • 617-661-7775 • www.rssc-architects.com
SITE GRADING AND DRAINAGE PLAN
Date: December 15, 2021
Rev: 1 12/10/2022
Scale: 1" = 20'
1803
C3.1
8750 Drainage Design.dwg

Dartmouth College Library Storage Project
56 Etna Road, Lebanon, NH
Stormwater Management System
Inspection & Maintenance Manual
December 2021
Revised January 2022

Purpose of this Manual:

Proper Maintenance of Stormwater Management Best Management Practices is critical to continued proper functioning of stormwater management systems. Left unchecked, stormwater BMPs (Best Management Practices) fill up with sediment and generally suffer degradation from uncontrolled growth of vegetation and the ravages of time and the elements. When this occurs, the BMPs are not effective in treating stormwater and preventing erosion and pollution. The following goals will be achieved through diligent stormwater BMP maintenance over the long term:

- Maintain the volume of storm water treated over the long term;
- Sustain the pollutant removal efficiency of the BMP;
- Reduce the risk of re-suspending sediment and other pollutants captured by the BMP;
- Prevent structural deterioration of the BMP and minimize the need for expensive repairs;
- Decrease the potential for failure of the BMP.

The City of Lebanon Stormwater Management Regulations require the long-term maintenance of storm water management practices and stipulate the establishment of a mechanism to provide for ongoing inspections and maintenance.

Responsible Party:

The responsible party listed below shall be responsible for ensuring the long-term effectiveness of the stormwater management system for this project.

The responsible party for maintaining these facilities is:

Dartmouth College
Facilities Operation and Maintenance (FOM) Department
Contact: Tim McNamara, Associate Director of Facilities Operation & Maintenance
(603)646-2485

Periodic inspection of the Stormwater Best Management Practices (BMPs) listed below is necessary to prevent erosion and ensure the continued effectiveness of these devices.

1. **Grassed Treatment Swale:**

The grassed treatment swale is designed to treat runoff coming from the parking area by slowing the runoff down and allowing suspended sediment to settle out. The grass in the swale provides biological treatment of the runoff and acts as a filter. The swale should be inspected at least twice annually and after significant rainfall events (2.5 inches or more in a 24 hour period.) Trash and debris should be removed immediately. The grass should be maintained in a healthy condition and mowed no shorter than 6" high. Silt should be removed from the bottom of the swale when it reaches a depth of 2". Aerating, re-seeding, and mowing should occur as needed to maintain a vigorous stand of grass.

2. Inspect drain pipes, swales, and catch basins at least twice annually and remove accumulated debris and sediment.

3. **Infiltration islands:**
Inspect infiltration islands at least twice annually and remove accumulated debris and sediment from the inlet (break in curb) and stone. Keep inlet free of ice in winter.

3. **Permanent Outlet Protection:**
Inspect stone at least twice annually and remove accumulated debris and sediment.

Forms for documenting compliance with the protocols detailed herein are provided on the following pages. Only one copy of each form is provided; additional copies will need to made for continuing inspections and record-keeping as needed.

Grass-Lined Treatment Swale:

The treatment swale provides stormwater storage, peak rate control, treatment, and may even provide groundwater recharge. It is subject to debris accumulation and erosion, and the following protocols apply for keeping it functioning properly:

Maintenance:

1. Removal of debris from inlet and outlet structures
2. Removal of accumulated sediment
3. Inspection and repair of outlet structures and appurtenances
4. Inspection of all system 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.
5. Inspection of pretreatment measures at least twice annually, and removal of accumulated sediment as warranted by inspection, but no less than once annually.
6. Periodic mowing of embankments and bottom of swale
7. Removal of woody vegetation from embankments and bottom of swale
8. Inspection and repair of embankments and spillways as may be required

Inspection Checklist and Maintenance Report

Grass-Lined Treatment Swale:

Practice Location: Dartmouth College Library Storage Facility, 56 Etna Road, Lebanon, NH

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of woody vegetation	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Structural damage at inlet or outlet	❑ Yes	❒ No

Maintenance Performed

Drain Pipes & Catch Basins

Description:

Drain pipes and catch basins make up closed drainage systems of which the primary purpose is stormwater conveyance. Closed drainage systems are subject to debris accumulation and clogging, and the following protocols apply for keeping them functioning properly:

Maintenance:

1. Inspect closed drainage systems periodically for sediment accumulation and debris accumulation. Look for signs of erosion at daylight locations.

2. Hire a catch basin cleaning company to clean all catch basins at least once every two years, or more frequently if conditions warrant, based on inspections.

3. Clear leaves and detritus from catch basin grates and culverts as needed.

Inspection Checklist and Maintenance Report

Drain Pipes & Catch Basins

Practice Location: Dartmouth College Library Storage Facility, 56 Etna Road, Lebanon, NH

Date: _____

Performed By: _____ Signature _____

Inspection Checklist

Presence of accumulated sediment	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Infiltration Islands

Description:

The infiltration islands within the parking area provide a location where stormwater can infiltrate into the ground. These islands are surrounded by curbing, with a 4-foot-long break in the curb to allow stormwater to enter. The islands have a river rock surface that allows the stormwater to infiltrate. The islands are subject to debris accumulation and clogging, and the following protocols apply for keeping them functioning properly:

Maintenance:

1. Inspect the river rock at least twice a year for sediment and debris accumulation, and remove as necessary.

2. Clear leaves, detritus, sediment and ice from the 4-foot inlet as needed. In winter, the inlets are subject to ice blockage, so should be observed closely and ice removed to maintain functionality.

Inspection Checklist and Maintenance Report

Infiltration Islands

Practice Location: Dartmouth College Library Storage Facility, 56 Etna Road, Lebanon, NH

Date: _____

Performed By: _____ Signature _____

Inspection Checklist

Presence of accumulated sediment	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No
Presence of ice	☐ Yes	☐ No

Maintenance Performed

Permanent Outlet Protection

Description:

Outlet protection is typically provided at stormwater discharge conduits from structural best management practices to reduce the velocity of concentrated stormwater flows to prevent scour and minimize the potential for downstream erosion. Outlet protection is also provided where conduits discharge runoff into an in-ground stormwater management practice (e.g., pond or swale) to prevent scour where flow enters the BMP.

Standard engineering practices allow for many different types of outlet protection which provide energy dissipation. Common outlet protection measures include:

- Riprap aprons
- Riprap lined scour holes, stilling basins or plunge pools.

Maintenance:

1. Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.
2. Remove any trash or accumulated sediment/debris.

Inspection Checklist and Maintenance Report
Permanent Outlet Protection

Practice Location: Dartmouth College Library Storage Facility, 56 Etna Road, Lebanon, NH

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of accumulated sediment	❑ Yes	❒ No
Damage to outlet	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Agenda
Planning Board
February 14, 2022

Agenda Item #3C
Public Hearing Items

Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L

PB2022-04-BLA

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-04-BLA

APPLICATION INFORMATION

Agenda Item: 3.C

Application ID: PB2022-04-BLA

Application Type:
Boundary Line Adjustment

Property Location & Tax Map:
- 25 Labombard Road (Tax Map 64, Lot 25)
- 0 Labombard Road (*now 33 Labombard Road*) (Tax Map 51, Lot 15)

Applicants:
Noah Lynd & Josh Garrison

Property Owner: Chaloux, LLC

Property Sizes (existing):
- 25 Labombard Road (Tax Map 64, Lot 25): +/-2.01 acres *per boundary line adjustment plat*
- 0 Labombard Road (*now 33 Labombard Road*) (Tax Map 51, Lot 15): +/-3.39 acres *per boundary line adjustment plat*

Property Sizes (proposed):
- 25 Labombard Road (Tax Map 64, Lot 25): +/-2.85 acres *per boundary line adjustment plat*
- 0 Labombard Road (*now 33 Labombard Road*) (Tax Map 51, Lot 15): +/-2.55 acres *per boundary line adjustment plat*

Zoning District:
Light Industrial (IND-L)

Zoning Overlay District(s):
- Wetlands Conservation District

LEGAL NOTICE

Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L: Request for approval of a Boundary Line Adjustment between lands located at 25 & 0 Labombard Road. PB2022-04-BLA

PLANS AND APPLICATION MATERIALS

- Application form (1 page)
- Letter dated January 24, 2022, from Adam Morse, PE, of Engineering Ventures, PC (project description; 1 page)
- Subdivision Regulations - Technical Checklist (3 pages)
- Plat titled "Boundary Line Adjustment Plat, Lands of Chaloux Properties, LLC," prepared by Latitudes Land Surveying, dated January 20, 2022, Project #2210.

COMPLETENESS REVIEW

This application has been reviewed in accordance with the Lebanon Subdivision Regulations. The Planning and Development Department recommends that the Board find that the application is complete enough to accept jurisdiction and to commence review.

APPLICATION OVERVIEW

This is a request for a Boundary Line Adjustment between lands located at 25 Labombard Road (Tax Map 64, Lot 25) and 0 Labombard Road (now 33 Labombard Road) (Tax Map 51, Lot 15). As proposed, the changes resulting from the Boundary Line Adjustment are as follows:

- Map/Lot 64-25 will increase by a net of +/-0.84 acres, from +/-2.01 acres to +/-2.85 acres.

- Map/Lot 51-15 will decrease by a net of +/-0.84 acres, from +/-3.39 acres to +/-2.55 acres.

STAFF COMMENTS

ASSESSING
No comment.

BUILDING INSPECTION
No comment.

FIRE
No comment.

POLICE
No comment.

PUBLIC WORKS/CITY ENGINEER
No comment.

PLANNING & ZONING
Both lots currently conform to the applicable minimum lot sizes and dimensional requirements as set forth in the Zoning Ordinance and will continue to after reconfiguration.

STAFF RECOMMENDATIONS

If the Board moves to approve this application, then based on the information reviewed by City staff, the Planning and Development Department recommends that the Board approve the application with the following conditions prior to the signing and recording of the plat:

1. The applicant shall provide to the Planning and Development Department a digital record drawing (Cad .dwg Format using NH State Plane Coordinate system).

2. Within 30 days of the recording of the subdivision plat, the property owner shall provide the Assessing Department with an updated current use plan/map for the subject properties, as applicable.

Attachments

cc: Noah Lynd & Josh Garrison
Chaloux, LLC File
Adam Morse, PE, Engineering Ventures, PC

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: Chaloux, LLC (Jay Campion) TEL.#: 603-643-6607

MAILING ADDRESS: PO Box 4430, Manchester, NH 03108

E-MAIL ADDRESS: jay.campion@gmail.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Noah Lynd and Josh Garrison TEL.#: 914-844-8162

MAILING ADDRESS: PO Box 302 Meriden, NH 03770

E-MAIL ADDRESS: noah.lynd40@gmail.com & joshrgarrison@gmail.com

PROJECT LOCATION:

TAX MAP #: 64-25 and 51-15 LOT#: PLOT #: ZONE: IND-L

STREET ADDRESS OF PROJECT: Labombard Rd.

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☒ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☐ NO

FLOOD PLAIN ☐ YES ☐ NO

SCOPE OF PROJECT:

Construction of a 10,000 sf indoor climbing gym building, with 540 sf yoga studio and 235 sf retail space, including site improvements consisting of new parking lot, sidewalks, patio, sewer and water utility connections and stormwater improvements and boundary line adjustment.

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: Climbing Gym

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:_____

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: 12/7/21

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #

ENGINEERING VENTURES PC

208 Flynn Avenue, Suite 2A, Burlington, VT 05401 · Tel: 802-863-6225 · Fax: 802-863-6306
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 · Tel: 603-442-9333 · Fax: 603-442-9331
414 Union Street Schenectady, NY 12305 · Tel: 518-630-9614

January 24, 2022

Tim Corwin
Senior Planner and Zoning Administrator
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: The Notch Climbing Gym Boundary Line Adjustment Narrative
Labombard Road
Subject parcels 51-15 and 64-25
IND-L Zone
Site Plan Revisions

Dear Tim,

On behalf of applicants Noah Lynd and Josh Garrison, please find attached Boundary Line Adjustment Plat prepared by Nate Yager, LLS of Latitudes Land Surveying.

The proposed boundary line adjustment is for the lands owned by Chaloux Properties, LLC; deeds of reference can be found on Book 3365 Page 791 and Book 4326 Page 858 of the Grafton County Registry of Deeds. Existing lot 51-15 encompasses 3.39 acres and existing lot 64-25 encompasses 2.01 Acres. The adjustment of the common boundary line will result in a new lot area of 2.55 acres for lot 51-15 and a new lot area of 2.85 acres for lot 64-25. This boundary line adjustment will facilitate sale of the property to the applicants, which will better position them to develop the site for construction of a new climbing gym facility.

As per section 7.7.A.v of the Subdivision Regulations There are no known conservation, preservation, or agricultural holdings on the subject lot.

Thank you and please don't hesitate to give me a call if you have any questions concerning this narrative.

Sincerely,
ENGINEERING VENTURES, PC



Adam Morse, PE
Project Manager

cc: (via email): Noah Lynd, Josh Garrison

CITY OF LEBANON, NH SUBDIVISION REGULATIONS – TECHNICAL CHECKLIST MINOR LOT LINE ADJUSTMENT / BOUNDARY LINE AGREEMENT	
PROJECT NAME: The Notch Climbing Gym	
APPLICANT: Noah Lynd and Josh Garrison	**DATE:** 1/24/2022
GENERAL SUBMISSION REQUIREMENTS:	

All applications to the Planning Board for Subdivision Review must be submitted by 12:00 Noon on the day of the filing cutoff. [§7.7.C] **Submissions must be accompanied by the following information or review of the application may be delayed:**

- ☒ A properly completed and signed Application Form. [§7.7.A(1)]
- ☒ The appropriate filing fees. [§7.7.A(2)]
- ☒ A written project description. [§7.7.A(3)]
- ☒ A list of the names and mailing addresses of all persons to be notified, by certified mail, of the public hearing. [§7.7.A(4)]
- ☒ A completed and signed Technical Checklist. [§7.7.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 Section 7.15 of the Subdivision Regulations, as appropriate.]
- ☒ Eight (8) sets of project plans to be distributed for Staff Review. [§8.2.A]
  [A Staff Review meeting is held at City Hall one (1) week following the cutoff date. Staff Review meetings begin at 2:00PM, unless otherwise noted. All revised and/or additional information or materials must be submitted within one (1) week following the Staff Review meeting.]
- ☒ A digital copy of Subdivision plan in .PDF format. [§8.2.B]

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 the 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.

PLAN SUBMITTAL TECHNICAL CHECKLIST:

NOTE: Minor Lot Line Adjustment / Boundary Line Agreement plans shall include the information described below pursuant to Section 8 of the Lebanon Subdivision 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. The scale of the plans shall be appropriate to the size of the overall development. 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 Subdivision 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 Office.

A written request for waiver shall be required, pursuant to Section 7.15 of the Subdivision Regulations, for any submission requirement for which the information or data is not provided by the applicant. [§8.2.C]

Plan Requirements	**Info. Provided**	**Waiver Sought**
8.2.A(1) - - Name of the City and County in which the subdivision is proposed; - A Locus map; - North arrow; - Scale of the plat; - Date of the plat and of any revisions to the plat; (NOTE: The date on the plat at the time of initial submission for application review shall be included on all subsequent submissions to the City. Any subsequent change(s) to the plat shall include a revision date and description of the revision(s).)	☒ ☒ ☒ ☒ ☒	☐ ☐ ☐ ☐ ☐
8.2.A(2) - Names and mailing addresses of Applicant(s); Owner(s) of Record of subject properties; Owners of abutting properties, including tax map and lot references; and Holders of any easements, rights-of-way, or other restrictions.	☒	☐
8.2.A(3) - Names and business addresses of the surveyor, including license number and seal, and of every engineer, architect, soil scientist, or wetlands scientist whose professional seal appears on any plan or document submitted to the Board.	☒	☐
8.2.A(4) - Zoning District in which the subject lots are located, including district boundaries if in more than one district.	☒	☐
8.2.A(5) - Location of all existing structures on the subject lots.	☒	☐
8.2.A(6) - Site location map showing the original boundaries of the subject lots and adjacent lots.	☒	☐
8.2.A(7) - The new surveyed property line(s) as a result of the application, including bearings and distances, as determined by an actual field survey by a licensed land surveyor, including the date of the completion of the survey. All dimensions shall be shown in feet and decimals, and the area of the altered lots shall be shown in square feet and acres.	☒	☐

Plan Requirements (*cont.*)	**Info. Provided**	**Waiver Sought**
8.2.A(8) - The plat shall be titled to include the names of the owners of all lots altered by the application.	☒	❒
8.2.A(9) - A statement shall be placed on the plat as follows: "This plan shows Minor Lot Line Adjustments / Boundary Line Agreements and does not require the approval of the Lebanon Planning Board as a subdivision."	☒	❒

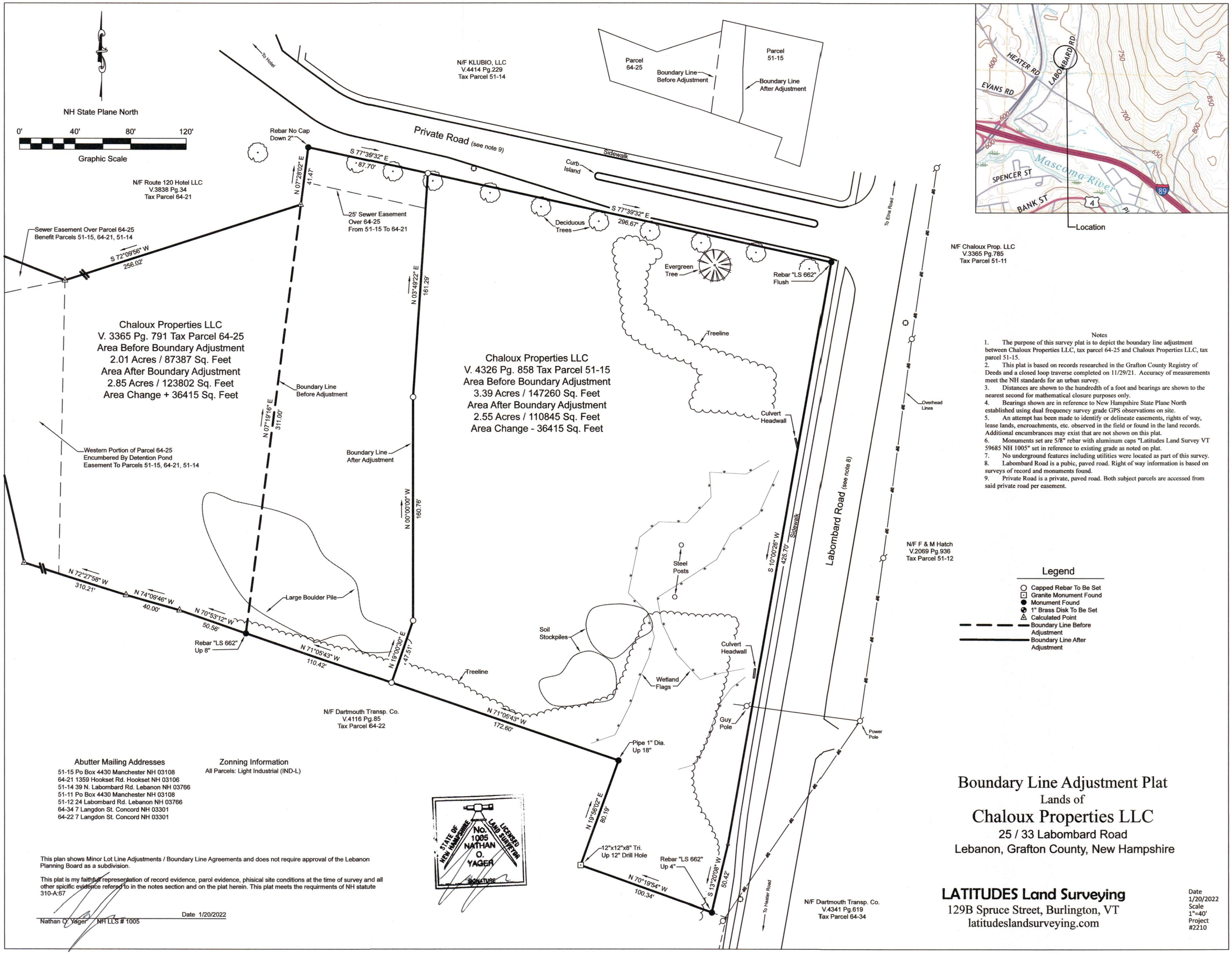
NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO SECTION 8 OF THE SUBDIVISION REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Engineering Ventures (Adam Morse)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

(Last Revised 05/22/13)


NH State Plane North
0' 40' 80' 120'
Graphic Scale
To Hotel
N/F KLUBIO, LLC
V.4414 Pg.229
Tax Parcel 51-14
Parcel 64-25
Boundary Line Before Adjustment
Parcel 51-15
Boundary Line After Adjustment
Private Road (see note 9)
Sidewalk
Curb Island
Rebar No Cap Down 2"
N 07°28'02" E 41.47'
S 77°39'32" E 87.70'
N/F Route 120 Hotel LLC
V.3838 Pg.34
Tax Parcel 64-21
25' Sewer Easement Over 64-25 From 51-15 To 64-21
Deciduous Trees
S 77°39'32" E 296.67'
Sewer Easement Over Parcel 64-25
Benefit Parcels 51-15, 64-21, 51-14
S 72°09'56" W 256.02'
N 03°49'22" E 161.29'
Evergreen Tree
Rebar "LS 662" Flush
Treeline
Culvert Headwall
Chaloux Properties LLC
V. 3365 Pg. 791 Tax Parcel 64-25
Area Before Boundary Adjustment
2.01 Acres / 87387 Sq. Feet
Area After Boundary Adjustment
2.85 Acres / 123802 Sq. Feet
Area Change + 36415 Sq. Feet
Chaloux Properties LLC
V. 4326 Pg. 858 Tax Parcel 51-15
Area Before Boundary Adjustment
3.39 Acres / 147260 Sq. Feet
Area After Boundary Adjustment
2.55 Acres / 110845 Sq. Feet
Area Change - 36415 Sq. Feet
Boundary Line Before Adjustment
N 07°19'16" E 311.00'
Boundary Line After Adjustment
N 00°00'00" W 160.76'
Western Portion of Parcel 64-25
Encumbered By Detention Pond
Easement To Parcels 51-15, 64-21, 51-14
N 72°27'58" W 310.21'
N 74°09'46" W 40.00'
N 70°53'12" W 50.56'
Large Boulder Pile
Rebar "LS 662" Up 8"
N 71°05'43" W 110.42'
N 19°00'30" E 47.51'
Treeline
N 71°05'43" W 172.60'
N/F Dartmouth Transp. Co.
V.4116 Pg.85
Tax Parcel 64-22
Soil Stockpiles
Steel Posts
Wetland Flags
Culvert Headwall
Guy Pole
Pipe 1" Dia. Up 18"
N 19°56'02" E 80.19'
12"x12"x8" Tri. Up 12" Drill Hole
Rebar "LS 662" Up 4"
N 70°19'54" W 100.34'
S 13°20'08" W 50.42'
S 10°00'26" W 425.70'
Sidewalk
Labombard Road (see note 8)
Power Pole
Overhead Lines
To Elna Road
To Hester Road
N/F Chaloux Prop. LLC
V.3365 Pg.785
Tax Parcel 51-11
N/F F & M Hatch
V.2069 Pg.936
Tax Parcel 51-12
N/F Dartmouth Transp. Co.
V.4341 Pg.619
Tax Parcel 64-34
HEATER RD
EVANS RD
LABOMBARD RD
SPENCER ST
BANK ST
Mascoma River
89
4
Location
Notes
1. The purpose of this survey plat is to depict the boundary line adjustment between Chaloux Properties LLC, tax parcel 64-25 and Chaloux Properties LLC, tax parcel 51-15.
2. This plat is based on records researched in the Grafton County Registry of Deeds and a closed loop traverse completed on 11/29/21. Accuracy of measurements meet the NH standards for an urban survey.
3. Distances are shown to the hundredth of a foot and bearings are shown to the nearest second for mathematical closure purposes only.
4. Bearings shown are in reference to New Hampshire State Plane North established using dual frequency survey grade GPS observations on site.
5. An attempt has been made to identify or delineate easements, rights of way, lease lands, encroachments, etc. observed in the field or found in the land records. Additional encumbrances may exist that are not shown on this plat.
6. Monuments set are 5/8" rebar with aluminum caps "Latitudes Land Survey VT 59685 NH 1005" set in reference to existing grade as noted on plat.
7. No underground features including utilities were located as part of this survey.
8. Labombard Road is a pubic, paved road. Right of way information is based on surveys of record and monuments found.
9. Private Road is a private, paved road. Both subject parcels are accessed from said private road per easement.
Legend
Capped Rebar To Be Set
Granite Monument Found
Monument Found
1" Brass Disk To Be Set
Calculated Point
Boundary Line Before Adjustment
Boundary Line After Adjustment
Abutter Mailing Addresses
51-15 Po Box 4430 Manchester NH 03108
64-21 1359 Hookset Rd. Hookset NH 03106
51-14 39 N. Labombard Rd. Lebanon NH 03766
51-11 Po Box 4430 Manchester NH 03108
51-12 24 Labombard Rd. Lebanon NH 03766
64-34 7 Langdon St. Concord NH 03301
64-22 7 Langdon St. Concord NH 03301
Zonning Information
All Parcels: Light Industrial (IND-L)
STATE OF NEW HAMPSHIRE
No. 1005
NATHAN O. YAGER
LICENSED LAND SURVEYOR
SIGNATURE
This plan shows Minor Lot Line Adjustments / Boundary Line Agreements and does not require approval of the Lebanon Planning Board as a subdivision.
This plat is my faithfull representation of record evidence, parol evidence, phisical site conditions at the time of survey and all other spicific evidence refered to in the notes section and on the plat herein. This plat meets the requirments of NH statute 310-A:67
Date 1/20/2022
Nathan O. Yager NH LLS # 1005
Boundary Line Adjustment Plat
Lands of
Chaloux Properties LLC
25 / 33 Labombard Road
Lebanon, Grafton County, New Hampshire
LATITUDES Land Surveying
129B Spruce Street, Burlington, VT
latitudeslandsurveying.com
Date 1/20/2022
Scale 1"=40'
Project #2210

Agenda
Planning Board
February 14, 2022

Agenda Item #3D
Public Hearing Items

Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L

PB2022-05-SPR

CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-05-SPR

APPLICATION INFORMATION

Agenda Item: 3.D

Application Type:
Site Plan Review to develop property for a +/-12,250 sq. ft. health club use

Property Location & Tax Map:
0 Labombard Road (Tax Map 51, Lot 15) and 25 Labombard Road *(now 33 Labombard Road)* (Tax Map 64, Lot 25)

Applicants:
Noah Lynd & Josh Garrison

Property Owner:
Chaloux, LLC

Property Sizes:
Proposed per pending boundary line plat – PB2022-04-BLA:

- 25 Labombard Road (Tax Map 64, Lot 25): +/-2.85 acres
- 0 Labombard Road (*now 33 Labombard Road*) (Tax Map 51, Lot 15): +/-2.55 acres

Existing Use & Improvements:
vacant

Proposed Use & Improvements:
+/-12,250 sq. ft. building for a proposed health club and associated site improvements

Zoning District: Light Residential (IND-L)

Overlay Districts:
Wetlands Conservation District

Future Land Use Map:
Mixed Use

LEGAL NOTICE

Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L: Request for Site Plan Review to construct a +/-12,250 sq. ft. building for a health club to include a climbing gym, yoga studio and accessory retail space, together with site improvements consisting of a new parking lot, sidewalks, patio, sewer and water utility connections, and stormwater improvements. PB2022-05-SPR

PLANS AND APPLICATION MATERIALS

- Application form (1 page)
- Letter dated December 13, 2021, from Adam Morse, PE, of Engineering Ventures, PC (project description; 2 pages)
- Application for Waivers (2 pages)
- Site Plan Review Regulations Technical Checklist (10 pages)
- Floor plans and elevations, prepared by Banwell Architects, dated December 13, 2022, Project No. 21-881 (8 sheets)
- Plan set titled "The Notch Climbing Gym – Labombard Rd," prepared by Engineering Ventures, PC, dated December 13, 2021, revised January 24, 2022, EV Project #21580 (14 sheets)

On file at the Planning and Development Department and available for review upon request:

- Lithonia Lighting specifications for D-Series Size 0 LED Area Luminaire fixture and WDGE1 LED Architectural Wall Sconce fixture (12 pages)
- Drainage Analysis titled, "The Notch Climbing Gym – Labombard Road," dated January 24, 2022, prepared by Engineering Ventures, PC, EV Project #21580 (62 pages)

COMPLETENESS REVIEW & STAFF COMMENTS

In order to accept jurisdiction and commence review of the applicant's proposal, the Planning Board must first determine that the application is complete as required by NH RSA 676:4, I(c)(1). The Planning and Development Department has reviewed the application for compliance with the Site Plan Review Regulations and recommends that the Board find that the application is complete enough to accept jurisdiction and to commence review.

APPLICATION OVERVIEW

The proposed development will be primarily constructed on 33 Labombard Road, currently a vacant lot of +/-3.39 acres in size. Pursuant to a proposed Boundary Line Adjustment plan pending before the Board (PB2022-04-BLA), the applicant intends to decrease the size of 33 Labombard Road to +/-2.55 acres, and to increase the size of the adjacent lot at 25 Labombard Road from +/-2.01 acres to +/-2.85 acres.

The applicant proposes to develop 33 Labombard Road with the construction of a +/-12,250 sq. ft. building for a health club to include a climbing gym, yoga studio and accessory retail space. The building will be located approximately in the area marked by the yellow star in Figure 1 below. Site improvements will include a new parking lot, sidewalks, patio, sewer and water utility connections, and stormwater improvements. A shared driveway will be constructed across the adjusted boundary line of the subject properties in order to help facilitate the future development of 25 Labombard Road (which is currently vacant).

Figure 1. Bird's Eye View of Subject Property (*looking north*).



©2021 Eagleview (image taken 4/4/2021)

STAFF COMMENTS

PLANNING

I. SITE PLAN REVIEW REGULATIONS:

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.

Waiver Requests

Pursuant to Section 7.1 ("Waiver of Regulations"), the applicant has requested waivers from certain provisions of Article VI ("Design and Construction Requirements") of the Site Plan Review Regulations. Please see attached Application for Waivers for a discussion of each.

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.

SECTION 5 –SUBMISSION REQUIREMENTS

5.1 (Drawings and Other Submittals): The applicant has provided the attached materials in accordance with the submission requirements of Section 5.1 of the Site Plan Review Regulations.

SECTION 6 – 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. The type, quantity, and location of proposed trees and shrubs are shown on Sheet 13 of the plan set.

6.4 (Fees and Assessments in Effect at time of Connection): New construction will be subject to the City's Impact Fee Ordinance and fee schedule adopted by the Board on October 12, 2021.

6.6 (Stormwater Management): The applicant has submitted a drainage plan in accordance with Section 5.1.E.17 of the Site Plan Review Regulations and the stormwater management design standards set forth in Section 6.6. *See* Sheet 7 of the plan set. All comments of the City Engineer have been satisfactorily addressed.

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. The type, quantity, and location of proposed of proposed lighting fixtures are shown on the plan which is Sheet 14 of the plan set.

6.8 (Off-Site Improvements): The applicant does not propose any off-site improvements.

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 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:

The proposed use of the site complies with the zoning regulations of the Light Industrial (IND-L) District.

CITY ASSESSOR
No comment at this time.

BUILDING INSPECTOR
No comment at this time.

ENGINEERING/PUBLIC WORKS
No comment at this time.

FIRE DEPARTMENT
Planning staff has provided the plans to the Fire Department and anticipates receiving written comment prior to the February 14th hearing.

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.

Conditions to be Satisfied Prior to Application for a Building Permit

1. The Boundary Line Adjustment plat approved by the Planning Board on _____, 2022 (PB2022-04-BLA) shall be recorded pursuant to and in conformance with the Notice of Action.

2. The applicant shall schedule and hold a pre-building permit application meeting with the Planning and Development Department, City Building Inspectors, City Engineer/Department of Public Works, and Fire Department, in order to help streamline the building permit review process and to review applicable code requirements.

3. 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.

4. All engineering review fees shall be paid in full as required by Section 4.7.E.1 of the Subdivision Regulations.

Conditions to be Satisfied Prior to the Issuance of a Building Permit

5. 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 the construction of sewer and water both on-site and work within the City's right-of-way (water, sewer, road, drainage), in accordance with Chapters 136 and 182 of the City Code and 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. 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 applicant shall sign a Water & Sewer Extension and Infrastructure Inspection Agreement in accordance with Chapters 136 and 182 of the City Code.

6. The development shall be subject to City of Lebanon Impact Fees, pursuant to Section 213 of the Zoning Ordinance. The Impact Fee shall be calculated at the time of Building Permit issuance based on the Impact Fee Schedule adopted on October 12, 2021. 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.

7. All water and sewer fees shall be paid.

8. All water and sewer fees shall be paid as set forth in City Code Chapter 68.

9. Prior to the start of any construction activities on the property, the applicant shall obtain or update (if appropriate) any required State approvals.

Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy

10. The impact fee calculated pursuant to Condition of Approval #5 shall be paid.

11. 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 prior to acceptance of any utility improvements by the City.

12. 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.

General Conditions

13. The applicant shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.

Attachments

cc: Noah Lynd (via e-mail)
Josh Garrison (via e-mail)
Jay Campion, Chaloux, LLC (via e-mail)
Adam Morse, PE, Engineering Ventures, PC (via e-mail)
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: Chaloux, LLC (Jay Campion) TEL.#: 603-643-6607

MAILING ADDRESS: PO Box 4430, Manchester, NH 03108

E-MAIL ADDRESS: jay.campion@gmail.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Noah Lynd and Josh Garrison TEL.#: 914-844-8162

MAILING ADDRESS: PO Box 302 Meriden, NH 03770

E-MAIL ADDRESS: noah.lynd40@gmail.com & joshrgarrison@gmail.com

PROJECT LOCATION:

TAX MAP #: 64-25 and 51-15 LOT#: PLOT #: ZONE: IND-L

STREET ADDRESS OF PROJECT: Labombard Rd.

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☒ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☐ NO

FLOOD PLAIN ☐ YES ☐ NO

SCOPE OF PROJECT:

Construction of a 10,000 sf indoor climbing gym building, with 540 sf yoga studio and 235 sf retail space, including site improvements consisting of new parking lot, sidewalks, patio, sewer and water utility connections and stormwater improvements and boundary line adjustment.

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: Climbing Gym

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: _____

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: 12/7/21

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #

ENGINEERING VENTURES PC

208 Flynn Avenue, Suite 2A, Burlington, VT 05401 · Tel: 802-863-6225 · Fax: 802-863-6306
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 · Tel: 603-442-9333 · Fax: 603-442-9331
414 Union Street Schenectady, NY 12305 · Tel: 518-630-9614

December 13, 2021

Lebanon Planning Board
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: The Notch Climbing Gym
Labombard Road
Subject parcel 51-15
IND-L Zone
Site Plan Review Request

Dear Lebanon Planning Board,

On behalf of Noah Lynd and Josh Garrison, we are pleased to submit the enclosed materials and request Site Plan Review at the January 10, 2022 hearing for the above referenced project. The Owner/Applicant proposes to construct a new 10,000 sq. ft. climbing gym located on Lot B of the Rte. 120 Hotel, LLC Subdivision. The existing lot is located in the Light Industrial Zone. The new building will contain a 10,000-sf main level and a 2,250-sf mezzanine.

The subject property, Lot 51-15, is a 3.4-acre lot. The existing property is vacant with a small area of wetlands in the southeast corner of the lot extending on the neighboring lot to the south. The lot is primarily meadow and there are some piles of fill and boulders adjacent to the west and south boundary. The lot slopes from a high point in the northeast corner down towards the south end of the lot. With steeper slops immediately south of the northeast corner with slopes leveling out towards the south and west. The north end of the site appears to be primarily fill that was placed in that location during construction of the hotel access drive. There are currently two culverts that cross under Labombard Rd. and drain to the wetlands on the subject property. A wetland delineation was completed by ADK Environmental on 11/1/21. The site is bordered by a public sidewalk along its frontage with Labombard Rd.

The lot is served by municipal water and sewer line stubs put in with the original subdivision construction. The sewer connection for the lot is connected to a privately operated sewer lift station that discharges to the sewer main in Route 120. An 8” sewer line is stubbed into the lot near the northeast corner. An 8” water line is also stubbed into the lot roughly centered on the north boundary line.

The new building includes a mezzanine, climbing area, yoga studio and small retail space. Site work will consist of new sidewalks to provide connectivity between the public sidewalk main entrance and various egress locations. A parking lot designed to accommodate 49 cars is provided to the southwest of the building. The building is laid out in an "L" shape with its front facing towards the southeast. Space along the west end of the building has been provided for a future 2,000 sf addition. The drive access is to be centered on the west boundary line and the existing boundary line will be moved to the center of the drive access as shown on the plans. At the outcome of the boundary line adjustment, the subject lot will encompass 2.55 acres. A maintenance and access easement will be dedicated from the subject lot to lot 64-25 for the shared drive access. The owner of lot 64-25 will also provide an easement to the subject lot for shared access and maintenance. A new electrical transformer will be connected to existing power located along the Hilton Garden access drive. The transformer is planned to be located just east of the shared drive access.

Stormwater management will be achieved through construction of a series of grass swales, culverts, catch basins, piping, underdrains, curbing and a stormwater treatment practice consisting of a gravel wetland and sediment forebay system. The sediment forebay will provide pretreatment for the system. An underdrain and swale will be around the building to route drainage from the shed roof to the culvert and swale system so that it can be discharged to the gravel wetlands. Parking lot drainage and drainage from the west side of the building will be routed to a series of catch basins and a swale which flows south into the gravel wetland along the west proposed boundary. The lot is subject to an Alteration of Terrain Permit since it is part of an existing subdivision which has a recent permit on file.

Based on our review of the 8th Edition of the ITE Trip Generation Rates we determined that based on ITE Code 492 Health/Fitness Club with 12.3 units equates to 405 daily trips with 17 peak AM trips and 43 peak PM trips.

We look forward to presenting this project to you at the January 10th hearing. If you have any questions or comments or require any additional information prior to the hearing, please give our office a call.

Sincerely,
ENGINEERING VENTURES, PC

Adam Morse, PE
Project Manager

cc: (via email): Noah Lynd, Josh Garrison, Carl Lavallee, Ingrid Nichols, Mara Robinson

City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: Noah Lynd and Josh Garrison

Project Name: The Notch Climbing Gym

Project Address: Labombard Road, Lebanon, NH 03766

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).]

1. Section 6.2.L of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

   Wheel stops are included in all locations with the exception of the center landscape strip. This is due to its intended use as a stormwater collection feature. Grades are relatively gradual in this stormwater swale and therefore curbing is not needed for safety.

2. Section 6.5.C.2 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

   There is an egress entrance facing the public way. The entrance is not intended for a primary use. ~~Access from the public sidewalk has been provided to the main entrance at the parking lot on the~~ southeast side of the building. This entryway has been made to appear more like a main entrance with the addition of architectural features as well as including the main signage feature for the building.

3. Section 6.2.E.4 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because The east row of parking contains 16 parking spaces including 3 ADA spaces. A bump out was not provided since the entire row of parking abuts landscaping.

4. Section 6.2.D.1 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because Due to the need for public access and the proximity of the wetlands, in order to avoid wetlands near the southeast corner a 5' buffer was achieved. Landscaping along the west end of the building was moved out of the future building footprint to avoid having to reconstruct the landscaping in a future phase of the project.

5. Section 6.2.B.1 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because Due to the proximity of the wetlands, landscaping along Labombard Rd. and the southeast portion of the site ~~within the 15 ft. is not necessary since its existing natural state as a wetland meets the intent of the buffer~~ requirement. One main goal of the project has been to avoid wetland impacts and as such leaving this area as a natural feature will avoid having to work in and disturb the area to install landscaping. Leaving the area alone will allow natural wetland process to continue to evolve, promote growth of the natural wetland vegetation and provide animal habitat.

6. Section 6.2.B.10 of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because Due to the proximity of the wetlands, landscaping along Labombard Rd. is not necessary since its existing natural state as a wetland meets the intent of the requirement. One main goal of the project has been to avoid wetland impacts and as such leaving this area as a natural feature will avoid having to work in and ~~disturb the area to install landscaping. There are several small trees within this wetland area and it is~~ expected over time that these trees will grow naturally and eventually provide shade along Labombard Rd. as they mature, creating natural shade and screening.

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: _____ Date: 1/24/22

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: The Notch Climbing Gym	
APPLICANT: Noah Lynd & Josh Garrison	**DATE:** 12/13/2021
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.

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]

Plan Requirements	**Info. Provided**	**Waiver Sought**
5.1.E(1) - Vicinity sketch (suggested scale: 1" = 500').	☒	*N/A*
5.1.E(2) - Names and mailing addresses of Applicant; Owner(s) of Record of site; Owners of abutting properties; and Holders of any easements, rights-of-way, or other restrictions.	☒	*N/A*
5.1.E(3) - 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 to the Board.	☒	*N/A*
5.1.E(4) - The following information shall be provided on the first page (or cover page, if applicable) of the Site Plan:		
a. Name of the City and County in which the development is proposed;	☒	*N/A*
b. North arrow;	☒	*N/A*
c. Scale of the plan;	☒	*N/A*
d. Date of the plan and of any revisions to the plan; (NOTE: The date on the plan at the time of initial submission for application review shall be included on all subsequent submissions to the City. Any subsequent change(s) to the plan shall include a revision date and description of the revision(s).)	☒	*N/A*
e. The following basic site information in TABLE FORM:		
1. Zoning designation for subject property;	☒	*N/A*
2. Tax Map and Lot number(s) for subject property;	☒	*N/A*
3. Area of lot;	☒	*N/A*
4. Gross floor area of existing and proposed buildings/additions;	☒	*N/A*
5. Number of existing and proposed on- and off-street parking spaces as a table. The table must identify (i) the number of required (minimum) parking spaces and the permitted (maximum) number of parking spaces and the calculations for each, (ii) future proposed, and (iii) existing parking capacity. If the site is part of an existing development or subdivision, the master table must provide such information for all related sites and phases, individually and as a project total;	☒	*N/A*
6. Number of existing and proposed short- and long-term bicycle storage spaces;	☒	*N/A*
7. Number of existing and proposed loading spaces;	☒	*N/A*
8. Height of existing and proposed buildings/additions;	☒	*N/A*
9. Number of stories and gross square footage of each;	☒	*N/A*
10. Proposed use;	☒	*N/A*
11. Required and proposed front, side, and rear yard setbacks	☒	*N/A*
12. Maximum allowable lot coverage with existing and proposed calculations;	☒	*N/A*
13. Indication of whether or not the property is subject to any City Overlay districts (for example, the Wetlands Conservation District or Flood Plain District) or to NHDES Shoreland Water Quality Protection jurisdiction.	☒	*N/A*
5.1.E(5) - Current survey certified by a land surveyor licensed in NH, depicting perimeter boundaries of the lot(s), with compass bearings, distances, and lot areas, and depicting the location of existing improvements on property.	☒	☐
5.1.E(5) - Width and location of rights-of-way and/or easements on property.	☒	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
5.1.E(6) - Existing and proposed grades, including topographic contours with spot elevations, (referenced to USGS or FEMA Flood Insurance Rate Map datums, as appropriate) prepared by a professional engineer or land surveyor licensed in NH. (Where grades are less than 20%, contours shall be at 2 ft. intervals; otherwise they shall be at 5 ft. intervals.)	☒	☐
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, if any, 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. *(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.)*	☒	☐

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, 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) - 100-yr flood elevation, floodway, and floodplain limits, where relevant.	N/A☐	☐
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, where necessary.	☒	☐
5.1.E(17) - Drainage plans prepared by a professional engineer registered in NH, whose seal and signature shall appear on plan(s).	☒	☐
5.1.E(18) – Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☒	☐
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.	☒	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
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 is granted by the City Engineer.	☒	☐
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.	N/A☐	☐
5.1.E(24) - Plans for fire protection including emergency vehicle turn radius diagrams, if requested by the Lebanon Fire Department.	☒	☐
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.	N/A☐	☐
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.	N/A☐	☐

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: _____

(Last Revised 4/19/2021)

CITY OF LEBANON, NH STORMWATER REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: The Notch Climbing Gym	
APPLICANT: Noah Lynd & Josh Garrison	**DATE:** 12/13/2021

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]

Plan Requirements	**Info. Provided**	**Waiver Sought**
6.6.C.1 (1) - 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)	N/A ☐	☐
d. Watershed boundaries	N/A ☐	☐
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	☒	☐
6.6.C.1 (2) - 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	N/A ☐	☐
f. Septic systems, if applicable	N/A ☐	☐

Plan Requirements (*cont.*)	**Info. Provided**	**Waiver Sought**
g. Plan references and notes (including sequence of soil disturbance)	☒	☐
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.	☒	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate.	☒	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. 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. *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*	☒	☐

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)	☒	☐
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).	☒	☐
6.6.D - 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.	☒	☐

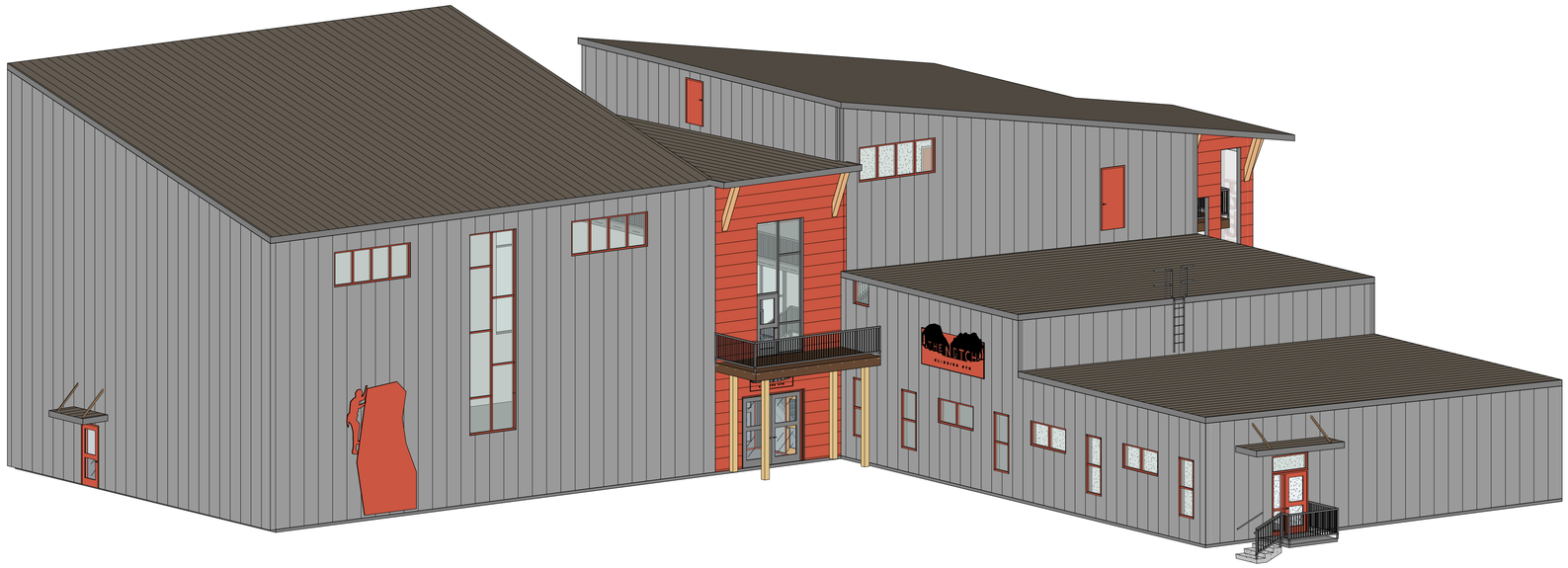
NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE VI OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Engineering Ventures (Adam Morse)

(Last Revised 04/19/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____



1 3D VIEW - SOUTH
Scale:



3 3D PERSPECTIVE
Scale:

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LEBANON, NH 03766
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PRE ENGINEERED METAL BUILDING: STRUCTURAL:
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5244 BEAR CREEK COURT
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PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING

Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
3D VIEWS

PROJECT NO: 21-881 DATE: 12/13/2021

SHEET NUMBER:
A000

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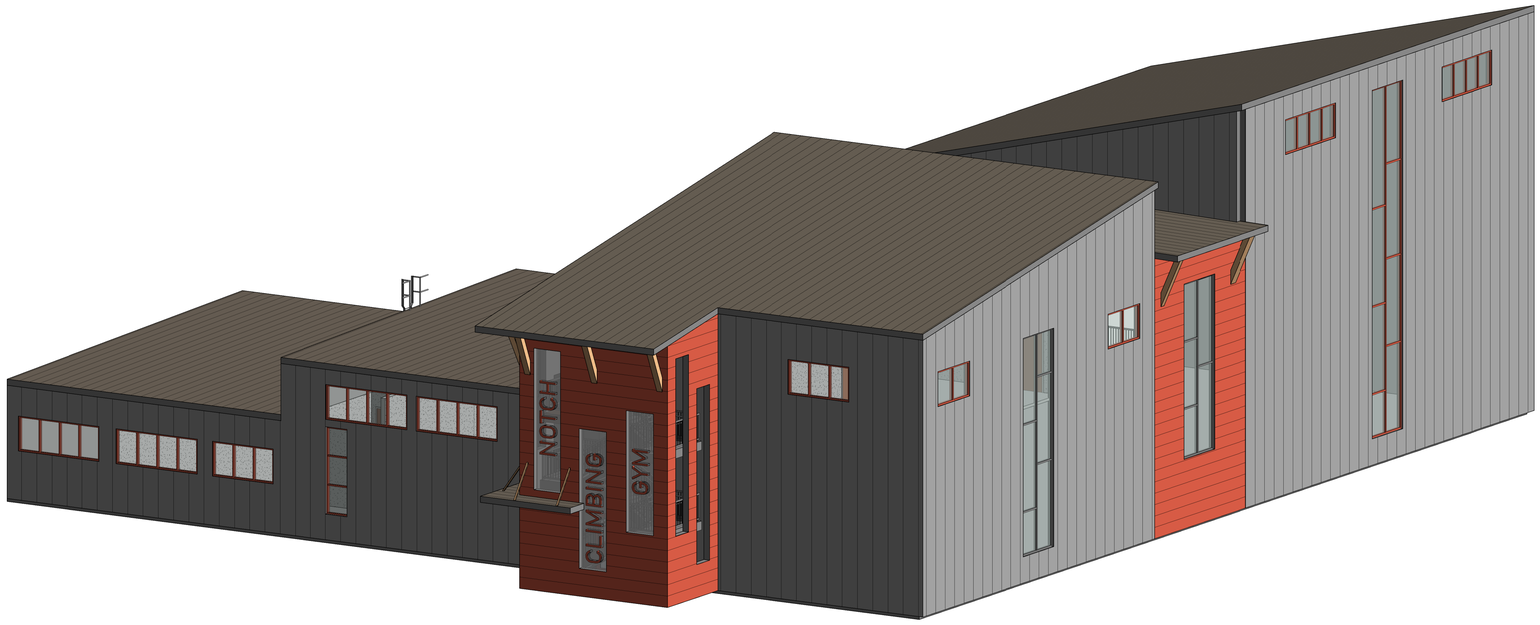
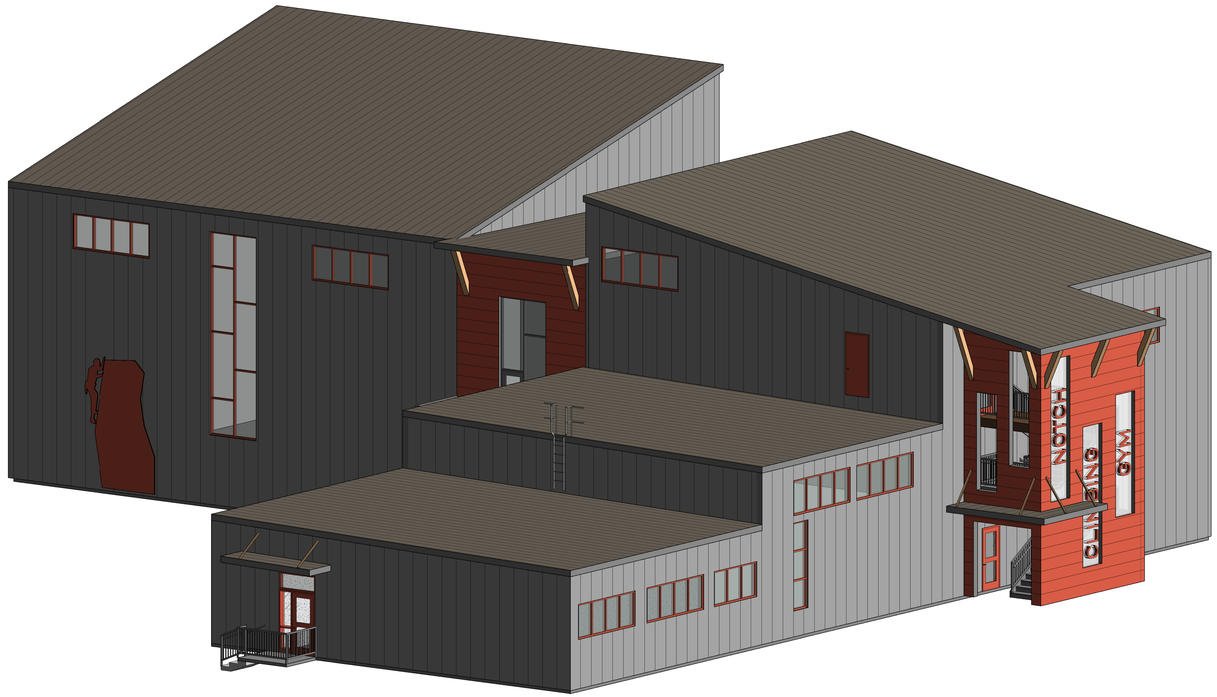


2 3D VIEW - NORTHEAST
Scale:



3 3D PERSPECTIVE SOUTHEAST
Scale:



1 3D VIEW - SOUTHEAST
Scale:

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PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
3D VIEWS

PROJECT NO: 21-881 DATE: 12/13/2021

SHEET NUMBER:
A001

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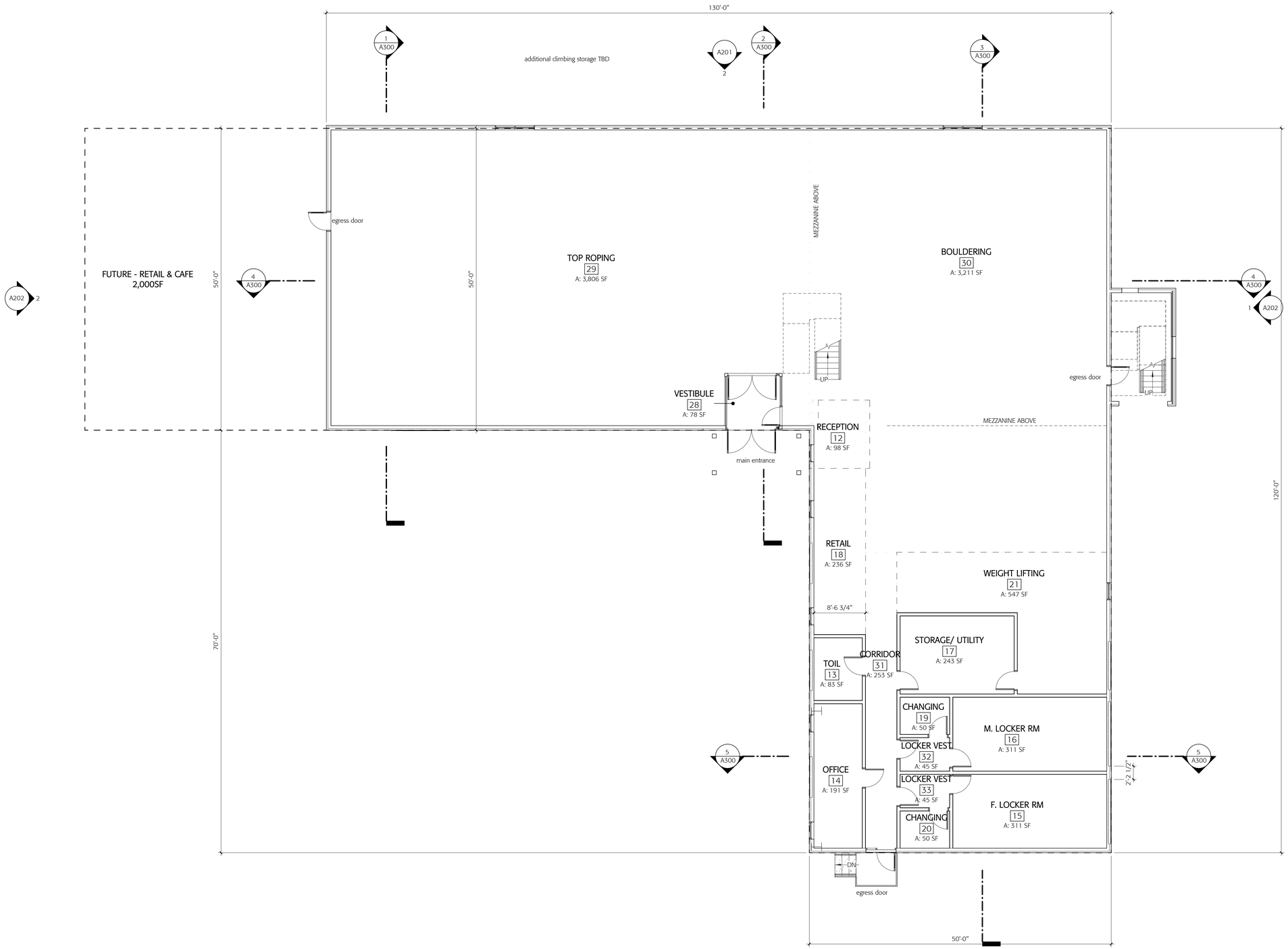

01 LEVEL 1 - FLOOR PLAN
Scale: 1/8" = 1'-0"

GENERAL PLAN NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD OR FACE OF MASONRY, U.O.N. OPENINGS IN WALLS WITHOUT FRAMES ARE TO FACE OF STUD OR MASONRY, U.O.N. DIMENSIONS AT EXISTING WALLS ARE TO EXISTING FINISH FACE, U.O.N.
2. ALL ANGLED WALLS ARE 45°, U.O.N.
3. REFER TO CODE PLAN FOR EXTENT OF RATED ENCLOSURES AND FIRE/SMOKEPROOFING.
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCY BETWEEN CONSTRUCTION DOCUMENTS AND FIELD CONDITIONS IS TO BE PROMPTLY COMMUNICATED TO ARCHITECT FOR CLARIFICATION.
5. ALL RATED ASSEMBLIES ARE TO BE CONSTRUCTED PER REFERENCED UL LISTINGS

PLAN KEYNOTES:

A. TEXT HERE

PLAN LEGEND:

- A — KEYNOTE, SEE PLAN / KEYNOTE CODES ABOVE
- MATCHLINE
- STRUCTURAL GRID LINE
- NEW CONSTRUCTION
- EXISTING CONSTRUCTION TO REMAIN
- NEW DOOR AND FRAME
- EXISTING DOOR TO REMAIN

FINISHES LEGEND:

GENERAL FINISH NOTES:

- EXISTING FINISHES TO REMAIN UNLESS OTHERWISE DESIGNATED ON ROOM TAGS OR OTHER NOTES

WALLS: WO - EXISTING TO REMAIN, PTD
W1 -
W2 -

BASE: B0 - EXISTING TO REMAIN
B1 -
B2 -

FLOORS: F0 - EXISTING TO REMAIN
F1 -
F2 -

CEILINGS: (SEE REFLECTED CEILING PLAN)

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PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
LEVEL 1 FLOOR PLAN

PROJECT NO: 21-881 DATE: 12/13/2021

SHEET NUMBER:
A101

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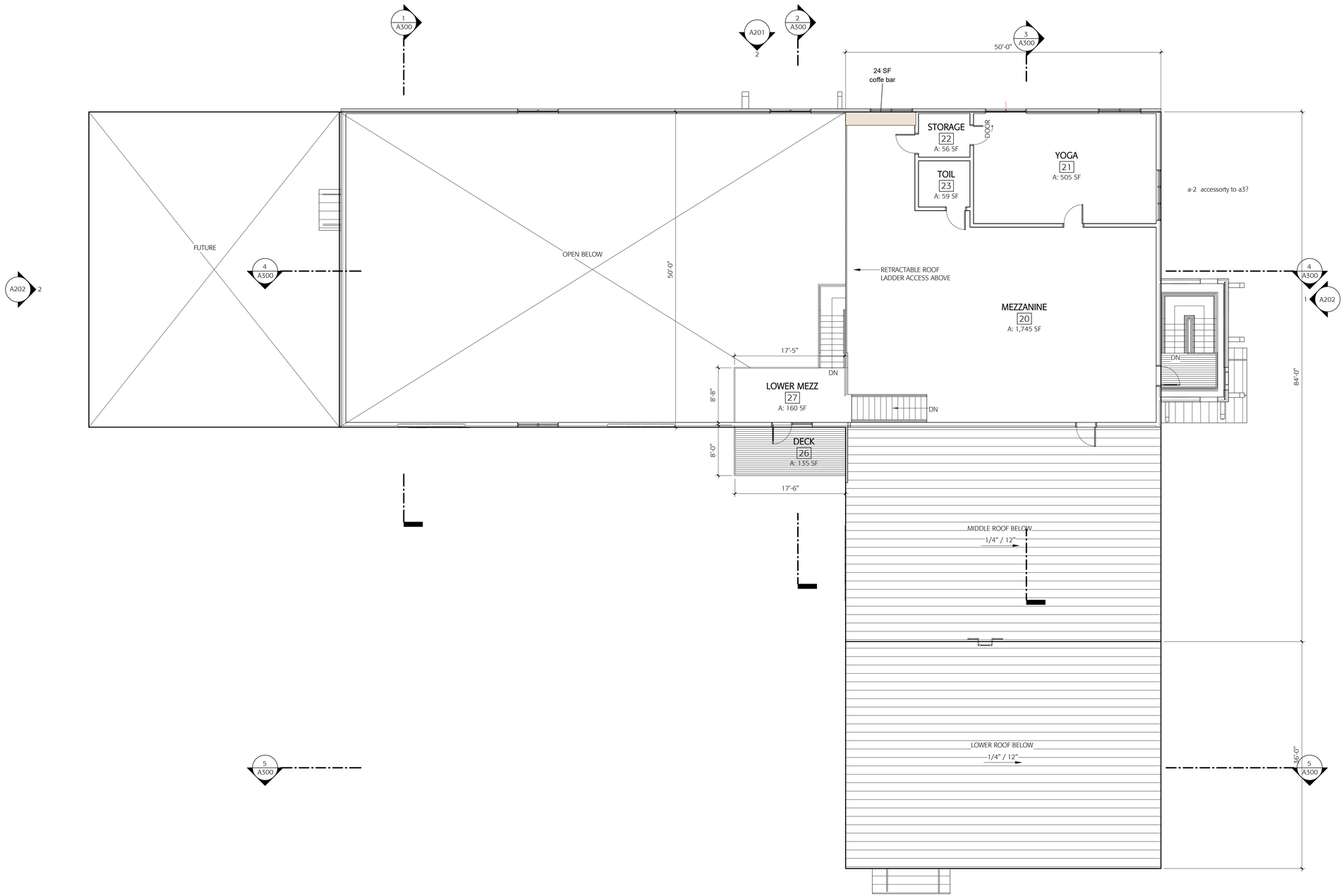

1 MEZZANINE - FLOOR PLAN
Scale: 1/8" = 1'-0"

GENERAL PLAN NOTES:

1. ALL DIMENSIONS ARE TO FACE OF STUD OR FACE OF MASONRY, U.O.N. OPENINGS IN WALLS WITHOUT FRAMES ARE TO FACE OF STUD OR MASONRY, U.O.N. DIMENSIONS AT EXISTING WALLS ARE TO EXISTING FINISH FACE, U.O.N.
2. ALL ANGLED WALLS ARE 45°, U.O.N.
3. REFER TO CODE PLAN FOR EXTENT OF RATED ENCLOSURES AND FIRE/SMOKEPROOFING.
4. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCY BETWEEN CONSTRUCTION DOCUMENTS AND FIELD CONDITIONS IS TO BE PROMPTLY COMMUNICATED TO ARCHITECT FOR CLARIFICATION.
5. ALL RATED ASSEMBLIES ARE TO BE CONSTRUCTED PER REFERENCED UL LISTINGS

PLAN KEYNOTES:

A. TEXT HERE

PLAN LEGEND:

- KEYNOTE, SEE PLAN KEYNOTE CODES ABOVE
- MATCHLINE
- STRUCTURAL GRID LINE
- NEW CONSTRUCTION
- EXISTING CONSTRUCTION TO REMAIN
- NEW DOOR AND FRAME
- EXISTING DOOR TO REMAIN

FINISHES LEGEND:

GENERAL FINISH NOTES:

- EXISTING FINISHES TO REMAIN UNLESS OTHERWISE DESIGNATED ON ROOM TAGS OR OTHER NOTES

WALLS: WO - EXISTING TO REMAIN, PTD
W1 -
W2 -

BASE: B0 - EXISTING TO REMAIN
B1 -
B2 -

FLOORS: F0 - EXISTING TO REMAIN
F1 -
F2 -

CEILINGS: (SEE REFLECTED CEILING PLAN)

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IRVING, TX 75061

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VITAL INFORMATION REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE WORK IS CONTAINED IN THE PROJECT MANUAL PREPARED FOR THIS PROJECT.

PROGRESS SET NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
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ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
MEZZANINE FLOOR PLAN

PROJECT NO: 21-881 | DATE: 12/13/2021

SHEET NUMBER:
A102

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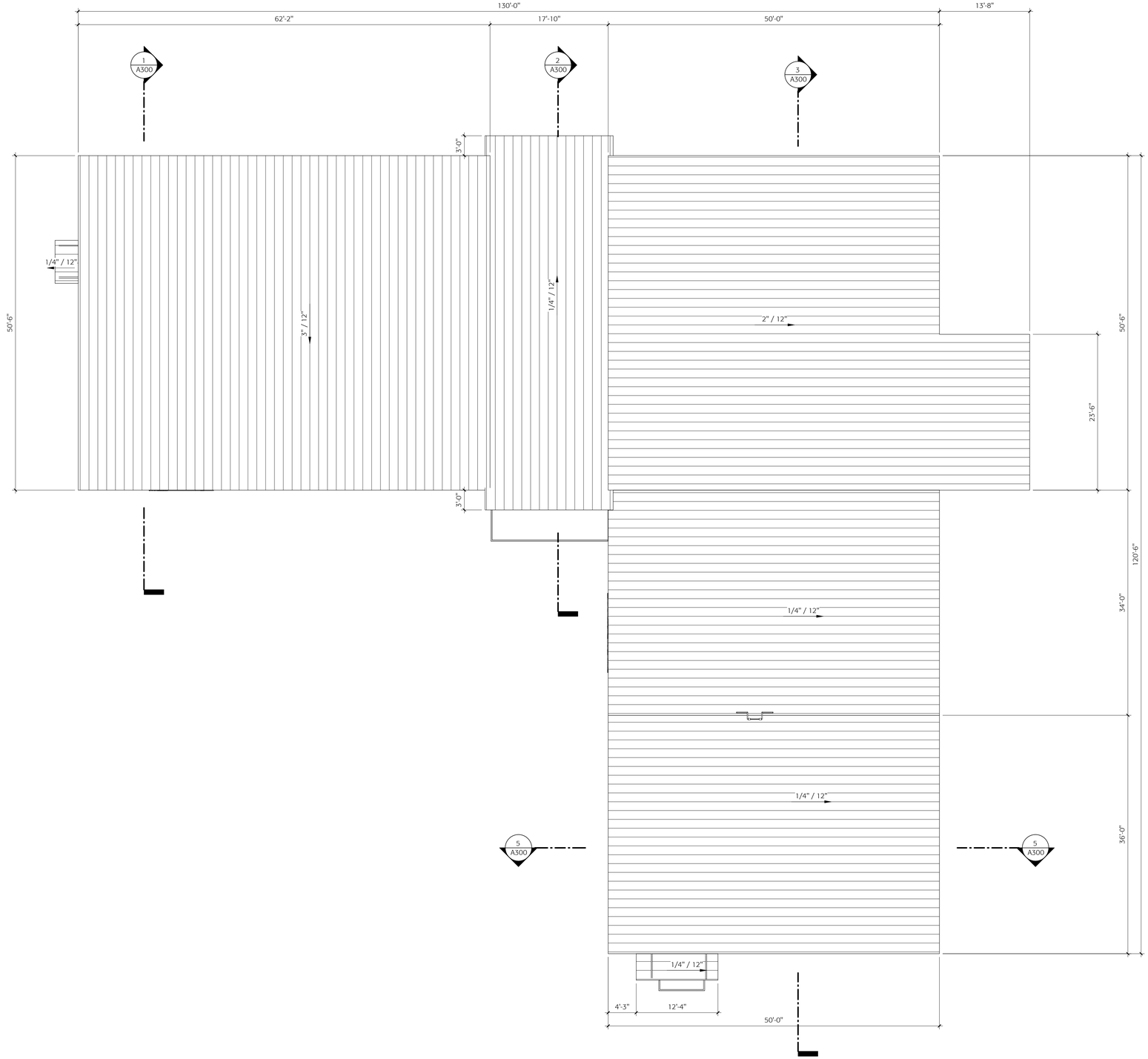

1 ROOF - FLOOR PLAN
Scale: 1/8" = 1'-0"

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IRVING, TX 75061

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MEP/FP:
DESIGN/BUILD

VITAL INFORMATION REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE WORK IS CONTAINED IN THE PROJECT MANUAL PREPARED FOR THIS PROJECT.

PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

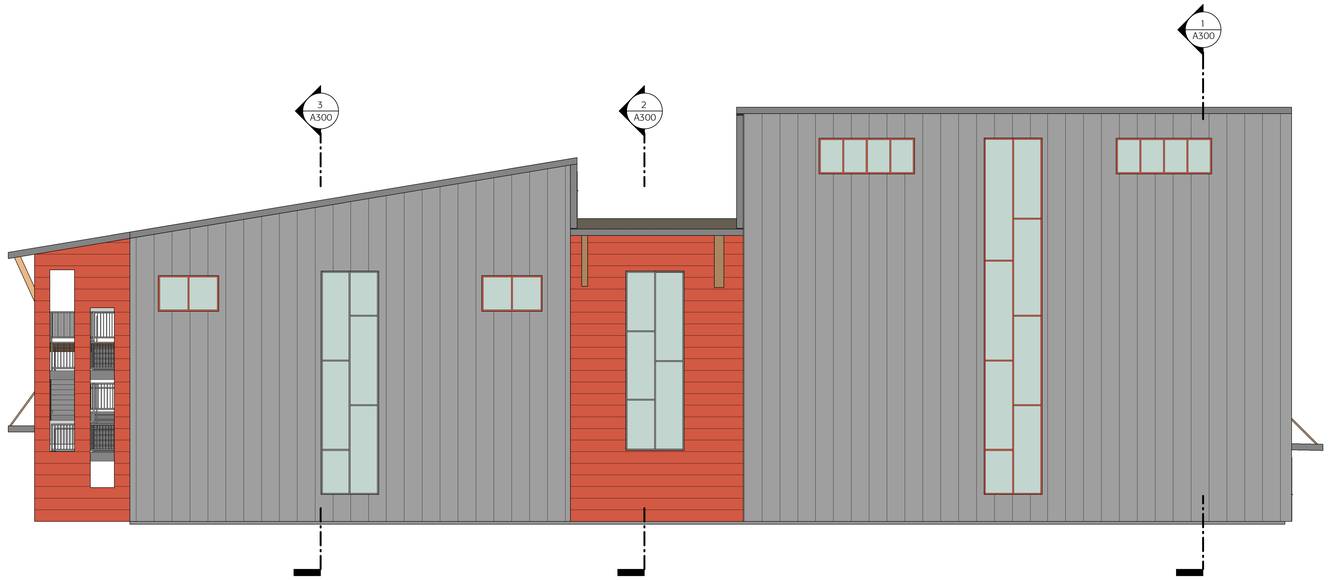
PROJECT:
NOTCH CLIMBING
Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
ROOF PLAN

PROJECT NO: **21-881** DATE: **12/13/2021**

SHEET NUMBER:
A103



2 NORTH ELEVATION
Scale: 1/8" = 1'-0"



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

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PRE ENGINEERED METAL BUILDING: STRUCTURAL:
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IRVING, TX 75061

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MEP/FP:
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PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
EXTERIOR ELEVATIONS

PROJECT NO: 21-881 | DATE: 12/13/2021

SHEET NUMBER:
A201

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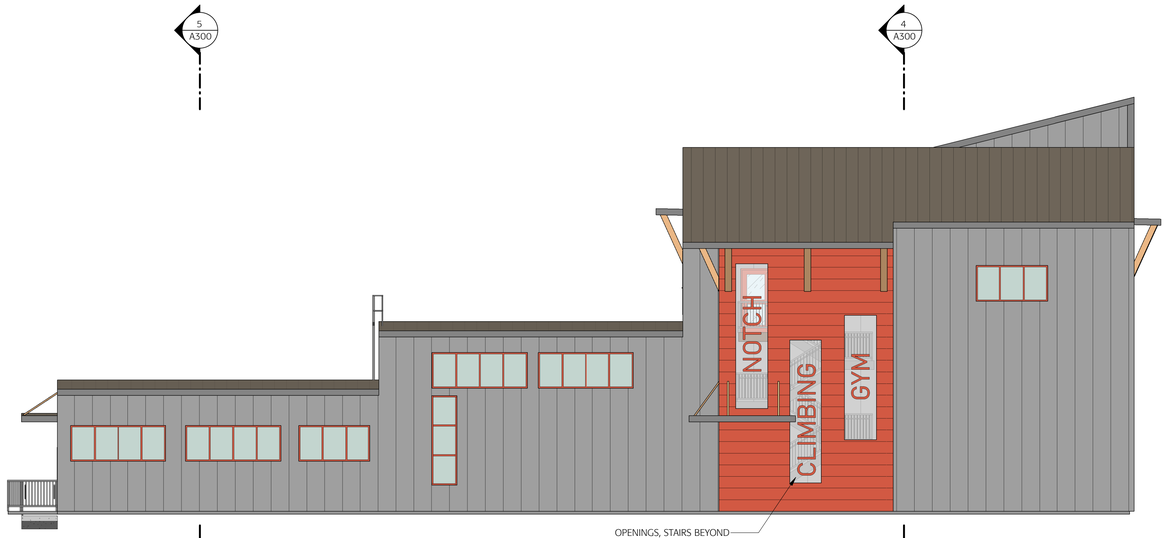

1 EAST ELEVATION
Scale: 1/8" = 1'-0"



2 WEST ELEVATION
Scale: 1/8" = 1'-0"

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T: 603 448 3778

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CONSULTANTS / DESIGN TEAM:

OWNER:
THE NOTCH CLIMBING GYM
LABOMBARD ROAD
LEBANON, NH 03766
T: (603) 252-0367

CONSTRUCTION MANAGER:
WRIGHT CONSTRUCTION COMPANY, INC.
31 STATION ROAD
MT. HOLLY, VT 05758
T: (802) 259-2094

CIVIL:
ENGINEERING VENTRURES, PC
85 MECHANIC STREET, SUITE e2-3
LEBANON, NH 03766
T: (603) 442-9333

PRE ENGINEERED METAL BUILDING: STRUCTURAL:
MESCO BUILDING SOLUTION
5244 BEAR CREEK COURT
IRVING, TX 75061

ARCHITECT:
BANWELL ARCHITECTS, NH
6 SOUTH PARK STREET
LEBANON, NH 03766
T: (603) 448-3778

MEP/FP:
DESIGN/BUILD

VITAL INFORMATION REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE WORK IS CONTAINED IN THE PROJECT MANUAL PREPARED FOR THIS PROJECT.

PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
Enter address here

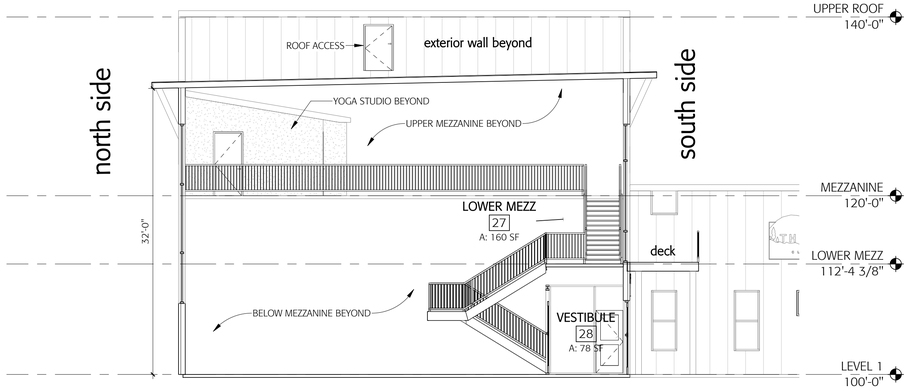
ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
EXTERIOR ELEVATIONS

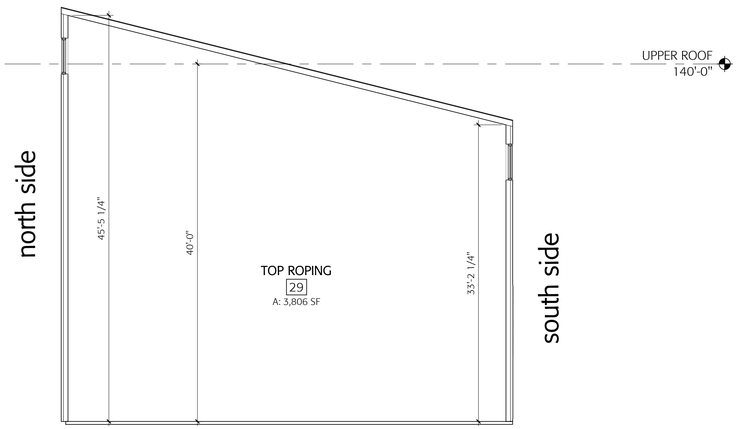
PROJECT NO: 21-881 DATE: 12/13/2021

SHEET NUMBER:
A202

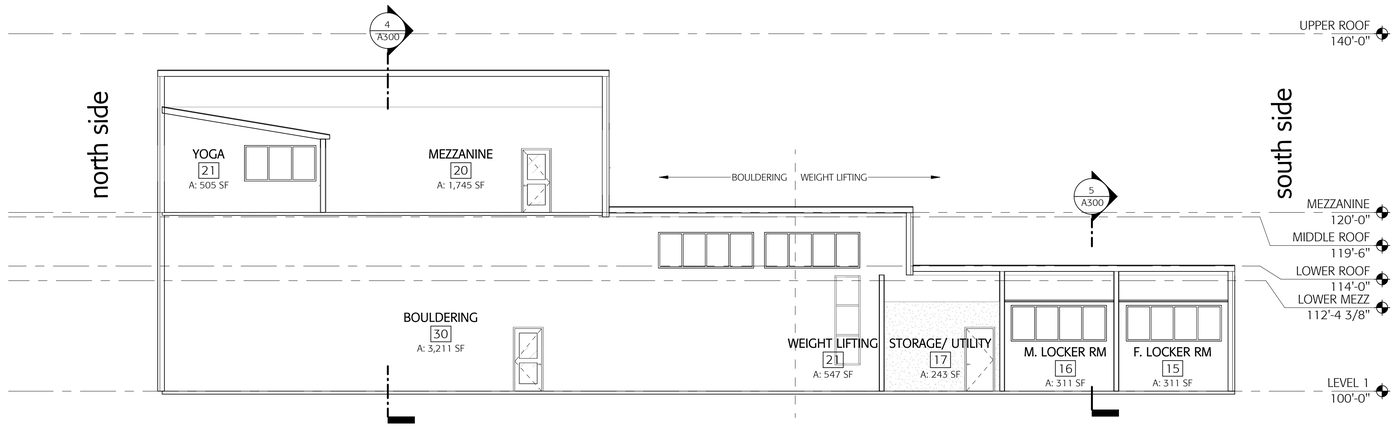
12/10/2021 9:53:38 AM C:\Users\mgriffin\Documents\21-881 Notch Climbing_R22_matt@banwellnh.com.rvt



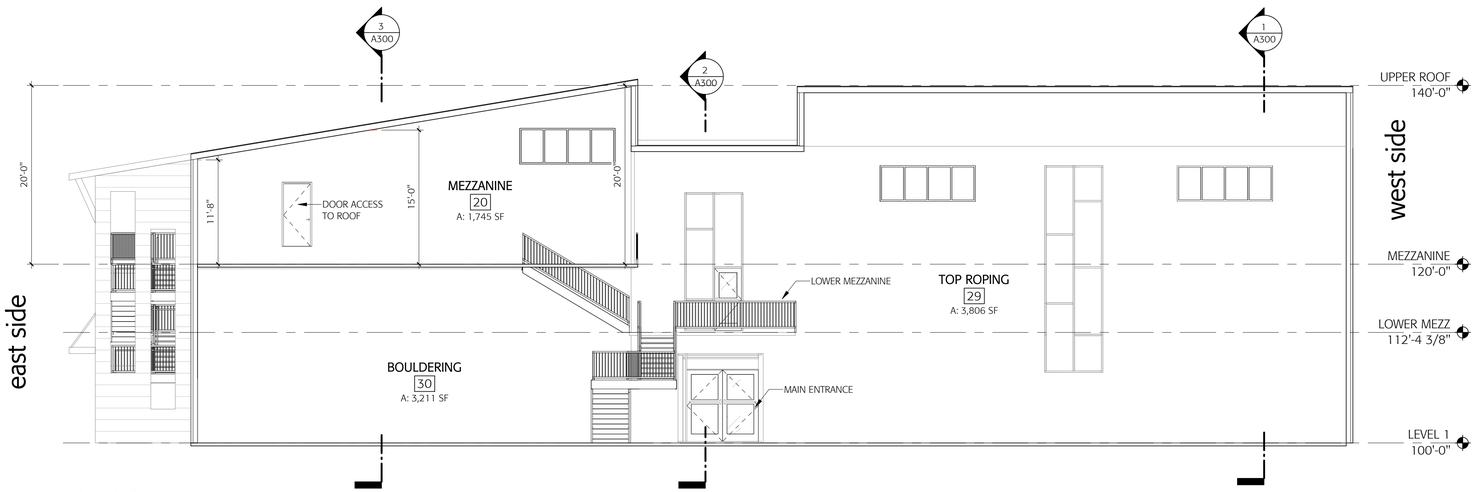
2 NORTH - SOUTH SECTION 2
Scale: 1/8" = 1'-0"



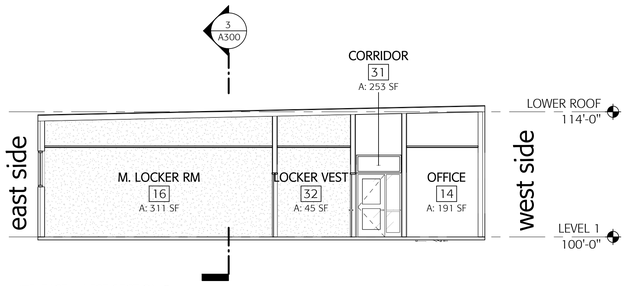
1 NORTH - SOUTH SECTION 1
Scale: 1/8" = 1'-0"



3 NORTH - SOUTH SECTION 3
Scale: 1/8" = 1'-0"



4 EAST - WEST SECTION 1
Scale: 1/8" = 1'-0"



5 EAST - WEST SECTION 2
Scale: 1/8" = 1'-0"

banwell ARCHITECTS
THE CARRIAGE HOUSE
6 SOUTH PARK STREET
LEBANON, NH 03766
T: 603 448 3778

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CONSULTANTS / DESIGN TEAM:

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PROGRESS SET
NOT FOR CONSTRUCTION

REVISION	DATE	COMMENTS

KEY PLAN & NORTH ARROW:

PROJECT:
NOTCH CLIMBING
Enter address here

ISSUED:
SITE PLAN REVIEW

DRAWING TITLE:
BUILDING SECTIONS

PROJECT NO: 21-881 DATE: 12/13/2021

SHEET NUMBER:
A300

12/10/2021 9:53:39 AM C:\Users\mgiffin\Documents\21-881 Notch Climbing_R22_matt@banwellrh.com.rvt

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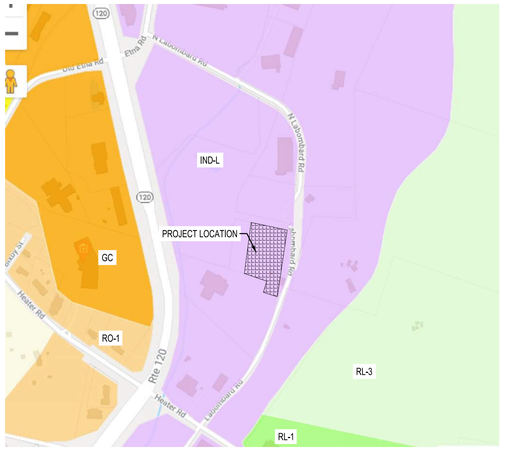
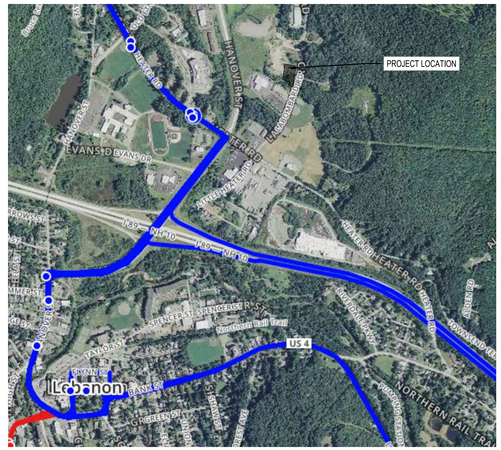
THE NOTCH CLIMBING GYM
LABOMBARD RD.
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE



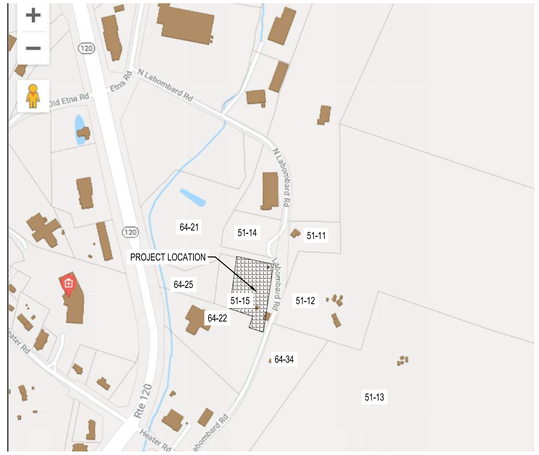
ORTHO MAP
1" = 500'



ZONING MAP
1" = 500'



BUS ROUTES
NTS



TAX MAP
1" = 500'

N

GRAPHIC SCALE

500 0 250 500 1,000 2,000

1 inch = 500 ft.
for sheet size 24" x 36"

ZONING CHART

12/13/2021
The Notch Climbing Gym
Noah Lynd and Josh Garrison
Lebanon Zoning Regulations

	Existing	Required	Proposed
Zoning District	IND-L		IND-L
Tax Lot #	51-15		
Area of Lot	3.4 Acres	2 Acres (min.)	2.55 Acres
# of stories	n/a		2
Impervious Area	n/a		37,000 sq. ft.
Short/Long Term Bicycle Storage	n/a	8	8
Gross Floor Area Main Floor	n/a		10,000 sq. ft.
Gross Floor Area Mezzanine	n/a		2,250 sq. ft.
Impervious Area (% of lot)	n/a		33%
Overlay Districts	Wetlands	Wetlands	Wetlands
Proposed Use	n/a		Climbing Gym
Building (Footprint)	n/a	43,560 sq. ft. (maximum)	10,000 sq. ft.
Parking/Use			
-employee/customer	49	1 per 300 sq. ft. FA	
# of stories			
Impervious Area	TBD		
Impervious Area (% of lot)	TBD		
Setbacks			
Front	n/a	40'	61'
Rear	n/a	20'	131'
Side	n/a	20'	32'
Max building coverage	n/a	50%	
Building Height	n/a	65' (max.)	47'

PARKING SUMMARY:
GROSS FLOOR AREA = 12,250 SF / 300 SF / PARKING SPACE = 41 PARKING SPACES
41 PARKING SPACES X 120% = 49 PARKING SPACES (MAXIMUM ALLOWED PER 607.3A)
BIKE PARKING:
156 OCCUPANTS X 5% = 8 SPACES

DRAWING LIST

SHEET	TITLE	CONSULTANT
C0.0	COVER SHEET	ENGINEERING VENTURES
C0.1	EXISTING CONDITIONS PLAN	ENGINEERING VENTURES
C0.2	SITE LEGEND AND NOTES	ENGINEERING VENTURES
C1.0	EROSION PREVENTION AND SEDIMENT CONTROL PLAN	
C1.1	VEHICLE TURNING PLAN	ENGINEERING VENTURES
C2.0	SITE PLAN	ENGINEERING VENTURES
C2.1	GRADING AND DRAINAGE PLAN	ENGINEERING VENTURES
C3.0	SITE DETAILS	ENGINEERING VENTURES
C3.1	SITE DETAILS	ENGINEERING VENTURES
C3.2	WATER AND SEWER DETAILS	ENGINEERING VENTURES
C3.3	STORMWATER DETAILS	ENGINEERING VENTURES
C3.4	EROSION PREVENTION AND SEDIMENT CONTROL DETAILS	ENGINEERING VENTURES
L1.0	SITE LANDSCAPE PLAN	MARA LANDSCAPE DESIGN
L2.0	SITE LIGHTING PLAN	VISIBLE LIGHT

SUBJECT PROPERTY

LOT 51-15
LABOMBARD RD.
LEBANON, NH 03766

OWNER APPLICANT

CURRENT OWNER
CHALOUX PROPERTIES, LLC
PO BOX 4430
MANCHESTER, NH 03108

APPLICANT
NOAH LYND & JOSH GARRISON
PO BOX 302
MERIDAN, NH 03770

PROJECT CONSULTANTS

CIVIL ENGINEERING
ENGINEERING VENTURES, PC
85 MECHANIC STREET, SUITE E2-3
LEBANON, NH 03766
(603) 442-9333

LAND SURVEYOR
LATITUDES LAND SURVEYING
1 MILL ST.
BURLINGTON, VT 05401
(802) 825-6545

LANDSCAPE ARCHITECT
MARA LANDSCAPE DESIGN, LLC
16 MYRTLE AVE.
NEWBURYPORT, MA 01950

ARCHITECT
BANWELL ARCHITECTS
6 SOUTH PARK ST.
LEBANON, NH 03766
(603) 448-3778

LIGHTING
VISIBLE LIGHT
24 STICKNEY TERRACE # 6,
HAMPTON, NH 03842
(603) 926-6049

GENERAL CONTRACTOR
WRIGHT CONSTRUCTION
31 STATION RD.
MOUNT HOLLY, VT
802-747-8234

WETLANDS CONSULTANT
ADK ENVIRONMENTAL
31 CENTENNIAL DRIVE
WEBSTER, NH 03303

ABUTTERS LIST

ID	Site Address	Owner Name	Owner Address	Owner City	Owner State	Owner Zip
51-11	33 LABOMBARD RD	CHALOUX PROP LLC	PO BOX 4430	MANCHESTER	NH	03108
64-22	13 LABOMBARD RD	DARTMOUTH TRANSP CO INC	7 LANGDON ST	CONCORD	NH	03301
51-12	24 LABOMBARD RD	HATCH, FREDERIC & MARGARET	24 LABOMBARD RD	LEBANON	NH	03766
51-2	52 N LABOMBARD RD	MARY HITCHCOCK MEM HOSPITAL	ONE MEDICAL CENTER DR	LEBANON	NH	03756
64-21	35 LABOMBARD RD	ROUTE 120 HOTEL LLC	1359 HOOKSET RD	HOOKSET	NH	03106
51-14	39 N LABOMBARD RD	KLUBIO LLC	39 LABOMBARD RD	LEBANON	NH	03766

STATE OF NEW HAMPSHIRE
ADAM MORSE
No. 15514
LICENSED
PROFESSIONAL ENGINEER
1/24/22

No.	Description	Date
1	Addressed staff comments	1/24/22

ENGINEERING VENTURES PC
208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-8225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
414 Union Street, Schenectady, NY 12305 • 518-630-9614
www.engineeringventures.com

WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Cover Sheet

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C0.0
1 of 14

S:\PROJECTS\0-2021\21580\NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C0.0 COVER SHEET.DWG

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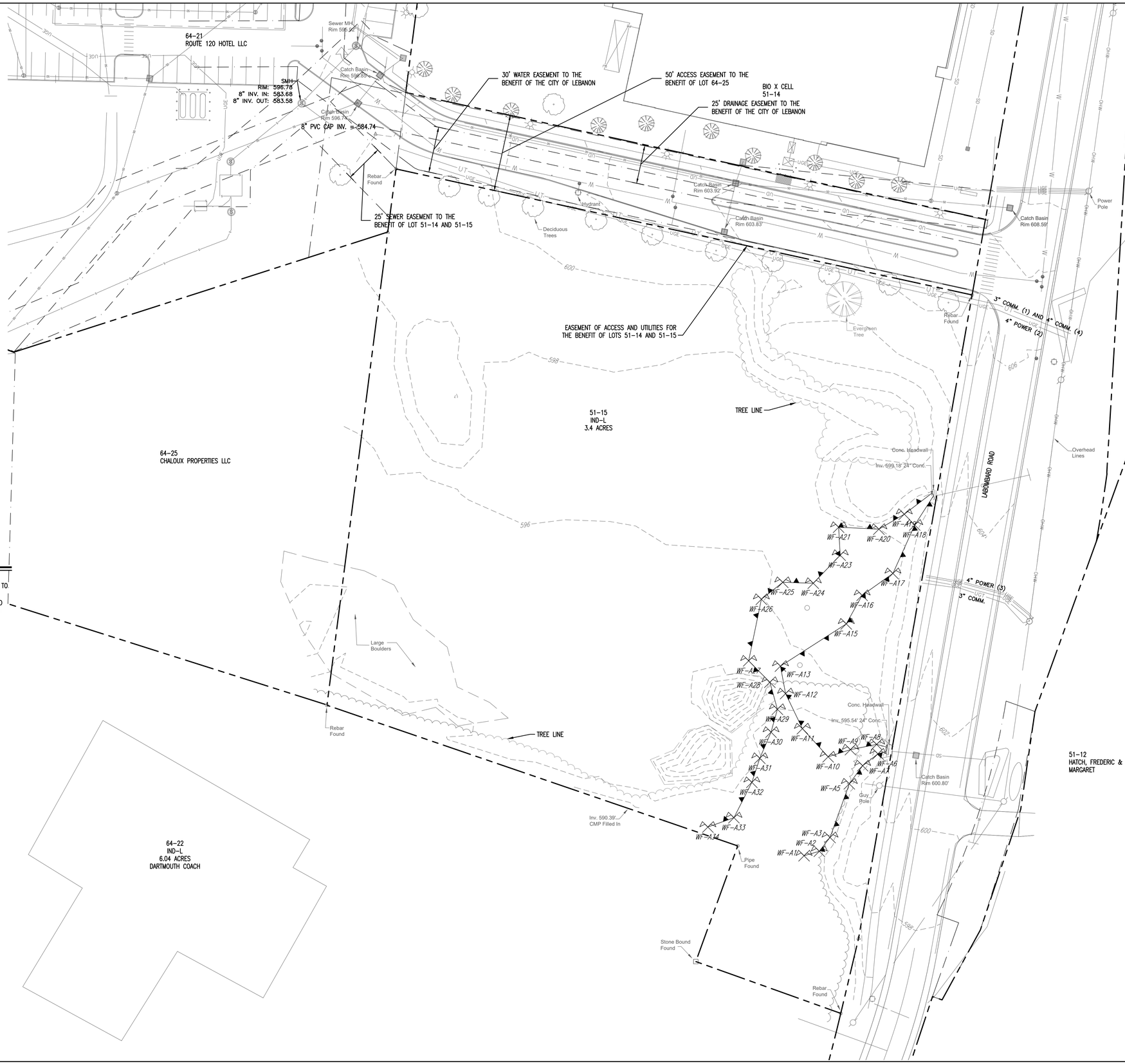

SURVEY NOTES

1. EXISTING PHYSICAL FEATURES AND TOPOGRAPHY SHOWN HERE ARE BASED ON THE BOUNDARY AND TOPOGRAPHIC SURVEY CONDUCTED BY LATITUDES LAND SURVEY ON 11/20/2021.
2. UTILITIES SHOWN DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATED UPON OR ADJACENT TO THE SURVEYED PREMISES. EXISTING UTILITIES SHOWN ON PLANS WERE TAKEN FROM FIELD OBSERVATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING UTILITY LOCATIONS PRIOR TO COMMENCING WORK. NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN UTILITIES AS SHOWN AND AS FOUND.
3. THE CONTRACTOR SHALL CONTACT DIG SAFE (811 or 888-344-7233) A MINIMUM OF 72 HOURS, BUT NOT INCLUDING SATURDAYS, SUNDAYS AND LEGAL HOLIDAYS, PRIOR TO ANY CONSTRUCTION.
4. NORTH ORIENTATION IS REFERENCED TO APPROXIMATE NEW HAMPSHIRE STATE PLANE GRID NORTH DERIVED FROM GPS READINGS.
5. ELEVATIONS ARE REFERENCED TO APPROXIMATE NAVD88 DERIVED FROM GPS READINGS.

WETLAND DELINEATION NOTE

AUDRA L. KLUMB, NH CERTIFIED WETLAND SCIENTIST #222 OF A&D KLUMB ENVIRONMENTAL, LLC, WEBSTER, NH, PERFORMED THE WETLAND MAPPING FOR THIS SITE ON NOVEMBER 1, 2021 ACCORDING TO THE TECHNICAL CRITERIA OF THE US ARMY CORPS OF ENGINEERS DELINEATION MANUAL (TECHNICAL REPORT Y-87-1, JANUARY 1987), THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0 (JANUARY 2012), AND NH STATUTE RSA482-A:2 X.

AUDRA KLUMB _____ DATED_____

ADK Environmental, LLC, 34 Centennial Drive, Webster, NH 03303
(p): 603-746-5069, adke@klumbenv.com

N

GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

S:\PROJECTS\5-2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C0.1 EXISTING COND. DWG

STATE OF NEW HAMPSHIRE
ADAM MORSE
No. 15514
LICENSED
PROFESSIONAL ENGINEER
1/24/22

No.	Description	Date
1	Addressed staff comments	1/24/22

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85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
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www.engineeringventures.com

WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8224

Sheet Title: Existing Conditions Plan

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

C0.1

2 of 14

PLOTTED: 12/12/2022 10:52 AM

SYMBOL LEGEND

PROPOSED FEATURES		EXISTING FEATURES
⊡	BOUND	*BOUND*
	BENCHMARK	*BENCHMARK*
◉	DRILL HOLE	*DRILL HOLE*
▲	SURVEY POINT	*SURVEY POINT*
○	IRON PIN	*IRON PIN*
TP1 ▩	TEST PIT	*TP1 TEST PIT*
B1	BORING	*B1 BORING*
P1 ◒	PERC TEST	*PERC TEST*
▥	CATCH BASIN (SQUARE)	*CATCH BASIN (SQUARE)*
◍	CATCH BASIN (ROUND)	*CATCH BASIN (ROUND)*
	HEADWALL	*HEADWALL*
	FLARED END SECTION	*FLARED END SECTION*
	STONE APRON	*STONE APRON*
Ⓓ	DRAIN MANHOLE (DMH)	*DRAIN MANHOLE (DMH)*
○ C/O	DRAINAGE CLEAN OUT	*DRAINAGE CLEAN OUT*
Ⓢ	SANITARY SEWER MANHOLE (SMH)	*SANITARY SEWER MANHOLE (SMH)*
○ C/O	SANITARY CLEAN OUT	*SANITARY CLEAN OUT*
	HYDRANT	*HYDRANT*
WV	WATER SHUTOFF	*WATER SHUTOFF*
	TAPPING SLEEVE & VALVE	*TAPPING SLEEVE & VALVE*
GV	GATE VALVE	*GATE VALVE*
Ⓦ	WELL	*WELL*
	UTILITY POLE	*UTILITY POLE*
	GUY POLE	*GUY POLE*
Ⓔ	ELECTRICAL MANHOLE	*ELECTRICAL MANHOLE*
	FLOOD LIGHT	*FLOOD LIGHT*
	LIGHT POST	*LIGHT POST*
Ⓣ	TELEPHONE MANHOLE	*TELEPHONE MANHOLE*
Ⓖ	NATURAL GAS MANHOLE	*NATURAL GAS MANHOLE*
Ⓒ	COMMUNICATION MANHOLE	*COMMUNICATION MANHOLE*
●	BOLLARD	*BOLLARD*
	SINGLE POLE SIGN	*SINGLE POLE SIGN*
	DOUBLE POLE SIGN	*DOUBLE POLE SIGN*
+100.5	SPOT ELEVATION	*+ 100.00 SPOT ELEVATION*
♿	ACCESSIBLE PARKING STALL	*ACCESSIBLE PARKING STALL*
⟹	DRAINAGE FLOW	*DRAINAGE FLOW*
	DECIDUOUS TREE	*DECIDUOUS TREE*
	CONIFEROUS TREE	*CONIFEROUS TREE*

LINETYPE LEGEND

PROPOSED FEATURES	EXISTING FEATURES
100 MAJOR CONTOUR	*100 MAJOR CONTOUR*
98 MINOR CONTOUR	*98 MINOR CONTOUR*
EDGE OF RIVER	*EDGE OF RIVER*
EDGE OF POND	*EDGE OF POND*
	FLOOD PLAIN
PROPERTY LINE	*PROPERTY LINE*
RIGHT OF WAY	*RIGHT OF WAY*
SETBACK	*SETBACK*
EASEMENT	*EASEMENT*
LOC LIMIT OF CONSTRUCTION	*LIMIT OF CONSTRUCTION*
LOD LIMIT OF DISTURBANCE	*LIMIT OF DISTURBANCE*
SF SILT FENCE	*SILT FENCE*
DEMOLITION WORK	*DEMOLITION WORK*
CENTERLINE	*CENTERLINE*
EDGE OF PAVEMENT	*EDGE OF PAVEMENT*
EDGE OF GRAVEL	*EDGE OF GRAVEL*
EDGE OF CONCRETE	*EDGE OF CONCRETE*
CURB	*CURB*
X X FENCE (BARBED WIRE)	*X X FENCE (BARBED WIRE)*
FENCE (CHAIN LINK)	*FENCE (CHAIN LINK)*
FENCE (WOODEN)	*FENCE (WOODEN)*
GUARD RAIL	*GUARD RAIL*
TREE LINE	*TREE LINE*
	EDGE OF WETLANDS – DELINEATED
	EDGE OF WETLANDS – APPROXIMATE
STONE WALL	*STONE WALL*
S SANITARY SEWER	*S SANITARY SEWER*
	(S) SANITARY SEWER APPROX.
FM SEWER FORCEMAIN	*FM SEWER FORCEMAIN*
SS SEWER SERVICE	*SS SEWER SERVICE*
SLA DISPOSAL AREA LATERAL	*SLA DISPOSAL AREA LATERAL*
STORM LINE	*STORM LINE*
	(ST) STORM LINE APPROX.
UD UNDER DRAIN	*UD UNDER DRAIN*
FD FOUNDATION DRAIN	*FD FOUNDATION DRAIN*
RD ROOF DRAIN	*RD ROOF DRAIN*
DITCH/SWALE	*DITCH/SWALE*
T TELECOMM	*T TELECOMM*
	(T) TELECOMM APPROX.
UGT UNDERGROUND TELECOMM	*UGT UNDERGROUND TELECOMM*
OHT OVERHEAD TELECOMM	*OHT OVERHEAD TELECOMM*
E ELECTRIC LINE	*E ELECTRIC LINE*
	(E) ELECTRIC APPROX.
UGE UNDERGROUND ELECTRIC	*UGE UNDERGROUND ELECTRIC*
OHE OVERHEAD ELECTRIC	*OHE OVERHEAD ELECTRIC*
SL ELECTRICAL SITE LIGHTING	*SL ELECTRICAL SITE LIGHTING*
W WATER LINE	*W WATER LINE*
	(W) WATER APPROX.
WS WATER SERVICE	*WS WATER SERVICE*
GAS GAS LINE	*GAS GAS LINE*
	(G) GAS APPROX.
CATV CABLE TV	*CATV CABLE TV*
UGTV UNDERGROUND CABLE TV	*UNDERGROUND CABLE TV*
OVERHEAD CABLE TV	*OHTV OVERHEAD CABLE TV*
STM STEAM LINE	*STM STEAM LINE*
LPS LOW PRESSURE STEAM	*LPS LOW PRESSURE STEAM*
HPS HIGH PRESSURE STEAM	*HPS HIGH PRESSURE STEAM*
HW HOT WATER	*HW HOT WATER*
CW CHILLED WATER	*CW CHILLED WATER*

STANDARD ABBREVIATIONS

BENCHMARK	BM	END OF VERTICAL CURVE ELEVATION	EVCE	LIMITS OF CONSTRUCTION	LOC	REINFORCED CONCRETE PIPE	RCP
BEGINNING OF VERTICAL CURVE ELEVATION	BVCE	END OF VERTICAL CURVE STATION	EVCS	LIMITS OF DISTURBANCE	LOD	RIGHT-OF-WAY	ROW
BEGINNING OF VERTICAL CURVE STATION	BVCS	EXISTING	EX	MAXIMUM	MAX	SANITARY	SAN
CAST-IN-PLACE	CIP	EXISTING GRADE/GROUND	EG	MINIMUM	MIN	SANITARY MANHOLE	SMH
CAST IRON	CI	FINISHED FLOOR	FF	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES	MUTCD	SILT FENCE	SF
CATCH BASIN	CB	FINISHED GRADE/GROUND	FG	MONITORING WELL	MW	SLOPE	S=
CENTERLINE	℄	FIELD INLET	FI	MONUMENT	MON	STATION	STA
CLEAN OUT	C/O	FLARED END SECTION	FES	NOT IN CONTRACT	NIC	STORM MANHOLE	DMH
CORRUGATED METAL PIPE	CMP	FOOT, FEET	FT	NOT TO SCALE	NTS	TANGENT	TAN
CUBIC FEET	CF	FOOTING	FTG	POINT OF CURVATURE	PC	TANGENT TO CURVE	TC
CUBIC FEET PER SECOND	CFS	FOUNDATION	FND	POINT OF INTERSECTION	PI	TAPPING SLEEVE AND VALVE	TS&V
CUBIC YARD	CY	GALLONS PER MINUTE	GPM	POLYETHYLENE, PROFESSIONAL ENGINEER	PE	TEMPORARY BENCHMARK	TBM
DIAMETER	DIA	GATE VALVE	GV	PROPERTY LINE	PL	TEST PIT	TP
DISTRIBUTION BOX	D-BOX	HEADWALL	HW	PERC TEST, POINT OF TANGENCY	PT	TOP OF BANK	TOB
DUCTILE IRON	DI	HIGH DENSITY POLYETHYLENE	HDPE	POLYVINYL CHLORIDE	PVC	TOP OF CURB	TOC
EDGE OF CONCRETE	EOC	HYDRANT	HYD	POINT OF VERTICAL INTERSECTION	PVI	TOP OF WALL	TOW
EDGE OF GRAVEL	EOG	INTERSECTION	INT	POND	PND	TYPICAL	TYP
EDGE OF PAVEMENT	EOP	INVERT	INV	QUANTITY	QTY	VERIFY IN FIELD	VIF
ELECTRIC	ELEC	IRON PIN	IP	QUALITY ASSURANCE	QA	WATER VALVE	WV
ELECTRIC MANHOLE	EMH	IRON PIPE SIZE	IPS	QUALITY CONTROL	QC		
ELEVATION	ELEV	LENGTH	L=	RADIUS	R=		

EPA 2017 CONSTRUCTION GENERAL PERMIT

1. THIS PROJECT IS SUBJECT TO AN EPA 2017 CONSTRUCTION GENERAL PERMIT (CGP).
2. CONTRACTOR SHALL PREPARE A SWPPP AND NOI IN ACCORDANCE WITH THE EPA 2017 CGP.
3. CONTRACTOR SHALL FUNCTION AS AND MEET ALL REQUIREMENTS FOR ELIGIBILITY AS AN OPERATOR AS DEFINED BY THE CGP.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION, MONITORING, MAINTENANCE, AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES AND TAKING PRECAUTIONARY STEPS TO AVOID ANY SEDIMENT TRANSFER TO NEIGHBORING SITES OR WATERS OF THE STATE AS REQUIRED BY THE SUBMITTED SWPPP AND THE CGP.

GENERAL NOTES

1. EXACT OBJECT LOCATIONS MAY DIFFER FROM THAT AS SHOWN, AND ADDITIONAL SUB-SURFACE AND SURFACE UTILITIES AND STRUCTURES MAY EXIST. THE CONTRACTOR IS TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK AND TO CALL DIG SAFE 72 HOURS PRIOR TO ANY DIGGING, DRILLING OR BLASTING.
2. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS WITHOUT THE EXPRESSED APPROVAL FROM THE ENGINEER.
3. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
4. THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO EXISTING CONDITIONS OR BETTER AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS AND/OR HEDGES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE.
5. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
6. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, AND CERTIFICATES.
7. THE CONTRACTOR WILL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A NEW HAMPSHIRE STATE LICENSED LAND SURVEYOR.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS, AND COORDINATE WORK WITH ALL CONTRACTS FOR THE SITE.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT EXPLORATORY TEST PITS AS MAY BE REQUIRED TO DETERMINE UNDERGROUND CONDITIONS.
10. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS FOR CONSTRUCTION.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.
12. MAINTAIN FLOW FOR ALL EXISTING UTILITIES, UNLESS NOTED OTHERWISE.
13. CONTRACTOR TO GRADE ALL AREAS ON THE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND IMPERVIOUS SURFACES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION, MONITORING, MAINTENANCE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES AND TAKING PRECAUTIONARY STEPS TO AVOID ANY SEDIMENT TRANSFER TO NEIGHBORING SITES OR WATERS OF THE STATE.

STATE OF NEW HAMPSHIRE
ADAM M. MORSE
No. 15514
12/14/22
LICENSED PROFESSIONAL ENGINEER

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Site Legend and Notes

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C0.2

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S:\PROJECTS\21-2021\21580 NH LEBANON CLIMBING GYM\DWGS\SHEET FILES\21580 C0.2 LEGENDS AND NOTES.DWG

PLOTTED: 12/12/2021 10:52 AM

CONSTRUCTION SEQUENCE

1. CONTRACTOR TO COORDINATE STOCKPILE AND STAGING AREAS WITH THE OWNER.
2. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL HOST A PRECONSTRUCTION MEETING WITH OWNER, ENGINEER, CITY PLANNING, POLICE, FIRE, AND PUBLIC WORKS STAFF.
3. PRIOR TO ANY OTHER WORK, SILT FENCES SHALL BE INSTALLED GENERALLY 10 FEET FROM THE BASE OF THE FILL SLOPES, OR AS SHOWN ON THE EROSION CONTROL PLAN. THESE SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN STABILIZED. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES 6 INCHES DEEP AT THE FENCE. THE SILT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A PROPER SEDIMENT BARRIER.
4. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT.
5. INSTALL INLET PROTECTION ON EXISTING CATCH BASINS AFFECTED DURING CONSTRUCTION.
6. ROUGH GRADE AND STOCKPILE TOPSOIL SURROUNDED BY SILT FENCE.
7. DEMO EXISTING STRUCTURES AS REQUIRED.
8. CLEAR AND GRUB, REMOVE LOOSE PAVING/DEMO PAVING AS REQUIRED AND HAUL OFF SITE USING EXISTING PARKING AREA AS STAGING.
9. GRADE DRIVE ENTRANCE AND EXCAVATE BUILDING PAD
10. BEGIN VERTICAL CONSTRUCTION OF BUILDING FOUNDATION CONCURRENT WITH WATER AND SEWER UTILITIES.
11. CONSTRUCT STORMWATER SYSTEM.
12. EXCAVATE AND PREP FOR INFILTRATION SYSTEM, IMPORT BASE SUBGRADE MATERIALS AS NECESSARY.
13. COORDINATE INSTALLATION OF DRAINAGE DETENTION SYSTEM.
14. INSTALL STORMWATER PIPING AND STRUCTURES
15. BACKFILL AND SUBGRADE PREP FOR NEW PARKING AND SIDEWALK AREAS
16. COMPLETE FINAL GRADING OF SITE. PLACE TOPSOIL AND PERMANENTLY VEGETATE, LANDSCAPE, AND MULCH.
17. INSTALL LIGHT POLES.
18. PAVE BASE COURSE.
19. STABILIZE EXPOSED SLOPES AND SOILS AS SOON AS GRADED, REPAIR AND REESTABLISH ALL DISTURBED VEGETATED/LAWN AREAS, AND MAINTAIN UNTIL ADEQUATELY VEGETATED.
20. PAVE WEARING COURSE.
21. AFTER THE SITE IS APPROVED BY THE ENGINEER AS ADEQUATELY STABILIZED, REMOVE ALL TEMPORARY.
22. ANTICIPATED FINAL COMPLETION DATE SUMMER/FALL 2022.

EROSION CONTROL LEGEND

EROSION PREVENTION AND SEDIMENT CONTROL STRATEGY
THE FOLLOWING TECHNIQUES WILL BE UTILIZED AS PART OF A SEDIMENT AND EROSION CONTROL PROGRAM. THE SEDIMENT AND EROSION CONTROL PROGRAM WILL BE IMPLEMENTED IN STAGES. CERTAIN ITEMS FROM ONE STAGE WILL LIKELY OVERLAP OR TAKE PLACE CONCURRENTLY WITH ITEMS FROM OTHER STAGES. HAY PRODUCTS SHALL NOT BE USED.

TEMPORARY INLET PROTECTION – STONE COLLARS AND/OR INLET SOCKS. INSTALL AS INDICATED ON PLANS. STONE TO BE REMOVED AND REPLACED WITH CLEAN STONE WHEN SEDIMENT IS ≤ 1/2 DEPTH OF STONE. REMOVE ALL SEDIMENT COLLECTED IN STRUCTURE OR SOCK AS SOON AS POSSIBLE.

STONE CHECK DAM
THIS STRUCTURAL MEASURE IS ALONG DITCHES/ SWALES AND IN OTHER LOCATIONS INDICATED ON THIS PLAN TO SLOW STORMWATER RUNOFF AND TRAP SEDIMENT PARTICLES. THESE WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN PERMANENTLY STABILIZED.

PERMANENT EROSION CONTROL NETTING.
THIS STRUCTURAL MEASURE IS INSTALLED IN AREAS THAT HAVE SLOPES 3:1 AND GREATER AND IN OTHER LOCATIONS INDICATED ON THIS PLAN TO STABILIZE THE SLOPE AND REDUCE THE EROSION POTENTIAL. THE NETTING IS TYPICALLY IMPREGNATED WITH GRASS SEED AND SOMETIMES STAPLED TO THE EXPOSED SOIL. THESE WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN PERMANENTLY STABILIZED.

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
THIS STRUCTURAL MEASURE IS A STABILIZED PAD OF AGGREGATE UNDERLAIN WITH FILTER FABRIC LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC RIGHT-OF-WAY, STREET, ALLEY, SIDEWALK, OR PARKING AREA. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY OR STREETS. THIS WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN PERMANENTLY STABILIZED. ONCE REMOVED, THE IMPACTED AREA SHALL BE SEEDED AND MULCHED.

TEMPORARY SEDIMENT BASIN
THIS STRUCTURAL MEASURE INVOLVES CONSTRUCTING TEMPORARY SEDIMENT BASINS IN THE LOCATION OF PROPOSED STORMWATER PONDS. GENERALLY THE STORMWATER PONDS CAN BE CONSTRUCTED AS SHOWN ON THE PLANS HOWEVER ORIFICE ON THE OUTLET STRUCTURES SHALL BE OMITTED UNTIL THE SITE IS STABILIZED TO IMPOUND RUNOFF AND ALLOW FOR SETTLING OF SUSPENDED FINES. THIS WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN PERMANENTLY STABILIZED. ONCE THE SITE IS STABILIZED, SEDIMENT SHALL BE REMOVED FROM THE BASINS AND THE OUTLET ORIFICE SHALL BE DRILLED INTO THE OUTLET STRUCTURE AS NOTED ON THE PLANS.

TEMPORARY STAGING AND WASTE AREAS (APPROXIMATE)
THESE ARE APPROVED LOCATIONS WHERE NON-SOIL, NON-ERODIBLE MATERIALS MAY BE STORED. SOILS SHALL NOT BE STORED IN THESE AREAS.

TEMPORARY SOIL STOCKPILE AREAS (APPROXIMATE)
THESE ARE APPROVED LOCATIONS WHERE TOPSOIL AND OTHER SOIL MATERIALS MAY BE STORED. THESE STOCKPILES WILL BE PROTECTED FROM EROSION BY A NUMBER OF METHODS, INCLUDING INSTALLING SILT FENCING AROUND THE DOWN GRADIENT PERIMETER OF THE STOCKPILE AND SEEDING AND MULCHING THE STOCKPILE WHEN NOT IN USE FOR MORE THAN FIVE DAYS.

TEMPORARY SILT FENCING
THIS STRUCTURAL MEASURE IS A TEMPORARY BARRIER OF GEOTEXTILE FABRIC USED TO INTERCEPT SEDIMENT LADEN RUNOFF FROM SMALL DRAINAGE AREAS OF DISTURBED SOIL. IT IS INSTALLED ALONG THE PERIMETER OF IMPACTED AREAS AND ALONG THE BASE OF THE FILL SLOPES. ADDITIONALLY, WHEN DESIGNATED ALONG THE LIMITS OF DISTURBANCE, INSTALL CONSTRUCTION FENCE BEHIND THE SILT FENCE. SILT FENCING IS EFFECTIVE IN REDUCING STORMWATER RUNOFF VELOCITIES, ASSIST IN THE DEPOSITION OF TRANSPORTED SEDIMENT LOAD AND PREVENT EROSION OF SOILS ONTO ADJACENT AREAS. THESE WILL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN PERMANENTLY STABILIZED.

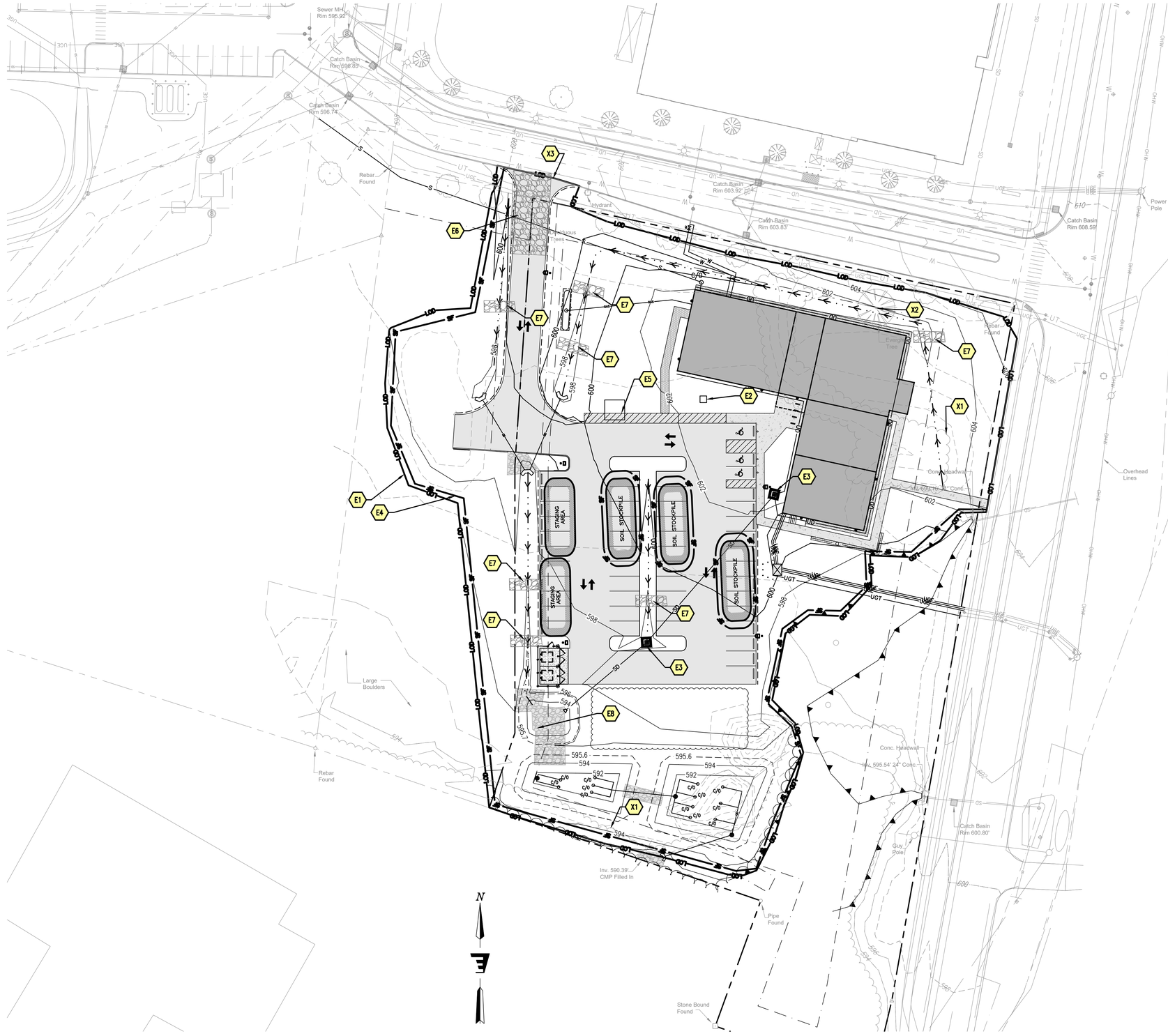
LIMITS OF DISTURBANCE
THE CONTRACTOR SHALL CONTAIN ANY EARTH MOVING ACTIVITIES WITHIN THE DESIGNATED LIMITS SHOWN ON THIS PLAN. THE ENGINEER SHALL REVIEW THE SITE TO MAKE ANY ADJUSTMENTS TO ACCOUNT FOR ENVIRONMENTALLY SENSITIVE AREAS, SPECIMEN TREES AND SPECIAL AREAS OF CONCERN.

STORMWATER POLUTION PREVENTION NOTES

- E1 LIMIT OF DISTURBANCE (AREA OF DISTURBANCE = 57,000 SF)
- E2 PORTABLE SANITATION FACILITIES, TO BE STAKED DOWN AND SECURED
- E3 INLET PROTECTION (TYP.)
- E4 SILT FENCE
- E5 CONCRETE WASHOUT
- E6 STABILIZED CONSTRUCTION ENTRANCE
- E7 CHECK DAM
- E8 TEMPORARY SEDIMENT FOREBAY

DEMO NOTES

- X1 CUT BACK TREE LINE
- X2 CUT TREE
- X3 DEMO CURB AT FUTURE DRIVE ACCESS



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GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

STATE OF NEW HAMPSHIRE
ADAM MORSE
No. 15914
LICENSED
PROFESSIONAL ENGINEER

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-3234

Sheet Title: Erosion Prevention and Sediment Control and Demo Plan

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

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S:\PROJECTS\0-2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C1.0 EROSION CONTROL PLAN.DWG

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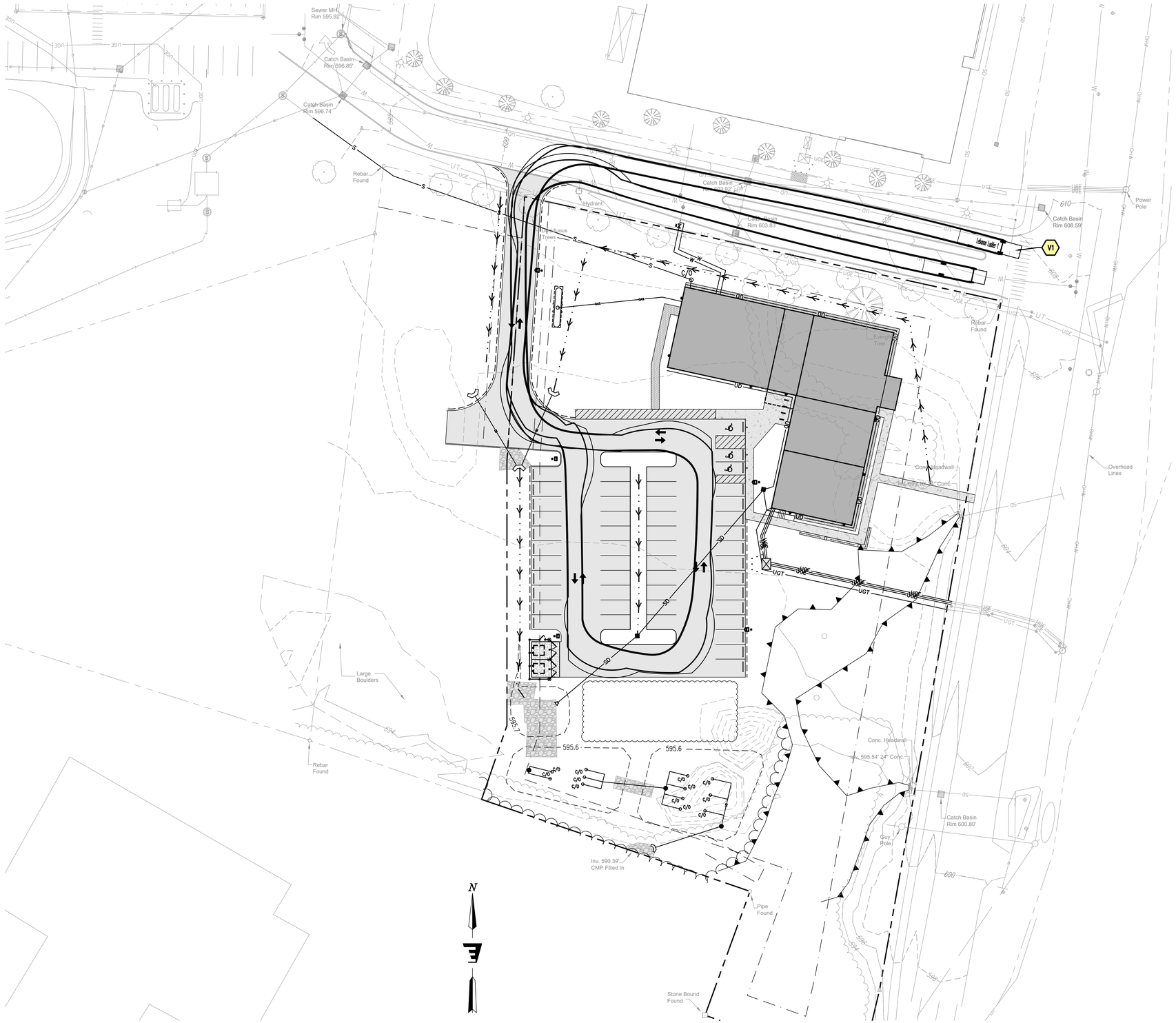

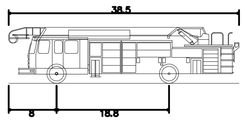

Lebanon Ladder 1	
Overall Length	38.500ft
Overall Width	8.000ft
Overall Body Height	9.351ft
Min Body Ground Clearance	1.072ft
Track Width	9.200ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	40.00°

VEHICLE TURNING NOTES

V1 LEBANON LADDER 1

N

GRAPHIC SCALE

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1 inch = 30 ft.
for sheet size 24" x 36"

STATE OF NEW HAMPSHIRE
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1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Vehicle Turning Plan

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

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ELECTRICAL NOTES

- E1 ELECTRICAL TRANSFORMER, (7) BOLLARDS
- E2 UNDERGROUND ELECTRICAL CONDUIT
- E3 PARKING LOT LUMINARY (TYP.)
- E4 BUILDING WALL PACK (TYP.)
- E5 TRENCHLESS WETLAND CROSSING OR MINIMUM IMPACT WETLAND PERMIT AS REQUIRED.

GAS NOTES

- G1 1,990 GALLON UNDERGROUND PROPANE TANK, (4) BOLLARDS
- G2 GAS LINE

SEWER NOTES

- S1 8" PVC SDR 35 SANITARY SEWER SERVICE LINE, INV. = 596.5, INSTALL CLEANOUT, 45° BEND AND 11.25° BEND AS REQUIRED.
- S2 LIFT STATION CAPACITY UPGRADES TBD
- S3 CONNECT TO 8" PVC SDR 35 SEWER STUB, INV. = 584.74 (V.I.F.), INSTALL 11.25° BEND AS REQUIRED
- S4 8" PVC SDR 35 SANITARY SEWER SERVICE LINE, SLOPE = .046 FT/FT

WATER NOTES

- W1 4" DOMESTIC WATER
- W2 8" SPRINKLER LINE
- W3 4" GATE VALVE

SITE NOTES

- C1 GRANITE CURBING (TYP.)
- C2 PRECAST PIN DOWN CURB WHEEL STOP (TYP.)
- C3 DUMPSTER ENCLOSURE
- C4 GRASS SWALE
- C7 5' WIDE CONCRETE SIDEWALK OR AS NOTED (TYP.)
- C8 3' HIGH RETAINING WALL WITH PEDESTRIAN RAILING (CONTRACTOR TO PROVIDE SHOP DRAWING WITH NH PE STAMP)
- C9 ADA PARKING SPACES (1 VAN ACCESSIBLE AND 2 REGULAR)
- C10 DIRECTION OF TRAVEL
- C11 ROOF ELEVATION CHANGE (SEE ARCHITECTURAL ELEVATIONS)
- C12 CONCRETE LANDING AND STEPS DOWN TO SIDEWALK FROM EGRESS
- C13 SNOW STORAGE
- C14 STAPLE BIKE RACK
- C15 ADA SIGN (TYP.)
- C16 EGRESS STAIRS FROM MEZZANINE (SEE ARCHITECTURAL PLANS)
- C17 TREE LINE
- C18 15' WIDE ACCESS EASEMENT FOR THE BENEFIT OF LOT 51-15
- C19 15' WIDE ACCESS EASEMENT FOR THE BENEFIT OF LOT 64-25
- C20 1' GRAVEL SHOULDER (TYP.)
- C21 LOT LINE TO BE ADJUSTED TO NEW LOCATION
- C22 LOCATION OF NEW LOT LINE
- C23 ASPHALT PAVING WITH STRIPING
- C25 SURE PACK PATH
- C26 BALCONY
- C27 25' SEWER EASEMENT FOR THE BENEFIT OF LOT 51-15

GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8224

Sheet Title: Site Plan

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

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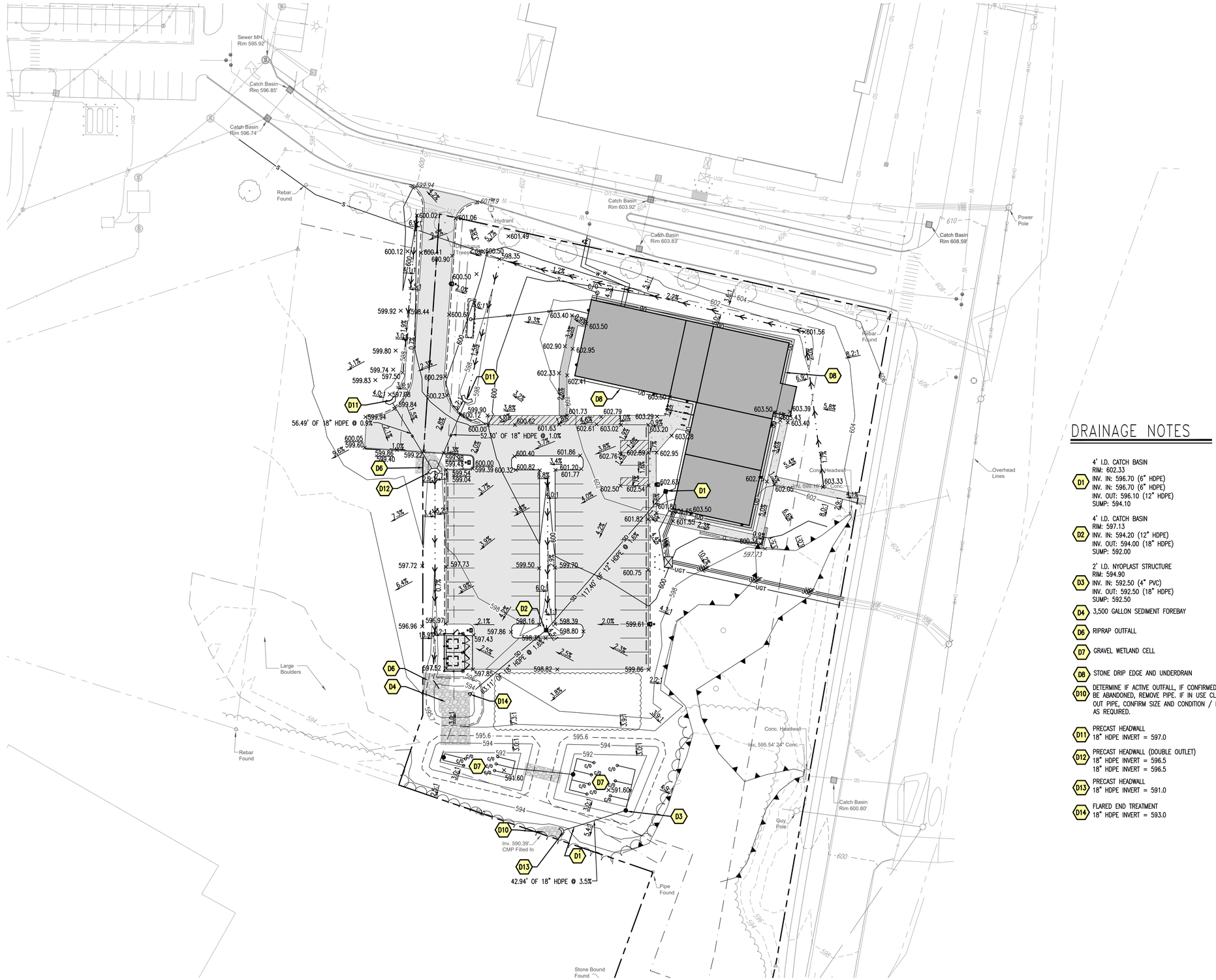
S:\PROJECTS\2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C2.0 SITE PLAN TRANSFORMER ON SOUTH.ISEE.DWG



DRAINAGE NOTES

D1 — 4' I.D. CATCH BASIN
RIM: 602.33
INV. IN: 596.70 (6" HDPE)
INV. IN: 596.70 (6" HDPE)
INV. OUT: 596.10 (12" HDPE)
SUMP: 594.10

D2 — 4' I.D. CATCH BASIN
RIM: 597.13
INV. IN: 594.20 (12" HDPE)
INV. OUT: 594.00 (18" HDPE)
SUMP: 592.00

D3 — 2' I.D. NYOPLAST STRUCTURE
RIM: 594.90
INV. IN: 592.50 (4" PVC)
INV. OUT: 592.50 (18" HDPE)
SUMP: 592.50

D4 — 3,500 GALLON SEDIMENT FOREBAY

D6 — RIPRAP OUTFALL

D7 — GRAVEL WETLAND CELL

D8 — STONE DRIP EDGE AND UNDERDRAIN

D10 — DETERMINE IF ACTIVE OUTFALL, IF CONFIRMED TO BE ABANDONED, REMOVE PIPE. IF IN USE CLEAN OUT PIPE, CONFIRM SIZE AND CONDITION / REPAIR AS REQUIRED.

D11 — PRECAST HEADWALL
18" HDPE INVERT = 597.0

D12 — PRECAST HEADWALL (DOUBLE OUTLET)
18" HDPE INVERT = 596.5
18" HDPE INVERT = 596.5

D13 — PRECAST HEADWALL
18" HDPE INVERT = 591.0

D14 — FLARED END TREATMENT
18" HDPE INVERT = 593.0

N

GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

ADAM MORSE
No. 15514
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Grading and Drainage Plan

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

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7 of 14

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S:\PROJECTS\A-D\21XXX\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C2.0 SITE PLAN TRANSFORMER ON SOUTH SIDE.DWG

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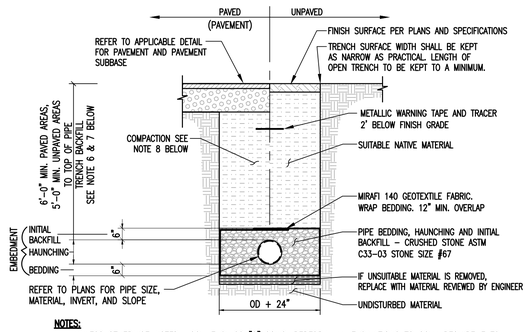

NOTES:

1. UNLESS OTHERWISE NOTED, ASSUME CLASS "C" SOILS. PERFORM ALL EXCAVATIONS TO OSHA REQUIREMENTS.
2. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
3. PROVIDE 6' OF COVER OVER DRAIN PIPE IN PAVED AREAS AND 5' OF COVER OVER PIPE IN UNPAVED AREAS. OTHERWISE, REFER TO INSULATION OVER SHALLOW DRAIN LINE DETAIL.
4. WHEN APPLICABLE INSTALL PIPE WITH BELL ENDS DOWN SLOPE. PREVENT SEDIMENT FROM ENTERING NEW STORM DRAIN SYSTEM DURING CONSTRUCTION.
5. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE PIPE IS NOT DAMAGED.
5. TRENCH BACKFILL MATERIAL, INCLUDING ROADWAY LOCATIONS, SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION AND FREE OF UNSUITABLE MATERIALS AS DEFINED IN THE EARTHWORK SPECIFICATIONS INCLUDED ON THESE PLANS.
6. LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF SIX INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
7. BACKFILL MATERIALS SHALL BE COMPACTED, IN 12" LAYERS, TO 92% OF MODIFIED PROCTOR (ASTM 1557) TO WITHIN 3 FEET OF FINISHED GRADE. IN AREAS UNDER ROADWAYS, DRIVES, AND PARKING THE UPPER 3 FEET SHALL BE COMPACTED, IN 6" LAYERS, TO 95% MODIFIED PROCTOR (ASTM 1557) AND IN LAWN OR OTHER UNDEVELOPED SPACE THE UPPER 3 FEET SHALL BE COMPACTED TO 92% MODIFIED PROCTOR.

TYPICAL STORM DRAIN TRENCH DETAIL

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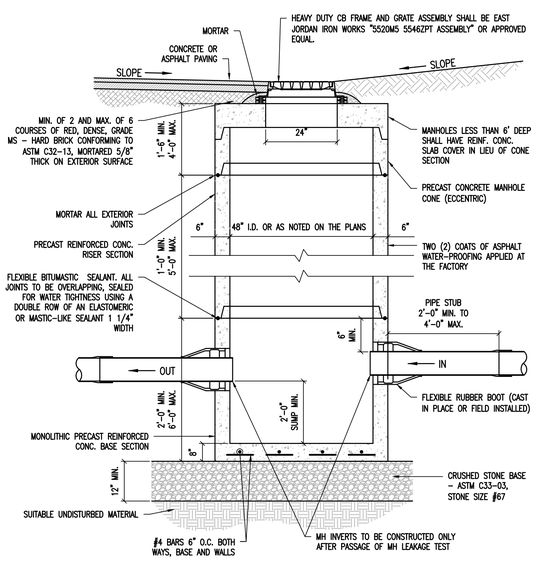
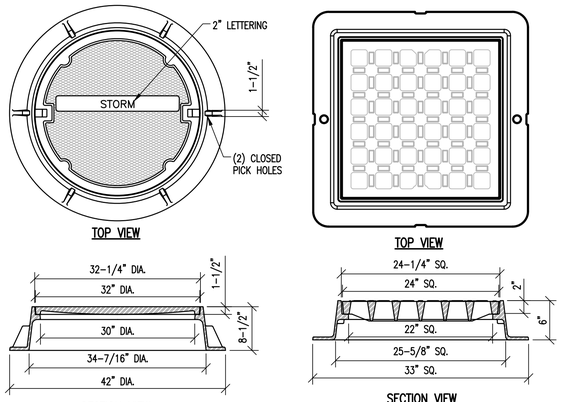


NOTES:

1. IF DEPTH OF MANHOLE IS 6 FT. OR LESS FROM RIM TO CENTERLINE INVERT, THEN A FLAT TOP WILL BE INSTALLED. IF DEPTH OF MANHOLE FROM RIM TO CENTERLINE INVERT IS MORE THAN 6 FT., THEN AN ECCENTRIC CONICAL TOP WILL BE INSTALLED.
2. CATCH BASIN AND GRATE SHALL BE DESIGNED FOR H20 LOADING.

CATCH BASIN DETAIL

NOT TO SCALE 4

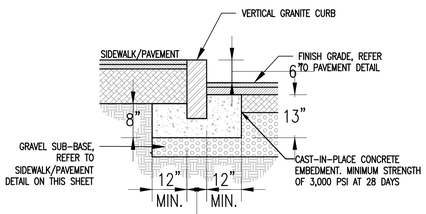


NOTES:

1. ALL DIMENSIONS SHOWN HERE ARE NOMINAL.
2. COVER SHALL BE HEAVY DUTY (H–20) LOAD RATED.
3. CATCH BASIN (CB) FRAME AND GRATE ASSEMBLY SHALL BE EAST JORDAN IRON WORKS "5520M5 5546ZPT ASSEMBLY" OR APPROVED EQUAL.
4. MANHOLE (MH) FRAME AND COVER ASSEMBLY SHALL BE EAST JORDAN IRON WORKS "1480A V1419 ASSEMBLY" OR APPROVED EQUAL.

CATCH BASIN AND DRAIN MANHOLE FRAME & GRATE

NOT TO SCALE 2

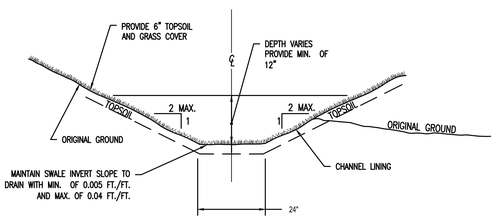


VERTICAL GRANITE CURB NOTES:

1. GRANITE CURBS SHALL BE INSTALLED IN ACCORDANCE WITH PROJECT AND STATE SPECIFICATIONS
2. WHERE CURB IS ADJACENT TO ENTRY/EXIT DOOR PADS WITH FROST WALL FOUNDATIONS, CURB SHALL BE DOWELED TO PAD WITH 24" LONG #4 DOWELS (CENTERED) AT 1'–6" O.C. (PORTION OF DOWEL IN CURB TO BE GREASED).
3. WHERE CURB IS ADJACENT TO SIDEWALK, BOLLARD, LIGHT BASE OR OTHER HARD FEATURES, 1/2" EXPANSION MATERIAL (FULL DEPTH OF CURB), SHALL BE INSTALLED BETWEEN FEATURE & CURB.

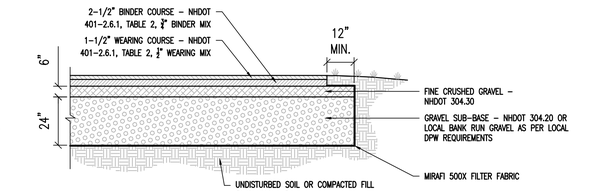
VERTICAL GRANITE CURB

NOT TO SCALE 3



GRASS DRAINAGE SWALE

NOT TO SCALE 6

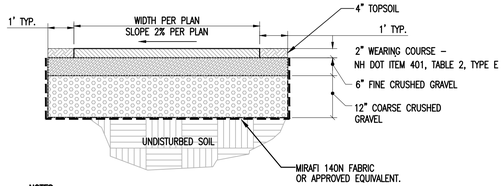


NOTES:

1. ALL SUBBASE MATERIALS SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY ACCORDING TO ASTM D–1557 (MODIFIED PROCTOR).
2. ROAD/PARKING LOT PAVEMENT CROSS SECTION BASED ON NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ITEM 401, TABLE 2.

PAVEMENT DETAIL

NOT TO SCALE 6

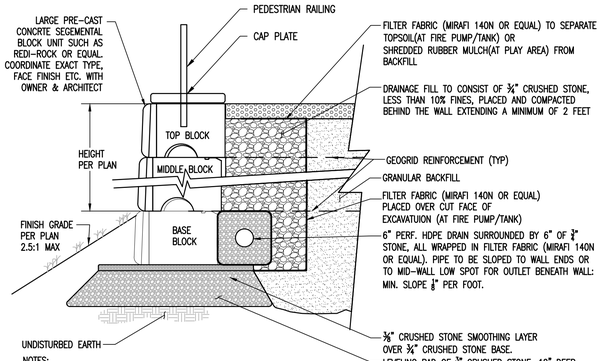


NOTES:

1. COMPACT ALL FILL MATERIAL TO 95% OPTIMUM DENSITY.

ASPHALT SIDEWALK DETAIL

NOT TO SCALE 7

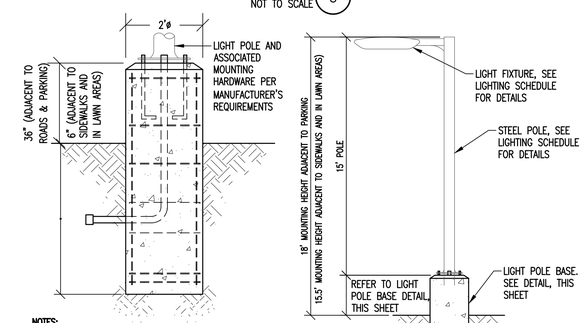


NOTES:

1. RETAINING WALL DESIGN SHALL BE STAMPED BY A LICENSED GEOTECHNICAL ENGINEER.
2. RETAINING WALL WILL EXTEND ABOVE GRADE MINIMUM 27" AS VEHICULAR BARRIER (SEE PLAN FOR ELEVATIONS). CONTRACTOR TO PROVIDE SHOP DRAWING FOR APPROVAL.
3. SEE LANDSCAPE PLANS FOR PEDESTRIAN RAILING ATTACHMENT.

SEGMENTAL BLOCK WALL

NOT TO SCALE 8



NOTES:

1. CONCRETE: 4,000 P.S.I. AFTER 28 DAYS.
2. REINFORCING: (4) – #4'S, 1 @ EACH CORNER.
3. 1" CHAMFER @ TOP EDGE.
4. CONDUIT & ANCHOR BOLTS PLACED AS RE–QUIRED; PROVIDED BY ELECTRICAL CONTRACTOR.
5. CONCRETE TO HAVE AIR ENTRAINING AGENT.
6. THE PROPOSED EXTERIOR LIGHT POLE EMBEDMENT DEPTH(S) SHALL BE DESIGNED AND DETAILED BY A GEOTECHNICAL ENGINEER.

NOTE:
1. PROPOSED POLES SHALL MEET 140 MPH SUSTAINED WINDS

TYPICAL LIGHT POLE BASE

TYPICAL LIGHT POLE

LIGHT POLE DETAIL

NOT TO SCALE 9

SITE/EARTHWORK SPECIFICATIONS

1. PRIOR TO THE START OF WORK, A PRE–CONSTRUCTION MEETING WILL BE HELD WITH THE CONTRACTOR, AND PROJECT ENGINEER TO REVIEW PROCEDURES, IDENTIFY RESPONSIBILITIES. UNLESS STATED OTHERWISE, ALL MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF NHDOT SPECIFICATIONS.
2. CLEARING AND GRUBBING– SITE TO BE RESTORED TO PRE–CONSTRUCTION CONDITIONS, INCLUDING DRIVEWAYS, STONE WALLS, AND GRASS AREAS. THE DRIVEWAY SUB–GRADE MATERIAL SHALL EXTEND ONE FOOT BEYOND THE EDGE OF PAVING.
3. COMPACTION OF ALL MATERIALS SHALL BE PERFORMED USING VIBRATORY ROLLERS AND WATER IN LIFTS OF NO GREATER THAN TWELVE INCHES. COMPACTION SHALL BE PERFORMED UNTIL THE REQUIRED DENSITY IS ACHIEVED. DENSITY SHALL BE DETERMINED BY ASTM D2922 AND SHALL NOT BE LESS THAN THE REQUIRED AMOUNT AS DETERMINED IN ACCORDANCE WITH ASTM D1557.
4. COMPACTION TESTING SHALL BE PERFORMED FOR EVERY LAYER OF MATERIAL PLACED AND FOR EVERY 1000 SQUARE FEET OF AREA.
5. PAVEMENT SHALL MEET THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AS PUBLISHED BY VTRANS.
6. PAVEMENT SHALL NOT BE INSTALLED WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT, NOR WHEN THE ROAD BASE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. PAVEMENT SHALL NOT FALL BELOW 185 DEGREES FAHRENHEIT PRIOR TO THE COMPLETION OF ROLLING. PAVEMENT SHALL NOT BE INSTALLED WHEN THE SUBGRADE IS FROZEN OR THE GRADES ARE INCORRECT.
7. ALL REMAINING DISTURBED AREAS SHALL BE FERTILIZED AND SEEDED IN ACCORDANCE WITH APPLICABLE STATE SPECIFICATIONS FOR EROSION CONTROL.
8. THE SEEDING OF 10% OR GREATER SLOPES SHALL REQUIRE THE USE OF EROSION CONTROL MATTING.
9. ALL EARTHWORK MATERIALS SHALL BE OBTAINED FROM APPROVED SOURCES. THEY SHALL CONSIST OF SATISFACTORILY GRADED, FREE DRAINING MATERIAL, REASONABLY FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIAL. EARTHWORK MATERIALS SHALL MEET THE REQUIREMENTS OF THE FOLLOWING TABLES:

A. SAND BLANKET/BEDDING: NHDOT 209–2.1.1

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1–1/2 INCHES	90 – 100
1/2 INCH	70 – 100
NO. 4	60 – 100
NO. 100	0 – 20
NO. 200	0 – 8

B. 3/4" CRUSHED STONE: ASTM C33–03, STONE SIZE #67

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 INCH	100
3/4 INCHES	90 – 100
3/8 INCH	20 – 55
NO. 4	0 – 10
NO. 8	0 – 5

C. 1–1/2" CRUSHED STONE: NHDOT 304..4

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCH	100
1–1/2 INCH	95 – 100
3/4 INCH	35 – 70
3/8 INCH	10 – 30
NO. 4	0 – 5

D. COARSE CRUSHED GRAVEL: NHDOT 304.2

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
4 INCHES	95 – 100
NO. 4	25 – 50
NO. 100	0 – 12
NO. 200	0 – 6

E. FINE CRUSHED GRAVEL: NHDOT 304.33

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1–1/2 INCHES	90 – 100
NO. 4	30 – 60
NO. 100	0 – 12
NO. 200	0 – 6

F. GRANULAR BACKFILL: NHDOT 209–2.1.2

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
3 INCHES	100
NO. 4	45 – 75
NO. 100	0 – 12
NO. 200	0 – 6

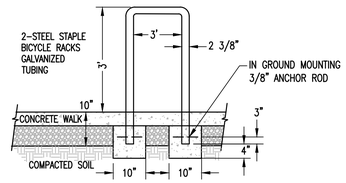
G. TYPE I STONE FOR STONE FILL THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF FOUR INCHES.

H. TYPE II STONE FOR STONE FILL THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM TWO INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 12 INCHES.

I. TOPSOIL SHALL MEET THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE SPECIFICALLY STATED IN THE CONTRACT DOCUMENTS:
   1. THE pH OF THE MATERIAL SHALL BE BETWEEN 5.5 AND 7.6.
   2. THE ORGANIC CONTENT SHALL BE NOT LESS THAN 2% NOR MORE THAN 20%.
   3. GRADATION:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1 INCH	85 – 100
1/4 INCH	65 – 100
NO. 200	20 – 80

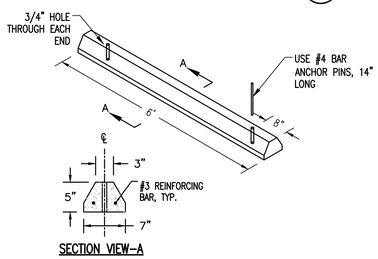
THE CONTRACTOR MAY AMEND NATURAL TOPSOIL WITH APPROVED MATERIALS AND BY APPROVED METHODS TO MEET THE ABOVE SPECIFICATIONS.



NOTES:
1. ONE RACK HAS THE CAPACITY TO HOLD 2 BIKES.
2. MAINTAIN 3' MINIMUM SPACING BETWEEN RACKS AND 4' TO EXTERIOR WALL.
3. U–STYLE RACKS NOT ACCEPTABLE.

STAPLE BIKE RACK

NOT TO SCALE 10



SECTION VIEW–A

PIN DOWN CURB

NOT TO SCALE 11

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STATE OF NEW HAMPSHIRE – ADAM M. MORSE No. 15914 LICENSED PROFESSIONAL ENGINEER – 12/1/21

No.	Description	Date
1	Addressed staff comments	1/24/22

WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Site Details

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C3.0

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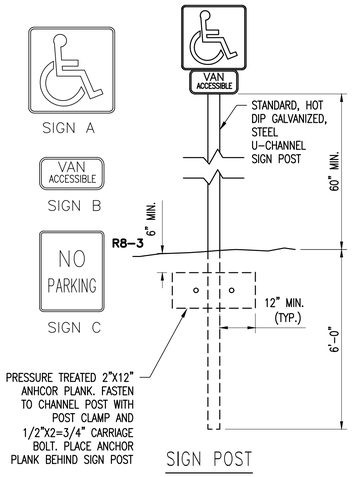


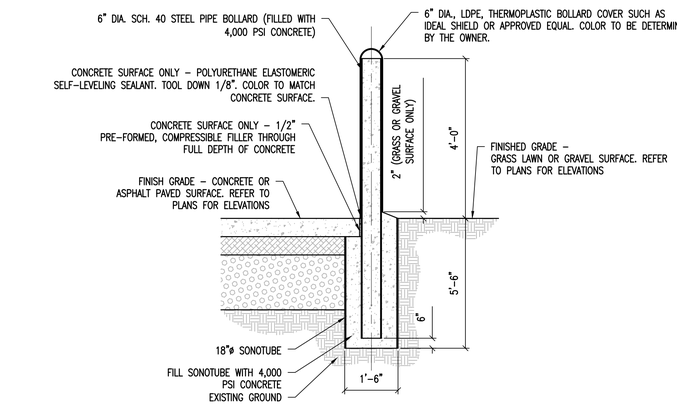
SIGN POST

SIGN KEY:

SIGN	MUTCD DESIGNATIONS	COMMON NAME	SIZE
A	D9-6	HANDICAPPED	24" x 24"
B	D9-6P	VAN ACCESSIBLE (PLAQUE)	18" x 9"
C	R8-3	NO PARKING	18" x 24"

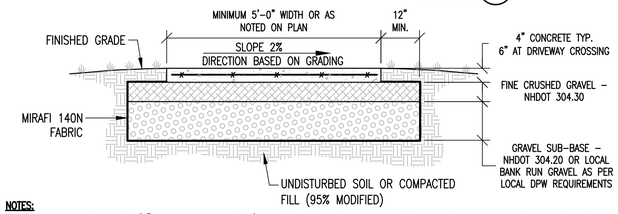
ADA SIGNS AND POST

NOT TO SCALE 1



TYPICAL BOLLARD DETAIL

NOT TO SCALE 3

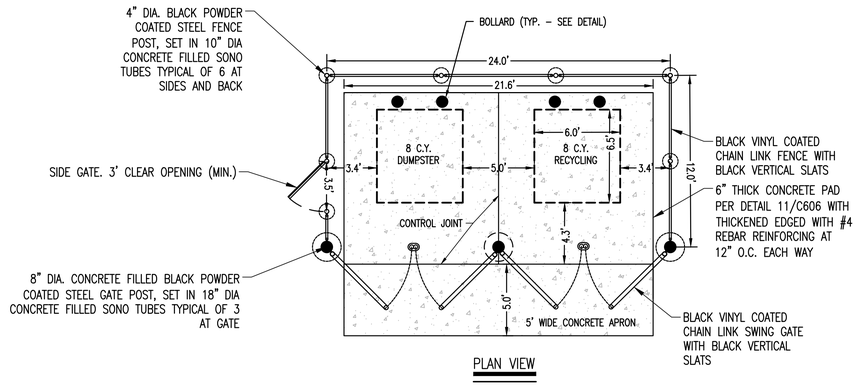


NOTES:

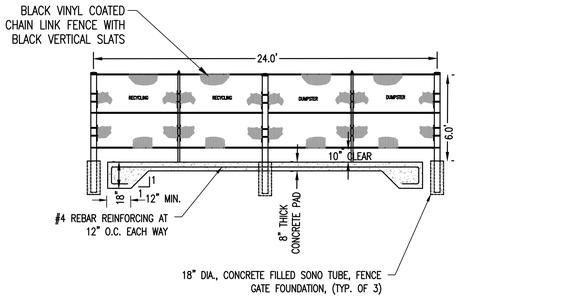
1. PLACE A TOOLED JOINT 1/8" WIDE AND AT LEAST 1/3 OF THE DEPTH, TYPICALLY AT INTERVALS MATCHING THE SIDEWALK WIDTH, OR AS NOTED ON PLANS (NOT TO EXCEED 10'-0").
2. PLACE EXPANSION JOINT AS INDICATED ON PLANS, NOT TO EXCEED 20'-0" MAX.
3. BROOM FINISH WITH SMOOTH TROWELED EDGES. TREAT WITH SILANE-SILOXANE OR EQUAL.
4. CAST-IN-PLACE CONCRETE TO BE 4000 psi CONCRETE, 5%-7% AIR ENTRAINMENT WITH 6x6-W4.0xW4.0 REINFORCING CENTERED IN SIDEWALK.
5. WHERE SIDEWALK IS ADJACENT TO ENTRY/EXIT DOOR PADS WITH FROST WALL FOUNDATIONS, SIDEWALK SHALL BE DOWELED TO PAD WITH 24" LONG #4 DOWELS (CENTERED) AT 1'-6" oc (PORTION OF DOWEL IN SIDEWALK TO BE GREASED).
6. WHERE SIDEWALK IS ADJACENT TO CURB, BOLLARD OR OTHER HARD FEATURE, INSTALL 1/2" EXPANSION MATERIAL (FULL DEPTH OF SIDEWALK), BETWEEN FEATURE AND SIDEWALK.

CONCRETE SIDEWALK

NOT TO SCALE 4



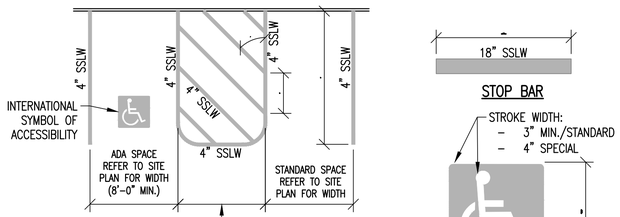
PLAN VIEW



SECTION VIEW

NOTES:

1. CONCRETE TO BE 4000psi WITH 5-7% AIR ENTRAINMENT.
2. BROOM FINISH WITH SMOOTH TROWELED EDGES. TREAT WITH SILANE-SILOXANE OR EQUIVALENT.
3. CONTROL JOINT SHALL BE A 1/8" WIDE JOINT AT LEAST 1/3 OF THE DEPTH OF THE PAD.

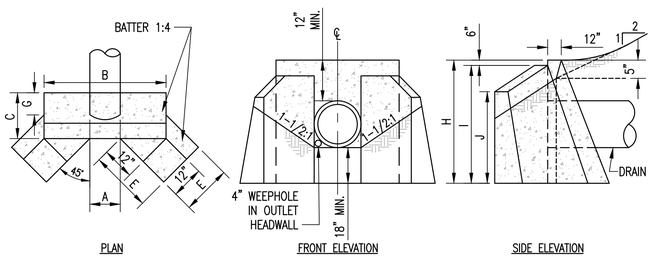


PARKING LOT STRIPING

INTERNATIONAL SYMBOL OF ACCESSIBILITY

ADA PAVEMENT MARKINGS

NOT TO SCALE 2



DIA. D INCHES	2:1 SLOPE DIMENSIONS A		B		C		E		F		G		H		I		J	
	in.	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in	ft	in
12	1	2	4	1	1	11	1	2	1	9	0	9	3	6	3	0	3	0
15	1	6	4	4	2	0	1	6	1	9	0	8	3	9	3	3	3	1
18	1	9	4	7	2	0	1	9	1	10	0	8	4	1	3	7	3	3
25	2	3	5	1	2	2	2	4	1	11	0	7	4	6	4	0	3	6
30	2	9	5	7	2	3	2	11	1	11	0	6	5	0	4	6	3	10
36	3	3	6	1	2	5	3	7	2	0	0	6	5	6	5	0	4	1

NOTE:

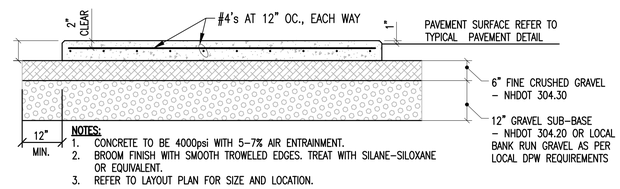
1. CONCRETE SHALL BE CLASS "A" CONCRETE
2. STEEL REINFORCING SHALL BE AS SPECIFIED BY THE MANUFACTURER

PRECAST CONCRETE HEADWALL

NOT TO SCALE 5

DUMPSTER ENCLOSURE

NOT TO SCALE 6



NOTES:

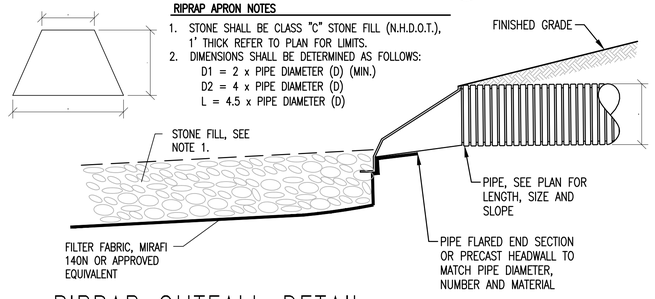
1. CONCRETE TO BE 4000psi WITH 5-7% AIR ENTRAINMENT.
2. BROOM FINISH WITH SMOOTH TROWELED EDGES. TREAT WITH SILANE-SILOXANE OR EQUIVALENT.
3. REFER TO LAYOUT PLAN FOR SIZE AND LOCATION.

CONCRETE PAD DETAIL

NOT TO SCALE 7

RIPRAP APRON NOTES

1. STONE SHALL BE CLASS "C" STONE FILL (N.H.D.O.T.), 1' THICK REFER TO PLAN FOR LIMITS.
2. DIMENSIONS SHALL BE DETERMINED AS FOLLOWS:
   D1 = 2 x PIPE DIAMETER (D) (MIN.)
   D2 = 4 x PIPE DIAMETER (D)
   L = 4.5 x PIPE DIAMETER (D)



RIPRAP OUTFALL DETAIL

NOT TO SCALE 4

STATE OF NEW HAMPSHIRE – ADAM MORSE No. 15914 LICENSED PROFESSIONAL ENGINEER – 1/24/22

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
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Sheet Title: Site Details

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

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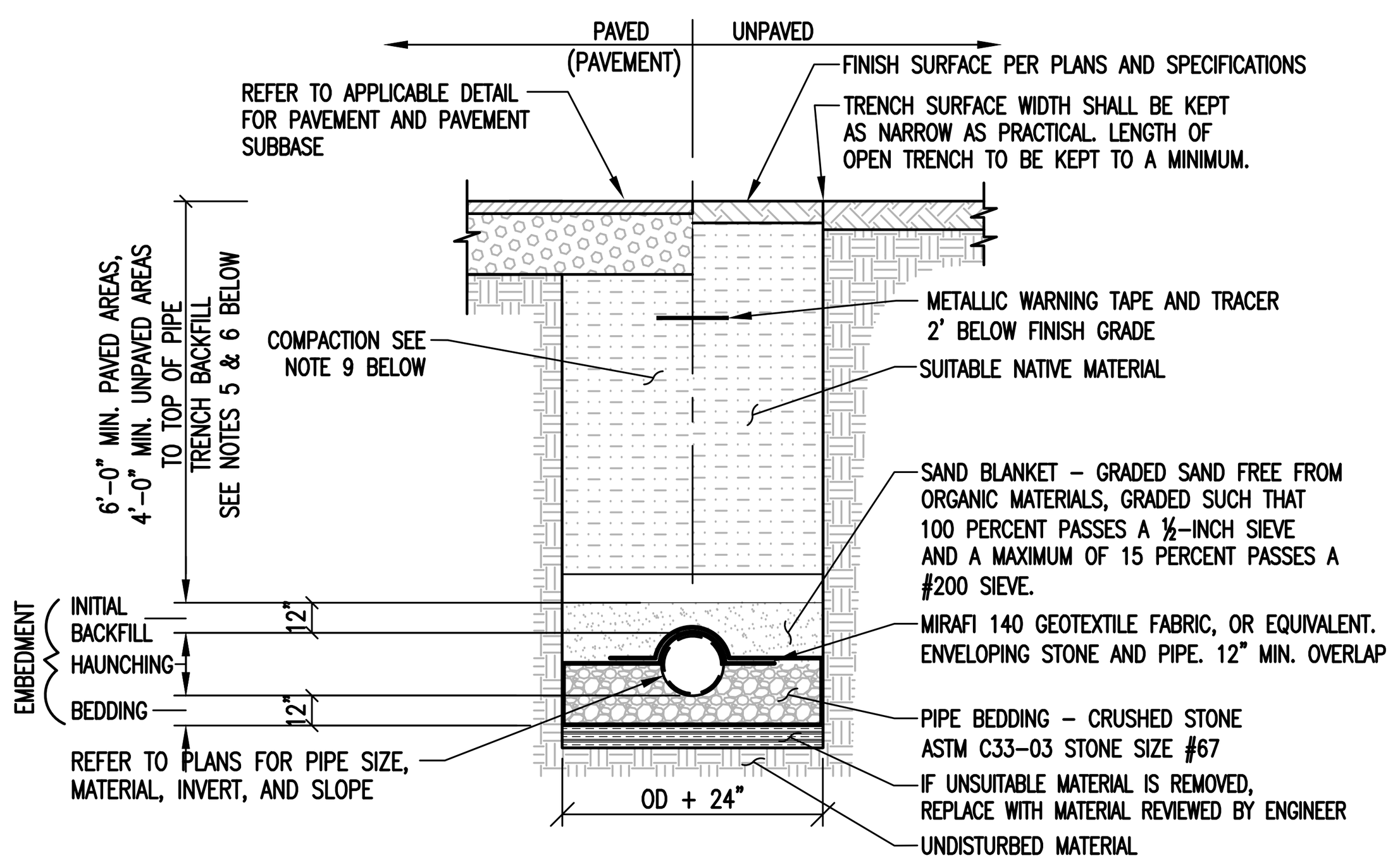
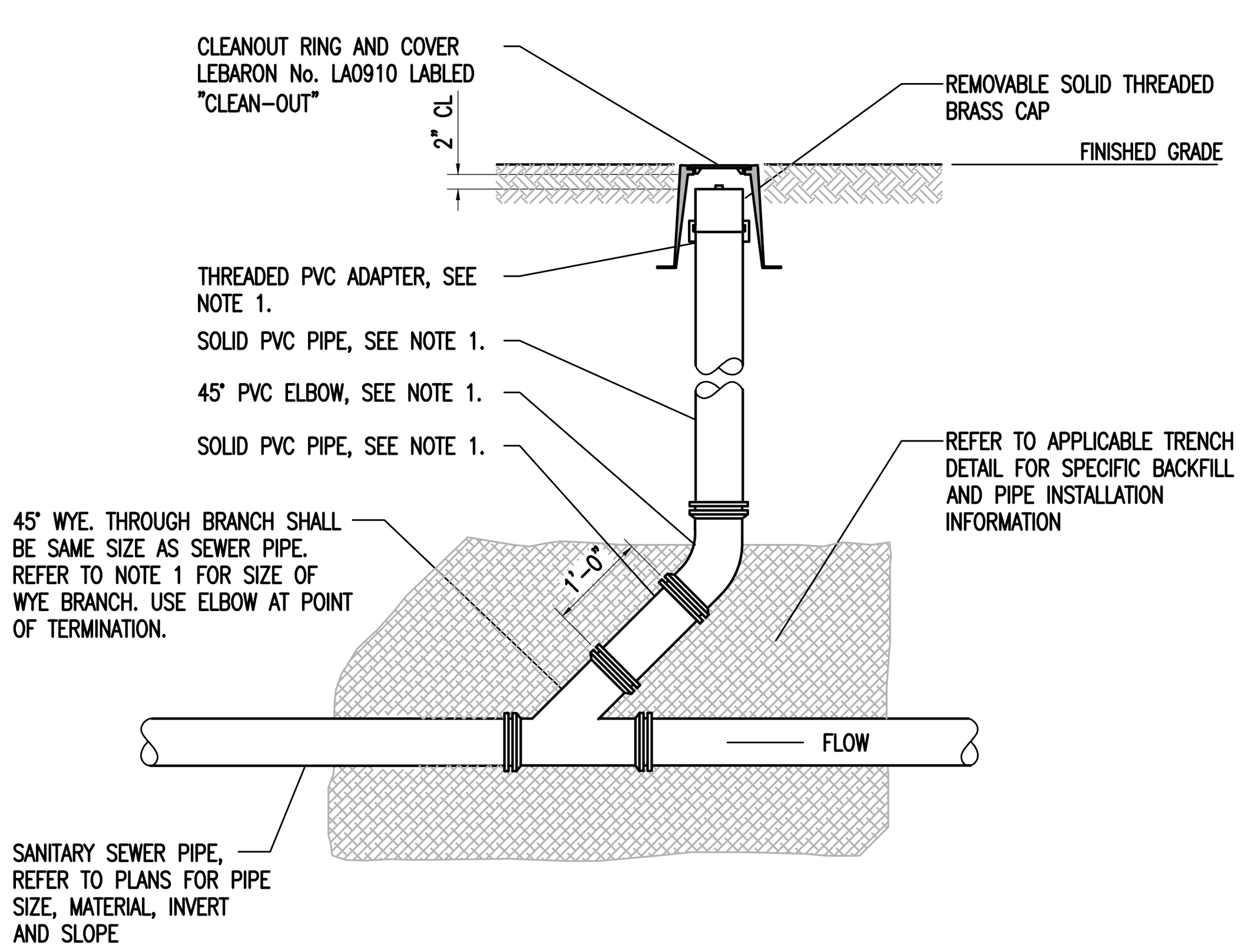


NOTES:
1. UNLESS OTHERWISE NOTED, ASSUME CLASS "C" SOILS. PERFORM ALL EXCAVATIONS TO OSHA REQUIREMENTS.
2. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR THE FULL LENGTH OF PIPE.
3. FOR SEWER LINES THE MINIMUM DEPTH TO THE TOP OF THE PIPE SHALL BE 6'-0" IN PAVED AREAS AND 4'-0" IN UNPAVED AREAS. SHALLOWER DEPTHS REQUIRE APPROVAL FROM THE ENGINEER. REFER TO INSULATION OVER SHALLOW SEWER LINE DETAIL.
4. LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF SIX INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
5. TRENCH BACKFILL MATERIAL, INCLUDING ROADWAY LOCATIONS, SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION AND FREE OF UNSUITABLE MATERIALS AS DEFINED BY NHDOT 203.2.7, ENV-WQ-704.11(h), AND THE EARTHWORK SPECIFICATIONS INCLUDED ON THESE PLANS.
6. WHEN APPLICABLE INSTALL PIPE WITH BELL ENDS DOWN SLOPE. PREVENT SEDIMENT FROM ENTERING NEW SEWER SYSTEM DURING CONSTRUCTION.
7. ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES FOR SEWER PIPE LESS THAN 15 INCHES IN DIAMETER.
8. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE PIPE IS NOT DAMAGED.
9. BACKFILL MATERIALS SHALL BE COMPACTED, IN 12" LAYERS, TO 92% OF MODIFIED PROCTOR (ASTM 1557) TO WITHIN 3 FEET OF FINISHED GRADE. IN AREAS UNDER ROADWAYS, DRIVES, AND PARKING THE UPPER 3 FEET SHALL BE COMPACTED, IN 6" LAYERS, TO 95% MODIFIED PROCTOR (ASTM 1557) AND IN LAWN OR OTHER UNDEVELOPED SPACE THE UPPER 3 FEET SHALL BE COMPACTED TO 92% MODIFIED PROCTOR.

GRAVITY SEWER TRENCH (1)
NOT TO SCALE



SANITARY CLEANOUT NOTES:
1. ALL CLEANOUT RISER PIPE AND FITTINGS SHALL BE 4" DIAMETER WHEN THE SEWER PIPE IS LESS THAN 6" DIAMETER AND 6" DIAMETER FOR ALL SEWER PIPE 6" IN DIAMETER AND GREATER.
2. CLEANOUTS SHALL BE PROVIDED AT EACH HORIZONTAL CHANGE IN DIRECTION OF THE SEWER PIPE GREATER THAN 45 DEGREES AND AT INTERVALS OF NOT MORE THAN 100 FEET.
3. CLEANOUT RISER ASSEMBLY PIPE MATERIAL SHALL MATCH SANITARY SEWER PIPE MATERIAL.

SANITARY SEWER CLEANOUT (2)
NOT TO SCALE

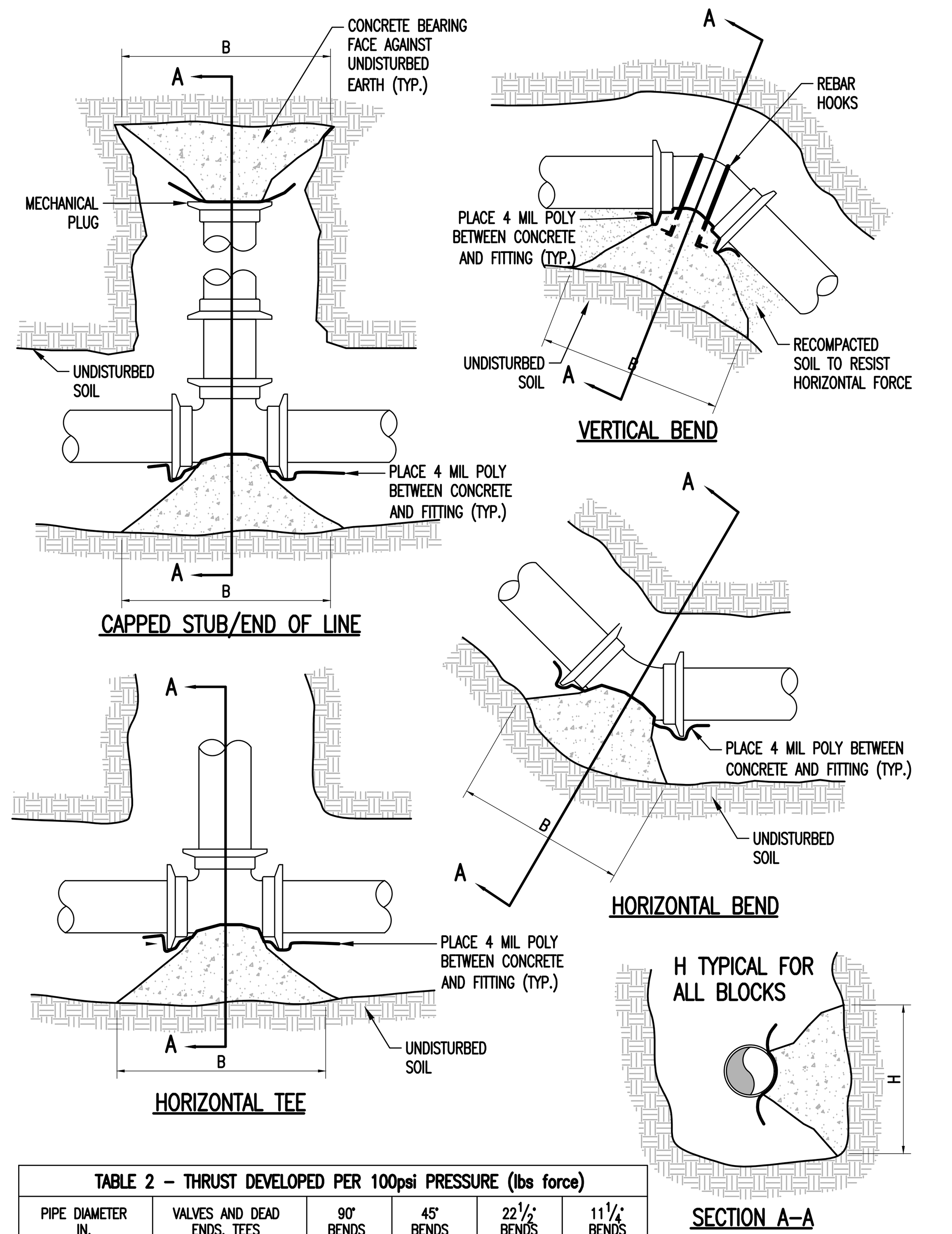


TABLE 2 – THRUST DEVELOPED PER 100psi PRESSURE (lbs force)					
PIPE DIAMETER IN.	VALVES AND DEAD ENDS, TEES	90° BENDS	45° BENDS	$22\frac{1}{2}$° BENDS	$11\frac{1}{4}$° BENDS
4	1810	2560	1390	635	320
6	3740	5290	2860	1370	690
8	6430	9100	4920	2320	1170
10	9680	13680	7410	3610	1820
12	13690	19350	10470	5080	2550
14	18380	25990	14100	6100	3080
16	23780	33630	18280	7960	4020

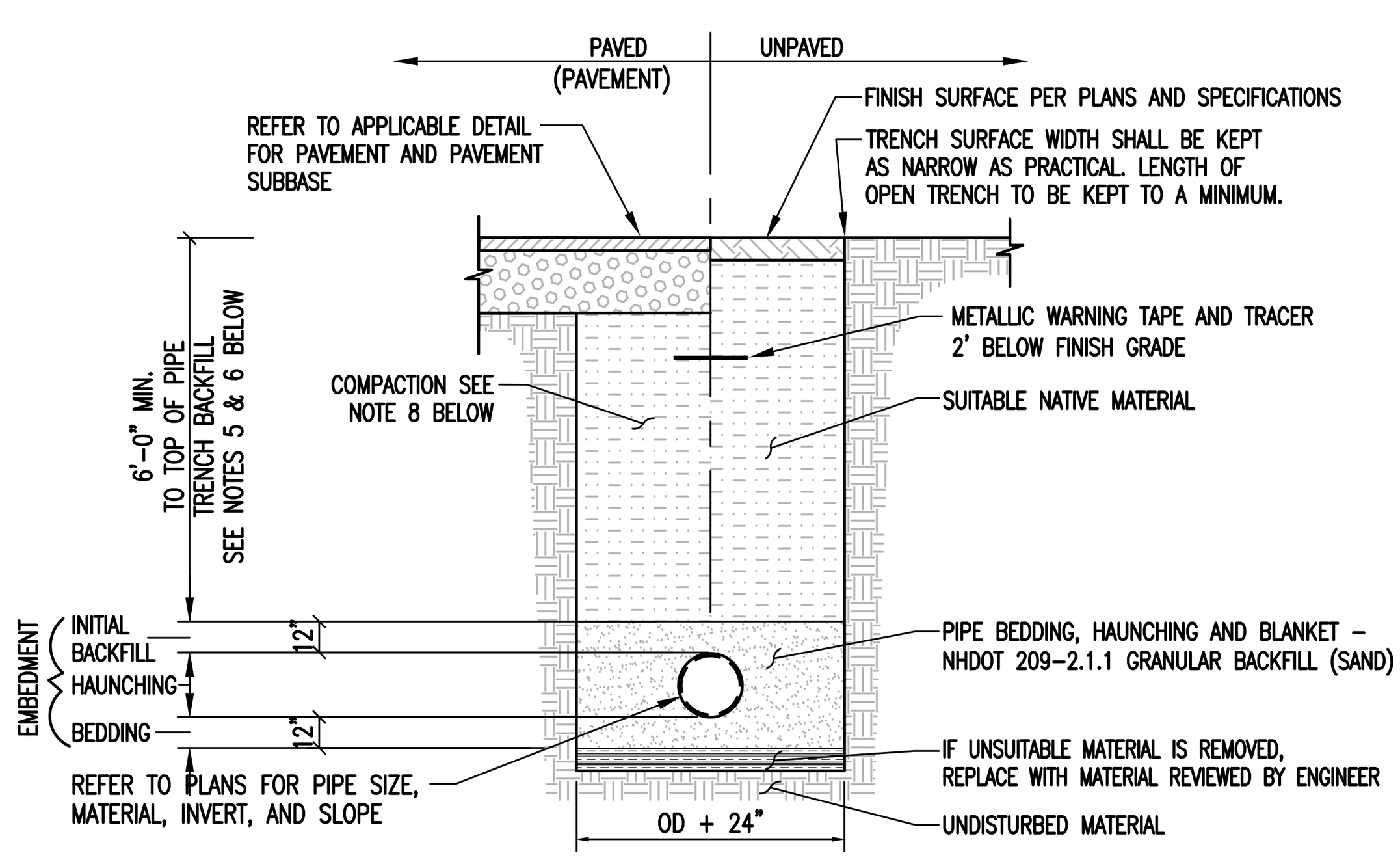
NOTES:
1. PERFORM HYDROSTATIC AND LEAKAGE TEST PRESSURE PER SPECIFICATIONS.
2. PLACE 4 MIL POLYETHYLENE BETWEEN FITTINGS AND THRUST BLOCKS.
3. CONCRETE SHALL BE CLASS B.
4. ON ALL THRUST BLOCKS, B SHALL BE THE GREATER DIMENSION, USE 1.5:1 TO 2:1 FOR B:H.

TABLE 1 – BEARING STRENGTH OF UNDISTURBED SOIL	
SOIL TYPE	BEARING STRENGTH
PEAT, ETC.	0 lb/ft^2
SOFT CLAY	500 lb/ft^2
SAND	1000 lb/ft^2
SAND AND GRAVEL	1500 lb/ft^2
SAND AND GRAVEL WITH CLAY	2000 lb/ft^2
SAND AND GRAVEL CEMENTED WITH CLAY	4000 lb/ft^2
HARD PAN	5000 lb/ft^2

DETERMINING MINIMUM BEARING FACE AREA:
THE AREA (ft^2) SHALL BE CALCULATED BY DETERMINING THE TOTAL THRUST GENERATED AT THE FITTING.
DIVIDE THE THRUST DEVELOPED (lbs force) (FROM TABLE 2) BY THE BEARING STRENGTH OF THE SOIL (FROM TABLE 1). THE RESULT IS THE AREA OF THE SOIL REQUIRED TO RESIST THE THRUST (A).
THE AREA CALCULATED WILL BE FOR THE AREA OF CONCRETE UP AGAINST THE TRENCH WALL (i.e. THE BACK SIDE OF THE BLOCK). USE THE TEST PRESSURE TO DETERMINE THE TOTAL THRUST.

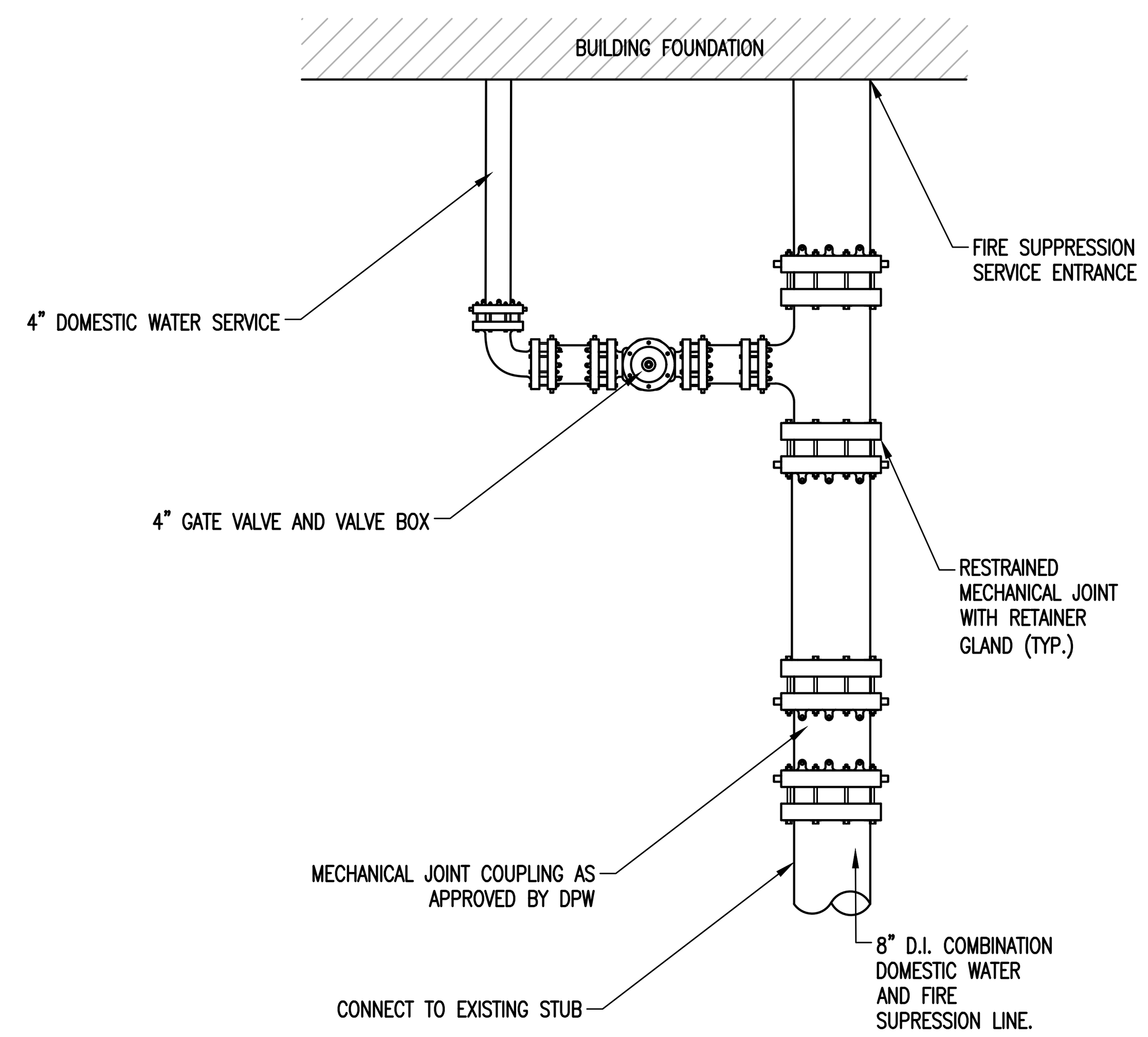
$$\text{AREA} = \frac{\text{THRUST DEVELOPED (lbs force)}}{\text{BEARING STRENGTH OF SOIL}}$$

TYPICAL BEARING THRUST BLOCK (3)
NOT TO SCALE



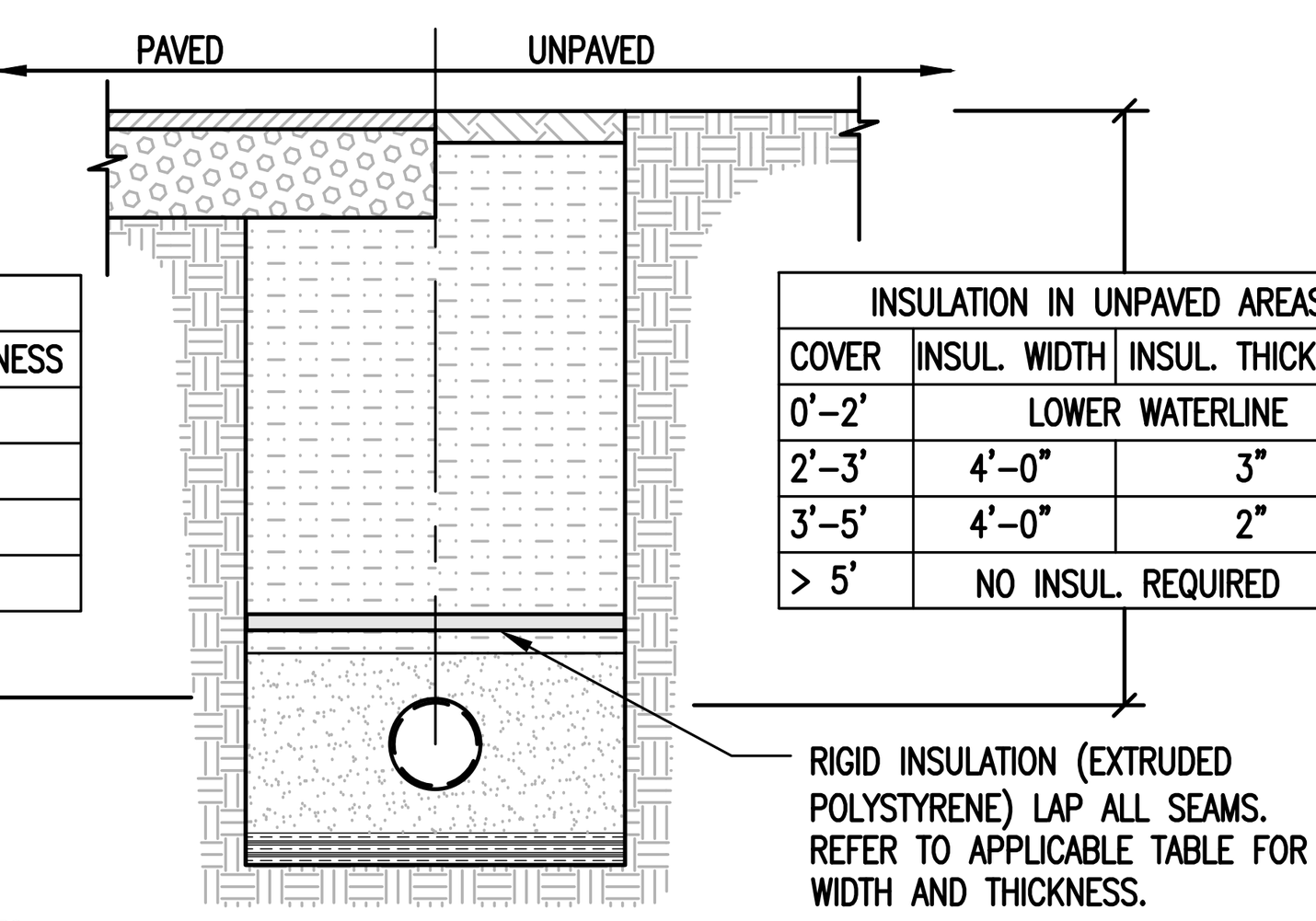
NOTES:
1. UNLESS OTHERWISE NOTED, ASSUME CLASS "C" SOILS. PERFORM ALL EXCAVATIONS TO OSHA REQUIREMENTS.
2. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR FULL LENGTH OF PIPE.
3. PROVIDE 6'-0" MINIMUM COVER OVER WATER PIPE. OTHERWISE, REFER TO INSULATION OVER SHALLOW WATER LINE DETAIL.
4. INSTALL WATER PIPE IN ACCORDANCE WITH AWWA STANDARD C600.
5. LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF SIX INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
6. TRENCH BACKFILL MATERIAL, INCLUDING ROADWAY LOCATIONS, SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION AND FREE OF UNSUITABLE MATERIALS AS DEFINED IN THE EARTHWORK SPECIFICATIONS INCLUDED ON THESE PLANS.
7. NO MECHANICAL TAMPERS SHALL BE USED DIRECTLY OVER PIPE TO INSURE PIPE IS NOT DAMAGED.
8. BACKFILL MATERIALS SHALL BE COMPACTED, IN 12" LAYERS, TO 92% OF MODIFIED PROCTOR (ASTM 1557) TO WITHIN 3 FEET OF FINISHED GRADE. IN AREAS UNDER ROADWAYS, DRIVES, AND PARKING THE UPPER 3 FEET SHALL BE COMPACTED, IN 6" LAYERS, TO 95% MODIFIED PROCTOR (ASTM 1557) AND IN LAWN OR OTHER UNDEVELOPED SPACE THE UPPER 3 FEET SHALL BE COMPACTED TO 92% MODIFIED PROCTOR.

WATER TRENCH (4)
NOT TO SCALE



WATER SERVICE ENTRANCE (7)
NOT TO SCALE

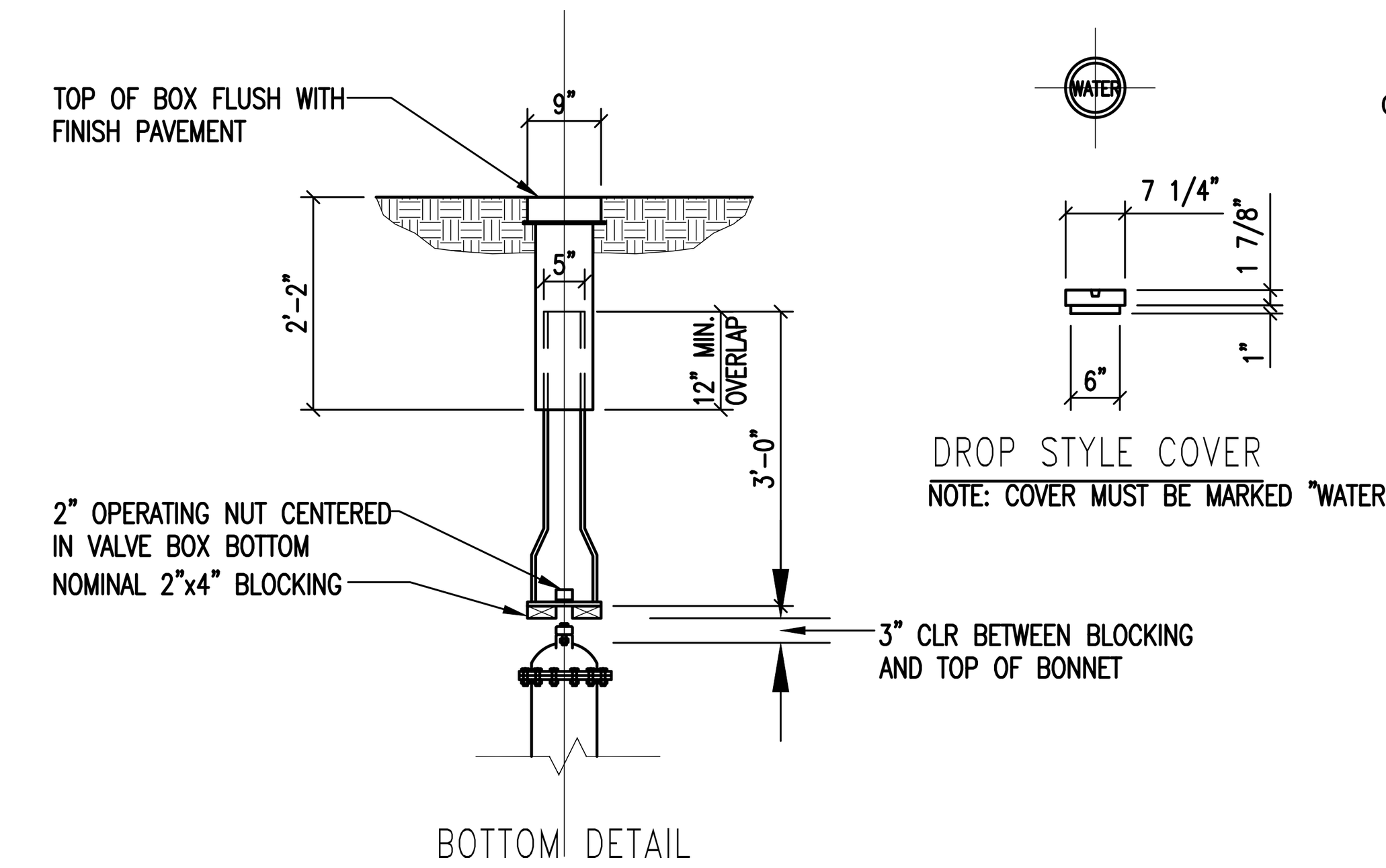
INSULATION IN PAVED AREAS:		
COVER	INSUL. WIDTH	INSUL. THICKNESS
0'-3'	LOWER WATER LINE	
3'-4'	4'-0"	3"
4'-6'	4'-0"	2"
> 6'	NO INSUL. REQUIRED	



INSULATION IN UNPAVED AREAS:		
COVER	INSUL. WIDTH	INSUL. THICKNESS
0'-2'	LOWER WATERLINE	
2'-3'	4'-0"	3"
3'-5'	4'-0"	2"
> 5'	NO INSUL. REQUIRED	

TRENCH NOTES
1. REFER TO APPLICABLE TRENCH DETAIL FOR SPECIFIC BACKFILL INFORMATION.

INSULATION OVER SHALLOW WATER LINE (6)
NOT TO SCALE



VALVE BOX NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO TECHNICAL SPECIFICATIONS.
2. ALL PIPES SHOULD HAVE A MINIMUM DEPTH OF 5.5' FROM TOP OF PIPE TO FINISH GRADE.
3. ALL GATE VALVES SHALL BE OPEN RIGHT.

VALVE BOX (7)
NOT TO SCALE

SANITARY SEWER NOTES:

CONTRACTOR SHALL CONFORM TO GUIDELINES DETAILED IN THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES.
CONTRACTOR IS RESPONSIBLE FOR READING AND FOLLOWING THE FULL COMPLETE EDITION PROVIDED BY THE STATE.

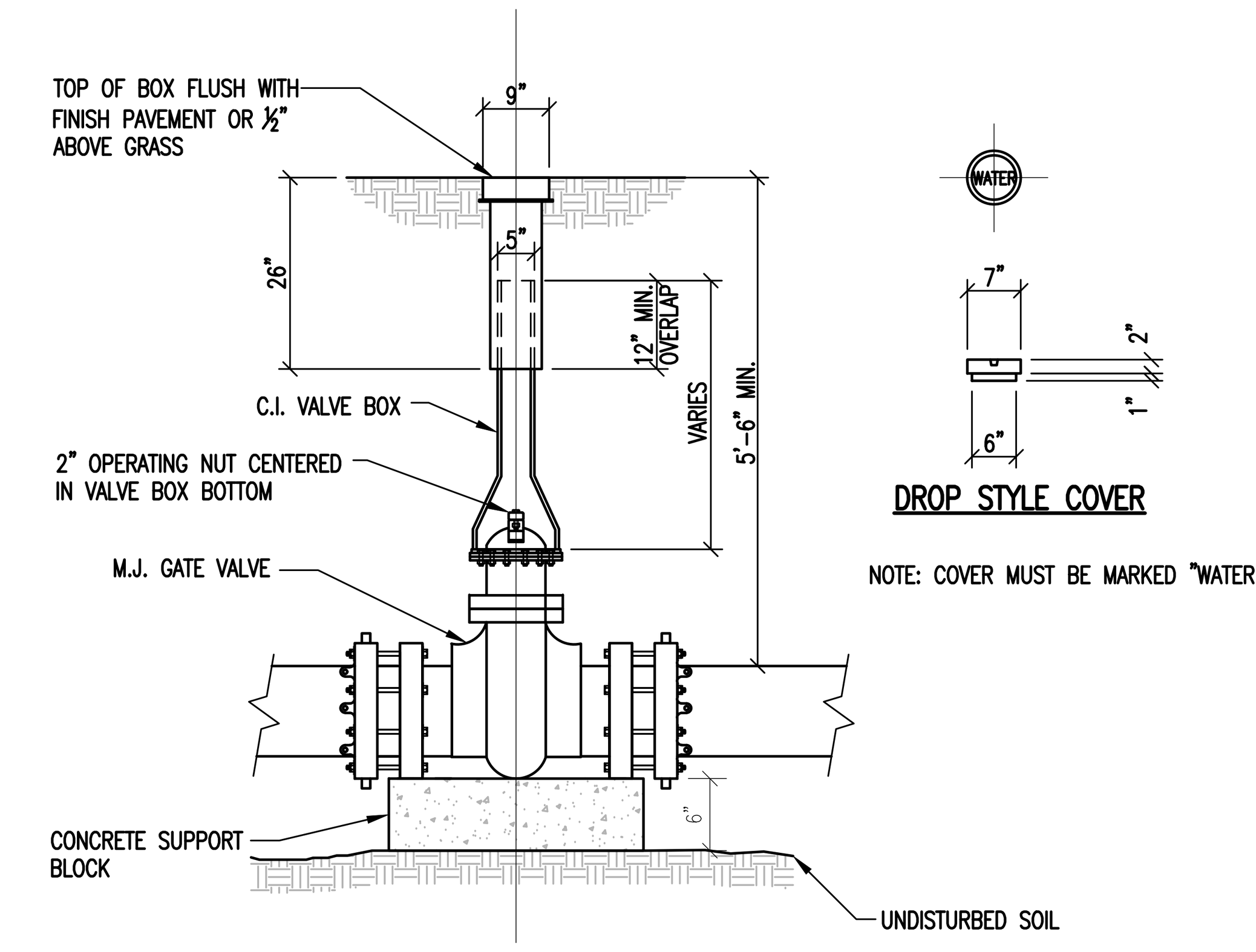
A-01. BUILDING SEWERS:
- A. MATERIALS: THE BUILDING SEWER SHALL BE CONSTRUCTED IN A MANNER WHICH WILL PREVENT LEAKING, BREAKING OR CLOGGING. ACCEPTABLE MATERIALS FOR THE SEWER ARE RUBBER-RING-JOINTED PVC GRAVITY SEWER PIPE SDR35 ASTM D3034.
- B. SIZING AND SLOPE: MINIMUM BUILDING SEWER SIZE IS 8 INCHES (UNLESS SHOWN ON THE PLAN) AND A MINIMUM SLOPE OF 2% AND MAXIMUM SLOPE OF 15%.
- C. MANHOLES: BUILDING SEWERS DISCHARGING TO A COLLECTION SEWER SHALL BE CONNECTED THROUGH A MANHOLE OR WITH A WYE FITTING SO AS TO DIRECT FLOW AND MINIMIZE IN-LINE TURBULENCE.
- D. LEAKAGE: BUILDING SEWERS SHALL MEET THE LEAKAGE STANDARDS PRESCRIBED IN THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES (CHAPTER ENV-Wq 700). SEE "A-02, J" BELOW FOR MORE DETAIL.

A-02. SEWER COLLECTION SYSTEMS:
- A. A SEWER COLLECTION SYSTEM IS THAT SYSTEM OF SEWERS THAT TRANSPORT WASTEWATER FROM BUILDING SEWERS TO THE WASTEWATER TREATMENT/DISPOSAL SYSTEM.
- B. NO CONNECTIONS OF ROOF DRAINS, AREA DRAINS, FOUNDATION DRAINS, CELLAR DRAINS OR OTHER CLEAN WATER SOURCES OR ANY STORM DRAINS WILL BE ALLOWED TO BUILDING OR COLLECTION SEWERS.
- C. THE SIZE OF COLLECTION SEWERS SHALL BE AS SHOWN ON THESE DRAWINGS.
- D. DEPTH: SEWERS SHALL BE BURIED TO A MIN. DEPTH OF 6' BELOW GRADE IN ALL ROADWAY LOCATIONS AND TO A MIN. DEPTH OF 4' BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. RIGID FOAM INSULATION SHALL BE USED, WHERE INDICATED ON DRAWINGS.
- E. SLOPE, VELOCITY: ALL SEWERS SHALL BE INSTALLED WITH NOT LESS THAN THE SLOPES SHOWN BELOW:
  10" DIAMETER PIPE = 0.28 (FEET/100 FEET)
  8" DIAMETER PIPE = 0.40 (FEET/100 FEET)
- F. CHANGES IN PIPE SIZE: WHEN A SMALLER SEWER JOINS A LARGE ONE, THE INVERT OF THE LARGER SEWER SHALL BE LOWERED SUFFICIENTLY TO MAINTAIN THE SAME ENERGY GRADIENT.
- G. MATERIAL (GRAVITY SEWER): PVC SDR 35, ASTM D3034 AND ASTM D2412, WITH PUSH-ON GASKETED JOINTS. GASKETS SHALL CONFORM TO ASTM D3212. SEWER JOINTS SHALL BE CONSTRUCTED TO MINIMIZE INFILTRATION AND TO PREVENT THE ENTRANCE OF ROOTS INTO THE SYSTEM.
- H. TRENCHING: LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF SIX INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
- I. BEDDING: SEE TRENCH DETAILS THIS DRAWING FOR MATERIALS. TRENCH BACKFILL SHALL BE OF A SUITABLE NATIVE MATERIAL FREE FROM DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONES, ORGANIC MATTER, OR OTHER UNSTABLE MATERIALS.
- J. LEAKAGE TESTS: UPON COMPLETION OF GRAVITY SEWER MAIN CONSTRUCTION, THE GRAVITY SEWER LINE SHALL BE TESTED IN ACCORDANCE WITH THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES (ENV-WQ704.06). LEAKAGE TESTS FOR GRAVITY SEWERS SHALL BE COMPLETED BY LOW PRESSURE AIR TESTS ONLY IN CONFORMANCE WITH WITH THE FOLLOWING TESTING STANDARDS IN EFFECT AT THE TIME THE TEST IS CONDUCTED: ASTM #F1417 OR UNI-B-6 METHODS.
- K. DEFLECTION TESTING: ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER.
- L. INSTALLATION: PIPE SHALL BE LAID WITH BELL ENDS FACING UPGRADE AND LAYING SHALL START AT THE DOWNGRADE END.

M. PROTECTION OF WATER SUPPLIES
- a. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE POTABLE WATER SUPPLY SYSTEM AND A SEWER OR SEWER APPURTENANCE WHICH WOULD PERMIT THE PASSAGE OF SEWAGE OR POLLUTED WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME IN ANY CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.
- b. NO SEWER SHALL BE LOCATED WITHIN THE WELL PROTECTIVE RADII ESTABLISHED IN ENV-WS 300 FOR ANY PUBLIC WATER SUPPLY WELL OR WITHIN 100 FEET OF ANY PRIVATE WATER SUPPLY WELL.
- c. SEWERS SHALL BE LOCATED TO MAINTAIN A MINIMUM OF TEN FEET HORIZONTAL CLEARANCE FROM ANY EXISTING OR PROPOSED WATER MAIN.
- d. A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (b) or (c) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN ENV-Wq 704.07.
- e. WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
  - 1.) VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND
  - 2.) SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 9 FEET HORIZONTALLY FROM THE WATER MAIN.
- f. WATER-SEWER SEPARATION SHALL COMPLY WITH ENV-Wq 704.19 OR A WAIVER MUST BE REQUESTED FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.

A-03. MANHOLES
- A. DIAMETER: THE MINIMUM DIAMETER OF MANHOLES SHALL BE 48 INCHES; LARGE DIAMETERS ARE PREFERRED FOR CONNECTION TO LARGE DIAMETER SEWERS. A MINIMUM ACCESS DIAMETER OF 30 INCHES SHALL BE PROVIDED.
- B. FLOW CHANNEL: FLOW CHANNELS SHALL BE PROVIDED IN THE BASE OF ALL MANHOLES AND THE FLOW CHANNEL THROUGH MANHOLES SHOULD BE MADE TO CONFORM IN SHAPE AND SLOPE TO THAT OF THE SEWERS.
- C. MANHOLES SHALL BE OF THE PRE-CAST CONCRETE TYPE AND SHALL MEET ALL THE REQUIREMENTS OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULE ENV-WQ 704.12. MANHOLES SHALL BE WATERPROOFED ON THE EXTERIOR.
- D. INLET AND OUTLET PIPES SHALL BE JOINED TO THE MANHOLE WITH A RUBBER-GASKETED FLEXIBLE WATERTIGHT CONNECTION THAT ALLOWS DIFFERENTIAL SETTLEMENT OF THE PIPE AND MANHOLE WALL TO TAKE PLACE.
- E. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE FOLLOWING PROCEDURE: MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
- F. THE MANHOLE VACUUM TEST SHALL CONFORM TO ENV-Wq 704.17 AND THE FOLLOWING:
  - 1) THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10" Hg ; AND
  - 2) THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1" Hg PRESSURE DROP TO 9" Hg SHALL BE 10 MINUTES, REGARDLESS OF MANHOLE DEPTH.
- G. THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHEIVE THE ACCEPTANCE LIMITS SPECIFIED IN "F" ABOVE.

GENERAL
- A. "AS BUILT" INFORMATION SHALL BE PREPARED BY THE CONTRACTOR AT THE TIME OF COMPLETION OF THE SYSTEM PER TOWN OF HANOVER DPW STANDARDS.



NOTES:
1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO TECHNICAL SPECIFICATIONS.
2. UTILIZE MEGALUG MECHANICAL JOINT RESTRAINT ON ALL M.J. GATE VALVES.
3. SEE TYPICAL WATER TRENCH DETAIL FOR PIPE BEDDING REQUIREMENTS.
4. IF DEPTH FROM GRADE TO TOP OF VALVE OPERATING NUT IS GREATER THAN 6'-0 , A VALVE STEM RISER MADE OF HIGH STRENGTH STEEL SHALL BE PROVIDED. DEPTH FROM VALVE STEM RISER NUT TO GRADE WILL BE 4 TO 6 FEET.

GATE VALVE (8)
NOT TO SCALE

STATE OF NEW HAMPSHIRE – ADAM MORSE No. 15614 LICENSED – PROFESSIONAL ENGINEER – 1/24/22

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Water and Sewer Details

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C3.2
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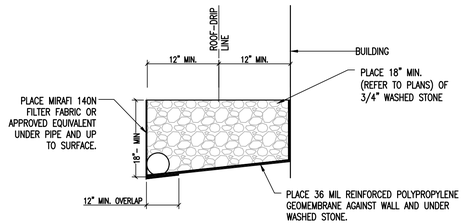
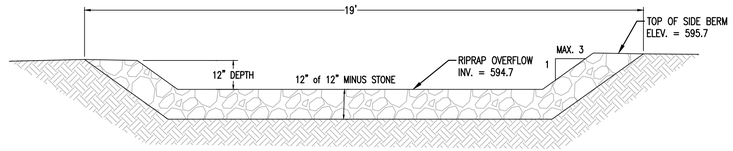
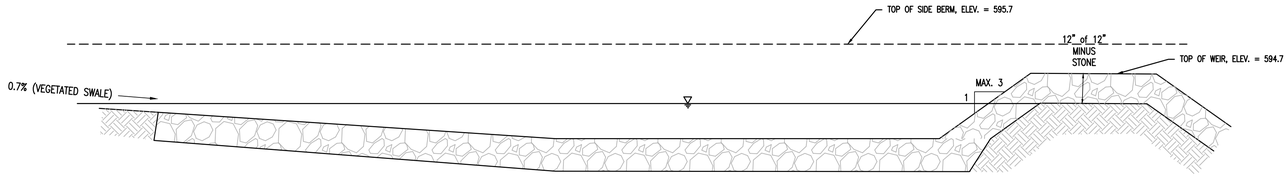


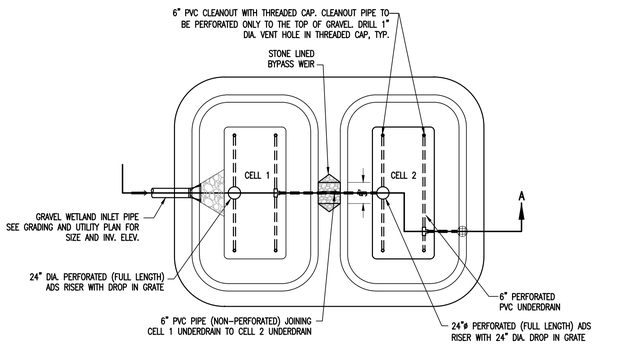
TYPICAL DRIP EDGE
NOT TO SCALE 1

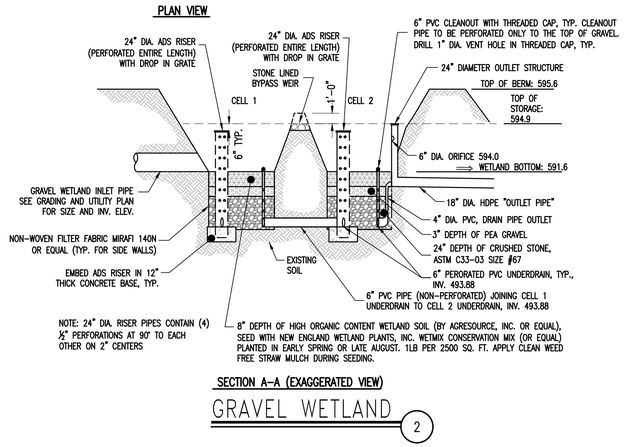


SEDIMENT FOREBAY OVERFLOW
NOT TO SCALE 3



SEDIMENT FOREBAY
NOT TO SCALE 4





GRAVEL WETLAND
2

STATE OF NEW HAMPSHIRE
ADAM MORSE
No. 15914
LICENSED
PROFESSIONAL ENGINEER
11/24/22

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
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Sheet Title: Stormwater Details

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C3.3
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EROSION CONTROL NOTES

GENERAL EROSION CONTROL NOTES

1. THE "ON-SITE EROSION CONTROL PLAN COORDINATOR" SHALL BE THE GENERAL CONTRACTOR, THIS INDIVIDUAL SHALL BE PRESENT ON-SITE FROM DAY-TO-DAY, AND SHALL BE RESPONSIBLE FOR ENSURING THAT THE EROSION CONTROL MEASURES REQUIRED BY THE EROSION CONTROL PLAN, DETAILS AND NOTES, ARE PROPERLY INSTALLED AND MAINTAINED. THE ONSITE EROSION CONTROL PLAN COORDINATOR SHALL KEEP A WRITTEN RECORD OF INSPECTIONS AND MAINTENANCE OF EROSION CONTROL FEATURES. A COPY OF THESE PLANS AND INSPECTION/MAINTENANCE RECORDS SHALL BE KEPT ONSITE AT ALL TIMES.
2. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE DISTURBED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS DISTURBED, THE DISTURBANCE SHALL BE KEPT TO THE SHORTEST PRACTICAL DURATION AS APPROVED BY THE OWNER'S REP.
3. DUST SHALL BE CONTROLLED WITH WATER DISTRIBUTED BY A TRUCK MOUNTED SPRAY BAR. CALCIUM CHLORIDE(AASHTO M 144) OR SODIUM CHLORIDE (AASHTO M 143) SHALL BE USED AS DIRECTED BY THE OWNER'S REP.
4. ALL EROSION AND STORMWATER CONTROL SYSTEMS SHALL BE INSPECTED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE OCCURRENCE OF A STORM EVENT OF 0.5" OR GREATER. NEEDED REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AS THEY ACCUMULATE AND PLACED IN AREAS WHERE FURTHER EROSION IS UNLIKELY.
5. A REPORT, STAMPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, SHALL BE WRITTEN WITHIN 24 HOURS OF EACH INSPECTION THAT:
   A) DESCRIBES THE PROGRESS OF THE PROJECT, INCLUDING WHETHER ALL CONDITIONS OF THE PERMIT ARE BEING MET AND, IF NOT, WHICH REQUIREMENTS ARE NOT BEING MET;
   B) IF ANY REQUIREMENTS ARE NOT BEING MET, AN EXPLANATION OF THE CORRECTIVE ACTION(S) THAT WILL BE OR ARE BEING TAKEN TO BRING THE PROJECT INTO COMPLIANCE WITH APPLICABLE REQUIREMENTS AND THE DEADLINE BY WHICH SUCH ACTIONS WILL BE COMPLETED; AND
   C) INCLUDES PHOTOGRAPHS OF THE SITE THAT ARE REPRESENTATIVE OF THE PROJECT; AND
6. RETAIN A COPY OF THE REPORT PREPARED PURSUANT TO (5), ABOVE, ON-SITE FOR REVIEW DURING SITE INSPECTIONS BY FEDERAL, STATE, AND LOCAL OFFICIALS
7. ALL PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
8. DETENTION BASINS AND SWALES SHALL BE INSTALLED PRIOR TO ROUGH GRADING THE SITE.
9. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
10. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
11. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
    - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
13. LOT DISTURBANCE OTHER THAN THAT SHOWN ON THE APPROVED PLANS SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.
14. THE APPLICANT SHALL NOTIFY IN WRITING DES WETLANDS BUREAU AND THE LEBANON CONSERVATION COMMISSION OF THEIR INTENTION TO COMMENCE CONSTRUCTION NO LESS THAN FIVE (5) BUSINESS DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
15. APPROPRIATE SILTATION/EROSION/TURBIDITY CONTROLS SHALL BE IN PLACE PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND REMAIN IN PLACE UNTIL THE AREA IS STABILIZED. SILT FENCE(S) MUST BE REMOVED ONCE THE AREA IS STABILIZED.
16. DISCHARGE FROM DEWATERING OF WORK AREAS SHALL BE TO SEDIMENT BASINS THAT ARE:
    A) LOCATED IN UPLANDS;
    B) LINED WITH HAY BALES OR OTHER ACCEPTABLE SEDIMENT TRAPPING LINERS;
    C) SET BACK AS FAR AS POSSIBLE FROM WETLANDS AND SURFACE WATERS, IN ALL CASES WITH A MINIMUM OF 20 FEET OF UNDISTURBED VEGETATED BUFFER.
17. WITHIN THREE DAYS OF FINAL GRADING, ALL EXPOSED SOIL AREAS SHALL BE STABILIZED BY SEEDING AND MULCHING DURING THE GROWING SEASON, OR IF NOT WITHIN THE GROWING SEASON, BY MULCHING WITH TACK OR NETTING AND PINNING ON SLOPES STEEPER THAN 3:1.
18. WHERE CONSTRUCTION ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED WITHIN THE GROWING SEASON, ALL EXPOSED SOIL AREAS SHALL BE STABILIZED WITHIN 14 DAYS BY SEEDING AND MULCHING.
19. WHERE CONSTRUCTION ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED OUTSIDE THE GROWING SEASON, ALL EXPOSED AREAS SHALL BE STABILIZED WITHIN 14 DAYS BY MULCHING AND TACK. SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED BY MATTING AND PINNING.
20. PROPER HEADWALLS SHALL BE CONSTRUCTED WITHIN SEVEN DAYS OF CULVERT INSTALLATION.

EROSION CONTROL CONSTRUCTION SEQUENCE:

1. THE "ON-SITE EROSION CONTROL PLAN COORDINATOR" SHALL BE THE GENERAL CONTRACTOR, THIS INDIVIDUAL SHALL BE PRESENT ON SITE FROM DAY TO DAY, AND SHALL BE RESPONSIBLE FOR ENSURING THAT THE EROSION CONTROL MEASURES REQUIRED BY THE EROSION CONTROL PLAN, DETAILS AND NOTES, ARE PROPERLY INSTALLED AND MAINTAINED. THE ONSITE EROSION CONTROL PLAN COORDINATOR SHALL KEEP A WRITTEN RECORD OF INSPECTIONS AND MAINTENANCE OF EROSION CONTROL FEATURES. A COPY OF THESE PLANS AND INSPECTION/MAINTENANCE RECORDS SHALL BE KEPT ONSITE AT ALL TIMES.
2. HOLD PRE-CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION, WITH THE CONTRACTOR, OWNER, AND ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING ALL EROSION CONTROL MEASURES DELINEATED ON THE PLANS AND ANY ADDITIONAL MEASURES THAT ARE NECESSARY TO MINIMIZE EROSION. THE CONTRACTOR SHALL HAVE EROSION CONTROL MATERIALS AND INSTALLATION EQUIPMENT ON SITE AT ALL TIMES.
3. IF POSSIBLE, ALL TEMPORARY EROSION CONTROL MEASURES REQUIRED FOR WORK PROPOSED DURING THE WINTER (BETWEEN OCTOBER 15 AND MAY 1), SHALL BE INSTALLED PRIOR TO OCTOBER 1.
4. PRIOR TO ANY OTHER WORK, SILT FENCES SHALL BE INSTALLED GENERALLY 10 FEET FROM THE BASE OF THE FILL SLOPES, OR AS SHOWN ON THE EROSION CONTROL PLAN. THESE SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE PROJECT SITE HAS BEEN STABILIZED. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES 6 INCHES DEEP AT THE FENCE. THE SILT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A PROPER SEDIMENT BARRIER.
5. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT.
6. INSTALL INLET PROTECTION ON EXISTING AND NEW CATCH BASINS.
7. ROUGH GRADE AND STOCKPILE TOPSOIL SURROUNDED BY SILT FENCE.
8. STABILIZE EXPOSED SLOPES AND SOILS AS SOON AS GRADED, AND MAINTAIN UNTIL ADEQUATELY VEGETATED.
9. COMPLETE FINAL GRADING OF SITE. PLACE TOPSOIL AND PERMANENTLY VEGETATE, LANDSCAPE, AND MULCH.
10. AFTER THE SITE IS APPROVED BY THE ENGINEER AS ADEQUATELY STABILIZED, REMOVE ALL TEMPORARY MEASURES AND INSTALL PERMANENT VEGETATION ON THE DISTURBED AREAS.

TEMPORARY/CONSTRUCTION EROSION CONTROL MEASURES:

1. SILT FENCES SHALL BE INSTALLED GENERALLY 10 FEET FROM THE BASE OF THE FILL SLOPES, OR AS SHOWN ON THE PLANS. THESE SHALL REMAIN IN PLACE UNTIL THE PROJECT SITE HAS BEEN STABILIZED. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES 6 INCHES DEEP AT THE FENCE. THE SILT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A PROPER SEDIMENT BARRIER.
2. INSTALL STONE CHECK DAMS IN GRASS-LINED SWALES 50 FEET ON CENTER TO PREVENT SILT FROM WASHING INTO THE DRAINAGE SYSTEM DURING CONSTRUCTION. SEDIMENT SHALL BE REMOVED FROM BEHIND THE DAMS WHEN IT BECOMES 6 INCHES DEEP. STONE CHECK DAMS SHALL BE REMOVED WHEN VEGETATION IS ESTABLISHED.
3. DROP INLET PROTECTION SHALL BE PROVIDED AROUND ALL EXISTING AND PROPOSED CATCH BASINS. PROTECTION SHALL REMAIN UNTIL ALL DISTURBED AREAS ARE STABILIZED. SEDIMENT SHALL BE REMOVED FROM DROP INLET PROTECTION WHEN THE STORAGE CAPACITY HAS BEEN APPROXIMATELY 50% FILLED. GRAVEL WILL BE CLEANED OR REPLACED WHEN IT NO LONGER DRAINS PROPERLY.
4. EXCAVATED MATERIAL FROM EARTH EXCAVATION AND DITCH DIGGING SHALL BE DISPOSED OF OFFSITE OR USED FOR PROJECT FILL MATERIAL IF DETERMINED SUITABLE BY THE OWNER'S REPRESENTATIVE.
5. STOCKPILED MATERIAL (TOPSOIL, BORROW, ETC.) SHALL HAVE SILT FENCE CONSTRUCTED AROUND THE PERIMETER. THE STOCKPILED MATERIAL SHALL BE SEEDED AND MULCHED AS SOON AS POSSIBLE TO PREVENT SOIL EROSION AND SEDIMENTATION OFF SITE. LOCATE STOCKPILES ON THE UPHILL SIDE OF DISTURBED AREAS, IF POSSIBLE. DURING WINDY CONDITIONS, STOCKPILED MATERIAL SHALL BE COVERED OR WATERED APPROPRIATELY TO PREVENT WIND EROSION.

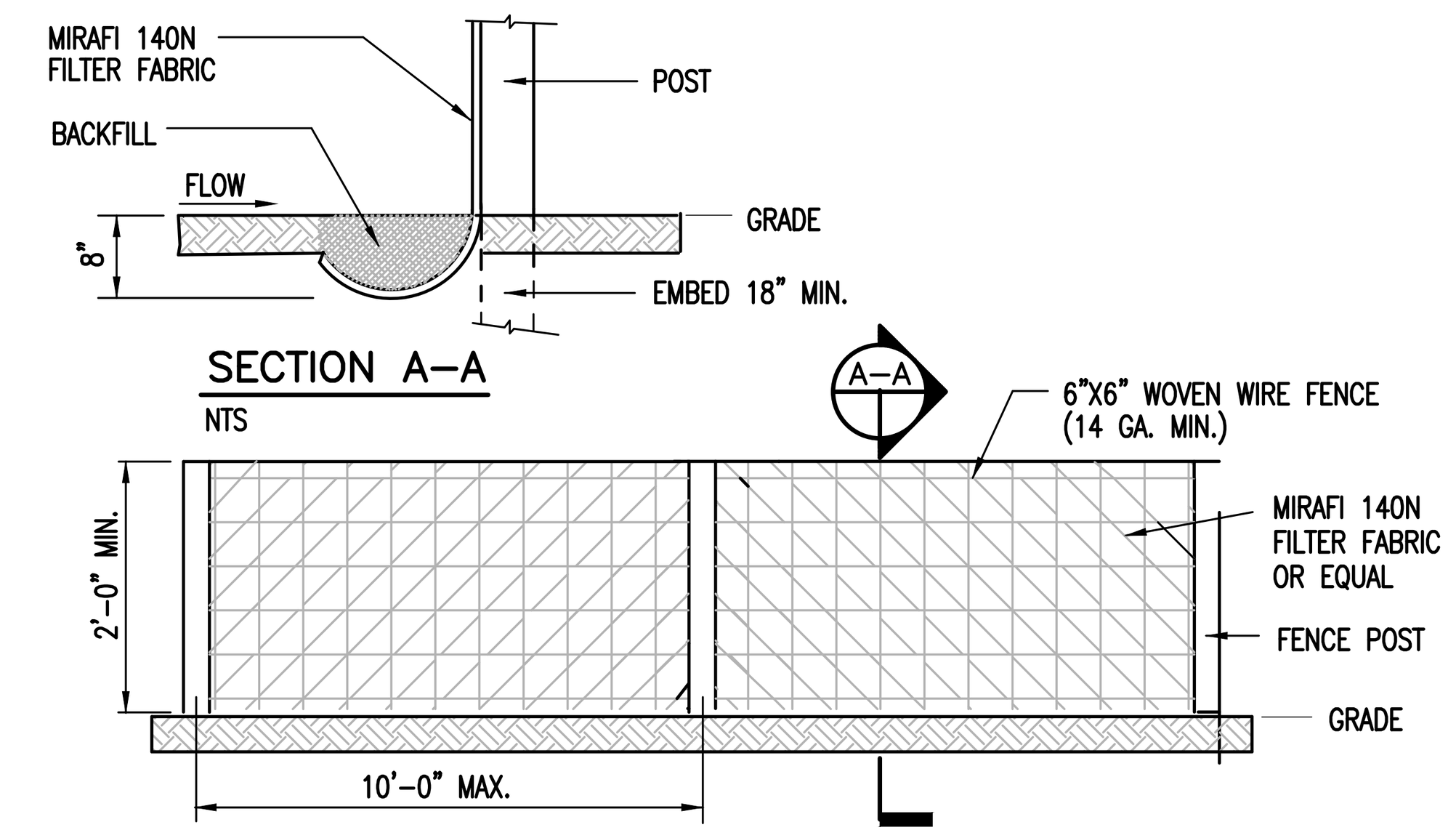
PERMANENT EROSION CONTROL MEASURES:

1. GRASS LINED SWALES SHALL BE TOP SOILED, SODDED AND FERTILIZED AREAS WHICH EXHIBIT SIGNS OF EROSION SHALL BE RE-SODDED IMMEDIATELY AND MAINTAINED UNTIL SOD HAS PERMANENT HOLD AND IS HEALTHY.
2. WHEN CONSTRUCTION IS COMPLETED IN AN AREA, IT SHALL BE IMMEDIATELY TOP SOILED, SEEDED, FERTILIZED AND MULCHED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUED MAINTENANCE OF ALL DISTURBED AREAS, INCLUDING WATERING, UNTIL THE AREA IS INSPECTED AND ACCEPTED BY THE OWNER OR ENGINEER.
4. AFTER THE SITE IS STABILIZED, REMOVE ALL TEMPORARY MEASURES AND INSTALL PERMANENT VEGETATION ON THE DISTURBED AREAS.
5. RE-SEEDING SHALL BE DONE UNTIL ALL AREAS ARE COMPLETELY COVERED WITH A MATURE STRAND OF GRASS. AN AREA SHALL BE CONSIDERED COVERED WHEN THE ENTIRE SURFACE CONTAINS A VERDUROUS STAND OF GRASS. AREAS THAT, IN THE OPINION OF THE ENGINEER, ARE PREDOMINATELY WEEDS SHALL BE PLOWED UP, FINE GRADED, FERTILIZED AND RE-SEEDED IN THE MANNER SPECIFIED PREVIOUSLY, EXERCISING CAUTION NOT TO CAUSE DAMAGE TO NEW OR EXISTING PLANT MATERIAL.

STANDARD 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.

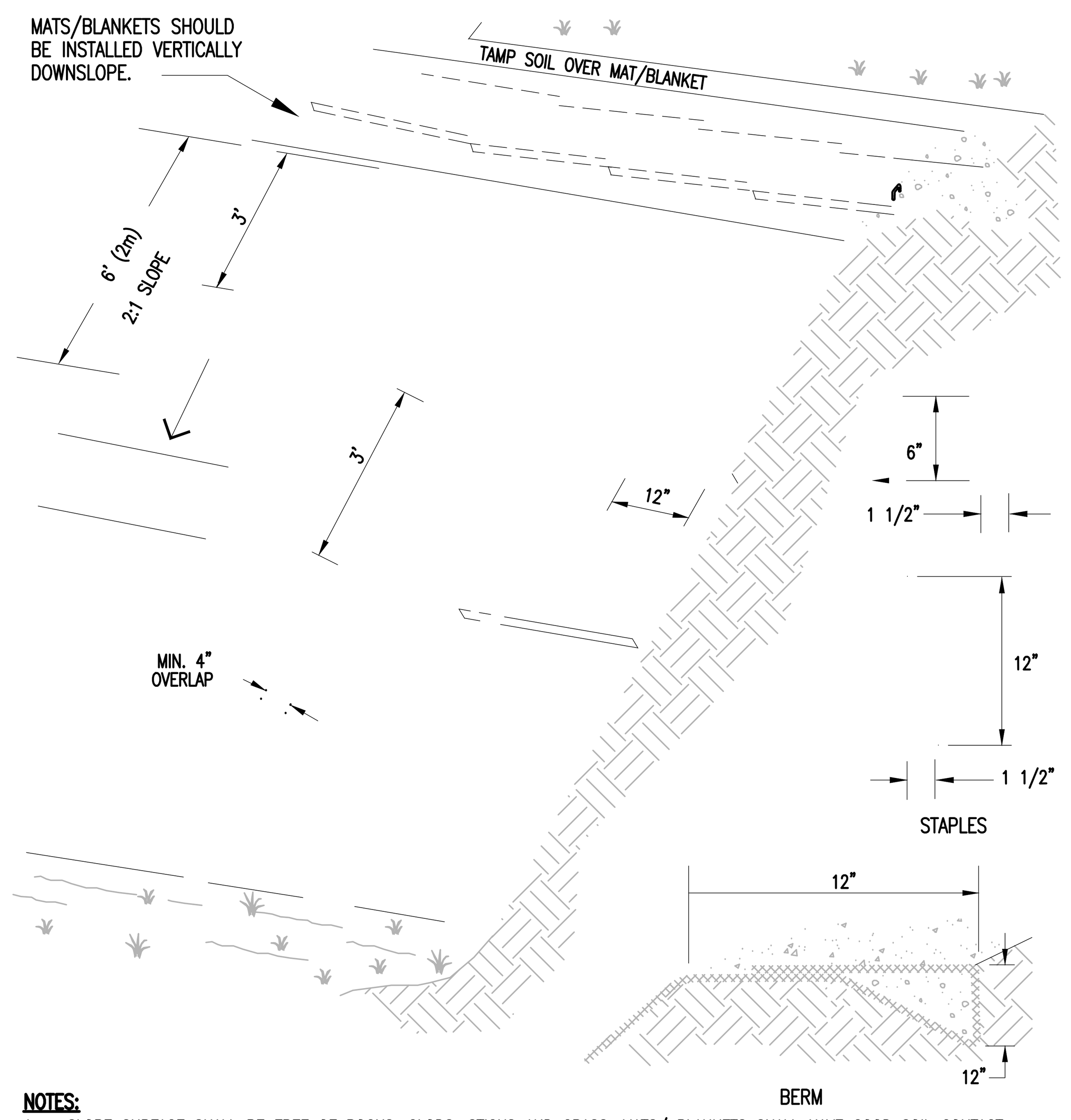
S:\PROJECTS\0-2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 C3.0 DETAILS.DWG



NOTES:

1. SILT FENCE SHALL BE PRE-FABRICATED EROSION CONTROL FENCE BY MIRAFI OR EQUAL, OR CONSTRUCTED IN PLACE AS SPECIFIED HEREIN.
2. CONSTRUCTED IN PLACE SILT FENCE:
   A. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
   B. FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE TIES SPACED EVERY 24" AT TOP OF MID SECTION.
   C. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6", FOLDED AND STAPLED.
3. INSPECTION SHALL BE FREQUENT (MINIMUM ONCE A WEEK AND AFTER EVERY RAINFALL). MAINTENANCE SHALL BE PERFORMED AS NEEDED, AND SEDIMENT REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE.

SILT FENCE DETAIL (1)
NOT TO SCALE



NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/ BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

EROSION CONTROL MATTING DETAIL (2)
NOT TO SCALE

SEEDING SPECIFICATION:

% BY WEIGHT	LBS. LIVE SEED BY ACRE	TYPE OF SEED
URBAN MIX GRASS SEED: FOR USE IN GRASSED LAWN AREAS AROUND BUILDING AND PARKING; TEMPORARY AND PERMANENT APPLICATIONS		
66.0	40.0	CREEPING RED FESCUE
33.0	20.0	KENTUCKY BLUEGRASS
100	60.0 # LIVE SEED/ACRE	
CONSERVATION MIX GRASS SEED- FOR USE IN ALL OTHER AREAS		
% BY WEIGHT	LBS. LIVE SEED PER ACRE	TYPE OF SEED
50	15.0	SMOOTH BROMEGRASS
17	5.0	RYEGRASS
33	10.0	BIRDSFOOT TREFOIL
100	30.0 # LIVE SEED/ACRE	

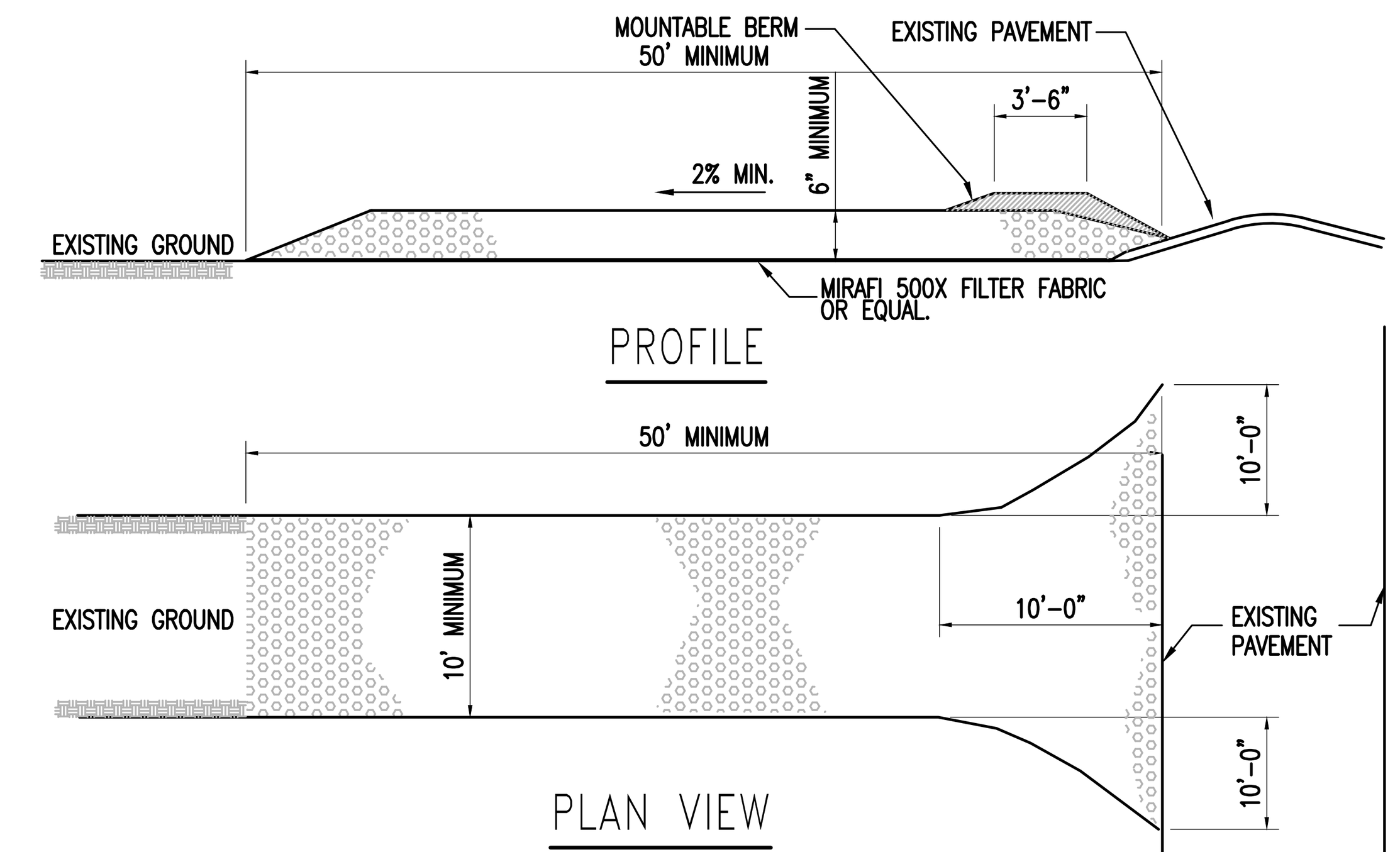
FERTILIZER- 10 LBS. PER 1000S.F.
SPRING SEEDING
FALL SEEDING

LIME- 90 LBS. PER 1000S.F.
DOLOMITIC GROUND LIMESTONE
NOT LESS THAN 85% OF THE TOTAL CARBONATE

TOP SOIL
4" MINIMUM APPROVED TOPSOIL

STRAW MULCH- 2 BALES PER 1000S.F.
APPLY BINDER OR NETTING AS NEEDED

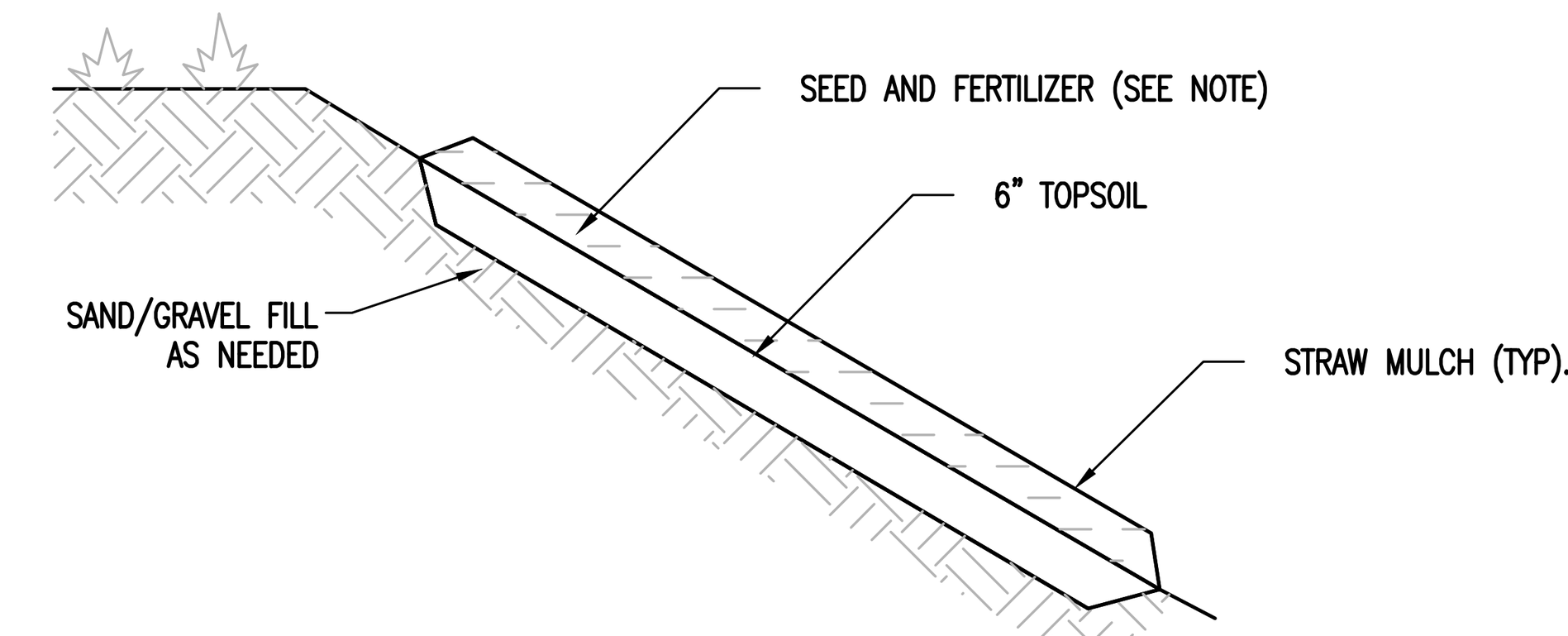
SEED SEPCIFICATION (3)
NOT TO SCALE



NOTES:

1. STONE SIZE: USE 3" (MIN) CRUSHED STONE.
2. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED ACROSS THE ENTRANCE.
3. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. REPAIR AND/OR CLEANOUT ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS MUST BE REMOVED IMMEDIATELY.
4. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
5. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

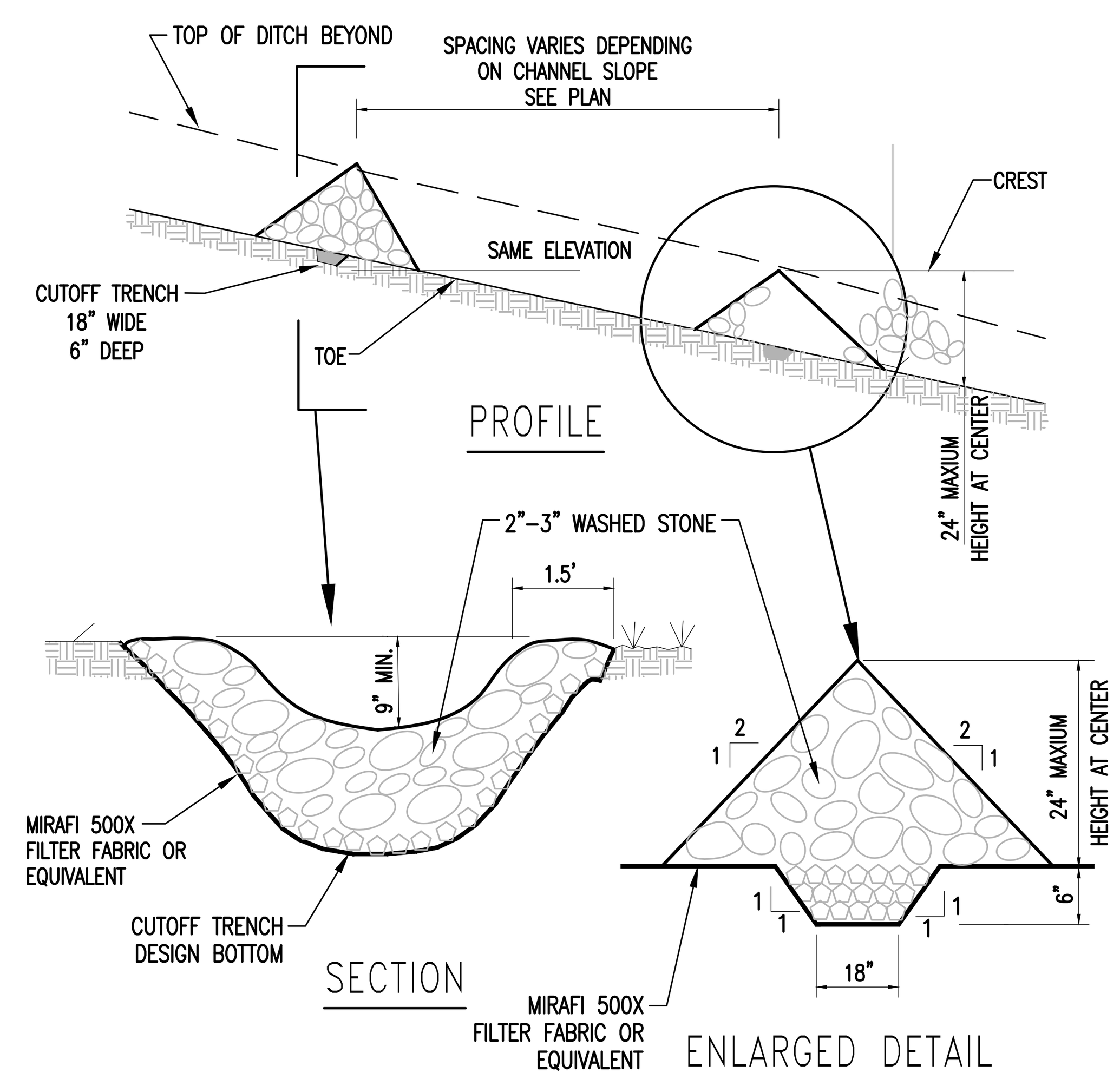
STABILIZED CONSTRUCTION ENTRANCE DETAIL (4)
NOT TO SCALE



NOTES:

1. SEEDING AND MULCHING OF DISTURBED AREAS SHALL TAKE PLACE WITHIN 48 HOURS OF FINAL GRADING.
2. MULCH: STRAW MULCH SHALL BE UTILIZED AND SHALL BE APPLIED AT A RATE OF 90-1,000 LBS/1,000 SF. MULCH SHALL NOT BE PLACED ON SLOPES OF GREATER THAN 3:1. SEED IMPREGNATED EROSION CONTROL NETTING SHALL BE USED IN ITS PLACE.
3. SEED: SEEDING SHALL OCCUR AFTER APRIL 15 AND PRIOR TO SEPTEMBER 15TH IN ORDER TO ESTABLISH A STAND OF GRASS PRIOR TO GROUND FREEZING. SEED SHALL BE IN ACCORDANCE WITH SEED SPECIFICATION ON THIS SHEET.
4. COVER SEED WITH $\frac{1}{4}$ INCH SOIL UNLESS A HYDROSEEDER IS USED.
5. MULCH ANCHORING: SHALL BE ACCOMPLISHED BY DEGRADABLE MULCH NETTING. USE WHEN SLOPES ARE GREATER THAN 10%.
6. TOPSOIL AND MULCHING NOT TO BE APPLIED IN AREAS OF TRAVEL WAYS.

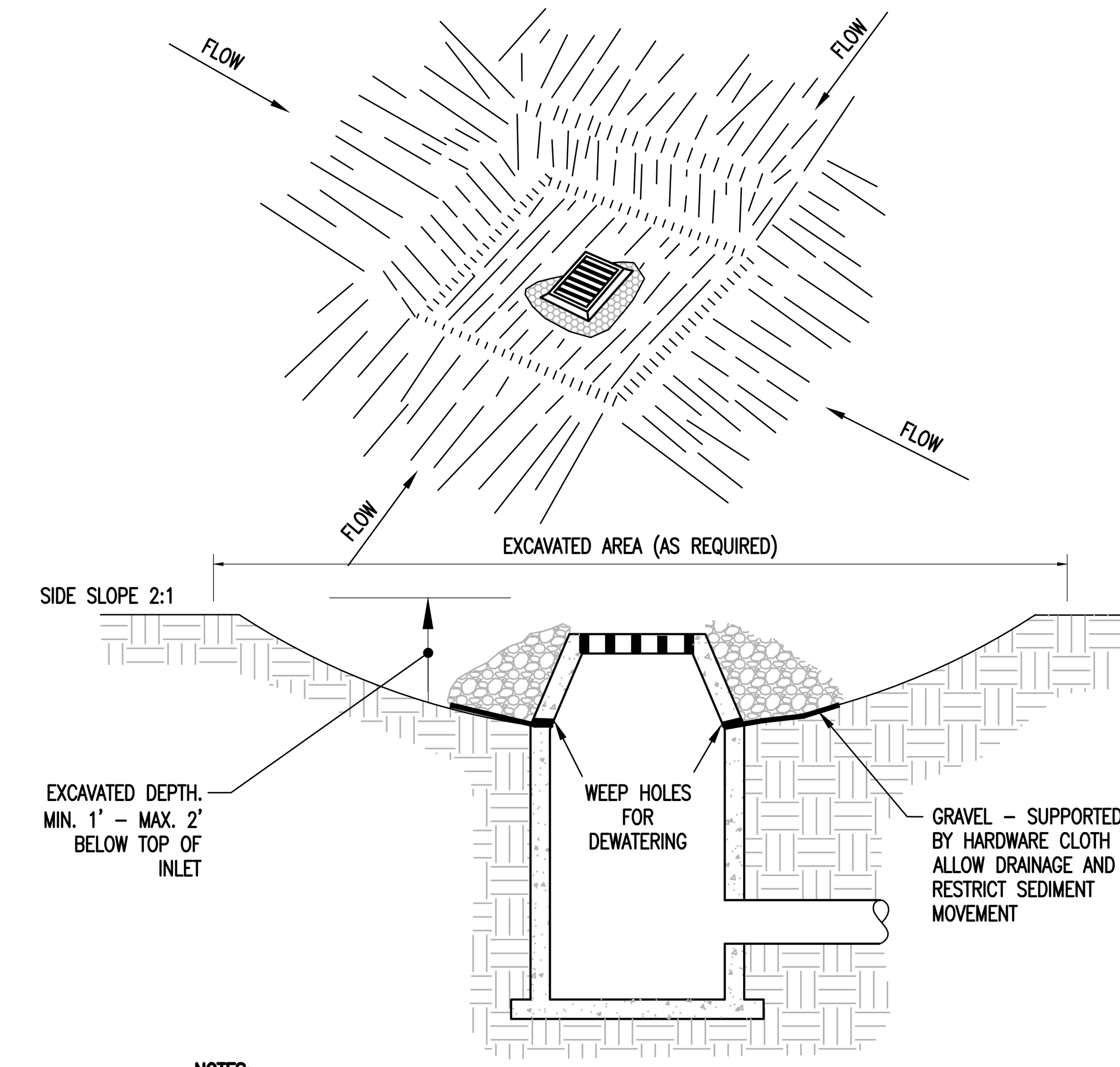
SEEDED AND MULCHED AREAS DETAIL (5)
NOT TO SCALE



NOTES:

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN PLANS.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. REMOVE ACCUMULATED SEDIMENT BEHIND CHECK DAM WHEN 1/2 THE HEIGHT OF THE DAM. REPLACE STONES AS NECESSARY.

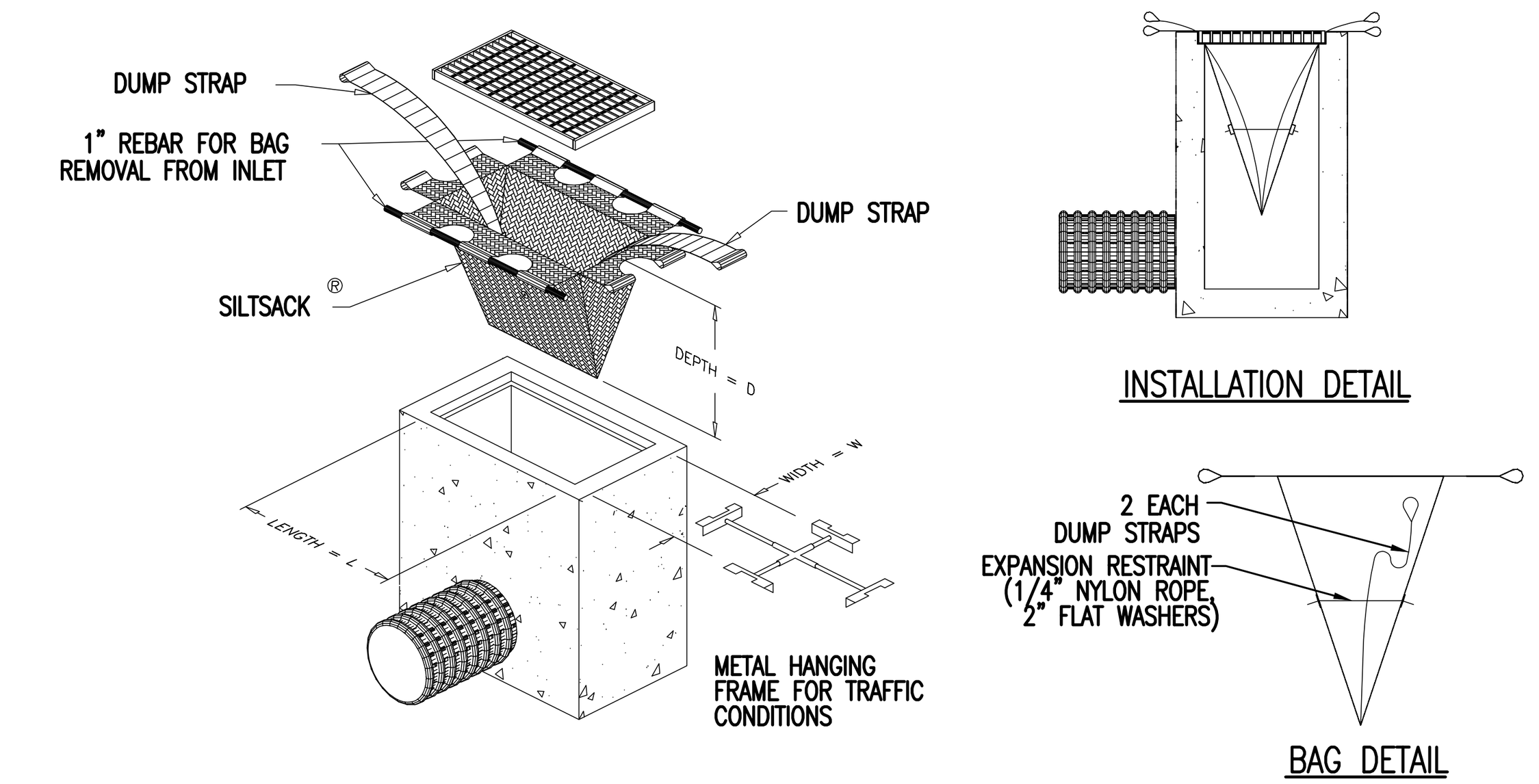
STONE CHECK DAM DETAIL (6)
NOT TO SCALE



NOTES:

1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY GRAVEL.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY AND STABILIZE WITH PERMANENT SEEDING.

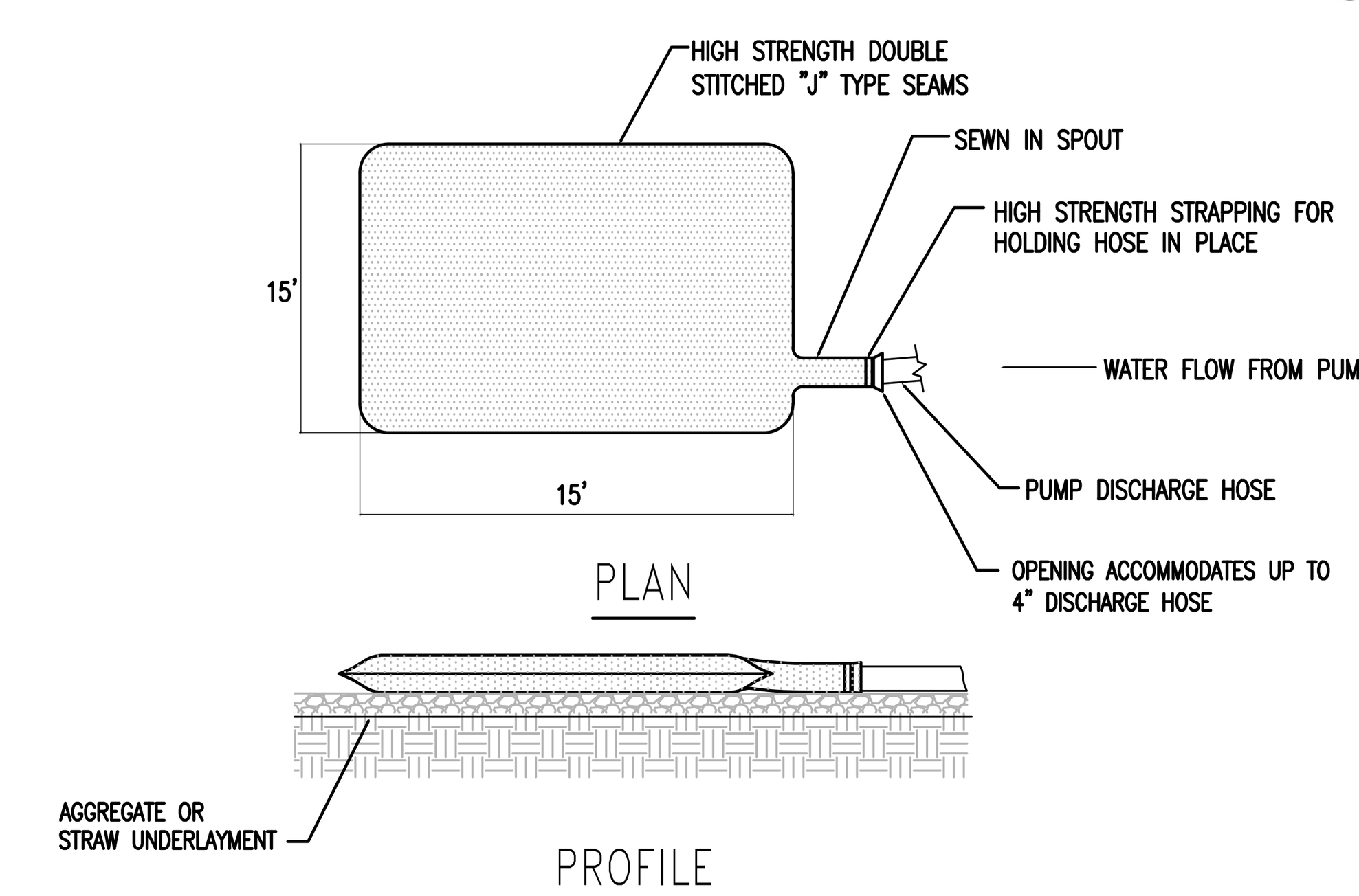
INLET PROTECTION DETAIL (7)
NOT TO SCALE



NOTES:

1. INLET PROTECTION SHALL BE HI-FLOW SILT SACK BY APC ENVIRONMENTAL
2. UTILIZE METAL HANGING FRAME IN TRAFFIC AREAS.
3. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION, CLEANING AND REMOVAL.

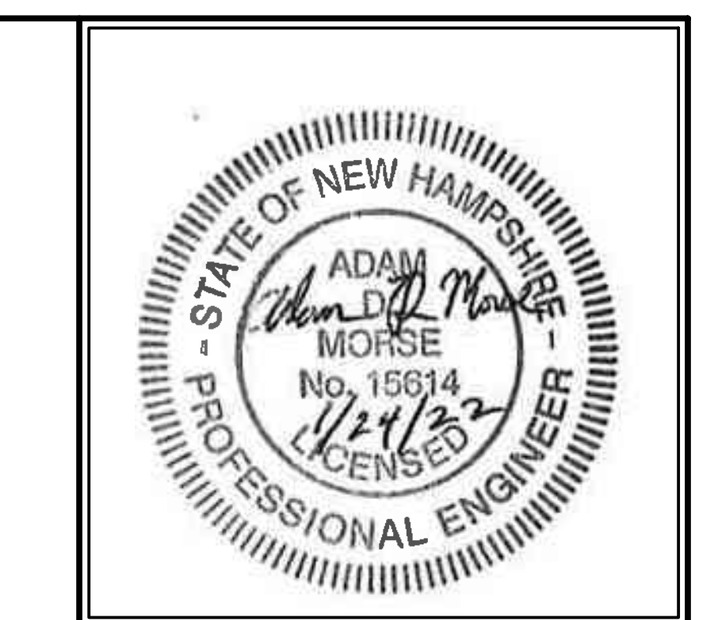
INLET PROTECTION - EXISTING STRUCTURE (8)
NOT TO SCALE



NOTES:

1. DEWATERING PUMP SEDIMENT CONTROL SYSTEMS SHALL BE UTILIZED ON THE DISCHARGE OF ALL PROJECT DEWATERING PUMPS.
2. THE PUMPED SEDIMENT CONTROL DEVICE SHALL BE A HEAVY DUTY 'DIRT BAG' SERIES 55 OR APPROVED EQUAL. LIFTING STRAPS SHALL BE INCLUDED WITH THE PUMPED SEDIMENT CONTROL DEVICE FOR REMOVAL WHEN FULL.
3. THE PUMPED SEDIMENT CONTROL DEVICE SHALL BE PLACED SO THAT THE FILTERED DISCHARGE WILL NOT CAUSE EROSION OR FLOODING IN THE DOWN GRADIENT AREAS.
4. HEAVY EQUIPMENT ACCESS TO THE THE PUMPED SEDIMENT CONTROL DEVICE SITE SHALL BE MAINTAINED FOR REPLACEMENT AND DISPOSAL.

DEWATERTING PUMP SEDIMENT CONTORL SYSTEM (9)
NOT TO SCALE



No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Erosion Prevention and Sediment Control Details

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	-
Date:	12/13/2021

C3.4
12 of 14

Notch Rock Climbing Gym Plant Schedule					
Qty	Symbol	Botanical Name	Common Name	Size-See Landscape Notes	
	Trees				
5	AR	Acer 'Freemani'	Freeman Maple	2.5"-3" Cal.	B&B
6	BN	Betula Nigra 'Heritage'	Heritage River Birch	7-8'	B&B Multi-stemmed
12	MP	Malus 'Prairiefire'	Prairiefire crabapple	2.5"-3" Cal.	B&B
10	PS	Pinus Strobus	Eastern white Pine	10-12'	B&B
7	UA	Ulmus Americana	Princeton Elm	2.5"-3" Cal.	B&B
	Shrubs:				
		Botanical Name	Common Name	Size	
23	HA	Hydrangea arborescens 'Annabelle'	Annabelle Hydrangea	5 Gal.	
15	IV	Ilex verticilata	Winterberry	5 Gal.	
79	IVR	Ilex verticilata 'Red Sprite'	Red Sprite Winterberry	3 Gal.	
67	JC	Juniperus chinensis 'Seagreen'	Seagreen Juniper	5 Gal.	
9	JV	Juniperus virginiana 'Hillspire'	Hillspire Cedar	7-8' Height	
1	SP	Syringa patula 'Miss Kim'	Miss Kim Lilac	2-3'	B&B
	Perennials & Ornamental Grass				
		Botanical Name	Common Name	Size	
55	CK	Calamagrostis 'Karl Forester'	Feather Reed Grass	3 Gal.	
40	HH	Hemerocalis 'Happy' Returns'	Happy Returns Daylily	1 Gal.	

15' Perimeter Landscape Requirement:	24,203 s.f.
Total number of trees required=	40
Total number of trees provided=	40 (Includes 9 exist.)
Total s.f. of understory trees/shrubs required:	200
Total s.f. of understory trees/shrubs provided:	260

Parking Lot Shade Requirement	
Total s.f. of parking lot	14,383 s.f.
Number of shade trees	3 Internal/7 External
Total percentage of Parking lot shaded =	31%

Landscape Notes:

1). Please refer to Engineer's site plan for all UT locations.
Some UT locations have been "frozen" in this viewport for clarity.

2). All new plant material shall be grown to nursery stock.

3). Contractor shall guarantee all plant material for up to one growing season from date of install.

4). Any substitutions made to this plan must be approved by the client and are subject to review by the city of Lebanon Planning Board.

5). All Plantings shall be planted in loam containing 5% of organic material.

6). All Landscape beds shall be cut in and receive 2" of aged dark mulch. Bark mulch shall be kept away from the trunk of the tree.

7). Per site plan req. 6.2.B.3 "All new plant material shall be nursery grown stock."

8). Per site plan req. 6.2.B.4 "At the time of planting, all decidious trees shall be a minimum of 2.5-3" in caliper, measured 6" above finish grade level; all evergreen trees shall be a minimum of 6-7' in height. All shrubs shall be 24-30" in height or 18-24" in spread."

9). Per site plan req. 6.2.H.1 "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 an orderly appearance."

10). Per site plan req. 6.2.H.1 "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 an orderly appearance."

11). Per site plan req. 6.2.K "After the issuance of a certificate of occupancy the storage, display, or parking of motor vehicles, boats, mobile homes, trailers, or construction equipment within landscaped areas, buffers, or screens, shown as such on the approved landscape plan is expressly prohibited and a violation of the Notice of Action."



No.	Description	Date
1	Addressed staff comments	1/24/22

LANDSCAPE PLAN
Prepared for:
The Notch Rock Climbing Gym

Mara landscape design, LLC
16 Myrtle Ave. Newburyport, MA 01950
978.868.0331
maralandscape@gmail.com

Scale: 1"=30'
Date: 1/24/22

L-1
13 of 14

PLOTTED: 12/16/2022 4:32 PM

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Filename	Lumens per Lamp	LLF	Distribution	Polar Plot
	S3	1	Lithonia Lighting	DSX0 LED P4 40K T3M MVOLT SPA DDBXD with SSS 20 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 22ft (20ft pole on 2ft base)	LED	DSX0_LED_P4_40K_T3M_MVOLT.ies	10256	0.9	TYPE III, MEDIUM, BUG RATING: B2 – U0 G2	–
	S4	2	Lithonia Lighting	DSX0 LED P4 40K TFTM MVOLT SPA DDBXD with SSS 20 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 22ft (20ft pole on 2ft base)	LED	DSX0_LED_P4_40K_TFTM_MVOLT.ies	10558	0.9	TYPE IV, SHORT, BUG RATING: B2 – U0 G2	–
	S5	2	Lithonia Lighting	DSX0 LED P4 40K T5M MVOLT SPA DDBXD with SSS 20 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 22ft (20ft pole on 2ft base)	LED	DSX0_LED_P4_40K_T5M_MVOLT.ies	10961	0.9	TYPE VS, BUG RATING: B4 – U0 G2	–
	W–M	8	Lithonia Lighting	WDGE1 LED P2 40K 80CRI VF MVOLT SRM DDBXD	WDGE1 LED Wallpack; mounted at 10ft above man doors	LED	WDGE1_LED_P2_40K_80CRI_VF.ies	1978	0.9	TYPE II, VERY SHORT, BUG RATING: B1 – U0 G0	–

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Outside of Parking Lot	+	0.3 fc	5.6 fc	0.0 fc	N/A	N/A
Parking Lot	+	1.1 fc	2.9 fc	0.4 fc	7.3:1	2.8:1



NOTE: SITE LIGHTING PLAN PREPARED BY VISIBLE LIGHT INC.

Stamp

No.	Description	Date
1	Addressed staff comments	1/24/22

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: Site Lighting Plan

Project Title:
LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

L2

14 of 14

S:\PROJECTS\A-2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\NOTCH LEB ROCK CLIMBING GYM L-2.DWG



D-Series Size 0
LED Area Luminaire

Buy American

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.95 ft² (.09 m²)

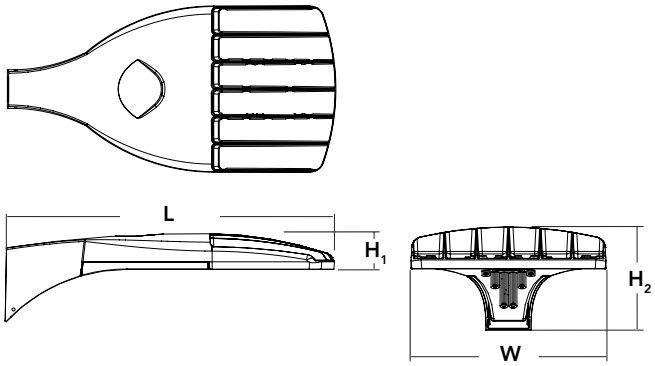
Length: 26" (66.0 cm)

Width: 13" (33.0 cm)

Height$_1$: 3" (7.62 cm)

Height$_2$: 7" (17.8 cm)

Weight (max): 16 lbs (7.25 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** P1 P5 P2 P6 P3 P7[1] P4[1] **Rotated optics** P10[2] P12[2] P11[2] P13[1,2]	30K 3000 K 40K 4000 K 50K 5000 K	T1S Type I short (Automotive) T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short[3] T5S Type V short[3] T5M Type V medium[3] T5W Type V wide[3] BLC Backlight control[4] LCCO Left corner cutoff[4] RCCO Right corner cutoff[4]	MVOLT (120V-277V)[5,6] XVOLT (277V-480V)[7,8,9] 120[6] 208[6] 240[6] 277[6] 347[6] 480[6]	**Shipped included** SPA Square pole mounting RPA Round pole mounting[10] WBA Wall bracket[3] SPUMBA Square pole universal mounting adaptor[11] RPUMBA Round pole universal mounting adaptor[11] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[12]

Control options		Other options	Finish *(required)*	
Shipped installed		**Shipped installed**	DDBXD	Dark bronze
NLTAIR2	nLight AIR generation 2 enabled[13,14]	HS House-side shield[22]	DBLXD	Black
PIRHN	Network, high/low motion/ambient sensor[15]	SF Single fuse (120, 277, 347V)[6]	DNAXD	Natural aluminum
PER	NEMA twist-lock receptacle only (control ordered separate)[16]	DF Double fuse (208, 240, 480V)[6]	DWHXD	White
PER5	Five-pin receptacle only (control ordered separate)[16,17]	L90 Left rotated optics[2]	DDBTXD	Textured dark bronze
PER7	Seven-pin receptacle only (leads exit fixture) (control ordered separate)[16,17]	R90 Right rotated optics[2]	DBLBXD	Textured black
DMG	0-10V dimming extend out back of housing for external control (control ordered separate)[18]	DDL Diffused drop lens[22]	DNATXD	Textured natural aluminum
PIR	High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[19,20]	HA 50°C ambient operations[1]	DWHGXD	Textured white
PIRH	High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[19,20]	BAA Buy America(n) Act Compliant		
PIR1FC3V	High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[19,20]	**Shipped separately**		
PIRH1FC3V	High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[19,20]	BS Bird spikes[23]		
FAO	Field adjustable output[21]	EGS External glare shield		

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Ordering Information

Accessories

Ordered and shipped separately.

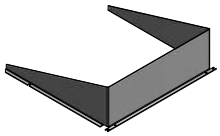
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [24]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [24]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [24]
DSHORT SBK U	Shorting cap [24]
DSX0HS 20C U	House-side shield for P1,P2,P3 and P4 [22]
DSX0HS 30C U	House-side shield for P10,P11,P12 and P13 [22]
DSX0HS 40C U	House-side shield for P5,P6 and P7 [22]
DSX0DDL U	Diffused drop lens (polycarbonate) [22]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [25]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [12]
DSX0EGS (FINISH) U	External glare shield

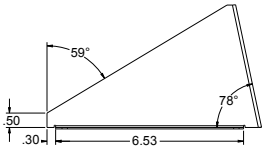
For more control options, visit DTL and ROAM online. Link to nLight Air 2

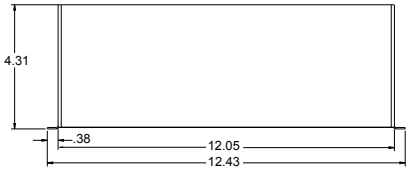
NOTES

1 HA not available with P4, P7, and P13.
2 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
3 Any Type 5 distribution with photocell, is not available with WBA.
4 Not available with HS or DDL.
5 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V. XVOLT not available with fusing (SF or DF).
7 XVOLT only suitable for use with P4, P7 and P13.
8 XVOLT operates with any voltage between 277V and 480V.
9 XVOLT not available with fusing (SF or DF) and not available with PIR, PIRH, PIR1FC3V, PIRH1FC3V.
10 Suitable for mounting to round poles between 3.5" and 12" diameter.
11 Universal mounting brackets intended for retrofit on existing pre-drilled poles only. 1.5 G vibration load rating per ANCI C136.31. Only usable when pole's drill pattern is NOT Lithonia template #8.
12 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" diameter mast arm (not included).
13 Must be ordered with PIRHN.
14 Sensor cover available only in dark bronze, black, white and natural aluminum colors.
15 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link
16 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
17 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
18 DMG not available with PIRHN, PER5, PER7, PIR, PIRH, PIR1FC3V or PIRH1FC3V, FAO.
19 Reference Controls Options table on page 4.
20 Reference Motion Sensor Default Table on page 4 to see functionality.
21 Not available with other dimming controls options.
22 Not available with BLC, LCCO and RCCO distribution.
23 Must be ordered with fixture for factory pre-drilling.
24 Requires luminaire to be specified with PER, PER5 or PER7 option. See Controls Table on page 4.
25 For retrofit use only. Only usable when pole's drill pattern is NOT Lithonia template #8

EGS – External Glare Shield

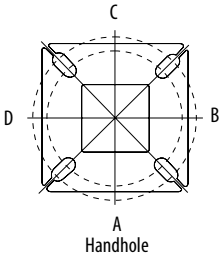


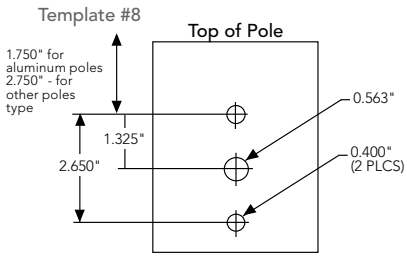




Drilling

HANDHOLE ORIENTATION
(from top of pole)





Tenon Mounting Slipfitter

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @ 90	3 @120	4 @ 90
2-3/8"	RPA	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 390	AS3-5 320	AS3-5 490
2-7/8"	RPA	AST25-190	AST25-280	AST25-290	AST25-390	AST25-320	AST25-490
4"	RPA	AST35-190	AST35-280	AST35-290	AST35-390	AST35-320	AST35-490

Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS
		Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"		3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"		4"
RPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

DSX0 Area Luminaire - EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration	Single DM19	2 @ 180 DM28	2 @ 90 DM29	3 @ 90 DM39	3 @ 120 DM32	4 @ 90 DM49
Mounting Type						
DSX0 LED	0.950	1.900	1.830	2.850	2.850	3.544

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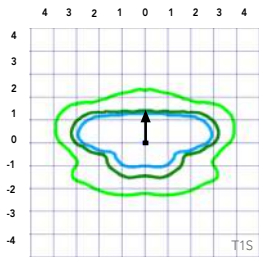
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').

LEGEND

- 0.1 fc
- 0.5 fc
- 1.0 fc



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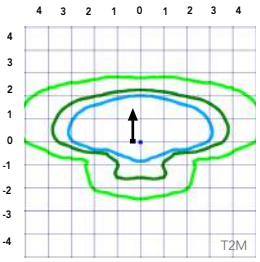

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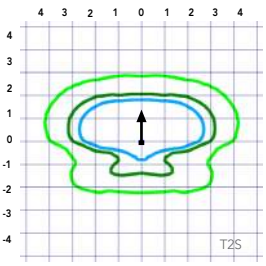

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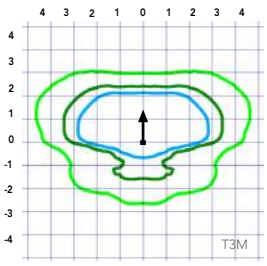

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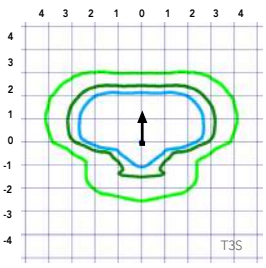

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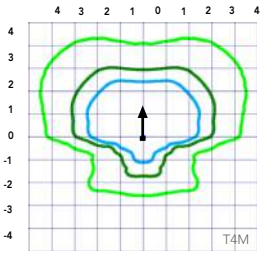

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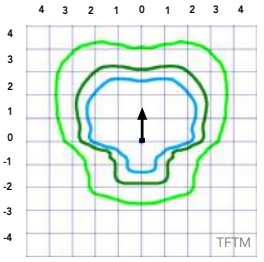

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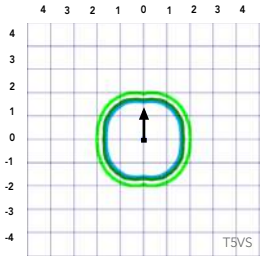

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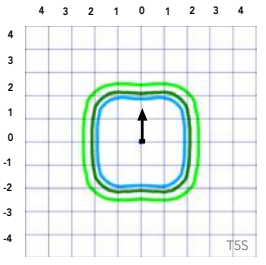

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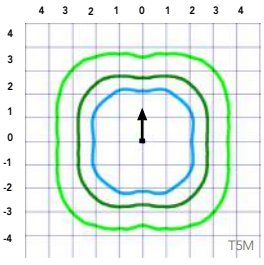

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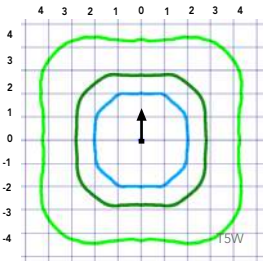

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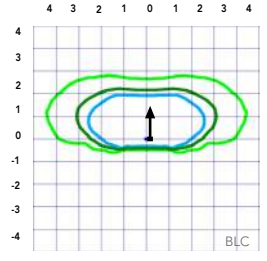

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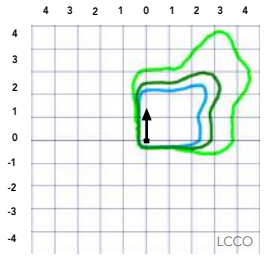

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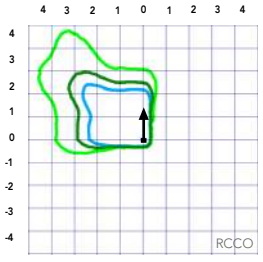

Test No.

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Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°C**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
25,000	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min
*for use when motion sensor is used as dusk to dawn control.						

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current	Wattage	120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Controls Options

Nomenclature	Description	Functionality	Primary control device	Notes
FAO	Field adjustable output device installed inside the luminaire; wired to the driver dimming leads.	Allows the luminaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS	Drivers wired independently for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two separately switched circuits. Consider nLight AIR as a more cost effective alternative.
PER5 or PER7	Twist-lock photocell receptacle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBGR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Eclypse.	nLight Air rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CIAIRity Pro app.

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	20	530	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
P2	20	700	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
P3	20	1050	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
P4	20	1400	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71
				RCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P5	40	700	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
P6	40	1050	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
P7	40	1300	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68
				RCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P10	30	530	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83
P11	30	700	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78
P12	30	1050	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76
P13	30	1300	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44
				RCCO	5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44

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FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS
The DSX0 LED area luminaire has a number of control options. DSX Size 0, comes standard with 0-10V dimming driver. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. Integrated motion sensors with on-board photocells feature field-adjustable programing and are suitable for mounting heights up to 30 feet.

nLIGHT AIR CONTROLS
The DSX0 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS
UL listed to meet U.S. and Canadian standards. UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C to 50°C ambient with HA option. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

BUY AMERICAN
Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT. Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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WDGE1 LED
Architectural Wall Sconce

Buy American

Catalog Number

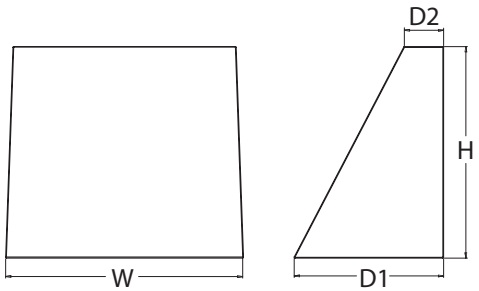
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Depth (D1): 5.5"
Depth (D2): 1.5"
Height: 8"
Width: 9"
Weight: (without options) 9 lbs



Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing true site-wide solution.

WDGE1 delivers up to 2,000 lumens with a soft, non-pixelated light source, creating a visually comfortable environment. The compact size of WDGE1, with its integrated emergency battery backup option, makes it an ideal over-the-door wall-mounted lighting solution.

WDGE LED Family Overview

Luminaire	Standard EM, 0°C	Cold EM, -20°C	Sensor	Lumens (4000K)					
				P1	P2	P3	P4	P5	P6
WDGE1 LED	4W	--	--	1,200	2,000	--	--	--	--
WDGE2 LED	10W	18W	Standalone / nLight	1,200	2,000	3,000	4,500	6,000	--
WDGE3 LED	15W	18W	Standalone / nLight	7,500	8,500	10,000	12,000	--	--
WDGE4 LED	--	--	Standalone / nLight	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WDGE1 LED P2 40K 80CRI VF MVOLT SRM PE DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WDGE1 LED	P1 P2	27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K[1] 5000K	80CRI 90CRI	VF Visual comfort forward throw VW Visual comfort wide	MVOLT 347[2]	**Shipped included** SRM Surface mounting bracket ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)[5] **Shipped separately** AWS 3/8inch Architectural wall spacer PBBW Surface-mounted back box (top, left, right conduit entry) Use when there is no junction box available.

Options	
E4WH[3]	Emergency battery backup, Certified in CA Title 20 MAEDBS (4W, 0°C min)
PE[4]	Photocell, Button Type
DS	Dual switching (comes with 2 drivers and 2 light engines; see page 3 for details)
DMG	0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately)
BCE	Bottom conduit entry for back box (PBBW). Total of 4 entry points.

Finish			
DDBXD	Dark bronze	DDBTXD	Textured dark bronze
DBLXD	Black	DBLBXD	Textured black
DNAXD	Natural aluminum	DNATXD	Textured natural aluminum
DWHXD	White	DWHGXD	Textured white
DSSXD	Sandstone	DSSTXD	Textured sandstone

Accessories

Ordered and shipped separately.

WDGEAWS DDBXD	WDGE 3/8inch Architectural Wall Spacer (specify finish)
WDGE1PBBW DDBXD U	WDGE1 surface-mounted back box (specify finish)

NOTES

1. 50K not available in 90CRI.
2. 347V not available with E4WH, DS or PE.
3. E4WH not available with PE or DS.
4. PE not available with DS.
5. Not qualified for DLC. Not available with E4WH.

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Dist. Type	27K (2700K, 80 CRI)					30K (3000K, 80 CRI)					35K (3500K, 80 CRI)					40K (4000K, 80 CRI)					50K (5000K, 80 CRI)				
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P1	10W	VF	1,120	112	0	0	0	1,161	116	0	0	0	1,194	119	0	0	0	1,227	123	0	0	0	1,235	123	0	0	0
		VW	1,122	112	0	0	0	1,163	116	0	0	0	1,196	120	0	0	0	1,229	123	0	0	0	1,237	124	0	0	0
P2	15W	VF	1,806	120	1	0	0	1,872	125	1	0	0	1,925	128	1	0	0	1,978	132	1	0	0	1,992	133	1	0	0
		VW	1,809	120	1	0	0	1,876	125	1	0	0	1,929	128	1	0	0	1,982	132	1	0	0	1,996	133	1	0	0

Electrical Load

Performance Package	System Watts	Current (A)				
		120V	208V	240V	277V	347V
P1	10W	0.082	0.049	0.043	0.038	--
	13W	--	--	--	--	0.046
P2	15W	0.132	0.081	0.072	0.064	--
	18W	--	--	--	--	0.056

Lumen Multiplier for 90CRI

CCT	Multiplier
27K	0.845
30K	0.867
35K	0.845
40K	0.885
50K	0.898

Lumen Output in Emergency Mode (4000K, 80 CRI)

Option	Dist. Type	Lumens
E4WH	VF	646
	VW	647

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.03
10°C	50°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	>0.96	>0.95	>0.91

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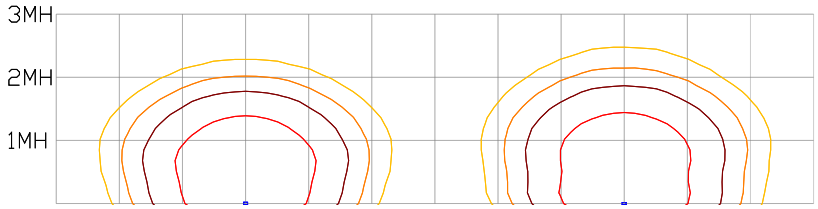
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting WDGE LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards.

LEGEND

- 0.25 fc
- 0.5 fc
- 1.0 fc
- 3.0 fc

MH = 8ft
Grid = 8ft x 8ft



WDGE1 LED P2 40K 80CRI VW

WDGE1 LED P2 40K 80CRI VF

Emergency Egress Options

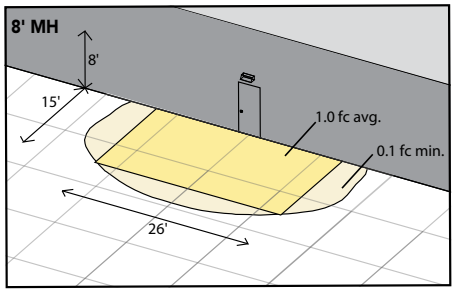
Emergency Battery Backup

The emergency battery backup is integral to the luminaire — no external housing required! This design provides reliable emergency operation while maintaining the aesthetics of the product. All emergency battery backup configurations include an independent secondary driver with an integral relay to immediately detect loss of normal power and automatically energize the luminaire. The emergency battery will power the luminaire for a minimum duration of 90 minutes (maximum duration of three hours) from the time normal power is lost and maintain a minimum of 60% of the light output at the end of 90minutes.

Applicable codes: NFPA 70/NEC – section 700.16, NFPA 101 Life Safety Code Section 7.9

The example below shows illuminance of 1 fc average and 0.1 fc minimum in emergency mode with E4WH and VF distribution.

Grid = 10ft x 10ft

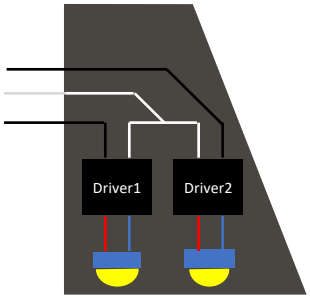


WDGE1 LED xx 40K 80CRI VF MVOLT E4WH

Dual Switching (DS) Option

The dual switching option offers operational redundancy that certain codes require. With this option the luminaire comes integrated with two drivers and two light engines. These work completely independent to each other so that a failure of any individual component does not cause the whole luminaire to go dark. This option is typically used with a back generator or inverter providing emergency power.

Applicable codes: NFPA 70/NEC – section 700.16, NFPA 101 Life Safety Code Section 7.9



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E4WH – 4W Emergency Battery Backup

D = 5.5"

H = 8"

W = 9"



PBBW – Surface-Mounted Back Box
Use when there is no junction box available.

D = 1.75"

H = 8"

W = 9"



AWS – 3/8inch Architectural Wall Spacer

D = 0.38"

H = 4.4"

W = 7.5"

FEATURES & SPECIFICATIONS

INTENDED USE
Common architectural look, with clean rectilinear shape, of the WDGE LED was designed to blend with any type of construction, whether it be tilt-up, frame or brick. Applications include commercial offices, warehouses, hospitals, schools, malls, restaurants, and other commercial buildings.

CONSTRUCTION
The single-piece die-cast aluminum housing integrates secondary heat sinks to optimize thermal transfer from the internal light engine heat sinks and promote long life. The driver is mounted in direct contact with the casting for a low operating temperature and long life. The die-cast door frame is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP66 rating for the luminaire.

FINISH
Exterior painted parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Standard Super Durable colors include dark bronze, black, natural aluminum, sandstone and white. Available in textured and non-textured finishes.

OPTICS
Well crafted reflector optics allow the light engine to be recessed within the luminaire, providing visual comfort, superior distribution, uniformity, and spacing in wall-mount applications. The WDGE LED has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine consists of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L91/100,000 hours at 25°C). The electronic driver has a power factor of >90%, THD <20%. Luminaire comes with built in 6kV surge protection, which meets a minimum Category C low exposure (per ANSI/IEEE C62.41.2).

INSTALLATION
A universal mounting plate with integral mounting support arms allows the fixture to hinge down for easy access while making wiring connections. The 3/8" Architectural Wall Spacer (AWS) can be used to create a floating appearance or to accommodate small imperfections in the wall surface. The ICW option can be used to mount the luminaire inverted for indirect lighting in dry and damp locations. Design can withstand up to a 1.5 G vibration load rating per ANSI C136.31.

LISTINGS
CSA certified to U.S. and Canadian standards. Luminaire is IP66 rated. PIR options are rated for wet location. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 2700K and 3000K color temperature only and SRM mounting only.

BUY AMERICAN
This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FARS, DFARS and DOT. Please refer to www.acuitybrands.com/resources/buy-american for additional information.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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THE NOTCH CLIMBING GYM
LABOMBARD ROAD

CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

DRAINAGE ANALYSIS

JANUARY 24, 2022

Prepared For:

WRIGHT CONSTRUCTION COMPANY
31 Station Road
Mount Holly, VT 05758

Prepared By:

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EV Project # 21580

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THE NOTCH CLIMBING GYM
LABOMBERD RD., CITY OF LEBANON, GRAFTON COUNTY, NH

DRAINAGE ANALYSIS

TABLE OF CONTENTS:

- Drainage Narrative
- Extreme Precipitation Data Table for Lebanon, NH
- Existing Drainage Map
- Proposed Drainage Map
- Site Specific Soils Data
- NRCS Web Soil Survey Report
- Existing HydroCAD Model Report
- Proposed HydroCAD Model Report
- NHDES BMP worksheet
- Stormwater Inspection and Maintenance Manual

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85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 · Tel: 603-442-9333

The Notch Climbing Gym
Labombard Rd., City of Lebanon, NH

Drainage Report

Project Narrative

EV Project # 21580
January 24, 2022

I Introduction

The project will consist of construction of a new climbing gym to be located off of Labombard Rd. at Lot B of the Rte. 120 Hotel, LLC Subdivision. The existing lot is located in the Light Industrial Zone. The new building will contain a 10,000-sf main level and a 2,250-sf mezzanine.

II Existing Conditions

The subject property, Lot 51-15, is a 3.4-acre lot. The existing property is vacant with a small area of wetlands in the southeast corner of the lot extending on the neighboring lot to the south. The lot is primarily meadow and there are some piles of fill and boulders adjacent to the west and south boundary. The lot slopes from a high point in the northeast corner down towards the south end of the lot. The north end of the site appears to be primarily fill that was placed in that location during construction of the hotel access drive. There are currently two culverts which enter the site from the east side of Labombard Rd. which drain to the wetlands on the subject property. A wetland delineation was completed by ADK Environmental on 11/1/21. The site is bordered by a public sidewalk along its frontage with Labombard Rd.

The lot is served by municipal water and sewer line stubs installed with the original subdivision construction. The sewer connection for the lot is connected to a privately operated sewer lift station that discharges to the sewer main in Route 120. An 8” sewer line is stubbed into the lot near the northeast corner. An 8” water line is also stubbed into the lot roughly centered on the north boundary line.

The lot is subject to an Alteration of Terrain Permit since it is part of an existing subdivision which has a recent permit on file.

Seasonal high water table depth in the vicinity of the treatment practice is assumed to be near the existing ground surface. The attached NRCS Web Soil Survey of the site reports data ranging from 0” to 12” and the close vicinity of the existing wetland system to treatment practice supports this data.

III Proposed Work

The project will involve the construction of a new approximately 10,000 sf climbing gym. The new building includes a mezzanine, yoga studio and small retail space. Site work will consist of new sidewalks to provide connectivity between the public sidewalk main entrance and various egress locations. A parking lot designed to accommodate 49 cars is provided to the southwest of the building. The building is laid out in an "L" shape with its front facing towards the southeast. Space along the west end of the building has been provided for a future 2,000 sf addition. The drive access is to be centered on the west boundary line and the existing boundary line will be moved to the center of the drive access as shown on the plans. At the outcome of the boundary line adjustment, it is estimated that the subject lot will encompass 2.55 acres. A maintenance and access easement will be dedicated from the subject lot to lot 64-25 for the shared drive access. The owner of lot 64-25 will also provide an easement to the subject lot for shared access and maintenance. A new electrical transformer will be connected to existing power located along Labombard Rd. The transformer is planned to be located just south of the building.

IV Stormwater Management

Stormwater management will be achieved through construction of a series of grass swales, culverts, catch basins, piping, underdrains, curbing and a stormwater treatment practice consisting of a gravel wetland and sediment forebay system. The sediment forebay will provide pretreatment for the system. An underdrain and swale will be provided along the east and north walls of the building to route drainage from the shed roof to the culvert and swale system so that it can be discharged to the gravel wetlands. Parking lot drainage and drainage from the west side of the building will be routed to a series of catch basins and a swale which flows south into the gravel wetland along the west proposed boundary. Effective impervious cover is minimal and is limited to a small section of sidewalk facing Labombard Rd. As per section 6.6.F.1 effective impervious is well under 10% of the site. The vast majority of impervious including the entire building, parking and vehicle surfaces will be funneled into the treatment system. The system is designed to provide a minimum of 80% removal of TSS, floatables, greases and oils and at least 40% removal of total phosphorous per section 6.6.F.3 and has been designed in general conformance with the UNH Gravel Wetland Manual.

For further details of existing and proposed drainage catchment please refer to the HydroCAD printout and the Existing and Proposed Drainage maps included at the end of this report.

  - WQv = (P)(Rv)(A)
  - P = 1" of rainfall (NHDES standard)
  - Rv = Runoff Coefficient = 0.05 + (0.9 * I)
  - I= % impervious draining to practice
  - A = Area draining to practice
  - A_I = Impervious area draining to practice
- WQv Calculations for area draining to POI-1:
  - P = 1"
  - A = 1.79 acres

- A_I = 0.79 acres
- I = 0.79/1.79 = 0.44
- Rv = 0.05 + (0.9 * 0.44) = 0.45 unitless
- WQv = (1") (0.45) (1.79) = 0.80 ac-in
- WQv = 2,906 cf (0.80 ac-in * 43,560 sf/ac * 1'/12")

Stormwater analysis was conducted using HydroCAD Version 10.0 to compute the post-construction conditions for the 2-year, 10-year, 50-year and 100-year 24-hour storms. This program uses the TR-20 stormwater calculation method.

The following table shows the results of the post-development HydroCAD analysis versus pre-development HydroCAD analysis. As shown stormwater discharge has been attenuated in all scenarios. No adverse impacts to the adjacent down gradient Lot (64-22) are expected based on this analysis.

Table 1 – HydroCAD Results

	2-yr Storm	**2-yr Storm**	**10-yr Storm**	**10-yr Storm**	**25-yr Storm**	**25-yr Storm**	**50-yr Storm**	**50-yr Storm**	**100-yr Storm**	**100-yr Storm**
	cfs	cf	cfs	cf	cfs	cf	cfs	cf	cfs	cf
Pre-Development (POI-1)	0.03	837	0.89	4,165	2.44	7,973	4.26	12,209	6.68	17,853
Post-Development (POI-1)	0.02	480	0.35	4,161	0.92	10,026	2.30	15,990	4.37	23,461
Δ(POI-1)	-0.01	-357	-0.54	-4	-1.52	2,053	-1.96	3,781	-2.31	5,608

V Soil Erosion and Sedimentation Control

Standard erosion and sedimentation control measures will need to be implemented during construction of the project. Inlet protections will be required around existing culvert and catch basin inlets. Silt fencing is proposed, where indicated. A stone construction entrance will be implemented to prevent vehicles from transporting dirt and soil off the site. Once final grades are established, landscaping features will be installed for the project area.

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	72.241 degrees West
Latitude	43.655 degrees North
Elevation	0 feet
Date/Time	Tue, 07 Dec 2021 15:41:30 -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	2.33	2.70	3.30	3.80	**1yr**
2yr	0.31	0.48	0.59	0.78	0.98	1.22	**2yr**	0.85	1.11	1.40	1.71	2.07	2.50	2.81	**2yr**	2.21	2.71	3.15	3.77	4.32	**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	3.48	**5yr**	2.72	3.35	3.87	4.56	5.19	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.83	**10yr**	1.26	1.67	2.10	2.55	3.04	3.59	4.09	**10yr**	3.18	3.93	4.53	5.27	5.97	**10yr**
25yr	0.49	0.78	1.00	1.38	1.83	2.31	**25yr**	1.58	2.12	2.65	3.19	3.78	4.41	5.06	**25yr**	3.91	4.87	5.56	6.38	7.19	**25yr**
50yr	0.56	0.90	1.16	1.62	2.18	2.76	**50yr**	1.88	2.52	3.16	3.80	4.46	5.16	5.95	**50yr**	4.57	5.73	6.51	7.38	8.27	**50yr**
100yr	0.64	1.04	1.34	1.90	2.59	3.29	**100yr**	2.23	3.02	3.77	4.51	5.27	6.04	7.01	**100yr**	5.35	6.74	7.61	8.54	9.52	**100yr**
200yr	0.74	1.21	1.56	2.23	3.08	3.93	**200yr**	2.66	3.61	4.50	5.35	6.21	7.08	8.24	**200yr**	6.26	7.93	8.91	9.88	10.97	**200yr**
500yr	0.89	1.47	1.91	2.77	3.88	4.96	**500yr**	3.35	4.57	5.67	6.71	7.73	8.72	10.23	**500yr**	7.72	9.84	10.98	12.00	13.22	**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	1.00	1.20	1.59	1.97	2.20	**1yr**	1.74	2.12	2.48	2.98	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	2.76	**2yr**	2.17	2.66	3.09	3.71	4.24	**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	2.92	3.29	**5yr**	2.59	3.17	3.67	4.32	4.94	**5yr**
10yr	0.38	0.58	0.72	1.00	1.29	1.50	**10yr**	1.11	1.47	1.69	2.16	2.70	3.33	3.77	**10yr**	2.94	3.62	4.17	4.84	5.54	**10yr**
25yr	0.43	0.66	0.82	1.17	1.53	1.77	**25yr**	1.32	1.73	1.98	2.53	3.12	3.95	4.50	**25yr**	3.50	4.33	4.94	5.61	6.44	**25yr**
50yr	0.47	0.72	0.89	1.28	1.73	2.00	**50yr**	1.49	1.96	2.22	2.85	3.49	4.50	5.15	**50yr**	3.98	4.95	5.61	6.27	7.22	**50yr**
100yr	0.52	0.79	0.99	1.43	1.96	2.26	**100yr**	1.69	2.21	2.49	3.19	3.92	5.13	5.89	**100yr**	4.54	5.67	6.38	7.00	8.07	**100yr**
200yr	0.58	0.87	1.10	1.59	2.22	2.55	**200yr**	1.91	2.49	2.80	3.60	4.45	5.84	6.74	**200yr**	5.17	6.48	7.27	7.82	9.04	**200yr**
500yr	0.66	0.98	1.26	1.83	2.61	2.97	**500yr**	2.25	2.90	3.23	4.19	5.21	6.96	8.07	**500yr**	6.16	7.76	8.64	9.03	10.50	**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**	0.77	1.01	1.19	1.51	1.89	2.31	2.61	**1yr**	2.04	2.51	2.87	3.51	4.02	**1yr**
2yr	0.32	0.49	0.61	0.82	1.02	1.20	**2yr**	0.88	1.17	1.36	1.73	2.18	2.57	2.88	**2yr**	2.28	2.77	3.23	3.87	4.41	**2yr**
5yr	0.40	0.62	0.76	1.05	1.33	1.57	**5yr**	1.15	1.53	1.74	2.17	2.72	3.23	3.67	**5yr**	2.86	3.53	4.08	4.79	5.44	**5yr**
10yr	0.48	0.74	0.92	1.28	1.65	1.95	**10yr**	1.43	1.91	2.15	2.61	3.22	3.87	4.41	**10yr**	3.43	4.24	4.88	5.66	6.40	**10yr**
25yr	0.62	0.94	1.16	1.66	2.19	2.63	**25yr**	1.89	2.57	2.86	3.34	4.04	4.91	5.66	**25yr**	4.34	5.44	6.18	7.06	7.95	**25yr**
50yr	0.74	1.13	1.40	2.02	2.71	3.28	**50yr**	2.34	3.21	3.57	4.02	4.81	5.87	6.82	**50yr**	5.19	6.56	7.40	8.36	9.37	**50yr**
100yr	0.90	1.36	1.70	2.45	3.37	4.12	**100yr**	2.91	4.03	4.46	4.87	5.73	7.03	8.25	**100yr**	6.22	7.93	8.87	9.92	11.05	**100yr**
200yr	1.09	1.64	2.07	3.00	4.18	5.18	**200yr**	3.61	5.06	5.58	5.88	6.88	8.40	9.95	**200yr**	7.44	9.57	10.64	11.78	13.05	**200yr**
500yr	1.41	2.10	2.70	3.92	5.58	7.02	**500yr**	4.81	6.87	7.51	7.54	8.65	10.68	12.78	**500yr**	9.45	12.29	13.53	14.81	16.27	**500yr**

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EXISTING DRAINAGE AREAS

	ES1	Total
Meadow, non-grazed, HSG A	22768	22768
Meadow, non-grazed, HSG B	124822	124822
Total	147590	147590

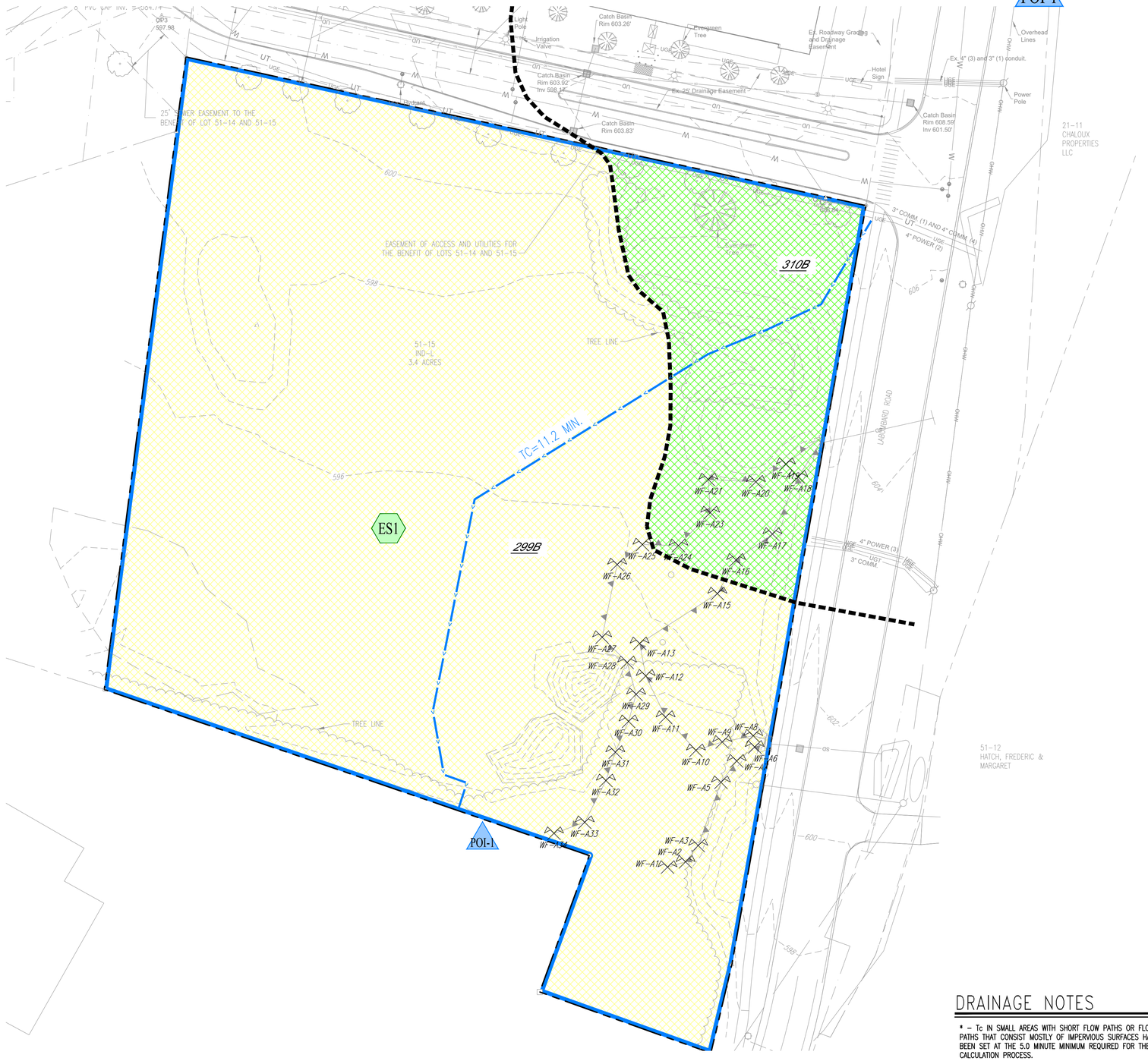
SOILS MAPPING LEGEND

NRCS – NATURAL RESOURCES CONSERVATION SERVICE

- *130A* – NRCS SOIL MAP UNIT SYMBOL
- – NRCS HYDROLOGIC SOIL GROUP "A"
- – NRCS HYDROLOGIC SOIL GROUP "B"
- – NRCS HYDROLOGIC SOIL GROUP "C"
- – NRCS HYDROLOGIC SOIL GROUP "D"
- – IMPERVIOUS
- – SOIL BOUNDARY

DRAINAGE LEGEND

- ES1 – SUBCATCHMENT DESIGNATION
- – TIME OF CONCENTRATION (Tc) PATH
- – SUBCATCHMENT BOUNDARIES
- POI-1 – POINT OF INTEREST



DRAINAGE NOTES

* – Tc IN SMALL AREAS WITH SHORT FLOW PATHS OR FLOW PATHS THAT CONSIST MOSTLY OF IMPERVIOUS SURFACES HAVE BEEN SET AT THE 5.0 MINUTE MINIMUM REQUIRED FOR THE CALCULATION PROCESS.

N

GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

Stamp

No.	Description	Date
0		

ENGINEERING VENTURES PC
208 Flynn Avenue, Suite 2A, Burlington, VT 05401 • 802-863-8225
85 Mechanic Street, Suite E2-3, Lebanon, NH 03766 • 603-442-9333
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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: PREDEVELOPMENT DRAINAGE PLAN

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM
Checked By:	KW
Scale:	1"=30'
Date:	12/13/2021

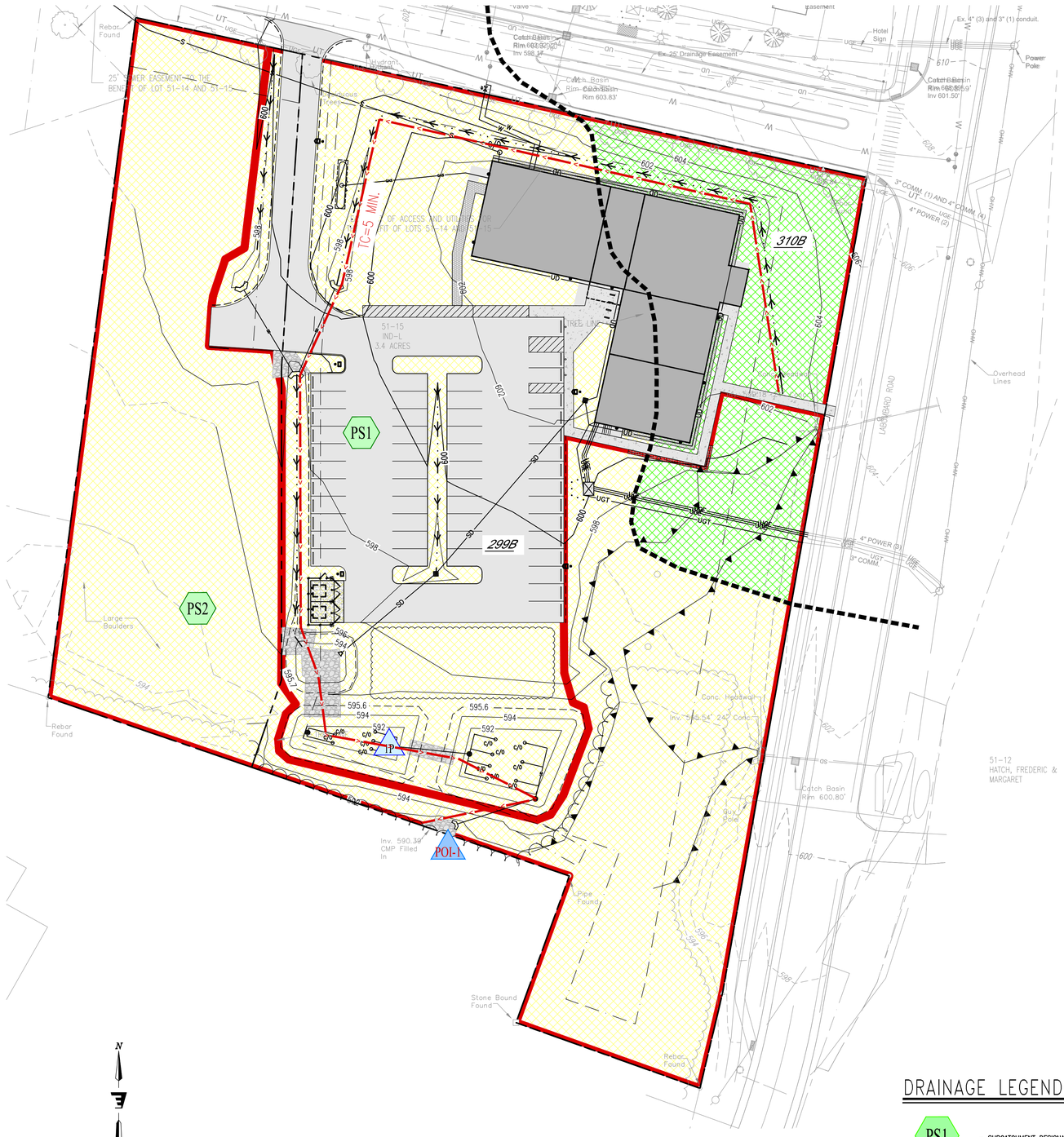
D1

S:\PROJECTS\2021\21580 NH LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 DRAINAGE PLAN.DWG

PLOTTED: 10/4/2022 1:36 PM

PROPOSED DRAINAGE AREAS

	PS1	PS2	Total
>75% Grass cover (good), HSG A	9863	0	9863
>75% Grass cover (good), HSG B	32869	0	32869
Impervious A	5932	0	5932
Impervious B	29103	0	29103
Meadow, non-grazed, HSG A	0	6973	6973
Meadow, non-grazed, HSG B	0	62850	62850
Total	77767	69823	147590



DRAINAGE NOTES

* – Tc IN SMALL AREAS WITH SHORT FLOW PATHS OR FLOW PATHS THAT CONSIST MOSTLY OF IMPERVIOUS SURFACES HAVE BEEN SET AT THE 5.0 MINUTE MINIMUM REQUIRED FOR THE CALCULATION PROCESS.

N

GRAPHIC SCALE

30 0 15 30 60 120

1 inch = 30 ft.
for sheet size 24" x 36"

DRAINAGE LEGEND

PS1 – SUBCATCHMENT DESIGNATION

– TIME OF CONCENTRATION (Tc) PATH

– SUBCATCHMENT BOUNDARIES

POI-1 – POINT OF INTEREST

SOILS MAPPING LEGEND

NRCS – NATURAL RESOURCES CONSERVATION SERVICE

1304 – NRCS SOIL MAP UNIT SYMBOL

– NRCS HYDROLOGIC SOIL GROUP "A"

– NRCS HYDROLOGIC SOIL GROUP "B"

– NRCS HYDROLOGIC SOIL GROUP "C"

– NRCS HYDROLOGIC SOIL GROUP "D"

– IMPERVIOUS

– NRCS SOIL BOUNDARY

Stamp

No.	Description	Date

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WRIGHT CONSTRUCTION COMPANY
31 STATION ROAD
MOUNT HOLLY, VT 05758
802-747-8234

Sheet Title: POST DEVELOPMENT DRAINAGE PLAN

Project Title: LABOMBARD ROAD
THE NOTCH CLIMBING GYM
CITY OF LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

EV Project #	21580
Drawn By:	AM/ NF
Checked By:	
Scale:	1"=20'
Date:	5/19/2021

D2

S:\PROJECTS\A-D\21580 IN LEBANON CLIMBING GYM\DWG\SHEET FILES\21580 DRAINAGE PLAN.DWG

Table 1- Site Specific Soils

SOIL CODE	SOIL NAME	HYDROLOGIC SOIL GROUP
947B	Pootatuck (Variant)	C
5A/P	Rippowam	C
310B	Quanset Loamy Sand 3 to 8 percent slopes	A
299B	Udorthents (smoothed)	B
62D	Charlton	B
Table 2- NRCS Off Site Soils		
63B	Charlton Fine Sandy Loam, 3 to8 percent slopes	B
63D	Charlton Fine Sandy Loam, 15 to 25 percent slopes	B
361C	Cardigan Kearsarge Rock Outcrop 8-15% slopes	B
361D	Cardigan Kearsarge Rock Outcrop 15-25% slopes	B
361E	Cardigan Kearsarge Rock Outcrop 25-60% slopes	B

POST DEVELOPMENT CONDITIONS

The development land use is characterized as the addition of pavement driveway system and parking lots to support the proposed use "Hotel Conference Center". The paved portion of the site will be collected in a combination of open and closed drainage system. The majority of the pavement runoff for storms up to and including the 1- year storm event will be directed into underground infiltration beds. Larger storms are bypassing the beds, being directed into and micro pool extended detention pond. Roof runoff from the back of the site will be outleted by down spouts and will sheet across the grass field. The roof water on the front of the site will be collected by a series of down spouts will be outleted into a treatment swale and then into the existing wet field located at the front of the building.

The project has been designed to remove pollutants in compliance with Env-Wq 1507.03. The majority of the runoff from the parking lots and roadways will be treated by infiltration for smaller storms up to a 2-year, and then by the micropool extended detention pond prior to discharge to the wetlands and small brook at the perimeter of the site. BMP worksheets are provided for these facilities later in the report.

MATCH LINE

MAP 64 LOT 19
PRITI HOSPITALITY, LLC
LEBANON, NH 03766
BK. 27921 PG. 367

RTE 120

WETLAND IMPACT 8
32 S.F.

213.97'
RIGHT OF WAY

MAP 64 LOT 9
MARY HITCHCOCK
MEMORIAL HOSPITAL
LEBANON, NH 03756
BK. 3451 PG. 353

N

SCALE: 1" = 40'
40 0 40 80

HANDICAP SIGN

BUILDING SETBACK (TYP)

PROPOSED SIGN

50' ACCESS EASEMENT
5,253 SQ.FT.
0.120 ACRES

PROPOSED UNDERGROUND LP TANKS

299E

5A/P

PC = 33+53.91

PT = 34+58.27

EC = 31+84.12

31+00

32+00

PT = 31+49.83

374B

20' DRAINAGE EASEMENT
16,428 SQ.FT. 0.377 ACRES

BUILDING SETBACK (TYP)

299B

DEV. POND EASEMENT
33,969 SQ.FT.
0.780 ACRES

Existing Site Specific Soil Line (Typ.)

5A/P

BUILDING SETBACK (TYP)

MAP 64 LOT 22
PINNACLE RT 120 AUTO, LLC
MILLER AUTO GROUP
LEBANON, NH 03766
BK. 3008 PG. 739

PC = 31+54.97

MATCH LINE

GRADING EASEMENT

MAP 51 LOT 11
CHALOUX PROPERTIES LLC
P O BOX 4430
MANCHESTER, NH 03108
BK. 3365 PG. 785

SEWER EASEMENT
2,653 SQ.FT.
0.150 ACRES

PC = 28+80.28

50' ACCESS EASEMENT
19,319 SQ.FT.
0.443 ACRES

PROPOSED SIGN

PROPOSED SIDE DIR.

PROPOSED STOP SIGN

STA: 29+41.48 LOBOMBARD ROAD
STA: 25+00 ENTRANCE ROAD

PROPOSED 8' WIDE CROSSWALK

ROAD GRADING & DRAINAGE EASEMENT 25,616 SQ.FT.
0.589 ACRES

310B

WETLAND IMPACT 5
240 S.F.

WETLAND IMPACT 6
2,000 S.F.

WETLAND IMPACT 6A
144 S.F.

BUILDING SETBACK (TYP)

LABOMBARD ROAD

GRADING EASEMENT

WETLAND IMPACT 7
683 S.F.

PT = 24+99.93

PC = 24+20.82

MAP 51 LOT 12
HATCH, FREDERIC & MARGARET
LEBANON, NH 03766
BK. 1314 PG.291
BK. 1314 PG.295

MAP 51 LOT 13
BENEVOLENT & PROTECTIVE ORDER
OF ELKS LODGE #2099
LEBANON, NH 03766
BK. 965 PG. 27

HOLDEN ENGINEERING & SURVEYING, inc.	56 Old Suncook Road – Unit #4 PO Box 459 Concord, N.H. 03302 (603) 225-6449 9 Constitution Drive Bedford, N.H. 03110 (603) 472-2078	SOILS CHALOUX PROPERTIES LLC. LEBANON, NEW HAMPSHIRE	Revisions Date: / Description / Dr. By / Chk. By	Book	Page	Date: 12-17-09 Scale: 1"=80' Dr. By: MK Ck By: Job No. 0920200 Sheet no.2 of 2

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Grafton County, New Hampshire

The Notch - Ex. Soils Rpt.



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:1,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grafton County, New Hampshire
Survey Area Data: Version 25, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 28, 2014—Apr 24, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
63B	Charlton fine sandy loam, 3 to 8 percent slopes, very stony	0.0	0.1%
114	Walpole-Binghamville complex	2.0	29.2%
310B	Quonset loamy sand, 3 to 8 percent slopes	2.7	39.6%
313	Deerfield loamy fine sand, 0 to 3 percent slopes	2.1	31.1%
Totals for Area of Interest		**6.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Grafton County, New Hampshire

63B—Charlton fine sandy loam, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh0r
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Charlton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Ridges, hills, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F142XB009VT - Acidic Till Upland
Hydric soil rating: No

Minor Components

Sutton, very stony
Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton, very stony
Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, very stony
Percent of map unit: 3 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

114—Walpole-Binghamville complex

Map Unit Setting
National map unit symbol: 9ffy
Elevation: 0 to 1,180 feet
Mean annual precipitation: 28 to 71 inches
Mean annual air temperature: 36 to 55 degrees F
Frost-free period: 90 to 250 days
Farmland classification: Farmland of local importance

Map Unit Composition
Walpole and similar soils: 45 percent
Binghamville and similar soils: 40 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Walpole

Setting

Landform: Lake terraces

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 21 inches: fine sandy loam
H3 - 21 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Description of Binghamville

Setting

Landform: Lake terraces
Parent material: Glaciolacustrine

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 18 inches: very fine sandy loam
H3 - 18 to 65 inches: very fine sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

Ecological site: F145XY004CT - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Not named wet
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Not named
Percent of map unit: 4 percent
Hydric soil rating: No

Dartmouth
Percent of map unit: 4 percent
Hydric soil rating: No

Deerfield
Percent of map unit: 3 percent
Hydric soil rating: No

310B—Quonset loamy sand, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9fh8
Elevation: 0 to 1,130 feet
Mean annual precipitation: 28 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 120 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition
Quonset and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quonset

Setting
Parent material: Outwash

Typical profile
H1 - 0 to 6 inches: gravelly fine sandy loam
H2 - 6 to 16 inches: very gravelly loamy sand
H3 - 16 to 60 inches: very gravelly sand

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained

Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Hydric soil rating: No

Deerfield

Percent of map unit: 7 percent
Hydric soil rating: No

313—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash deltas, outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand

Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash deltas, outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash deltas, outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Outwash terraces, outwash plains, kame terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Concave, convex
Hydric soil rating: No

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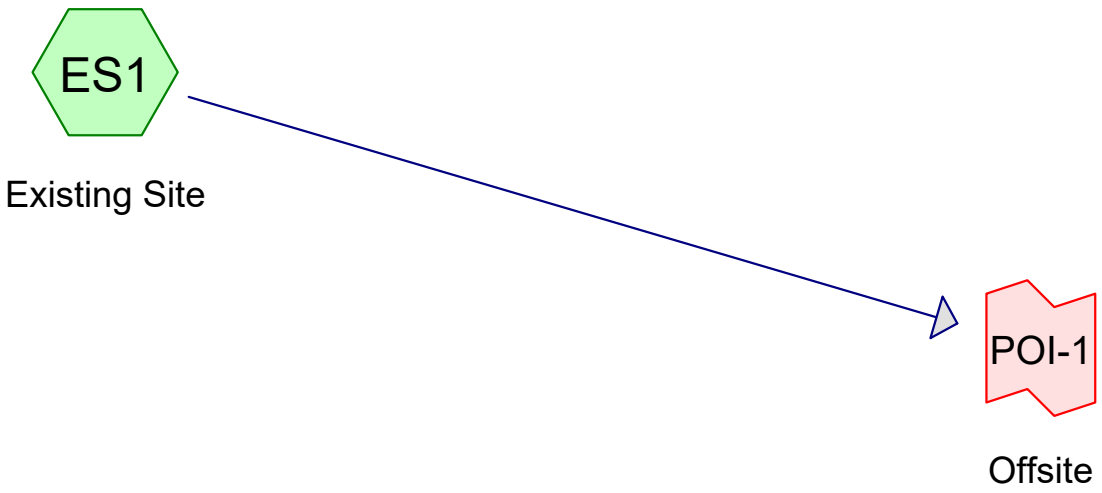


Subcat Reach Pond Link

Routing Diagram for 19324 Pre
Prepared by BEK, Printed 12/9/2021
HydroCAD® 10.10-6a s/n 02524 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
22,768	30	Meadow, non-grazed, HSG A (ES1)
124,822	58	Meadow, non-grazed, HSG B (ES1)
147,590	**54**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
22,768	HSG A	ES1
124,822	HSG B	ES1
0	HSG C	
0	HSG D	
0	Other	
147,590		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=147,590 sf 0.00% Impervious Runoff Depth=0.07"
Flow Length=457' Tc=11.2 min CN=54 Runoff=0.03 cfs 837 cf

Link POI-1: Offsite Inflow=0.03 cfs 837 cf
Primary=0.03 cfs 837 cf

Total Runoff Area = 147,590 sf Runoff Volume = 837 cf Average Runoff Depth = 0.07"
100.00% Pervious = 147,590 sf 0.00% Impervious = 0 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=147,590 sf 0.00% Impervious Runoff Depth=0.34"
Flow Length=457' Tc=11.2 min CN=54 Runoff=0.89 cfs 4,165 cf

Link POI-1: Offsite Inflow=0.89 cfs 4,165 cf
Primary=0.89 cfs 4,165 cf

Total Runoff Area = 147,590 sf Runoff Volume = 4,165 cf Average Runoff Depth = 0.34"
100.00% Pervious = 147,590 sf 0.00% Impervious = 0 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=147,590 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=457' Tc=11.2 min CN=54 Runoff=2.44 cfs 7,973 cf

Link POI-1: Offsite Inflow=2.44 cfs 7,973 cf
Primary=2.44 cfs 7,973 cf

Total Runoff Area = 147,590 sf Runoff Volume = 7,973 cf Average Runoff Depth = 0.65"
100.00% Pervious = 147,590 sf 0.00% Impervious = 0 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=147,590 sf 0.00% Impervious Runoff Depth=0.99"
Flow Length=457' Tc=11.2 min CN=54 Runoff=4.26 cfs 12,209 cf

Link POI-1: Offsite Inflow=4.26 cfs 12,209 cf
Primary=4.26 cfs 12,209 cf

Total Runoff Area = 147,590 sf Runoff Volume = 12,209 cf Average Runoff Depth = 0.99"
100.00% Pervious = 147,590 sf 0.00% Impervious = 0 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment ES1: Existing Site Runoff Area=147,590 sf 0.00% Impervious Runoff Depth=1.45"
Flow Length=457' Tc=11.2 min CN=54 Runoff=6.68 cfs 17,853 cf

Link POI-1: Offsite Inflow=6.68 cfs 17,853 cf
Primary=6.68 cfs 17,853 cf

Total Runoff Area = 147,590 sf Runoff Volume = 17,853 cf Average Runoff Depth = 1.45"
100.00% Pervious = 147,590 sf 0.00% Impervious = 0 sf

Summary for Subcatchment ES1: Existing Site

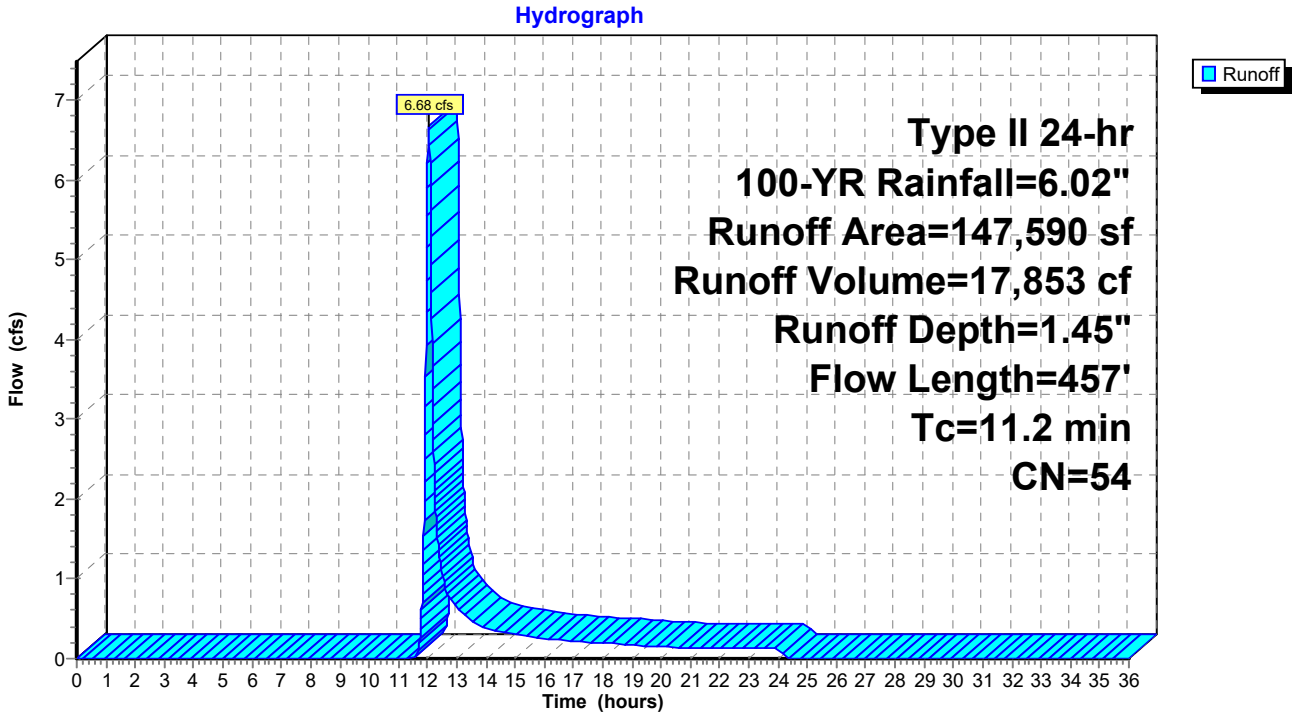
Runoff = 6.68 cfs @ 12.04 hrs, Volume= 17,853 cf, Depth= 1.45"
Routed to Link POI-1 : Offsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=6.02"

Area (sf)	CN	Description
22,768	30	Meadow, non-grazed, HSG A
124,822	58	Meadow, non-grazed, HSG B
147,590	54	Weighted Average
147,590		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		**Sheet Flow,** Range n= 0.130 P2= 2.50"
5.5	357	0.0240	1.08		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.2	457	Total			

Subcatchment ES1: Existing Site

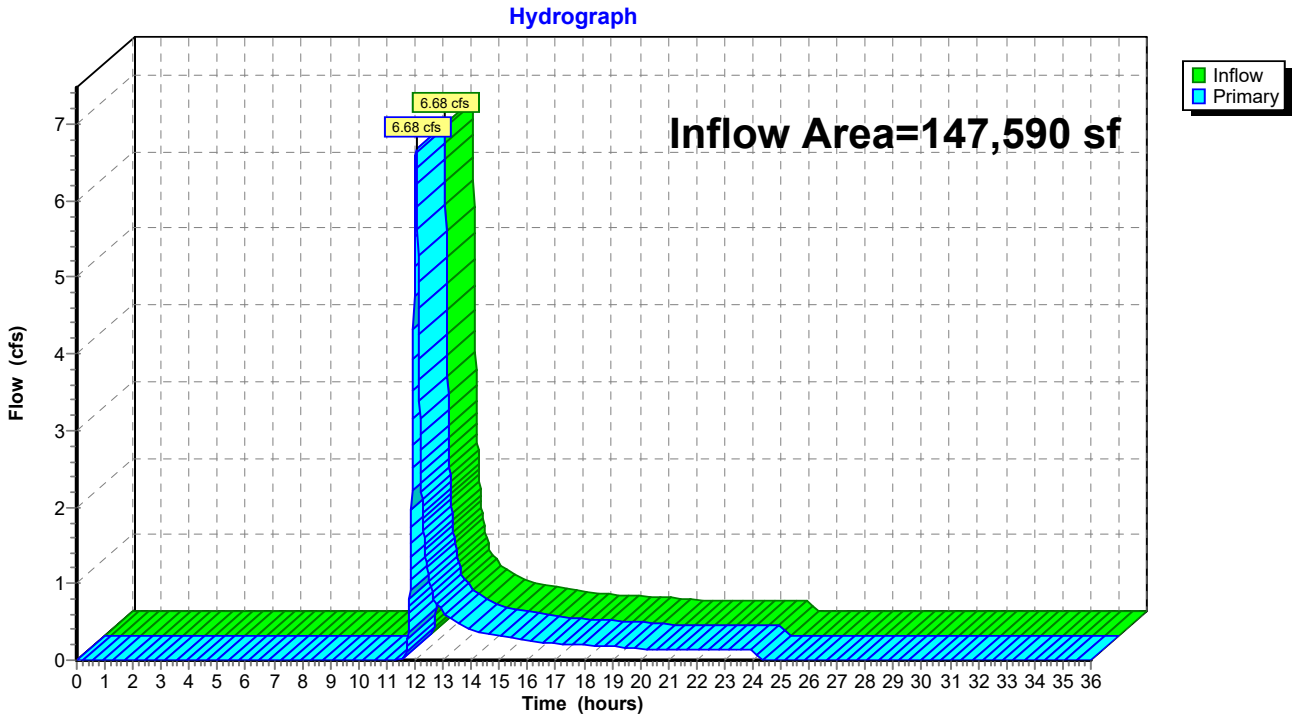


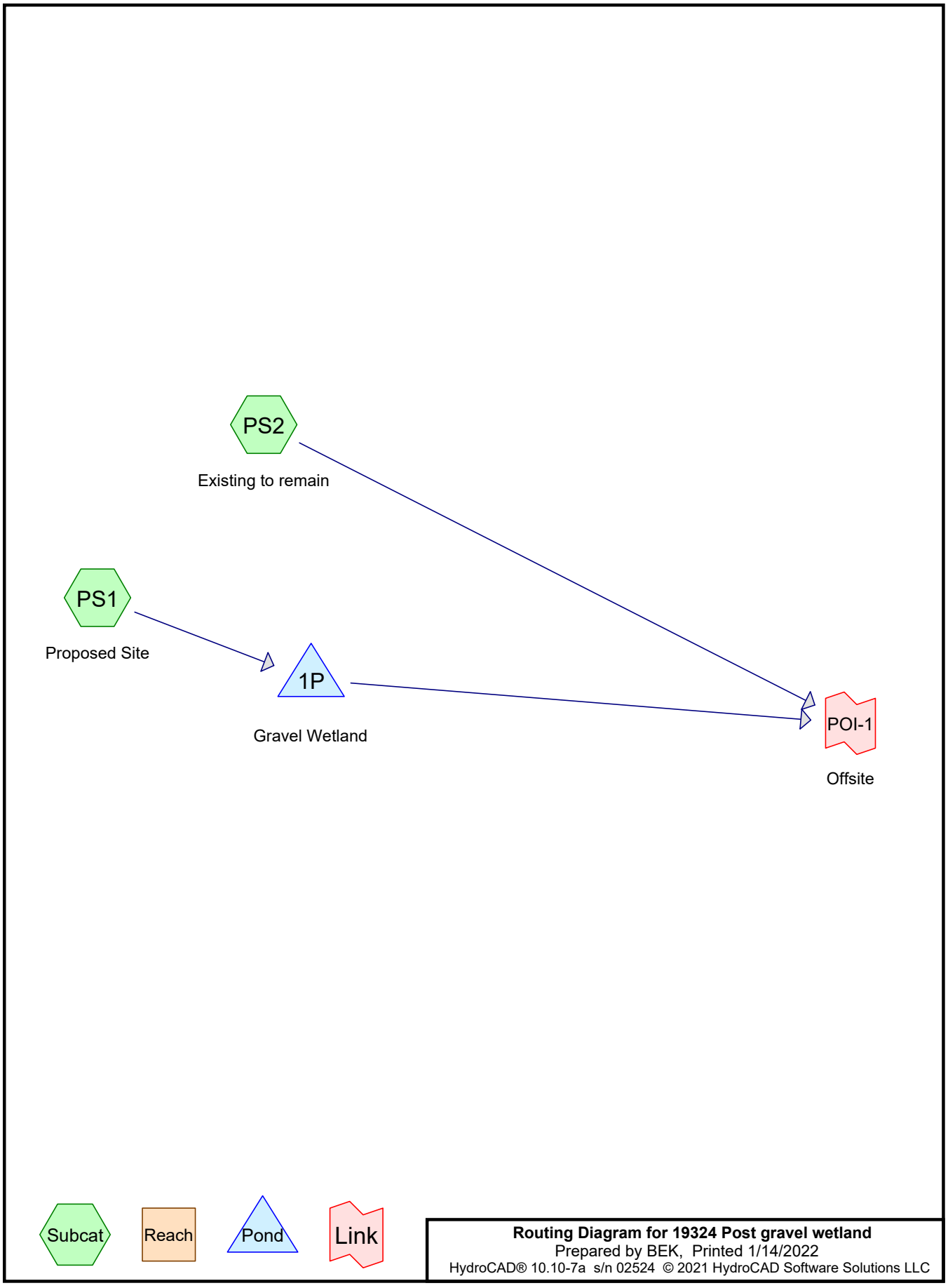
Summary for Link POI-1: Offsite

Inflow Area = 147,590 sf, 0.00% Impervious, Inflow Depth = 1.45" for 100-YR event
Inflow = 6.68 cfs @ 12.04 hrs, Volume= 17,853 cf
Primary = 6.68 cfs @ 12.04 hrs, Volume= 17,853 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link POI-1: Offsite




PS2
Existing to remain
PS1
Proposed Site
1P
Gravel Wetland
POI-1
Offsite
Subcat
Reach
Pond
Link
Routing Diagram for 19324 Post gravel wetland
Prepared by BEK, Printed 1/14/2022
HydroCAD® 10.10-7a s/n 02524 © 2021 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
9,863	39	>75% Grass cover, Good, HSG A (PS1)
32,869	61	>75% Grass cover, Good, HSG B (PS1)
6,973	30	Meadow, non-grazed, HSG A (PS2)
62,850	58	Meadow, non-grazed, HSG B (PS2)
5,932	98	Paved parking, HSG A (PS1)
29,103	98	Paved parking, HSG B (PS1)
147,590	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
22,768	HSG A	PS1, PS2
124,822	HSG B	PS1, PS2
0	HSG C	
0	HSG D	
0	Other	
147,590		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Proposed Site Runoff Area=77,767 sf 45.05% Impervious Runoff Depth=0.65"
Tc=5.0 min CN=75 Runoff=2.10 cfs 4,216 cf

Subcatchment PS2: Existing to remain Runoff Area=69,823 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=465' Tc=19.3 min CN=55 Runoff=0.02 cfs 480 cf

Pond 1P: Gravel Wetland Peak Elev=593.34' Storage=4,216 cf Inflow=2.10 cfs 4,216 cf
Outflow=0.00 cfs 0 cf

Link POI-1: Offsite Inflow=0.02 cfs 480 cf
Primary=0.02 cfs 480 cf

Total Runoff Area = 147,590 sf Runoff Volume = 4,696 cf Average Runoff Depth = 0.38"
76.26% Pervious = 112,555 sf 23.74% Impervious = 35,035 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Proposed Site Runoff Area=77,767 sf 45.05% Impervious Runoff Depth=1.36"
Tc=5.0 min CN=75 Runoff=4.51 cfs 8,805 cf

Subcatchment PS2: Existing to remain Runoff Area=69,823 sf 0.00% Impervious Runoff Depth=0.37"
Flow Length=465' Tc=19.3 min CN=55 Runoff=0.35 cfs 2,171 cf

Pond 1P: Gravel Wetland Peak Elev=594.09' Storage=7,180 cf Inflow=4.51 cfs 8,805 cf
Outflow=0.08 cfs 1,990 cf

Link POI-1: Offsite Inflow=0.35 cfs 4,161 cf
Primary=0.35 cfs 4,161 cf

Total Runoff Area = 147,590 sf Runoff Volume = 10,976 cf Average Runoff Depth = 0.89"
76.26% Pervious = 112,555 sf 23.74% Impervious = 35,035 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Proposed Site Runoff Area=77,767 sf 45.05% Impervious Runoff Depth=1.97"
Tc=5.0 min CN=75 Runoff=6.55 cfs 12,782 cf

Subcatchment PS2: Existing to remain Runoff Area=69,823 sf 0.00% Impervious Runoff Depth=0.70"
Flow Length=465' Tc=19.3 min CN=55 Runoff=0.92 cfs 4,060 cf

Pond 1P: Gravel Wetland Peak Elev=594.19' Storage=7,613 cf Inflow=6.55 cfs 12,782 cf
Outflow=0.29 cfs 5,966 cf

Link POI-1: Offsite Inflow=0.92 cfs 10,026 cf
Primary=0.92 cfs 10,026 cf

Total Runoff Area = 147,590 sf Runoff Volume = 16,842 cf Average Runoff Depth = 1.37"
76.26% Pervious = 112,555 sf 23.74% Impervious = 35,035 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Proposed Site Runoff Area=77,767 sf 45.05% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=75 Runoff=8.51 cfs 16,665 cf

Subcatchment PS2: Existing to remain Runoff Area=69,823 sf 0.00% Impervious Runoff Depth=1.06"
Flow Length=465' Tc=19.3 min CN=55 Runoff=1.59 cfs 6,142 cf

Pond 1P: Gravel Wetland Peak Elev=594.35' Storage=8,357 cf Inflow=8.51 cfs 16,665 cf
Outflow=0.87 cfs 9,848 cf

Link POI-1: Offsite Inflow=2.30 cfs 15,990 cf
Primary=2.30 cfs 15,990 cf

Total Runoff Area = 147,590 sf Runoff Volume = 22,807 cf Average Runoff Depth = 1.85"
76.26% Pervious = 112,555 sf 23.74% Impervious = 35,035 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PS1: Proposed Site Runoff Area=77,767 sf 45.05% Impervious Runoff Depth=3.30"
Tc=5.0 min CN=75 Runoff=10.84 cfs 21,380 cf

Subcatchment PS2: Existing to remain Runoff Area=69,823 sf 0.00% Impervious Runoff Depth=1.53"
Flow Length=465' Tc=19.3 min CN=55 Runoff=2.49 cfs 8,898 cf

Pond 1P: Gravel Wetland Peak Elev=594.69' Storage=10,103 cf Inflow=10.84 cfs 21,380 cf
Outflow=1.89 cfs 14,563 cf

Link POI-1: Offsite Inflow=4.37 cfs 23,461 cf
Primary=4.37 cfs 23,461 cf

Total Runoff Area = 147,590 sf Runoff Volume = 30,278 cf Average Runoff Depth = 2.46"
76.26% Pervious = 112,555 sf 23.74% Impervious = 35,035 sf

Summary for Subcatchment PS1: Proposed Site

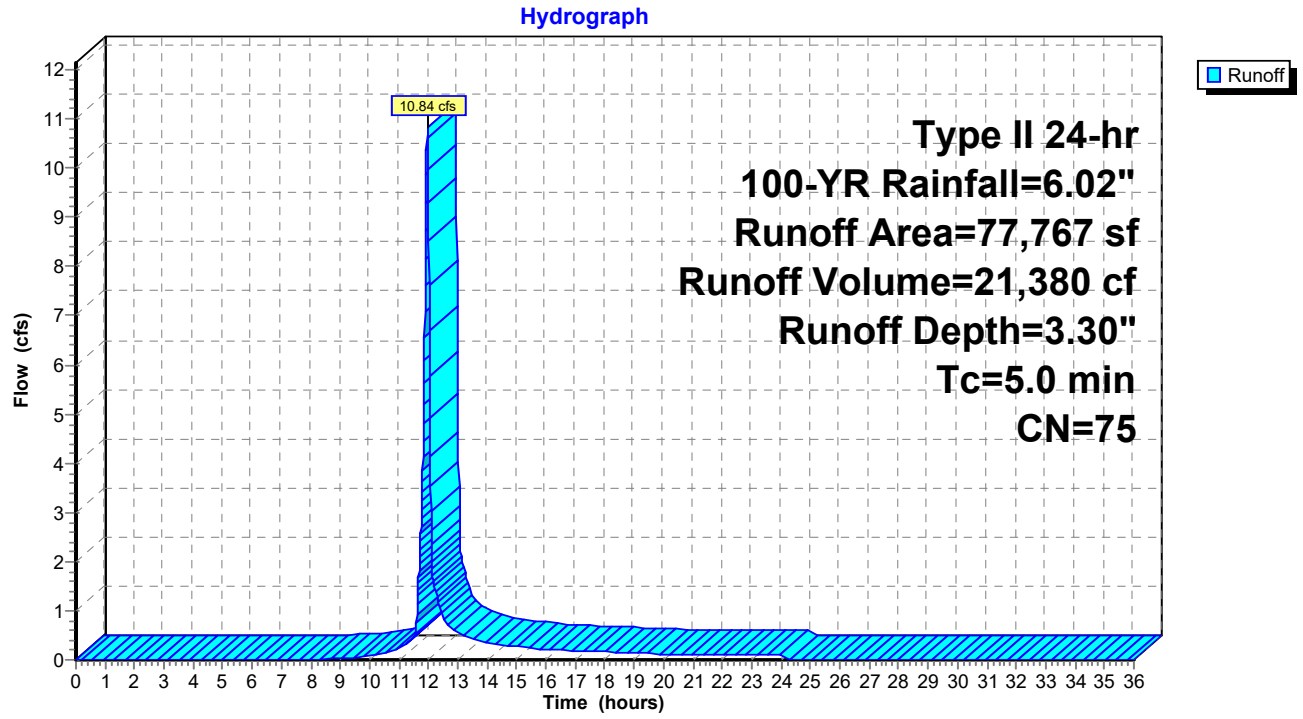
Runoff = 10.84 cfs @ 11.96 hrs, Volume= 21,380 cf, Depth= 3.30"
Routed to Pond 1P : Gravel Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=6.02"

Area (sf)	CN	Description
29,103	98	Paved parking, HSG B
32,869	61	>75% Grass cover, Good, HSG B
9,863	39	>75% Grass cover, Good, HSG A
5,932	98	Paved parking, HSG A
77,767	75	Weighted Average
42,732		54.95% Pervious Area
35,035		45.05% Impervious Area

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

Subcatchment PS1: Proposed Site



Summary for Subcatchment PS2: Existing to remain

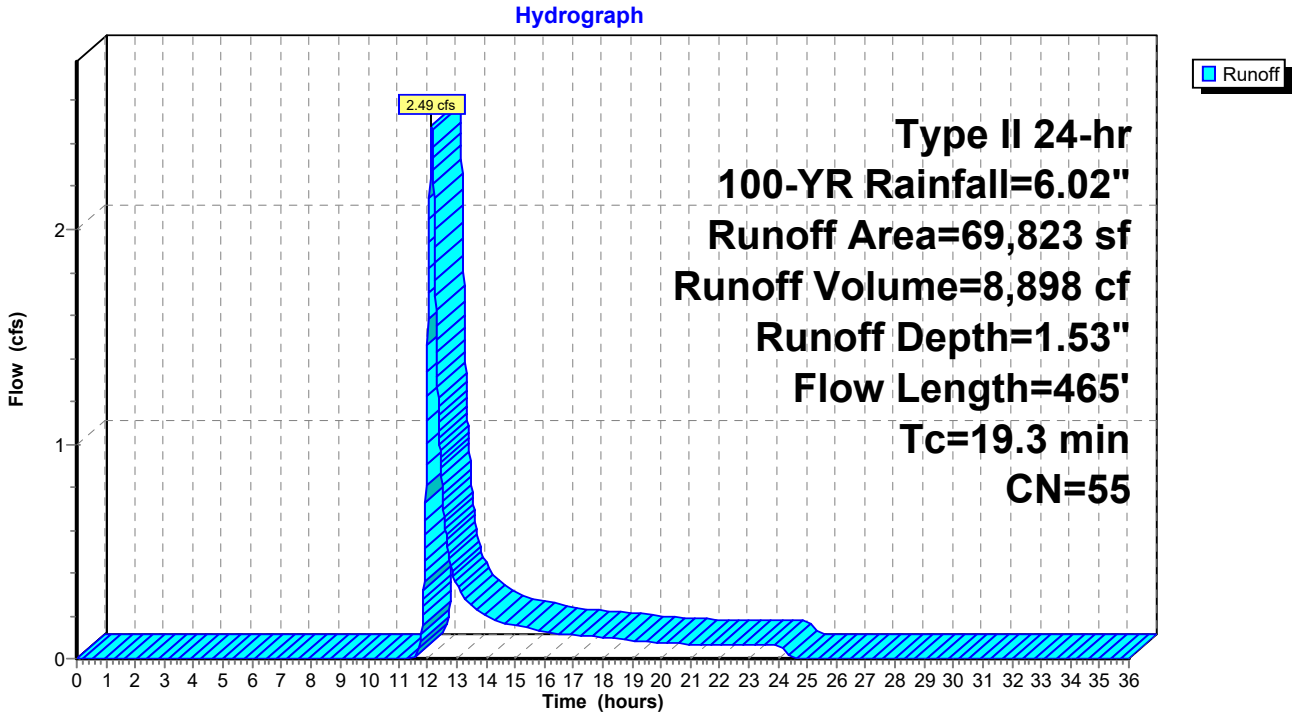
Runoff = 2.49 cfs @ 12.14 hrs, Volume= 8,898 cf, Depth= 1.53"
Routed to Link POI-1 : Offsite

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=6.02"

Area (sf)	CN	Description
6,973	30	Meadow, non-grazed, HSG A
62,850	58	Meadow, non-grazed, HSG B
69,823	55	Weighted Average
69,823		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	100	0.0800	0.29		**Sheet Flow,** Range n= 0.130 P2= 2.50"
13.6	365	0.0080	0.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.3	465	Total			

Subcatchment PS2: Existing to remain



Summary for Pond 1P: Gravel Wetland

Inflow Area = 77,767 sf, 45.05% Impervious, Inflow Depth = 3.30" for 100-YR event
Inflow = 10.84 cfs @ 11.96 hrs, Volume= 21,380 cf
Outflow = 1.89 cfs @ 12.13 hrs, Volume= 14,563 cf, Atten= 83%, Lag= 10.0 min
Primary = 1.89 cfs @ 12.13 hrs, Volume= 14,563 cf
Routed to Link POI-1 : Offsite

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 594.69' @ 12.13 hrs Surf.Area= 5,257 sf Storage= 10,103 cf

Plug-Flow detention time= 208.2 min calculated for 14,559 cf (68% of inflow)
Center-of-Mass det. time= 103.4 min (925.6 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	591.60'	5,033 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	591.60'	8,190 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#3	592.50'	1,800 cf	**Forebay (Prismatic)** Listed below (Recalc)
		15,022 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
591.60	447	0	0
592.50	782	553	553
593.50	1,224	1,003	1,556
594.50	1,728	1,476	3,032
595.50	2,273	2,001	5,033

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
591.60	1,112	0	0
592.50	1,514	1,182	1,182
593.50	2,031	1,773	2,954
594.50	2,607	2,319	5,273
595.50	3,226	2,917	8,190

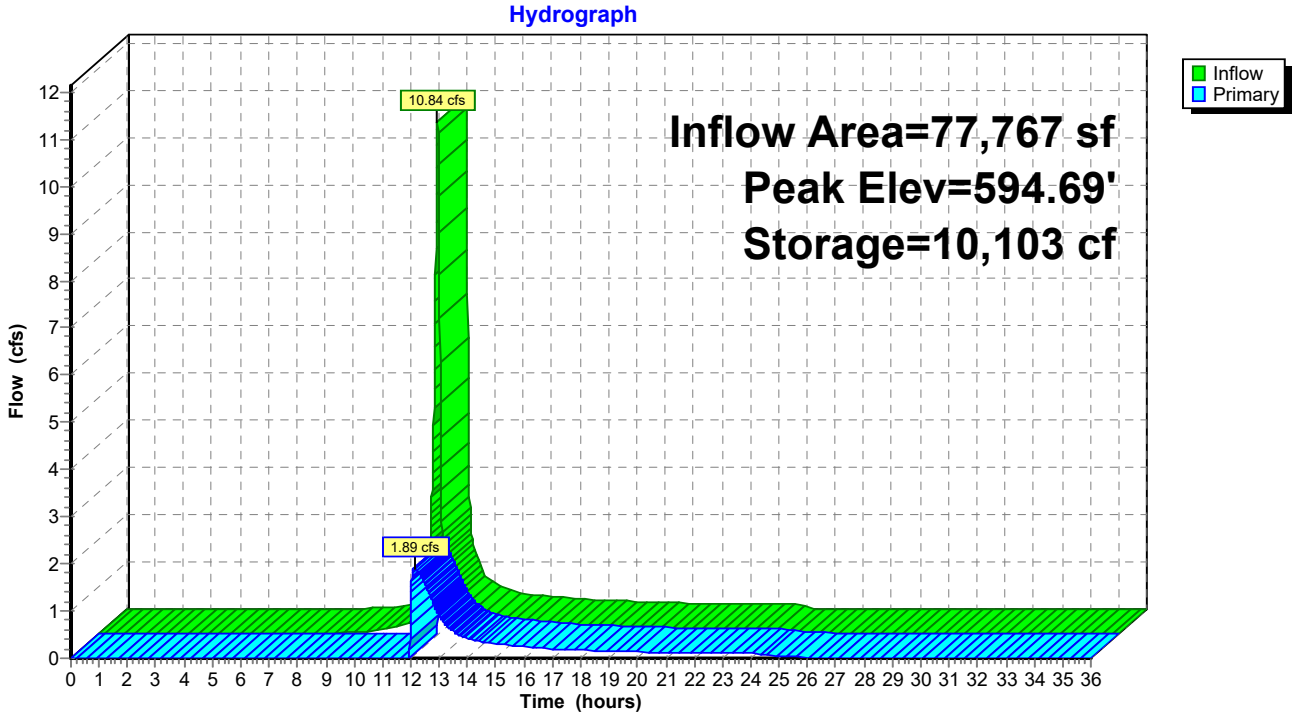
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
592.50	182	0	0
594.00	507	517	517
595.00	779	643	1,160
595.70	1,050	640	1,800

Device	Routing	Invert	Outlet Devices
#1	Primary	592.50'	**18.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 592.50' / 591.00' S= 0.0375 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	594.90'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=1.89 cfs @ 12.13 hrs HW=594.69' (Free Discharge)
└**1=Culvert** (Passes 1.89 cfs of 10.22 cfs potential flow)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 1.89 cfs @ 3.21 fps)

Pond 1P: Gravel Wetland

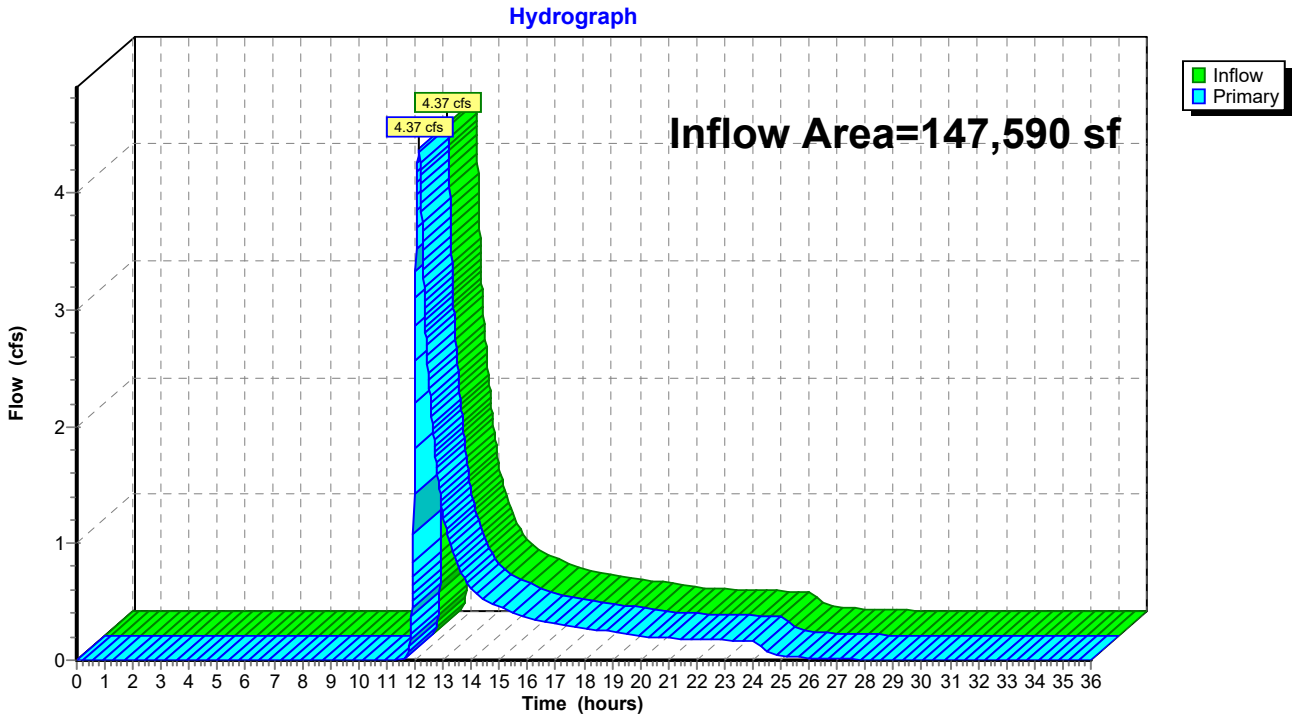


Summary for Link POI-1: Offsite

Inflow Area = 147,590 sf, 23.74% Impervious, Inflow Depth > 1.91" for 100-YR event
Inflow = 4.37 cfs @ 12.14 hrs, Volume= 23,461 cf
Primary = 4.37 cfs @ 12.14 hrs, Volume= 23,461 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link POI-1: Offsite



GRAVEL WETLAND DESIGN CRITERIA
(Env-Wq 1508.05)

Type/Node Name: **The Notch - Gravel Wetland 1P**

Enter the node name in the drainage analysis if applicable

1.79	ac	A = Area draining to the practice	
0.79	ac	A_I = Impervious area draining to the practice	
0.44	decimal	I = percent impervious area draining to the practice, in decimal form	
0.45	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.80	ac-in	WQV= 1" x Rv x A	
2,906	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
291	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
1,308	cf	45% x WQV (check calc for gravel wetland treatment bay volume)	
470	cf	V_{SED} = sediment forebay volume	← ≥ 10%WQV
1,476	cf	V_{TB1} = volume of treatment bay 1 [1]	← ≥ 45%WQV
4,114	cf	V_{TB2} = volume of treatment bay 2 [1]	← ≥ 45%WQV
594.00	ft	E_{WQV} = elevation of WQV (attach stage-storage table)	
-	cfs	Q_{WQV} = discharge at the E_{WQV} (attach stage-discharge table)	← $<2Q_{avg}$
-	hours	T_{ED} = drawdown time of extended detention = $2WQV/Q_{WQV}$	← ≥ 24-hrs
3.00	:1	Pond side slopes	← ≥3:1
594.20	ft	Elevation of SHWT	
591.60	ft	Epp = Elevation of the permanent pool (elevation of lowest orifice) [2]	← ≥ E_{SHWT} - 2 ft
40.00	ft	Length of the flow path between the inlet and outlet in each cell	← ≥ 15 ft
cleanout		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of ≤6")?	
594.20	ft	Peak elevation of the 50-year storm event (E_{50})	
595.50	ft	Berm elevation of the pond	
YES		E_{50} ≤ the berm elevation?	← yes

Qualified professional that developed the planting plan:
Name, Profession:

1. Volume stored above the wetland soil and below the high flow by-pass.
2. 4" to 8" below the wetland soil. If lowest orifice is less than 2 feet below SHWT, and saturated hydraulic conductivity (Ksat) is greater than 0.015 in/hr, the system must be lined.

Designer's Notes:

The Notch Climbing Gym
Stormwater Appurtenance Inspection and Maintenance Manual

Introduction

The Notch Climbing Gym project contains stormwater appurtenances which must be inspected and maintained on a regular basis. These systems include Ponds/Detention Systems, storm drainage piping and catch basins. In order to ensure the long-term effectiveness of approved stormwater practices, The Owner shall provide for on-going inspections and maintenance (I&M) for so long as the practices are reasonably expected to be used.

This text outlines the inspection and maintenance requirements of each system.

(1) The party responsible for implementing the required reporting, inspection, and maintenance activities identified in this I&M Manual shall be:

Noah Lynd and Josh Garrison
PO Box 302
Meriden, NH 03770

(2) The frequency of inspections shall be as follows:

Gravel Wetland System:

- 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.
- At least once annually, system should be inspected for drawdown time. If system does not drain to the level of the outlet invert within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to unclog underdrain systems (as applicable), including but not limited to removal of accumulated sediments and or reconstruction of system as appropriate.

Catch Basins

- At a minimum, it is recommended that catch basins be inspected at least twice annually, once following snow-melt and once following leafdrop, and cleaned as indicated by inspection.

Drip Edge

- At a minimum, it is recommended that drip edges be inspected at least twice annually, once following snow-melt and once following leafdrop, and cleaned as indicated by inspection. At this time they should be inspected for siltation, and if siltation is visible from the surface, the drip edge stone shall be replaced.

(3) An inspection checklist to be used during each inspection Log can be found starting on Pages 3-5 of this manual.

(4) An I&M Log shall be used to document each inspection and maintenance activity. A blank I&M Log can be found on Page 6 of this manual.

(5) A Deicing Log shall be used to track the amount and type of deicing materials applied to surfaces within the PBP site that drain to the gravel wetland. A blank Deicing Log can be found on Page 7 of this manual.

(6) A plan showing the locations of the site and the stormwater appurtenances is included with this manual. The Infiltration Basin and appurtenances are shown on the Site, Grading, Drainage and Utility Plan.

(7) If any invasive species begin to grow in the stormwater ponds they shall be manually removed immediately and disposed properly. Herbicides are not recommended.

This I&M Manual and adherence to it are requirements of the Town's stormwater permit.

All record keeping required by the I&M manual shall be maintained by the responsible party(ies) and be made available to the department upon request.

The Owner shall initiate the I&M activities upon the completion of all terrain alteration activities that direct stormwater to each appurtenance.

The Owner may contract with one or more third parties to conduct the I&M activities, but shall remain responsible for ensuring the long-term effectiveness of the stormwater practices.

If ownership of the property is transferred, the new owner(s) shall become the responsible party(ies).

I&M Checklist

Inspector:	Date:
Current Weather:	Time:
Rainfall in the Last 24 Hours (in): Can be checked here: http://www.nrcc.cornell.edu/page_nowdata.html	

Infiltration Basin Components

Items Inspected (Frequency)	Checked		Maintenance Needed		Maintenance Performed	
DEBRIS CLEANOUT (M)	Y	N	Y	N	Y	N
1. Ponds, Infiltration basin system and contributing areas clean of debris						
2. No dumping of yard wastes into ponds						
3. Litter (trash, debris, etc.) have been removed						
VEGETATION (M)						
4. No evidence of erosion.						
5. Is plant composition still according to plans						
6. No placement of inappropriate plants.						
7. No evidence of invasive species.						
DEWATERING AND SEDIMENTATION (A, AMS)						
8. Surface ponds dewater between storms.						
9. No evidence of standing water.						
10. No evidence of surface clogging.						
OUTLETS/OVERFLOW SPILLWAY (2A, AMS)						
11. Good condition, no need for repair						
12. No evidence of erosion.						
13. No evidence of any blockages.						
INTEGRITY OF Infiltration Basin System and Appurtenances (2A, AMS)						
14. System has not been blocked or filled inappropriately.						
15. Mulch layer is still in place (depth of at least 3”).						
16. Noxious plants or weeds removed.						

Inspection Frequency Key: A= Annual, 2A=Twice Annually, M=Monthly, AMS=After Major Storm (2.5”)

(cont.)

I&M Checklist (cont.)

Inspector:	Date:
Current Weather:	Time:
Rainfall in the Last 24 Hours (in): Can be checked here: http://www.nrcc.cornell.edu/page_nowdata.html	

Gravel Wetland Components

Items Inspected (Frequency)	Checked		Maintenance Needed		Maintenance Performed	
DEBRIS CLEANOUT (M)	Y	N	Y	N	Y	N
17. Gravel wetland and contributing areas clean of debris						
18. No dumping of yard wastes into gravel wetland						
19. Litter (trash, debris, etc.) have been removed						
VEGETATION (M)						
20. No evidence of erosion.						
21. Is plant composition still according to plans						
22. No placement of inappropriate plants.						
23. No evidence of invasive species.						
DEWATERING AND SEDIMENTATION (A, AMS)						
24. Gravel wetland surface dewaters between storms.						
25. No evidence of standing water.						
26. No evidence of surface clogging.						
OUTLETS/OVERFLOW SPILLWAY (2A, AMS)						
27. Good condition, no need for repair						
28. No evidence of erosion.						
29. No evidence of any blockages.						
INTEGRITY OF SYSTEM						
30. Chambers have not been blocked or filled inappropriately.						
31. Gravel bed cleaned of accumulated sediment.						
32. Noxious plants or weeds removed.						

Inspection Frequency Key **A= Annual, 2A=Twice Annually, M= Monthly, AMS= After Major Storm (2.5")**

(cont.)

I&M Checklist (cont.)

Inspector:	Date:
Current Weather:	Time:
Rainfall in the Last 24 Hours (in): Can be checked here: http://www.nrcc.cornell.edu/page_nowdata.html	

Catch Basins

Items Inspected (Frequency)	Checked		Maintenance Needed		Maintenance Performed	
DEBRIS CLEANOUT (2A)	Y	N	Y	N	Y	N
33. Contributing areas clean of debris						
34. Litter (trash, debris, etc.) have been removed						
35. Sediment removed if approaching half the sump depth.						
36. Floating hydrocarbons removed immediately by skimming, absorbent materials, or other method and disposed in conformance with applicable state and federal regulations.						

Inspection Frequency Key **A= Annual, 2A=Twice Annually, M= Monthly, AMS= After Major Storm (2.5")**

Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Date by which outstanding maintenance must be completed:_____

Inspector's Signature:_____

I&M Log

Date	Appurtenances Inspected	Maintenance Performed	Inspector's Signature

Deicing Log

Date	Area Deiced	Deicing Material	Amount Used	Deicer's Signature

Agenda
Planning Board
February 14, 2022

Agenda Item #3E
Public Hearing Items

Robert & John Oakes, 92 Riverside Drive (Tax Map 111, Lot 16), zoned RL-1

PB2022-06-SPR

CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-06-SPR – *postponed from 1/10/22*

APPLICATION INFORMATION

Agenda Item: 3.E

Application ID: PB2022-06-SPR

Application Type:
Site Plan Review to construct a +/- 25,976 sq. ft. commercial self-storage unit facility

Property Location & Tax Map:
92 Riverside Drive (Tax Map 111, Lot 16)

Applicant/Property Owner:
Robert & John Oakes

Zoning District:
Rural Lands One (RL-1) District

Property Size:
+/-3.53 acres *(per the applicant's site plan)*

Existing Improvements and Use:
+/-1,938 sq. ft. one-family dwelling *(per the City Assessor's records)*; a conforming use in the RL-1 District

Proposed Improvements and Use:
A self-storage warehouse facility; one-family dwelling to be removed

Overlay Districts:
None

Future Land Use Map:
Residential – Low

Staff Attachments:
Letter dated February 2, 2022, from Steve Keach, PE, of Keach-Nordstrom Associates, Inc. (engineering review of revised plans, 6 pages)

LEGAL NOTICE

Robert & John Oakes, 92 Riverside Drive (Tax Map 111, Lot 16), zoned RL-1: Request for Site Plan Review to construct a +/-26,176 sq. ft. commercial self-storage unit facility together with related site improvements. PB2022-06-SPR

PLANS AND APPLICATION MATERIALS

- Application form (1 page)
- Letter dated December 13, 2021, from Daniel Nash, of Advanced Geomatics & Design (project description; 2 pages)
- Letter dated December 13, 2021, from Daniel Nash, of Advanced Geomatics & Design (support statement; 1 page)
- Letter dated January 24, 2022, from Daniel Nash, of Advanced Geomatics & Design (response to staff comments; 2 pages)
- Application for Waivers (2 pages)
- Site Plan Review Regulations Technical Checklist (10 pages)
- Memo dated December 15, 2021, from Corey Mack, PE of WCG (fire truck tracking path analysis, 4 pages)
- Plan set titled "Oakes Storage, LLC," dated December 13, 2021, last revised January 24, 2022, prepared by Advanced Geomatics and Design, PN: 20-001 (16 sheets)

On-line only (not included with Planning Board hard copy agenda packets):

- Plan sheet titled, "Recharge System," dated December 12, 2021, last revised January 26, 2022, prepared by Advanced Geomatics and Design
- Lighting specifications by RAB for W17-30LY/PCU wall pack fixtures and IVAT3-45LPA730KU/WS2 pole-mounted fixtures (5 pages)
- Letter dated December 13, 2021, revised January 26, 2022, from Daniel Nash, of Advanced Geomatics & Design (drainage report; 1 page plus 17 pages of attachments)
- Oakes Storage, LLC, Stormwater Operation and Maintenance Plan, dated December 23, 2021 (6 pages)

COMPLETENESS REVIEW & STAFF COMMENTS

In order to accept jurisdiction and commence review of the applicant's proposal, the Planning Board must first determine that the application is complete. NH RSA 676:4, I(c)(1). Section 4.7.C.2 ("Initial Completeness Determination") of the Site Plan Review Regulations provides as follows:

a. The Planning & Development Department shall review the application for completeness pursuant to the requirements of Section 4.7.A and Section 5.1. If the Planning & Development Department finds that the application is complete, or lacks only those items or documents for which waiver requests have been submitted, then the Planning & Development Department shall make a preliminary determination of whether the waiver requests meet the standards of Section 7.2 of these Regulations, and if so, then the Planning & Development Department shall recommend to the Board acceptance of the application for review.

b. If the Planning & Development Department finds that the application is not complete or that one or more of the waiver requests do not meet the standards of Section 7.2, the Planning & Development Department shall so advise the Applicant, who can elect to complete the missing submission requirements. […]

The Planning and Development Department has reviewed the application in accordance with the Lebanon Site Plan Review Regulations and, per Section 4.7.C.2.b, has determined that the following requirements of the Site Plan Review Regulations have not been satisfied:

- **Section 5.1.E.6** – requiring contours at 5 ft. intervals (rather than 2 ft. intervals) for all areas where the existing or proposed grade is 20% or greater.
- **Section 5.1.E.16** – perimeter landscaping calculation requirements.
- **Section 6.2.B** – perimeter landscaping design requirements.
- **Section 6.6** – additional information is needed to verify the project's compliance with the stormwater management design requirements. *See* comments #20 and #24 in the attached letter dated February 2, 2022, from the Board's Reviewing Engineer, Steve Keach, PE (the Board's Reviewing Engineer for this project).

If the Board accepts the application as complete, staff recommends that prior to closing the public hearing, the applicant should either provide the required information or apply for a waiver (or waivers).

APPLICATION OVERVIEW

The subject lot was formerly a 2.94-acre triangular-shaped property located to the east of the I-89 interchange at Exit 17, and is bounded by Fellows Hill Road to the north, Dartmouth College Highway to the southeast, and Riverside Drive to the west (see Figure 1). It was improved with a one-family dwelling accessed from the Fellows Hill Road side of the property (see Figure 2). Recently, the City Council discontinued an abutting portion of Fellows Hill Road, and also sold its lot across Fellows Hill Road (formerly identified as Tax Map 111, Lot 3-1) to the applicant. The applicant has voluntarily merged the lots (including the former Fellows Hill Road right-of-way) so that the total size of the property is now +/- 3.53 acres (PB2022-11-VLM).

The applicants have obtained Variances from the Zoning Board of Adjustment to construct "commercial self storage units" – which is not a permitted use in the RL-1 District – and from the maximum building coverage requirement of 15% for Class 3 lots in the RL-1 District (ZB2020-08-VAR & ZB2020-36-VAR). In furtherance of the Variance approvals, the applicant has submitted a site plan application to construct a +/-25,976 sq. ft., 5-building commercial self-storage unit facility, together with related site improvements.

Figure 1. Location Map.

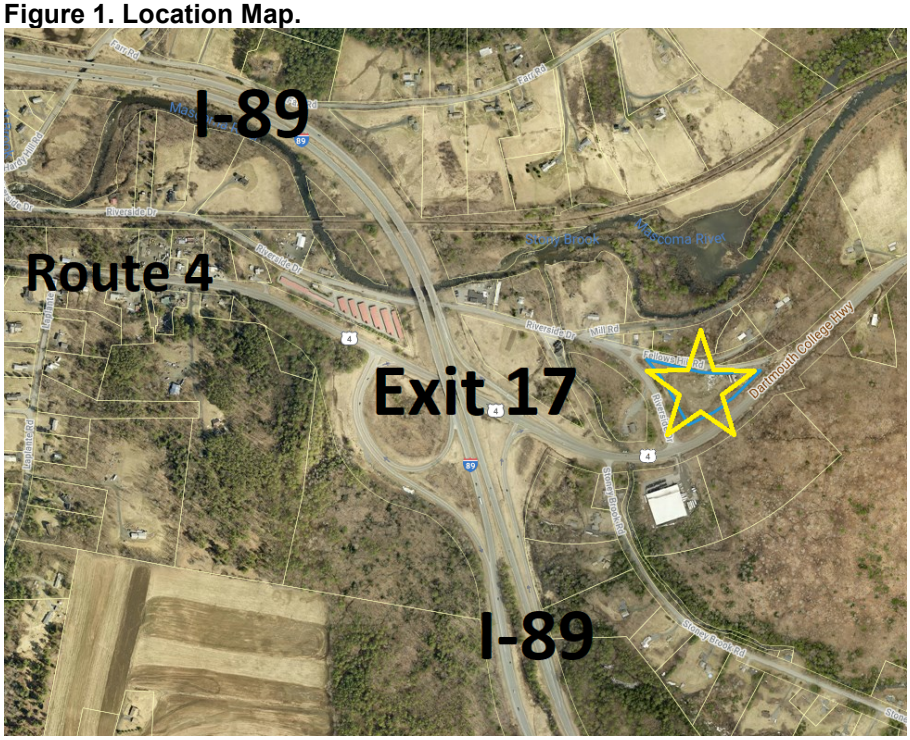


Figure 2. Aerial View of Subject Property (looking south).



©2018 Eagleview (image taken 5/2/2018)

STAFF COMMENTS

PLANNING

I. SITE PLAN REVIEW REGULATIONS:

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.

Waiver Requests

Pursuant to Section 7.1 ("Waiver of Regulations"), the applicant has requested waivers from certain provisions of the Site Plan Review Regulations, as set forth in the attached Application for Waivers and as listed below:

- **Section 6.2.D.1** – 10 ft.-wide landscaping around buildings requirement

- **Section 6.5.D.5** ***(incorrectly identified as 6.5.B.4 on the applicant's Application for Waivers)*** – requiring sidewalks along the property's frontage.
    - *Staff mistakenly requested that the applicant add this waiver request. In fact, this section is inapplicable to properties within the Rural Lands zoning districts. Therefore, the waiver request is not required.*

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.

As noted above under "Completeness Review", staff has identified additional requirements of the Site Plan Review Regulations with respect to which the applicant will either need to demonstrate compliance with or request a waiver (or waivers).

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.

SECTION 6 – DESIGN AND CONSTRUCTION REQUIREMENTS

6.2 (Landscaping Standards): The applicants have submitted a landscaping plan for the development area 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, except as noted above under "completeness review".

6.4 (Fees and Assessments in Effect at time of Connection): New construction will be subject to the City's Impact Fee Ordinance and fee schedule adopted by the Board on October 12, 2021.

6.6 (Stormwater Management): The applicants' proposed stormwater management system is depicted on Sheets 10 and 11 of the plan set. As noted above under "completeness review", additional information is required in order to verify compliance with Section 6.6. Other stormwater design-related comments and concerns are set forth in the attached letter from Steve Keach, PE.

6.7 (Lighting): The applicants have 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 (except as noted below). The type, quantity, and location of proposed of proposed lighting fixtures are shown on the plan which is Sheet 8 of the plan set.

6.8 (Off-Site Improvements): The applicants do not propose any off-site improvements.

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:

As noted above, the applicants obtained Variances from the Zoning Board of Adjustment to construct "commercial self storage units" – which is not a permitted use in the RL-1 District – and from the maximum building coverage requirement of 15% for Class 3 lots in the RL-1 District (ZB2020-08-VAR & ZB2020-36-VAR). Note that the Board's motion on March 1, 2021, for ZB2020-36-VAR included the following conditions of approval:

- *All available efforts to avoid drainage and hydraulic issues shall be required.*
- *The site shall be used for interior self-storage only.*
- *Business hours shall be limited to 6AM to 8PM.*
- *Artificial lighting shall be designed to limit light pollution.*

CITY ASSESSOR
No comment at this time.

BUILDING INSPECTOR
No comment at this time.

ENGINEERING/PUBLIC WORKS

A significant number of comments from the Board's Reviewing Engineer remain unaddressed. See attached letter from Steve Keach, PE, of Keach-Nordstrom Associates, dated February 2, 2022. At least two of the Reviewing Engineer's comments – i.e. comments #20 and #24 – raise questions as to the completeness of the application. With respect to the remainder of the comments, staff recommends that these be addressed by the applicants prior to the closing of the public hearing.

Note that the Reviewing Engineer's comment relating to a stormwater operations and maintenance plan (see bottom of page 5 of Mr. Keach's letter) is moot; the applicant had in fact provided an O & P plan with the original application submission in December.

FIRE DEPARTMENT
Planning staff has provided the plans to the Fire Department and anticipates receiving written comment prior to the February 14th hearing.

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:

Conditions to be Satisfied Prior to Application for a Building Permit

1. Prior to the start of any construction activities on the property, the applicants shall, to the satisfaction of the City Engineer, address all outstanding comments set forth in the letter from Steve Keach, PE, dated February 2, 2022, a copy of which shall be attached to the Board's Notice of Action as Exhibit A.

2. The applicants shall make the following revisions to the plan set to the satisfaction of the Planning and Development Department and the City Engineer:
    a) Any changes made pursuant to Condition of Approval #1.
    b) Add the following as a note on the cover sheet and on the site plan (Sheet 9): "Business hours shall be limited to 6AM to 8PM." *(per the Zoning Board conditions of approval for the Variance granted on 3/1/21, ZB2020-36-VAR).*
    c) Amend the cover sheet to provide description of plan revisions (5.1.E.4.d).

    The applicants shall provide the Planning and Development Department with one (1) full size copy of the revised plan set, and a digital copy of the revised plan set saved in a PDF-A format for archival purposes.

2. The applicants shall schedule and hold a pre-building permit application meeting with the Planning and Development Department, City Building Inspectors, City Engineer/Department of Public Works, and Fire Department, in order to help streamline the building permit review process and to review applicable code requirements.

3. All engineering review fees shall be paid in full as required by Section 4.7.E.1 of the Site Plan Review Regulations.

Conditions to be Satisfied Prior to the Issuance of a Building Permit

4. The development shall be subject to City of Lebanon Impact Fees, pursuant to Section 213 of the Zoning Ordinance. The Impact Fee shall be calculated at the time of Building Permit issuance based on the Impact Fee Schedule adopted on October 12, 2021. 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.

5. Prior to the start of any construction activities on the property, the applicant shall obtain or update (if appropriate) any required State approvals.

Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy

6. The impact fee calculated pursuant to Condition of Approval #4 shall be paid.

7. 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 Subdivision Regulations and Site Plan Review Regulations.

General Conditions

8. The applicants shall obtain an Excavation Permit from the Department of Public Works for any site work in the public right-of-way prior to any work in the right-of-way.

9. 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.

10. The applicants shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.

11. 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).

Attachments

cc: Robert & John Oakes (via e-mail)
Dan Nash, PE, Advanced Geomatics and Design (via e-mail)
File

KNA KEACH-NORDSTROM ASSOCIATES, INC.

February 02, 2022

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

Subject: **Site Plan Review Application – Oakes Storage, LLC**
92 Riverside Drive (Map 111 – Lots 16 & 3-1); Lebanon, New Hampshire
KNA Project No. 21-1216-2

Dear Mr. Vincent:

As you may recall, on January 12th we issued a letter report in response to the subject application. Within that report we offered a series of comments and recommendations generated as a result of consideration and review of project plans and supporting information received through that date. On January 25th and 26th we received copies of updated technical information submitted to City officials by or on behalf of the applicant. Specifically, we acknowledge receipt of copies of the following documents:

- A cover letter, with attachments, addressed to the City Planning Department, prepared by the applicant's consultant on January 24, 2022;
- A fire truck tracking path analysis dated December 15, 2021;
- A drainage report dated December 13, 2021 and last revised January 26, 2022; and
- A site plan (16 drawings) dated December 13, 2021 and last revised January 24, 2022.

Based upon consideration and review of this latest submittal we are pleased to advise that the applicant's consultant was able to satisfactorily address many of our prior remarks. Accordingly, our remaining comments and recommendations are limited to the following:

General Comments

1. We understand the applicant intends to acquire a parcel identified as Lot 3-1 on Assessor's Map 111 from the City of Lebanon and subsequently voluntarily merge the same with Map 111 – Lot 16 to create the 3.53± acre parcel that is the subject of the current application. On that basis we recommend a Notice of Voluntary Merger be executed and recorded prior to or as a condition of site plan approval.

2. 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 approval, the applicant

provide a performance guarantee, in an amount and form acceptable to your Department, to serve as a financial surety for restoration of the site in the event of abandonment, installation and maintenance of appropriate erosion and sedimentation controls throughout construction, as well as full and final completion of any proposed public improvements and/or work within a public right-of-way.

3. We note building placement and drive aisle geometry depicted on Figures No. 1 & No. 2 of the fire truck tracking path analysis vary from the current site layout shown on Sheet C-1. We recommend the Fire Department confirm acceptability of final site geometry prior to or as a condition of site plan approval

Planning/Design Matters

1. We continue to recommend Sheet X-1 be expanded to note the current statutory (RSA 229:5) classification of each adjoining public street.

2. We continue to recommend Sheet X-1 be expanded to indicate the easterly line of Lot 111-3-1 is coincident with the zoning district boundary between the RL-1 and RL-2 Districts.

3. We continue to recommend Sheet X-1 be expanded to note the intended disposition of existing buildings and site improvements which currently occupy the subject property.

4. We continue to recommend the text of Note No. 8 on the boundary plat (Sheet 5 of 16) be expanded to specify the resulting parcel area.

5. Based upon our consideration and review of Sheet L-1 (Landscape Plan) we offer the following remarks:

- In order to satisfy the requirements of Section 5.1.E.16 of the SPRR's we continue to recommend the drawing be expanded to provide required perimeter landscape and shading calculations.

- We continue to recommend the landscape design be rechecked and revised as necessary to fully satisfy applicable requirements of Sections 6.2.B and 6.2.D of the SPRR's governing perimeter landscaping and landscaping around buildings respectively.

- As shown on the drawing, a row of red oak plantings are planned along the southeasterly façade of Building 4. The drawing suggests the two southwesterly-most tree plantings are to be placed on the surface of an elevated "platform" situated between Building 4 and adjoining retaining wall. We continue to recommend the Landscape Architect revisit this intent. Specifically, we are concerned close proximity of tree canopy to building façade and roof and/or proximity of root systems to the immediately adjacent retaining wall may retard tree growth and health.

- Landscape Notes No. 9 & 10 on Sheet L-1 appear duplicative.

6. As shown on Sheet C-1 the applicant intends to utilize the existing paved surface of "Old Route 4" as a site driveway providing access from Fellows Hill Road. Again, as shown on the site plan, this planned site driveway intersects Fellows Hill Road at an acute angle. Although the volume of through traffic operating on Fellows Hill Road is limited, we are concerned the skewed angle of the future site driveway approach may prove confusing to motorists and thereby compromise operator safety. Correspondingly, we continue to recommend a MUTCD standard R1-1 "stop" sign, with corresponding stop bar, as well as a 50-foot length of double yellow centerline be provided at the site driveway's approach to Fellows Hill Road in an attempt to safely guide future motorists.

7. Does the applicant intend to resurface or improve the segment of Old Route 4 intended for use as a site driveway? If so, we would recommend the extent of planned improvement be acknowledged on the final site plan.

8. What is the intended disposition of the paved segment of Old Route 4 situated to the east of its intersection with currently planned construction within the interior of the site? If not intended to serve a useful purpose, we recommend the existing pavement be scarified, removed and the resulting area be loamed and seeded.

9. We continue to recommend top of wall and bottom of retaining wall elevations be specified on Sheet C-2.

10. We understand detailed structural design drawings of proposed retaining wall construction will be submitted to the Building Department for review and possible approval at a future date. We recommend this future submittal include details of planned safety rail installation atop each applicable segment of wall.

11. We previously remarked: "Three drive aisles between proposed self-storage buildings terminate at the southwesterly end of the site immediately adjacent to a planned 2:1 (downward) slope. In order to protect motorists operating within the site we recommend guardrail be installed along the southwesterly edge of pavement". In response Sheet C-1 has been expanded to include Note No. 4 which directs the contractor to "construct timber guardrail at top of slope". We recommend the final site plan be revised to indicate location of guardrail installation and to provide a typical detail of the timber rail.

12. Note No. 6 now provided on Sheet C-1 identifies a "entry control gate". We recommend the final site plan specify the type and variety of proposed gate installation. We also recommend the applicant make acceptable accommodations for 24-hour Fire Department access.

13. Note No. 7 on Sheet C-1 specifies applicant's intent to install security fencing around the perimeter of the planned self-storage facility. We recommend the final site plan identify location of proposed fence installation as well as type and variety of materials incorporated with the planned installation.

14. Sheet C-1 indicates the typical width of three parallel drive aisles between storage buildings and at the southwesterly end of the site is to be 24-feet. That said the combination of building footprint and pavement geometry at the northeasterly end of Building 2 is such that pavement width available for vehicular travel at this location diminishes to approximately 14 to 18-feet. We recommend site plan be revised to provide a uniform drive aisle width of not less than 24-feet at all locations if two-way vehicular travel is anticipated or planned throughout the facility.

15. We continue to recommend the finish floor elevation of Building 5 (garage) be specified on Sheet C-2.

16. We recommend stormwater management system "overflow" piping and drainage manhole DMH-4 be depicted on both Sheet C-2 and plan view on Sheet C-3.

17. In addition to consideration and review of access and circulation considerations we continue to recommend the Fire Department be afforded an opportunity to review and comment on other matters within the Department's purview.

18. If commercial signage is proposed, in order to satisfy the requirements of Section 5.1.E.14 of the SPRR's we recommend a detailed signage plan be provided.

19. We continue to recommend Sheet C-2 be expanded to provide additional finish grade spot elevations for paved areas in the immediate vicinity of proposed buildings and at the northeasterly end of the site in sufficient number as to effectively communicate the design engineer's site grading intentions to a future site contractor.

20. We continue to recommend Sheet C-2 be expanded to provide design information for the short segment of driveway culvert to be installed to the northwest of Building 5.

21. Note No. 2 on Sheet C-4 specif3es use of SDR-35 PVC for storm drain construction. Given susceptibility to scour (as well as current lack of availability and high cost of larger diameter pipe stock) of this product we recommend the design engineer consider use of an alternate pipe material.

22. We recommend a flared end-section and outlet protection apron be provided at the discharge end of the pipe culvert exiting DMH-4.

23. Sheet ECP-1 includes an Erosion Control Legend which defines the meaning of graphics intended for use in specifying locations at which a variety of best management practices (BMP's) are to be implemented during construction. That said several of the BMP's graphically illustrated in this legend do not appear on the drawing image. We recommend the drawing be rechecked and revised accordingly. We also recommend a typical detail of coir log/wattle installation be provided on the final site plan.

24. Based upon our review of drainage computations submitted under this application we offer the following remarks:

- It is to be noted that drainage computations provided under this application were prepared using the Rational Method. Although this method of analysis was commonly used for decades, in recent years its use has diminished sharply. That said it is this writer's opinion that the Rational Method, if properly implemented, remains viable and appropriate for use in the analysis of small watersheds and catchment areas. Although we take no exception to use of the Rational Method in the current instance, in our review of the applicant's drainage analysis we noted that selection of several Runoff Coefficient (C) values for unpaved surfaces do not appear to take into consideration soil type, land slope and/or vegetative cover. Rather, the design engineer used a uniform coefficient value of 0.3 for all unpaved surfaces. In our view this choice is conservative and likely serves to overestimate calculated runoff volumes, especially at 5.11-acre sub-catchment Area 8. Secondly, it appears all volume estimates were derived based on assumed Time of Concentration (Tc) values of 10 and 30 minutes respectively. While use of prescriptive Tc values is appropriate for small catchment areas, we anticipate the actual time of concentration values at sub-catchment Areas 1 and 8 may be greater than presumed. Again, the design engineer's use of presumed and uniform time of concentration values throughout likely serves to overestimate calculated runoff volumes. Correspondingly, we continue to recommend the design engineer revisit the analysis and rely on weighted Runoff Coefficient values which account for variation in soil, slope and ground cover conditions as well as calculated Tc values (using a default minimum Tc value of 10 minutes).

- As shown on the drawings, site generated stormwater from the majority of proposed impervious paved surface and building roof areas is to be captured by a series of three catch basins to be situated at the southwesterly end of the development site. Stormwater captured by these basins is intended to infiltrate into the soil mass below. Based upon our review of these accommodations we continue to recommend the design engineer provide test pit data confirming depth of seasonal groundwater table elevation and supporting presumed infiltration rates of native soil materials.

- In order to satisfy the requirements of Section 6.6.H of the SPRR's we continue to recommend an operation and maintenance plan for the planned stormwater management system be prepared and submitted.

We trust you will find remarks provided in the foregoing letter 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.

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: ROBERT & JOHN OAKES TEL.#: 603-727-8405

MAILING ADDRESS: 209 Dartmouth College Highway, Lebanon, NH 03766

E-MAIL ADDRESS: bobbyoakes14@hotmail.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Dan Nash TEL.#: 802-356-4928

MAILING ADDRESS: 105 Bank St, Lebanon, NH 03766

E-MAIL ADDRESS: AdvancedGeomatics@comcast.net

PROJECT LOCATION:

TAX MAP #: 111 LOT#: 16 PLOT #: ZONE: RL-1

STREET ADDRESS OF PROJECT: FELLOWS HILL ROAD (92 Riverside Drive)

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

SCOPE OF PROJECT:

Construct 26,176sf of mini-storage warehouse with attendant pavement and access.

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: MINI-STORAGE WAREHOUSE

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: 12·10·2021

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: 12/10/21

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #
12-13-21	111/16	2022-06-SPR	2373.84	12-13-21	18573

(Last Revised 4/04/18)

AGD
Advanced Geomatics
& Design

13 December 2021

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Site Plan Lot 111-16
Fellows Hill Road

Dear Mr. Corwin:

Oakes brothers, John and Robert, own the project parcel on Fellows Hill Road. The ownership will transfer to Oakes Storage, LLC, once approvals are obtained. The existing site was formerly the site of a single family residence. The structure was used for fire department training and demolished in the Spring of 2021.

The use proposed, storage/warehouse, is a non-conforming use in the RL-1 zone. Applicant sought and obtained variances for the use and the site coverage from the ZBA on 1March2021. A table of the types and sizes of units is on Sheet C-1. The proposal includes a 2 car garage, 576sf (24x24). The garage is intended for storage of supplies and equipment to maintain the site.

The project parcel is comprised of 3 lots. The primary parcel is Lot 111-16. The city discontinued a portion of Fellows Hill Road. The city also sold Lot 111-3-1 to the Oakes. These 3 parcels will be merged, if they have not been already.

Attached are elevation views of the proposed building. The storage units will be steel, pre-engineered units. The access is via garage type doors on each unit. This arrangement prohibits a 10' landscape strip, except on the units that have a closed rear or side.

Lighting is proposed to be minimal. Lighting for customer access will be motion activated. Some low level lighting will be provided for security. All lighting will be down lit LED.

Landscaping will be provided around the units to restore disturbed areas and to provide some buffering from the residential uses. Lot 111-3-1 is well wooded and will remain in a natural state.

The snow storage will be on several corners of the site. Excess snow will be hauled off.

Fellows Hill Road
City of Lebanon
13Dec2021

The site is not intended to be occupied on a business hour basis. The only presence at the site will be maintenance personnel performing occasional activities and customers access their units.

We anticipate and extremely low trip generation from this site.

Please let us know if you need any additional materials to support this request.

Sincerely,

Daniel A. Nash, PE
Principal

Attached:
-Support Statement
-Application
-Fee calc
-Fee check
-Abutters
-Checklist
-Waivers
-Drain Report (separate)
-OMP (separate)

CC: Bobby Oakes

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AGD
Advanced Geomatics & Design

13 December 2021

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Support Statement
Site Plan Lot 111-16
Fellows Hill Road

Dear Mr. Corwin:

We provide the following support statement information:

1. Consultants. The team members are listed in the abutters list.
2. Restrictions. We are not aware of any conservation, preservation, or agricultural preservation restrictions on the subject parcel.
3. Utilities. The site is currently served by electric, telephone, and cable services.
4. Zoning. The proposed use and allowance of increased coverage was by variance on 1Mar2021.
5. Drainage. The site includes a drainage recharge facility that reduces overall site runoff.
6. Timetable. We anticipate a Spring'22 construction start. The building is scheduled to be complete by Fall'22.
7. Fire Protection. The site is a low hazard use.
8. Waivers. Waiver requests will be provided under separate cover.

Sincerely,

Daniel A. Nash, PE
Principal

CC: Bobby Oakes

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AGD
Advanced Geomatics & Design

24 January 2022

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Site Plan Lot 111-16
Fellows Hill Road

Dear Mr. Corwin:

Revised plans have been submitted to the planning office. We offer the following to the extensive review comments:

-project parcel. It is the owner's intent to close on the purchase of the city parcel by the time of the meeting.

-mapping. When evaluating a parcel, one looks at the overall parcel and the size of it. With a small parcel, and the area being developed needing detail, 2 foot contours are appropriate. It is unreasonable and confusing to use two different scales to map existing conditions.

-zoning chart. Chart has been updated.

-retaining wall. The wall shape has been adjusted to obtain the minimum 15' setback from the ROW. Also, notes have been added to the ret wall plan to indicate type of wall and need for safety railing.

-bonding. We object to this requirement. The city has the power of the Certificate of Occupancy. This provides the incentive to complete required improvements. If some minor improvements are not completed when the project is ready to be occupied, then a bond can be put in place.

-intersection of drive (discontinued portion of Fellows Hill Road) and old Rt 4. The recommended improvement to the intersection is unreasonable and unnecessary. The project will generate just a little more traffic than a single-family home. The intersecting street has minimal traffic. There are no known safety issues.

-elevations. There will be lights placed over the doors of the storage units at intervals shown on the lighting plan. Most of these will be motion activated. Some will remain on to provide a low level of security lighting.

-snow storage. We had proposed to haul it off site when excess quantities are accumulated. The reviewer suggested more storage. We propose to use the discontinued road for excess snow storage.

-drainage. Responses to drainage comments will be issued separately.

Please let us know if you need any additional materials to support this request.

Sincerely,

Daniel A. Nash, PE
Principal

Attached:
-Fire truck maneuvering plan
-Waivers

CC: Bobby Oakes

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City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: JOHN&ROBERT OAKES

Project Name: OAKES STORAGE

Project Address: FELLOWS HILL ROAD

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).]

1. Section 6.2.D.1 *(circle one)* **Site Plan Review / Subdivision Regulations**. A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

As a mini-storage building, the front and sides are made to fully accessible to place and remove goods from storage. the single sided units on the north and south sides of the site comply with this requirement for the sides and rear of those buildings.

2. Section 6.5.B.4 (*circle one*) **Site Plan Review / Subdivision Regulations**. A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

There is no need for a sidewalk in this area. There are no connecting sidewalks anywhere near. The project will generate zero pedestrian traffic.

3. Section ___ of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this Section meets (*circle one*) **Criteria A / Criteria B** because _____

4. Section ___ of the (*circle one*) **Site Plan Review / Subdivision Regulations.** A Waiver of this 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: _____ Date: 12·10·2021

rev. 24Jan22

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: OAKES STORAGE	
APPLICANT: JOHN&ROBERT OAKES	**DATE:** 13DEC2021
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.

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]

Plan Requirements	Info. Provided	Waiver Sought
5.1.E(1) - Vicinity sketch (suggested scale: 1" = 500').	☑	N/A
5.1.E(2) - Names and mailing addresses of Applicant; Owner(s) of Record of site; Owners of abutting properties; and Holders of any easements, rights-of-way, or other restrictions.	☑	N/A
5.1.E(3) - 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 to the Board.	☑	N/A
5.1.E(4) - The following information shall be provided on the first page (or cover page, if applicable) of the Site Plan:		
a. Name of the City and County in which the development is proposed;	☑	N/A
b. North arrow;	☑	N/A
c. Scale of the plan;	☑	N/A
d. Date of the plan and of any revisions to the plan; (NOTE: The date on the plan at the time of initial submission for application review shall be included on all subsequent submissions to the City. Any subsequent change(s) to the plan shall include a revision date and description of the revision(s).)	☑	N/A
e. The following basic site information in TABLE FORM:		
1. Zoning designation for subject property;	☑	N/A
2. Tax Map and Lot number(s) for subject property;	☑	N/A
3. Area of lot;	☑	N/A
4. Gross floor area of existing and proposed buildings/additions;	☑	N/A
5. Number of existing and proposed on- and off-street parking spaces as a table. The table must identify (i) the number of required (minimum) parking spaces and the permitted (maximum) number of parking spaces and the calculations for each, (ii) future proposed, and (iii) existing parking capacity. If the site is part of an existing development or subdivision, the master table must provide such information for all related sites and phases, individually and as a project total;	☑	N/A
6. Number of existing and proposed short- and long-term bicycle storage spaces;	N/A	N/A
7. Number of existing and proposed loading spaces;	N/A	N/A
8. Height of existing and proposed buildings/additions;	☑	N/A
9. Number of stories and gross square footage of each;	☑	N/A
10. Proposed use;	☑	N/A
11. Required and proposed front, side, and rear yard setbacks	☑	N/A
12. Maximum allowable lot coverage with existing and proposed calculations;	☑	N/A
13. Indication of whether or not the property is subject to any City Overlay districts (for example, the Wetlands Conservation District or Flood Plain District) or to NHDES Shoreland Water Quality Protection jurisdiction.	☑	N/A
5.1.E(5) - Current survey certified by a land surveyor licensed in NH, depicting perimeter boundaries of the lot(s), with compass bearings, distances, and lot areas, and depicting the location of existing improvements on property.	☑	☐
5.1.E(5) - Width and location of rights-of-way and/or easements on property.	N/A	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
5.1.E(6) - Existing and proposed grades, including topographic contours with spot elevations, (referenced to USGS or FEMA Flood Insurance Rate Map datums, as appropriate) prepared by a professional engineer or land surveyor licensed in NH. (Where grades are less than 20%, contours shall be at 2 ft. intervals; otherwise they shall be at 5 ft. intervals.)	☑	☐
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, if any, 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.	N/A	☐
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.	N/A	☐
5.1.E(10) - Loading spaces and facilities used in connection with any structures on the site shall be shown	N/A	☐
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.	N/A	☐
5.1.E(12) - Size and location of all existing and proposed public and private utilities. *(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.)*	N/A	☐

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, 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.	N/A	☐
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.	N/A	☐
5.1.E(15) - 100-yr flood elevation, floodway, and floodplain limits, where relevant.	N/A	☐
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.	N/A	☐
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, where necessary.	☑	☐
5.1.E(17) - Drainage plans prepared by a professional engineer registered in NH, whose seal and signature shall appear on plan(s).	☑	☐
5.1.E(18) – Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☑	☐
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.	☑	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
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 is granted by the City Engineer.	N/A ☐	☐
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.	N/A ☐	☐
5.1.E(23) - For multi-family structures, plans for on-site recreational facilities.	N/A ☐	☐
5.1.E(24) - Plans for fire protection including emergency vehicle turn radius diagrams, if requested by the Lebanon Fire Department.	☑	☐
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.	N/A ☐	☐
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.	N/A ☐	☐

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: _____ 13 Dec 24

DAN NASH, PE

(Last Revised 4/19/2021)

CITY OF LEBANON, NH **STORMWATER REVIEW REGULATIONS** **TECHNICAL CHECKLIST**	
PROJECT NAME: OAKES STORAGE	
APPLICANT: JOHN&ROBERT OAKES	**DATE:** 13DEC2021

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]

Plan Requirements	Info. Provided	Waiver Sought
6.6.C.1 (1) - 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)	N/A	☐
d. Watershed boundaries	☑	☐
e. Buffer zones	N/A	☐
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)	N/A	☐
h. legend	☑	☐
i. locus plan	☑	☐
j. benchmarks	☑	☐
k. notes with datum and other plan references	☑	☐
l. instructions	☑	☐
m. detail descriptions	☑	☐
6.6.C.1 (2) - 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	N/A	☐
f. Septic systems, if applicable	N/A	☐

Plan Requirements (*cont.*)	**Info. Provided**	**Waiver Sought**
g. Plan references and notes (including sequence of soil disturbance)	☑	☐
h. Proposed and existing public and private utilities	N/A ☐	☐
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.	☑	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate.	☑	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. 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. *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*	☑	☐

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) 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).	☑ ☑ ☑	☐ ☐ ☐
6.6.D - 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: _____ 13 Dec 21

DAN NASH, PE

(Last Revised 04/19/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

Date: December 15, 2021

To: Dan Nash, PE, Project Manager, Advanced Geomatics & Design

From: Corey Mack, PE, Transportation Engineer

Subject: Oakes Storage Firetruck Tracking Path Analysis

WCG has reviewed the firetruck tracking paths for access to and within the proposed Oakes Storage on Fellows Hill Road in Lebanon NH. This memorandum documents the methodology, vehicles, and results of the tracking path analysis.

Software

To evaluate vehicle turning paths, WCG used AutoTURN[1] swept path analysis software, a product of Transoft Solutions. AutoTURN software is an industry standard software package that runs as an application within CAD software (such as AutoCAD) or through an online interface. The software uses scaled models of the site plan, vehicle body, wheelbase, and steering characteristics of standard or customized design vehicles to illustrate vehicle tracking during various maneuvers.

Assumptions

WCG evaluated the turning paths of a ladder fire truck into the most constrained aisles of the storage site. The Lebanon Fire Department's (LFD's) largest vehicle is a 1990 E-One 110 Foot ladder truck. Due to limitations of the available vehicle library, a slightly larger design vehicle was used to estimate the turning movements and tracking paths of the ladder fire truck. The dimensions of the LFD ladder truck and modeled design vehicle are documented in Table 1.

TABLE 1: COMPARISON OF LEBANON FIRE DEPARTMENT'S LARGEST VEHICLE AND MODELED DESIGN VEHICLE

	LFD Ladder Truck	Design Vehicle
Model	1990 E-One 110 Ladder	Smeal Aerial RM 105
Overall Length	38.5 feet	42.9 feet
Width	9.2 feet	8.3 feet
Wheelbase	18.8 feet	20.0 feet
Front Overhang	8.0 feet	10.3 feet
Approx. Inside Turning Radius	33 feet	34 feet

[1] https://www.transoftsolutions.com/vehicle-swept-path/autoturn-select/autoturn/

The modeled design vehicle is generally larger than the actual largest ladder truck used by the LFD. The Smeal Aerial RM 105 design vehicle is a reasonable dimensional approximation of the LFD ladder truck.

Discussion

The most constrained firetruck turning paths are shown in attached Figures 1 and 2. All aisles are directly accessible by a continuous, uninterrupted path by the design vehicle, and each aisle has at least one uninterrupted exiting path. A U-turn between directly adjacent aisles may require a three-point turn.

The front end of the design vehicle is noted to overhang the drainage swale wingwall at the entrance and the curb in several locations. No vertical obstructions should be placed in these areas to ensure the vehicle tracking paths are clear.

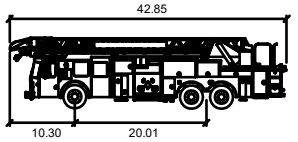
Conclusions

The proposed site will be adequate for the design vehicle to safely execute continuous, uninterrupted entering and exiting maneuvers from every aisle. Some specific paths that require a U-turn between directly adjacent aisles may require a three-point turn.

We recommend that no vertical obstructions (signs, trees, light poles, utility poles, etc) are placed within 3-feet of the curb line to allow for limited front-end overhang.

Attachments

Oakes Storage Firetruck Tracking Paths, dated 12/14/2021



Smeal Aerial RM 105ft

	Feet
Width	: 8.33
Track	: 7.91
Lock to Lock Time	: 6.0 s
Steering Angle	: 32.0 deg

Aisle 1
4,700 SF
Aisle 2
5,600 SF
Aisle 3
6,600 SF
Aisle 4
8,100 SF
Aisle 5

WALL CONSULTANT GROUP

Smeal Aerial RM 105 Entering Maneuvers

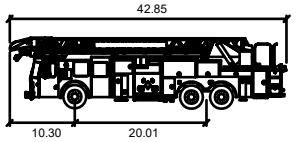
Oakes Storage Firetruck Tracking Paths, Lebanon NH

N

DATE: 12/14/2021

PROJECT: 21-192 T2

Figure 1



Smeal Aerial RM 105ft

	Feet
Width	: 8.33
Track	: 7.91
Lock to Lock Time	: 6.0 s
Steering Angle	: 32.0 deg

WALL CONSULTANT GROUP

Smeal Aerial RM 105 Exiting Maneuvers

Oakes Storage Firetruck Tracking Paths, Lebanon NH

N

DATE: 12/14/2021

PROJECT: 21-192 T2

Figure 2

OAKES STORAGE, LLC

LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

SITE PLAN

OWNER
ROBERT G. & JOHN T.OAKES
209 DARTMOUTH COLLEGE HIGHWAY
LEBANON, NH 03766

APPLICANT
OAKES STORAGE, LLC
209 DARTMOUTH COLLEGE HIGHWAY
LEBANON, NH 03766

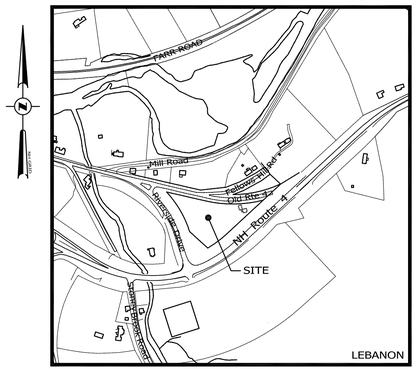
CONSULTANTS

CIVIL ENGINEER
DANIEL A. NASH, PE
ADVANCED GEOMATICS AND DESIGN
PO BOX 512
105 BANK STREET
LEBANON, NH 03766
advancedgeomatics@comcast.net

LANDSCAPE DESIGNER
MARA LANDSCAPE DESIGN
19 MYRTLE AVENUE
NEWBURYPORT, MA 01950

LIGHTING DESIGN
DEFIANCE ELECTRIC
78 CHOSEN VALE LANE
ENFIELD, NH 03748

SURVEYOR
PATON LAND SURVEYING
150 SOUTHRIDGE STREET
SPRINGFIELD, VT 05156



SCALE: 1" = 500'

TABLE OF CONTENTS

SHEET NUMBER		
2	LEGEND	G-1
3	OVERALL EXISTING CONDITIONS PLAN	OA-1
4	EXISTING CONDITIONS PLAN	X-1
5	BOUNDARY SURVEY	-
6	BUILDING ELEVATIONS	A1
7	LANDSCAPE PLAN	L-1
8	LIGHTING PLAN	L-2
9	SITE PLAN	C-1
10	DETAILED GRADING PLAN	C-2
11	RECHARGE SYSTEM	C-3
12	RETAINING WALL PLAN/PROFILES	C-4
13	EROSION CONTROL PLAN	ECP-1
14	SITE DETAILS	D-1
15	DRAINAGE DETAILS	D-4
16	EROSION CONTROL DETAILS	D-5

ZONING COMPARISON - RL1 DISTRICT			
	EXISTING	PROPOSED	REQUIRED
LOT SIZE	3.53 Acres	3.53 Acres	3 Acres
FRONTAGE: (RIVERSIDE DRIVE)	494'	494'	150'
FRONT YARD: (RIVERSIDE DR)	340'	45'	40'
FRONT YARD: (US ROUTE 4)	16'	40'	40'
REAR YARD: (FELLOWS HILL RD)	10'	32'	30'
SIDE YARD: (TO EAST)	-	283'	25'
BUILDING FOOTPRINT (s.f.):			
BUILDING #1	-	3,400 s.f.	
BUILDING#2	-	7,400 s.f.	
BUILDING #3	-	8,800 s.f.	
BUILDING #4	-	5,800 s.f.	
BUILDING #5	-	576 s.f.	
TOTAL		25,976 s.f.	
% BLDG.COVERAGE	1.4%	17%	15%
IMPERVIOUS AREA (sf)		25,976 s.f.	N/A
% IMPERVIOUS COV.	2.5%	34%	N/A
HEIGHT (BLDGS 1-4)	22'	12'	35'
HEIGHT (BLDG 5)		22'	35'
USE: EXISTING	SINGLE FAMILY RESIDENCE		
USE: PROPOSED	MINI STORAGE WAREHOUSE		
PARKING (REG./HC.)	2	1	N/A

ZONING TABLE NOTES:
1. ALL BUILDINGS ONE STORY
2. GROSS FLOOR AREA AND GROSS SQUARE FOOTAGE IS THE SAME FOR ALL BUILDINGS.

NOTES:

1. THIS PARCEL IS SHOWN AS LOT 111-16 ON THE LEBANON TAX MAPS.
2. THIS PARCEL IS NOT SERVED BY MUNICIPAL WATER AND SEWER (CLASS 3).
3. THIS PARCEL IS NOT SUBJECT TO THE WETLANDS OVERLAY DISTRICT.
4. THIS PARCEL IS NOT SUBJECT TO THE FLOOD OVERLAY DISTRICT.
5. SUBJECT PARCEL IS ZONED RL-1.
6. THE PROJECT PARCEL IS COMPRISED OF LOT 111-16, A DISCONTINUED PORTION OF FELLOWS HILL ROAD, & LOT 111-3-1.
7. PROPOSED USE IS ALLOWED BY VARIANCE GRANTED 1FEB2021 (ZB2020-36-VAR).
8. PROPOSED BUILDING COVERAGE IS ALLOWED BY VARIANCE GRANTED 1FEB2021 (ZB2020-36-VAR).

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 9737 LICENSED PROFESSIONAL ENGINEER

1/24/2022
~~12/13/2021~~
SITE PLAN
PN: 20-001

EXISTING LEGEND

	Boundary Corner
	Iron Pipe (Found)
	Rebar (Found)
	Stone Monument (Found)
	Survey Traverse Point
	Survey Control Disk
	Shrub
	Hardwood Tree
	Softwood Tree
C.O.	Cleanout
	Utility Pole
	Light Pole
	Bollard Light
	Light
	Utility Pole Anchor
E	U.g. Electric Junction Box
ET	U.g. Electric Transformer
T	U.g. Telephone Box
C	U.g. Cable Tv Box
	Curb Stop
	Gate Valve
	Fire Hydrant
W	Drilled Well
M	Monitor Well
	Catch Basin
D	Drain Manhole
S	Sewer Manhole
R	Riser
T	Telephone Manhole
E	Electric Manhole
C	Communication Manhole
P	Propane Tank
	Sign

EXISTING LEGEND(CONT.)

X 66.9	Spot Elevation
	Approximate Boundary Line
	Approximate RIght-Of-Way Line
	Existing 1'/2' Contour
760	Existing 5'/10' Contour
	Curb
	Edge Of Pavement
	Edge Of Gravel
	Painted White Line
	Painted Yellow Line
OET	Overhead Electric/Telephone
OHE	Overhead Electric
OHT	Overhead Telephone
UETC	U.g. Electric/Telephone/Cable
	Edge Of Brook/River
	Edge Of Wetland
	Guard Rail
	Stonewall
	Wire Fence
	Chainlink Fence
	Rail Fence
D	Drain Line
UD	Underdrain Line
W	Water Line
S	Sewer Line
FM	Sewer Forcemain
UGE / E	U.g. Electric
UGT	U.g. Telephone
	Edge Of Woods
	Retaining Wall
UGP	U.g. Propane
	Edge Of building

PROPOSED LEGEND

	BOLLARD
C.O.	CLEANOUT
	UTILITY POLE
	UTILITY POLE ANCHOR
	LIGHT POLE
	LIGHT
S	SEWER MANHOLE
D	DRAIN MANHOLE
R	RISER
	CATCH BASIN
	YARD DRAIN
E	ELECTRIC MANHOLE
T	TELEPHONE MANHOLE
C	COMMUNICATION MANHOLE
P	PROPANE TANK
T	U.G. TELEPHONE BOX
C	U.G. CABLE TV BOX
E	U.G. ELECTRIC JUNCTION BOX
ET	U.G. ELECTRIC TRANSFORMER
	GATE VALVE
	CURB STOP
	FIRE HYDRANT
W	DRILLED WELL
	SIGN
5	PARKING SPACE NUMBER
	HANDICAP PARKING SPACE
SWTD	STORM WATER TREATMENT DEVICE
	DETECTABLE SURFACE (TRUNCATED DOME)
×66.93	SPOT ELEVATION
UD	UNDERDRAIN
D	DUMPSTER
BR	BIKE RACK

PROPOSED LEGEND(CONT.)

	DUMPSTER FENCE
	PAINTED/NO PARKING
762	2' CONTOUR
760	10' CONTOUR
	GAS LINE
	DRAIN LINE
	UNDERDRAIN LINE
	WATER LINE
	SEWER LINE
	SEWER FORCEMAIN
	U.G. ELECTRIC
UGT	U.G. TELEPHONE
	U.G. ELECTRIC/TELEPHONE
UETC	U.G. ELECTRIC/TELEPHONE/CABLE
(RET.)	RETAINING WALL
(RET.)	REDI-ROK RETAINING WALL
	CENTERLINE ROAD
	CURB
	EDGE OF WOODS
	LIMIT OF DISTURBED
	BARRIER FENCE
	UNDERGROUND PROPANE TANK
	BUILDING ADDITION
TW = ??	TOP OF WALL ELEVATION
GT	GREASE TRAP/GRIT-OIL SEPARATOR

NOTES:

1. Lower case text on all plan sheets indicates existing data.
2. UPPER CASE TEXT ON ALL PLAN SHEETS INDICATES PROPOSED DATA.

SHEET 2 OF 16

#	REVISIONS	DATE
1	UPDATE	01/24/2022

LEGEND FOR OAKES STORAGE, LLC IN LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 3937 LICENSED PROFESSIONAL ENGINEER

SURVEYED:
DESIGNED:
DRAWN: DAN
CHECKED: DAN
DATE: 12/13/2021

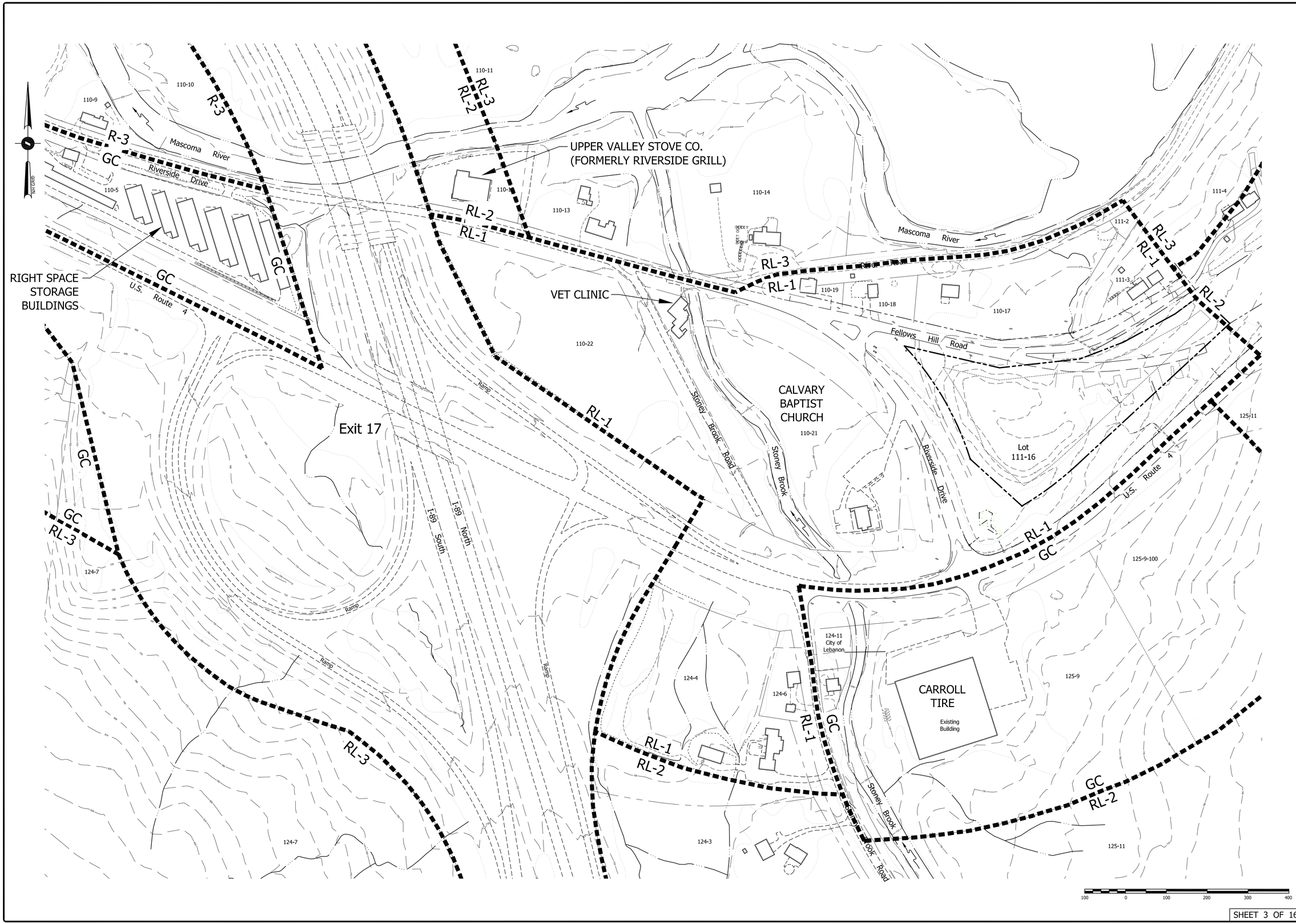
OAKES STORAGE

LEGEND

G-1

© 2021
ADVANCED GEOMATICS & DESIGN

DWG: 20001\LEGEND



SHEET 3 OF 16

#	UPDATE	REVISIONS	DATE
1			01/24/2022

OVERALL EXISTING CONDITIONS PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 9737
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	GIS/PATON
DESIGNED:	
DRAWN:	KH/J
CHECKED:	DAN
DATE:	12/13/2021

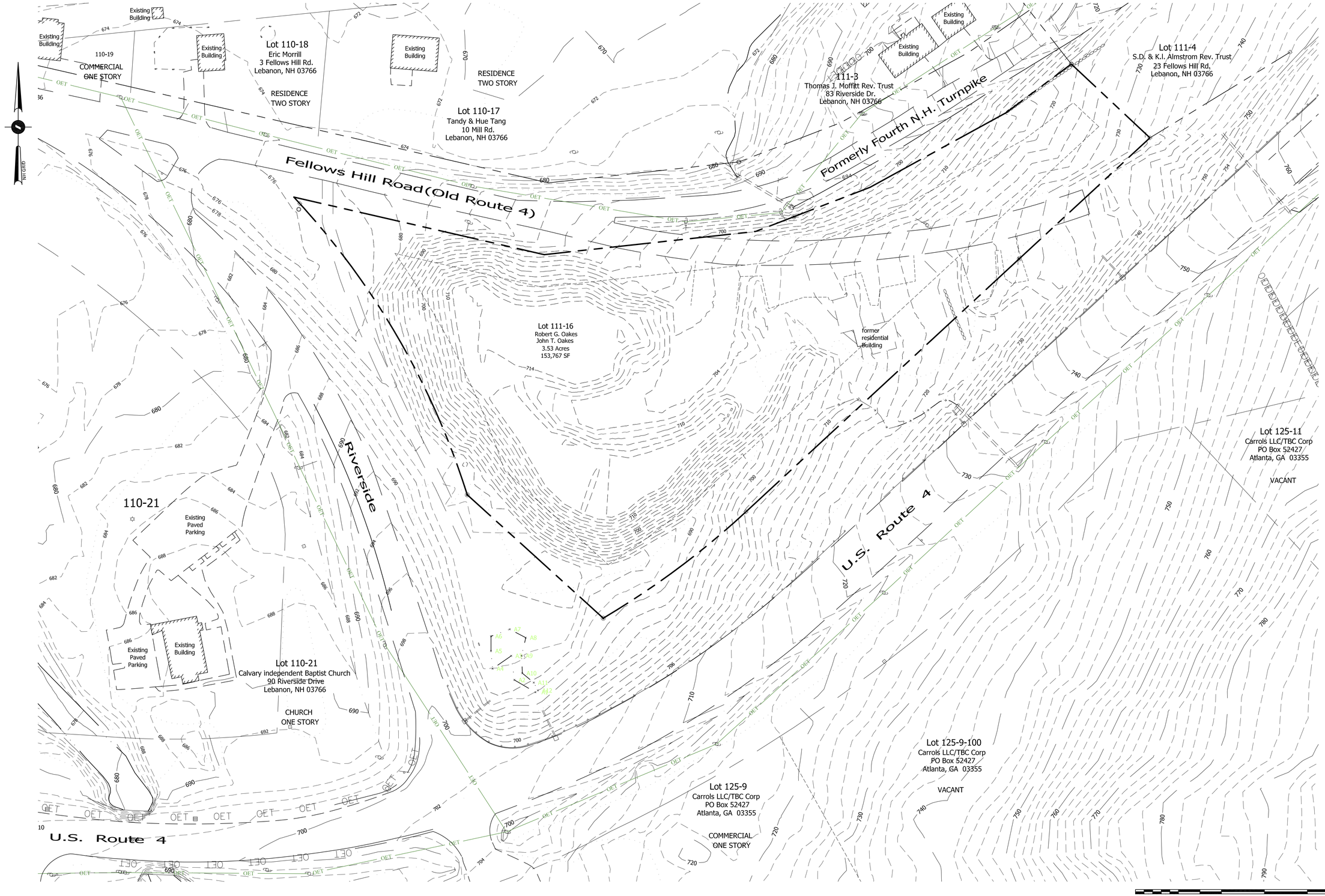
OAKES STORAGE

OVERALL EXISTING CONDITIONS

OA-1

© 2021
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-BA



EXISTING CONDITIONS PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

#	REVISIONS	DATE
1	UPDATE	01/24/2022

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 3737
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	GIS/PATON
DESIGNED:	
DRAWN:	KH/J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

EXISTING CONDITIONS

X-1

© 2021
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-BA

SHEET 4 OF 16

FOR REGISTRY USE

ERIC MORRILL
3 FELLOWS HILL RD.
LEBANON, NH 03766
LOT 110-18

TANDY & HUE TANG
10 MILL RD.
LEBANON, NH 03766
LOT 110-17

THOMAS J. MOFFITT REV. TRUST
83 RIVERSIDE DR.
LEBANON, NH 03766
LOT 111-3

S.D. & K.L. ALMSTROM REV. TRUST
23 FELLOWS HILL RD.
LEBANON, NH 03766
LOT 111-4
SEE PLAN REF. 3

CITY OF LEBANON
LOT 111-3-1
0.364 ACRES
15,855 SQ. FT.
SEE NOTE 6

ROBERT G. OAKES
JOHN T. OAKES
LOT 111-16
2.576 ACRES
112,199 SQ. FT.

66' FELLOWS HILL ROAD (OLD ROUTE 4) SEE REF. PLAN 2

FORMERLY FOURTH N.H. TURNPIKE

AREA OF ROAD DISCONTINUED
SEE NOTE 7

RIVERSIDE DRIVE

U.S. ROUTE 4
SEE REF. PLAN 1

GRAVEL ROAD

PAVED

GRAVEL

DRIVEWAY

BARN

SHED

HOUSE

SCRAP METAL

APPROX. DEED LINE
VOL. 1078 PAGE 226 (1968)

SEE NOTE 5

OUTLET BURIED

CATCH BASIN
RIM=745.47
INV.=740.4

CATCH BASIN
RIM=731.33
INV.=726.5

CATCH BASIN
RIM=699.38
INV.=694.7

CATCH BASIN
RIM=702.31
INV.=697.5

CATCH BASIN
RIM=699.00

N.H.H.B.
STA. 102+67.83
70' RT.

PC = 102+67.83

REBAR SET
STA. 102+67.83
90' LT.

REBAR SET
STA. 183+50
100' RT.

N.H.H.B.
STA. 186+50
100' RT.

N.H.H.B. UP 12""
STA. 181+12.84
100' RT.

N.H.H.B. UP 12""
STA. 181+12.84
90' LT.

N.H.H.B. UP 13"
STA. 105+44
90' LT.

1 1/4" IRON PIPE
FND., UP 14"
NOT HELD

3/4" REBAR FND.
UP 30"

N.H.H.B. UP 28"
STA. 174+50,
70' RT.

N.H.H.B. UP 12""
STA. 176+00,
100' RT.

ANGLE IRON
UP 30"

DROP INLET
TOP CONC.=687.5

INV.=683.06

INV.=744.96

INV.=748.85

INV.=722.55

INV.=723.04

INV.=725.50

INV.=686.57

INV.=691.4

12" CMP

24" CMP

REBAR S46°49'07"E
FND. 100.38'
REBAR TO LOT CORR.: 99.44'

TIE:
N58°33'17"F
152.77

N57°57'29"F
73.82

N61°14'33"E
144.34

N68°53'21"E
76.10

N68°53'21"E
38.11'

S77°03'31"E
239.03'
279.41'

N83°44'11"E
198.02'

40.38'

CHORD:
S77°22'39"W
338.83'
L=341.51'
R=785.60

S47°11'55"W
165.69'

L=406.68'
R=851.60

CHORD:
N89°15'38"E
402.82'

S47°11'55"W
346.73'

BRG. TO END
CURVE DIST=315.16'

CHORD:
N37°27'21"W
320.68'
L=323.34'
R=726.63

N47°46'33"W
170.91'

CHORD:
S53°51'16"
165.63'
L=165.94'
R=761.95'

66'

NOTES

1. OWNER OF RECORD OF LOT 111-16: ROBERT G. OAKES, JOHN T. OAKES, 209 DARTMOUTH COLLEGE HIGHWAY, LEBANON, NH 03766. DEED REFERENCE: VOL. 3885 PAGE 780 (PARTIAL). SEE VOL 1078 PAGE 226.

   OWNER OF RECORD OF LOT 111-3-1: CITY OF LEBANON, 51 NORTH PARK ST., LEBANON, NH 03766.

2. HORIZONTAL DATUM IS REFERENCED TO THE STATE OF NEW HAMPSHIRE GRID SYSTEM.
   VERTICAL DATUM IS BASED ON NAVD88.

3. SURVEY CONTROL ESTABLISHED BY STATIC GPS METHODS WITH OPUS SOLUTION.

4. THE SUBJECT PARCELS ARE IN THE RL1 ZONING DISTRICT.

5. LOT 111-16 IS A PORTION OF THE LAND CONVEYED TO EMERY THIBODEAU BY CHARLES FELLOWS IN VOL. 970 PAGE 469, DATED JUNE 7, 1962. EMERY THIBODEAU CONVEYED LAND TO ROBERT & DOROTHY OAKES IN VOL. 1078 PAGE 226, DATED SEPT. 4, 1968. THAT DEED LINE IS SHOWN ON THIS PLAN.
   NO DEED HAS BEEN FOUND TO ROBERT OAKES IN A RECORDS SEARCH FOR THE LAND WEST AND SOUTH OF THAT DEED LINE.

6. NO DEED HAS BEEN FOUND TO THE CITY OF LEBANON FOR LOT 111-3-1. THIS LAND WAS BELIEVED TO HAVE BEEN PART OF THE LAND OF CHARLES FELLOWS WHO WAS CONVEYED THE LAND BY DEED OF FRANK FELLOWS IN VOL. 555 PAGE 505, DATED FEB. 5, 1919.

7. THIS PORTION OF FELLOWS HILL ROAD WAS DISCONTINUED BY VOTE OF THE LEBANON CITY COUNCIL ON AUGUST 5, 2020.

8. LOT 111-3-1 TO BE MERGED WITH LOT 111-16.

LEGEND

- N.H.H.B. ⊡ NEW HAMPSHIRE HIGHWAY BOUND
- IRON PIN FOUND
- REBAR SET
- STONE WALL
- EDGE OF GRAVEL
- UTILITY POLE
- CATCH BASIN
- GUARDRAIL

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REFERENCE PLANS

1. NEW HAMPSHIRE DEPT. OF PUBLIC WORKS PROJ. NO. 189-1(31)50, DATED 1965, SHEETS 44 AND 45.
2. NEW HAMPSHIRE DEPT. OF PUBLIC WORKS PROJ. NO. F.A. 58(2), DATED 1938, SHEETS 10 & 11.
3. "SUBDIVISION OF HAROLD BERZON, LEBANON, NH"; DATED NOV. 1973; PREPARED BY T & M SURVEYS.

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

AUGUST 12, 2021
DATE

Christopher T. Paton
LICENSED LAND SURVEYOR (SEAL)

STATE OF NEW HAMPSHIRE — No. 887 CHRISTOPHER T. PATON — LICENSED LAND SURVEYOR

BOUNDARY SURVEY PLAT FOR VOLUNTARY LOT MERGER

ROBERT G. OAKES & JOHN T. OAKES
AND
LANDS FROM THE CITY OF LEBANON

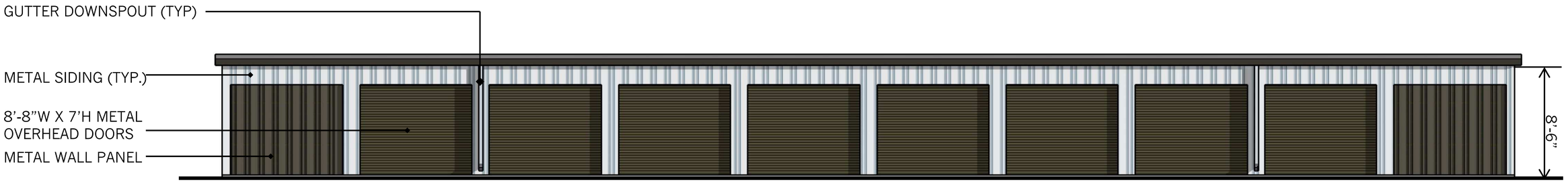
U.S. ROUTE 4, RIVERSIDE DRIVE AND FELLOWS HILL ROAD
LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

PREPARED BY

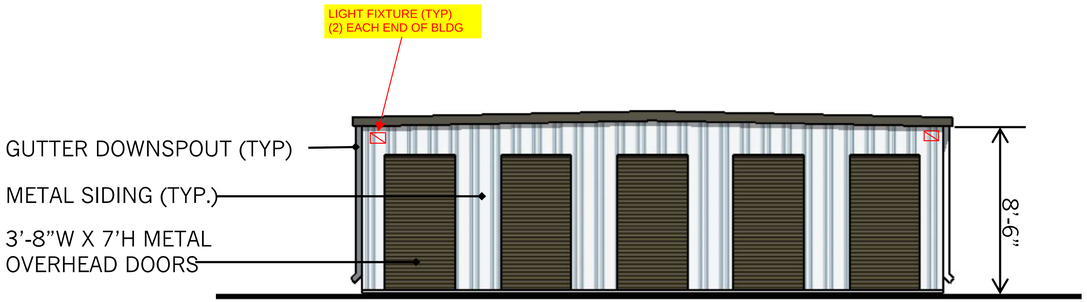
PATON LAND SURVEYING

150 SOUTHRIDGE ST., SPRINGFIELD, VT 05156

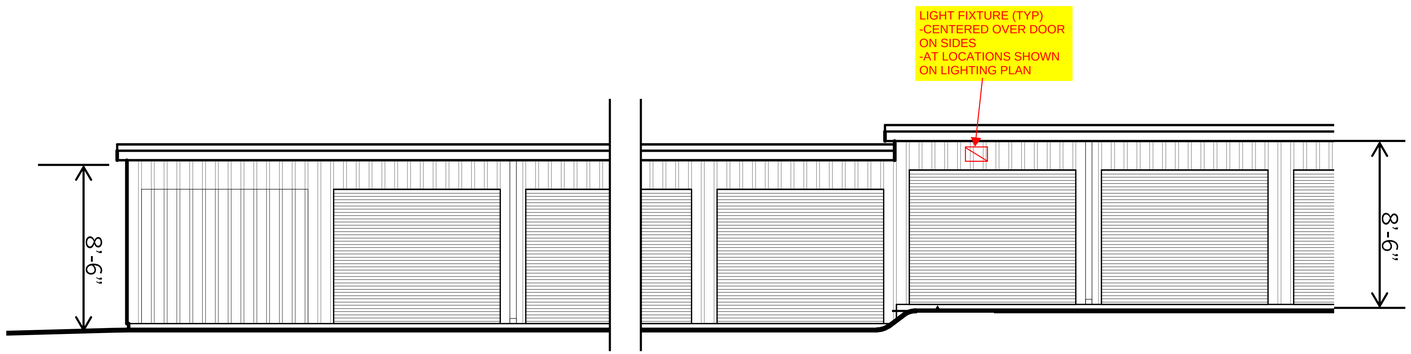
DATE: AUGUST 12, 2021	SCALE: 1"=40'
DRAWN BY CTP	CK'D BY CTP
SURVEYED BY: TR & RH	
PROJ. NO. 2020-284-43	



TYPICAL STORAGE BUILDING FRONT & REAR ELEVATION



TYPICAL STORAGE BUILDING SIDE ELEVATION



TYPICAL PARTIAL STEPPED STORAGE BUILDING FRONT & REAR ELEVATION



TYPICAL STEPPED STORAGE BUILDING FRONT & REAR ELEVATION

SHEET A-1

ELEVATION VIEWS
OAKES STORAGE
14JAN2022

SHEET 6 OF 16

Oakes Storage Plant Schedule					
Qty	Symbol	Botanical Name	Common Name	Size-See Landscape Notes	
	Trees				
6	BN	Betula Nigra 'Heritage'	Heritage River Birch	7-8'	B&B
3	PS	Pinus stobus	Eastern White Pine	7-8'	B&B
12	QR	Quercus robur 'Regal Prince'	Regal Prince Red Oak	2.5-3"	Cal.
8	TC	Tsuga canadensis	Canadian Hemlock	8-10'	B&B
	Shrubs:				
		Botanical Name	Common Name	Size	
45	FN	Forsythia 'Northern Gold'	Northern Gold Forsythia	#3	cont.
7	JC	Juniperus chinensis 'Hetzii'	Hetz Columnar Juniper	5-6'	
	Seedlings				
		Botanical Name	Common Name	Size	
270 (90) of each variety:	SD	Betula papyrifera	White Paper Birch	Seedlings 2 yr.	Space 8x8'
Mixed Species and spaced 8x8'	SD	Tsuga canadensis	Canadian Hemlock	Seedlings 2 yr.	Space 8x8'
	SD	Acer saccharum	Sugar Maple	Seedlings 2 yr.	Space 8x8'

Landscape Notes:

1). Please refer to site plan C-1/C-2 for all UT locations.
Some UT locations have been "frozen" in this viewport for clarity.

2). All new plant material shall be grown to nursery stock.

3). Contractor shall guarantee all plant material for up to one growing season from date of install.

4). Any substitutions made to this plan must be approved by the client and are subject to review by the city of Lebanon Planning Board.

5). All Plantings shall be planted in loam containing 5% of organic material.

6). All Landscape beds shall be cut in and receive 2" of aged dark mulch. Bark mulch shall be kept away from the trunk of the tree.

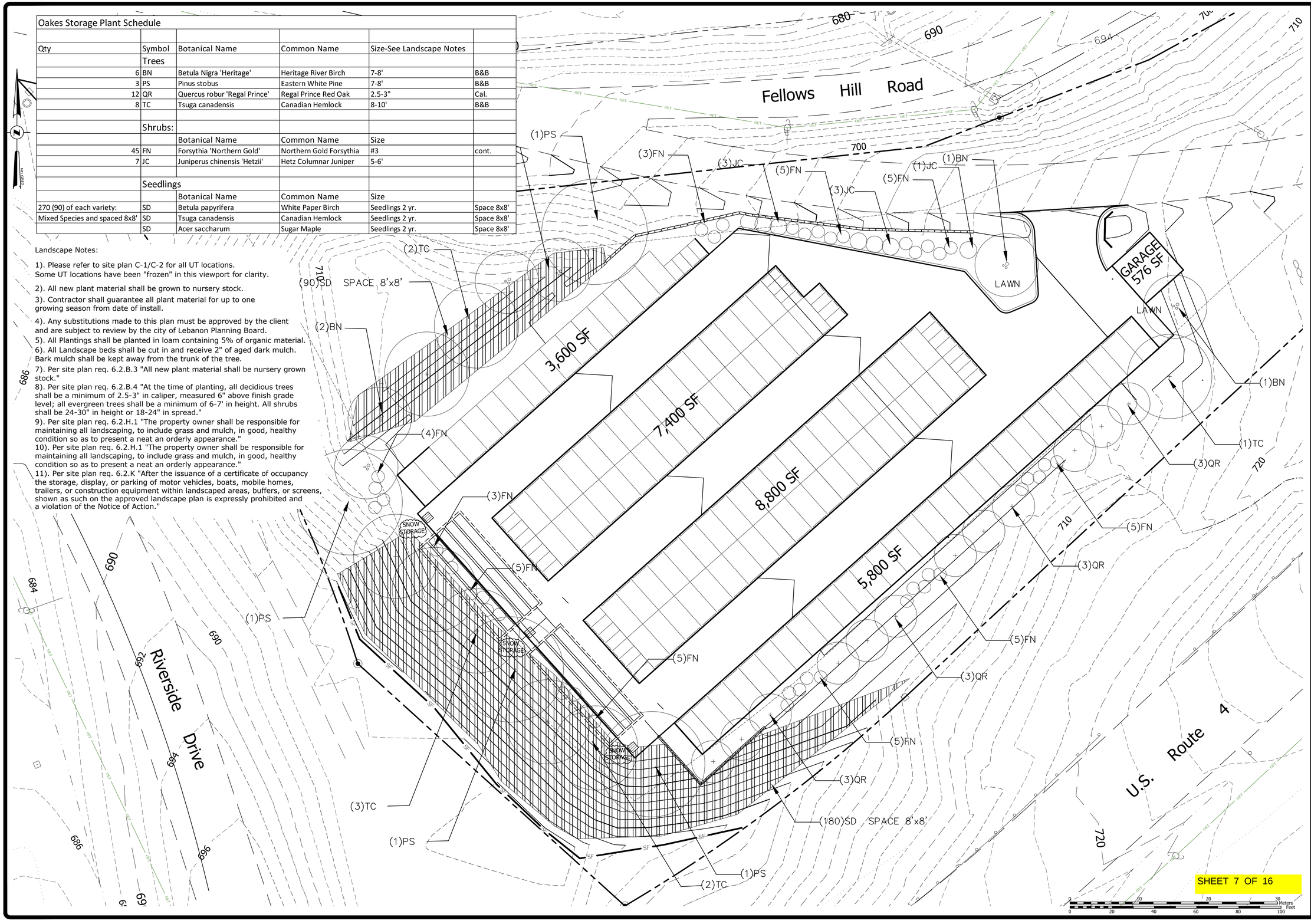
7). Per site plan req. 6.2.B.3 "All new plant material shall be nursery grown stock."

8). Per site plan req. 6.2.B.4 "At the time of planting, all decidious trees shall be a minimum of 2.5-3" in caliper, measured 6" above finish grade level; all evergreen trees shall be a minimum of 6-7' in height. All shrubs shall be 24-30" in height or 18-24" in spread."

9). Per site plan req. 6.2.H.1 "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 an orderly appearance."

10). Per site plan req. 6.2.H.1 "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 an orderly appearance."

11). Per site plan req. 6.2.K "After the issuance of a certificate of occupancy the storage, display, or parking of motor vehicles, boats, mobile homes, trailers, or construction equipment within landscaped areas, buffers, or screens, shown as such on the approved landscape plan is expressly prohibited and a violation of the Notice of Action."



SHEET 7 OF 16

0 10 20 30 Meters
0 20 40 60 80 100 Feet

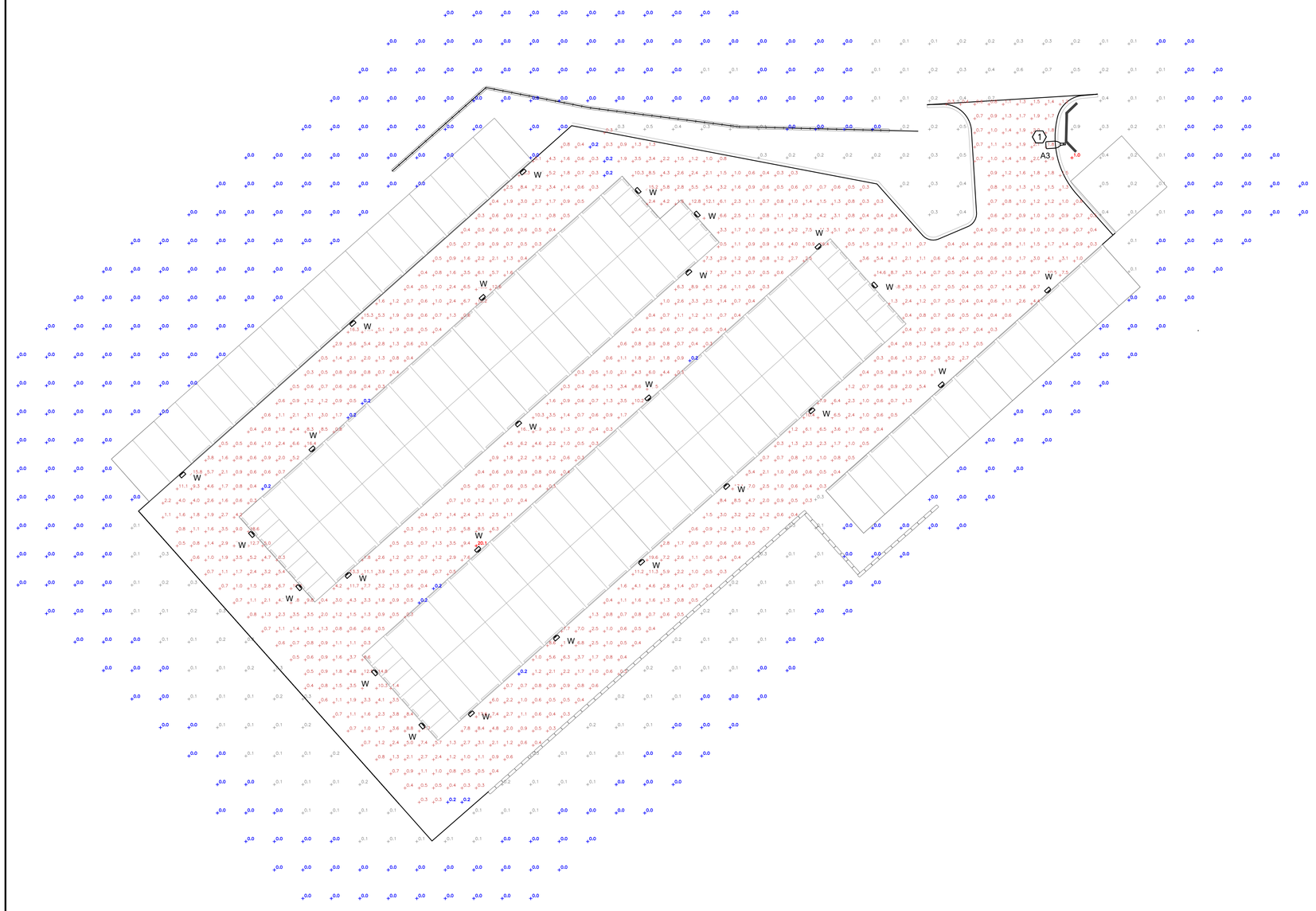
L-1

Scale: 1"=20'

DATE: 1/24/22

Landscape Plan
created for:
Oakes Storage,LLC
Located in:
Lebanon, NH

Mara landscape design, LLC
16 Myrtle Ave. Newburyport, MA 01950 105 BANK STREET Lebanon, NH 03766
maralandscape@gmail.com 978.868.0331



NOTES

1. LIGHTING LEVELS SHOWN ARE MEASURED IN FOOTCANDLES (FC), WITH A CALCULATION PLANE AT GRADE (0'–0" ABOVE FINISHED GRADE).
2. LUMINAIRE COLOR TEMPERATURE SHALL BE 3000K.

KEYED NOTES

(1) CALCULATED AT MOUNTING HEIGHT OF 20'–0" AFG.

EXTERIOR FIXTURE SCHEDULE

LABEL	QTY	DESCRIPTION	LUMENS	WATTS	COLOR TEMP
A3	1	FULL CUTOFF, VISUAL COMFORT DIFFUSED LED AREA LIGHT WITH TYPE 3 DISTRIBUTION, MTD @ 20'-0" AFG AND INTEGRAL PHOTOCELL/MOTION SENSOR	4,189	38 W	3000K
W	25	FULL CUTOFF, LOW GLARE LED WALLPACK MTD @ 9'-0" AFG WITH INTEGRAL PHOTOCELL FOR DUSK-TIL-DAWN OPERATION	2,679	30 W	3000K

EXTERIOR CALCULATED FOOTCANDLES

DESCRIPTION	SYMBOL	AVG	MAX	MIN	*MAX/MIN	*AVG/MIN
LOT & ENTRANCE	+	2.4 fc	20.1 fc	0.0 fc	N/A	N/A

*UNIFORMITY RATIOS ARE N/A WHEN SHOWING 0.0 FC

(1) SITE LIGHTING – CALCULATED LIGHTING LEVELS (FC)

SCALE: N.T.S.

SHEET 8 OF 16

DEFIANCE ELECTRIC SINCE 1978
86 CHOSEN VALE LANE SUITE 202
ENFIELD, NH 03748
P: (603).632.4982
www.DefianceElectric.com

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
01	FOR PERMIT	01/24/22

CLIENT
OAKES STORAGE
LEBANON, NH

PROJECT
OAKS STORAGE
SITE LIGHTING CALCULATIONS

DWG TITLE
CALCULATED LIGHTING LEVELS

PROJECT NUMBER N/A
DATE 01/24/22
DRAWN BY
CHECKED BY

L-2

SCALE AS NOTED

IVAT3-45LPA730KU/WS2

RAB



Low profile, low glare. Edge-lit technology unlike any other.

Color: Black Weight: 18.7 lbs

Project: OAKS STOR

Type: A3

Prepared By: T.BOUCHER

Date: 12/9/21

Driver Info

Type	Constant Current
120V	0.33A
208V	0.19A
240V	0.17A
277V	0.14A
Input Watts	37.8W

LED Info

Watts	38W
Color Temp	3000K (Warm)
Color Accuracy	80 CRI
L70 Lifespan	100,000 Hours
Lumens	4,189
Efficacy	110.8 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80

California Title 24:

Can be used to conform with the requirements of California Title 24 Part 6.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PY9WGL88

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations at 25°C

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IP Rating:

Ingress protection rating of IP66 for dust and water

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Housing:

Precision die-cast aluminum

IES Classification:

The Type III distribution is ideal for roadway, general parking, and other area lighting applications where a larger pool of lighting is required. It is intended to be located near the side of the area, allowing the light to project outward and fill the area.

Mounting:

Universal pole adapter

IVAT3-45LPA730KU/WS2

RAB

Technical Specifications (continued)

Construction

Lens:

Diffused Polymethyl Methacrylate (PMMA)

Effective Projected Area:

EPA = 0.61

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

Sensor Specifications

Multi Level Motion Sensor:

*40 ft. diameter coverage from 20 ft. height.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B2 U0 G2

Electrical

Driver:

Class 2, 50/60Hz, 120-277V, 4kV standard, 10kV optional

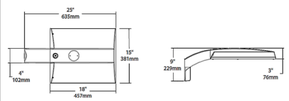
THD:

9.36% at 120V, 17.01% at 277V

Power Factor:

99% at 120V, 92% at 277V

Dimensions



Features

- 0-10V Dimming, standard
- 100,000-Hour LED lifespan

IVAT3-45LPA730KU/WS2

RAB

Ordering Matrix

Family	Distribution		Lumen Output	Mounting	CRI/Color Temp	Finish	Voltage/Driver	Sensor Options	Lightcloud Option
IVA	T3	-	45L	PA	730	K	U	/WS2	

- **Distribution:** T2 = Type II * | T3 = Type III | T4 = Type IV* | TSS = Type V Square | FT = Forward Throw *
- **Lumen Output:** 45L = 4,500 lumens (38W) | 75L = 7,500 lumens (67W) | 100L = 10,000 lumens (94W) | 130L = 13,000 lumens (117W)
- **Mounting:** PA = Universal Pole Mount | WM = Wall mount | SF = Slipfitter
- **CRI/Color Temp:** 750 = 70CRI 5000K | 740 = 70CRI 4000K | 730 = 70CRI 3000K
- **Finish:** Z = Bronze | W = White | G = Roadway Gray | K = Black
- **Voltage/Driver:** U = 120-277V 0-10V Dimming | H = 347-480V, 0-10V Dimming
- **Sensor Options:** Blank = No Options | /WS = 8ft lens Wattstopper | /WS2 = 20ft lens Wattstopper | /WS4 = 40ft lens Wattstopper | /7PR = 7-Pin receptacle
- **Lightcloud Option:** Blank = No Lightcloud* | /LC = Lightcloud* Controller [2]

[1] *Applies to Type IV, V Square*
[2] *Applies 120-277V*
* *All values are nominal with +/- 10% tolerance. See spec sheet for more details.*

1 FIXTURE DETAILS – TYPE A3

SCALE: N.T.S.

W17-30LY/PCU

RAB



Ultra-economy wall pack with a sleek, contemporary look.

Color: Bronze Weight: 4.7 lbs

Project: OAKS STOR.

Type: W

Prepared By: T.BOUCHER

Date: 12/9/21

Driver Info

Type	Constant Current
120V	0.25A
208V	0.15A
240V	0.13A
277V	0.11A
Input Watts	28.6W

LED Info

Watts	30W
Color Temp	3000K (Warm)
Color Accuracy	82 CRI
L70 Lifespan	50,000 Hours
Lumens	2,679
Efficacy	93.7 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations. Suitable for mounting within 4 feet of the ground.

Electrical

Driver:

Constant Current, Class 2, 120-277V, 50/60Hz, 120V: 0.25A, 208V: 0.15A, 240V: 0.13A, 277V: 0.11A

THD:

3.64% at 120V, 7.15% at 277V

Power Factor:

99.6% at 120V, 95.2% at 277V

Surge Protection:

2.5kV

Note:

All values are typical (tolerance +/- 10%)

Photocell:

120-277V Button photocell included. Photocell is compatible with 120V-277V.

Performance

Lifespan:

50,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Mounting:

Housing contains two (2) conduit entry points, one on each side, and knockout pattern for junction box or direct wall mounting.

Lens:

Glass

W17-30LY/PCU

RAB

Technical Specifications (continued)

Construction

Gaskets:

High-temperature silicone

Green Technology:

Mercury and UV free. RoHS-compliant components.

Finish:

Formulated for high durability and long-lasting color

Other

Replacement:

Replaces up to 100W Metal Halide

5 Yr Limited Warranty:

The RAB 5-year, limited warranty covers light output, driver performance and paint finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

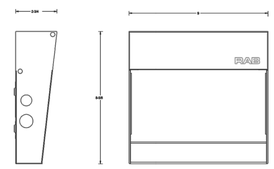
Trade Agreements Act Compliant:

This product is a product of Cambodia and a "designated country" end product that complies with the Trade Agreements Act

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Dimensions



Features

- Ultra-economy wall pack with a sleek, contemporary look
- Covers footprint of small HID wall packs
- Available in various lumen packages

Ordering Matrix

Family	Lumen Package	Color Temp	Options
W17	30L	Y	/PCU

- **Lumen Package:** 30L = Small (2900lm, 30W) | 36L = Small (3600lm, 33W) | 50L = Medium (5500lm, 50W) | 75L = Medium (7500lm, 69W) | 90L = Medium (9000lm, 86W) | 150L = Large (15000lm, 139W)
- **Color Temp:** Blank = 5000K (Cool) | Y = 3000K (Warm)
- **Options:** Blank = No Option | /PCU = 120-277V Button Photocell

1 FIXTURE DETAILS – TYPE W

SCALE: N.T.S.

DEFIANCE ELECTRIC LLC
SINCE 1978
86 CHOSEN VALE LANE SUITE 202
ENFIELD, NH 03748
P: (603).632.4982
www.DefianceElectric.com

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
01	FOR PERMIT	01/24/22

CLIENT

OAKES STORAGE

LEBANON, NH

PROJECT

OAKS STORAGE
SITE LIGHTING CALCULATIONS

DWG TITLE

SITE LIGHTING
FIXTURE DETAILS

PROJECT NUMBER N/A

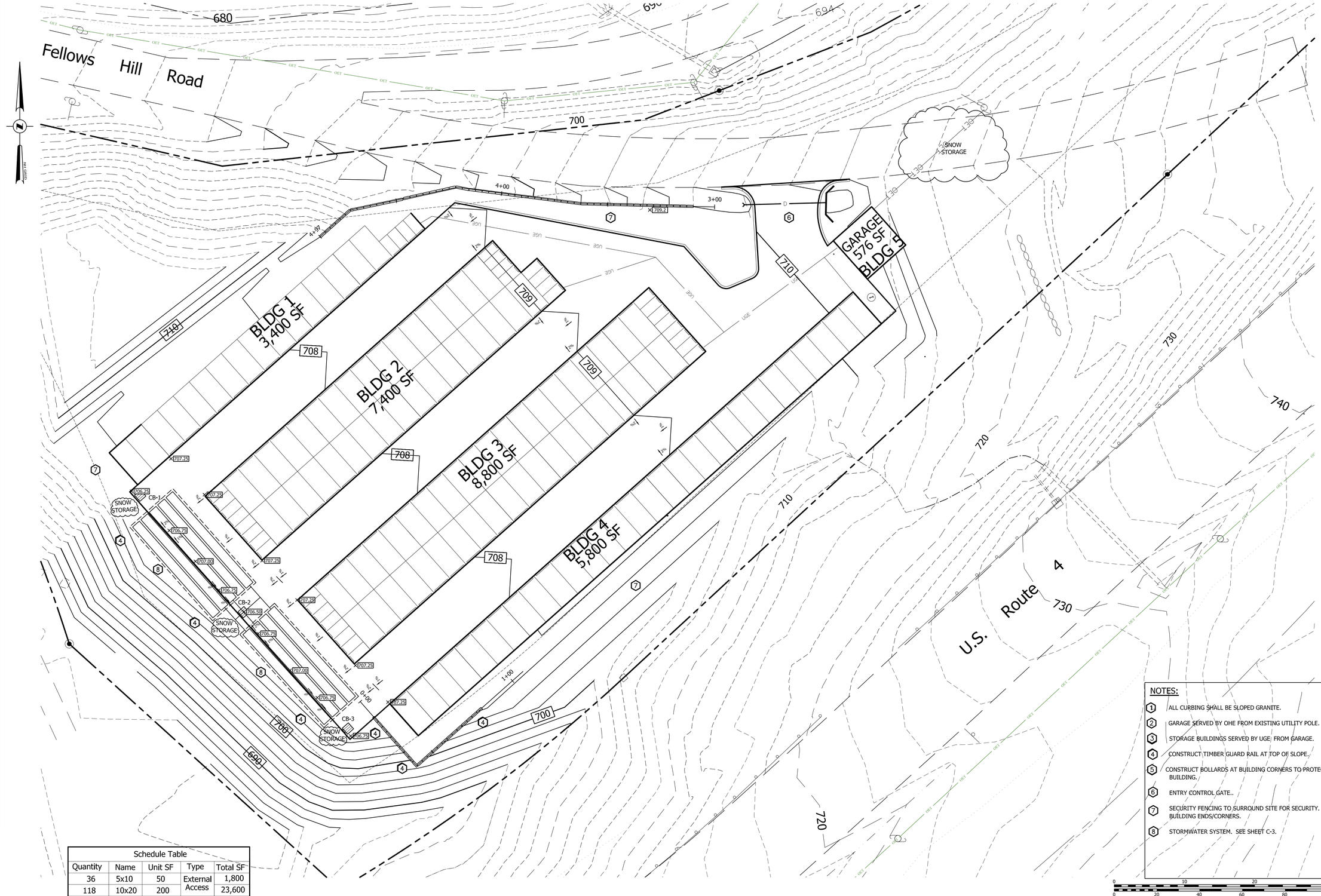
DATE 01/24/22

DRAWN BY

CHECKED BY

L-2A

SCALE AS NOTED



Schedule Table				
Quantity	Name	Unit SF	Type	Total SF
36	5x10	50	External Access	1,800
118	10x20	200		23,600
1	24x24	576		576
Total 155				25,976

NOTES:

1. ALL CURBING SHALL BE SLOPED GRANITE.
2. GARAGE SERVED BY OHE FROM EXISTING UTILITY POLE.
3. STORAGE BUILDINGS SERVED BY UGE FROM GARAGE.
4. CONSTRUCT TIMBER GUARD RAIL AT TOP OF SLOPE.
5. CONSTRUCT BOLLARDS AT BUILDING CORNERS TO PROTECT BUILDING.
6. ENTRY CONTROL GATE..
7. SECURITY FENCING TO SURROUND SITE FOR SECURITY. TO TIE INTO BUILDING ENDS/CORNERS.
8. STORMWATER SYSTEM. SEE SHEET C-3.

0 10 20 30 Meters
0 20 40 60 80 100 Feet

SHEET 9 OF 16

#	REVISIONS	DATE
1	UPDATE	01/24/2022

7/27/20

SITE PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 9737
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	KH/J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

SITE PLAN

C-1

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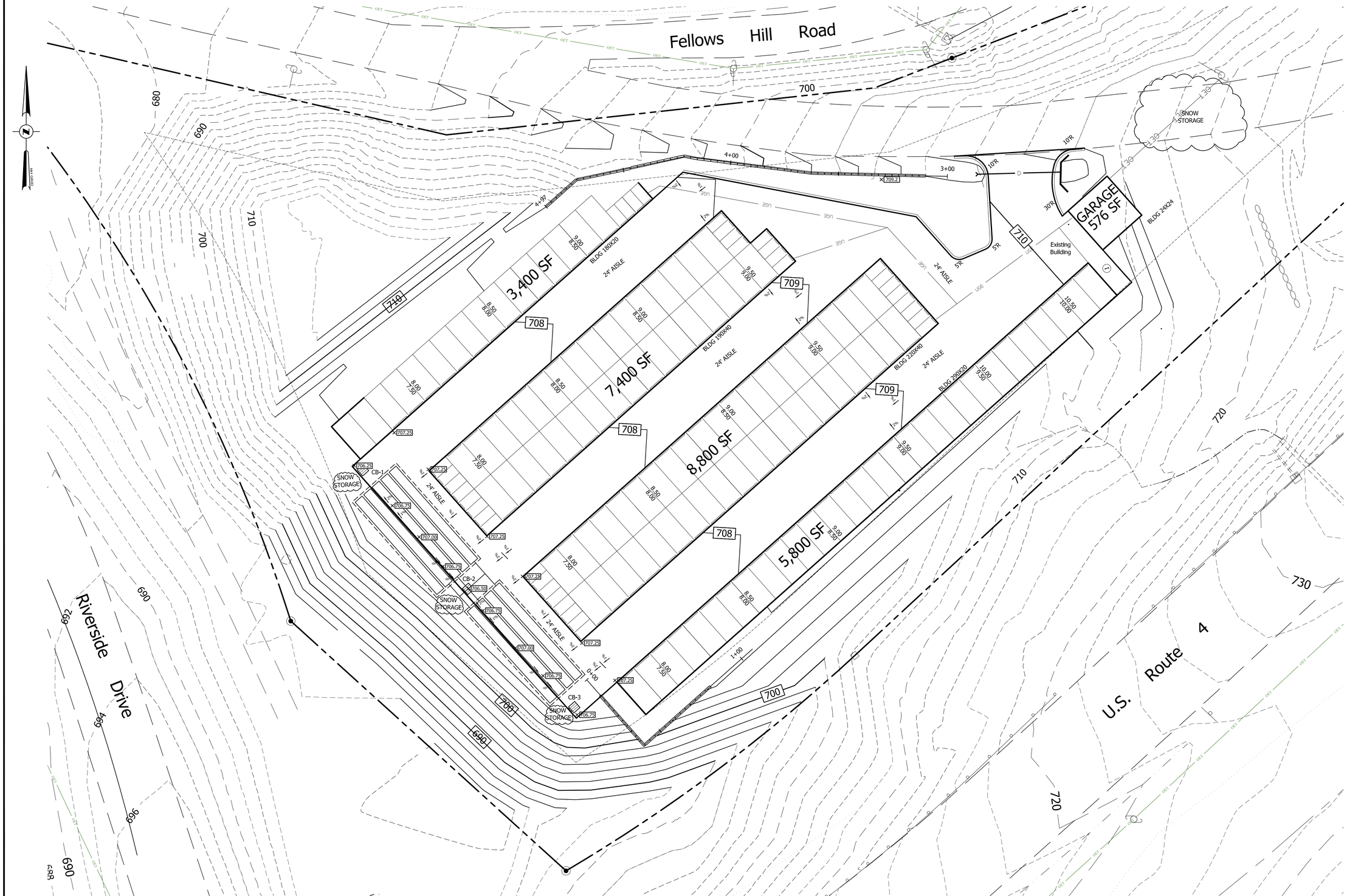
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-PL6



DETAILED GRADING PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

#	REVISIONS	DATE
1	PUDATE	01/24/2022

7/27/20

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 9737 LICENSED PROFESSIONAL ENGINEER

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	KH/J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

DETAILED GRADING PLAN

C-2

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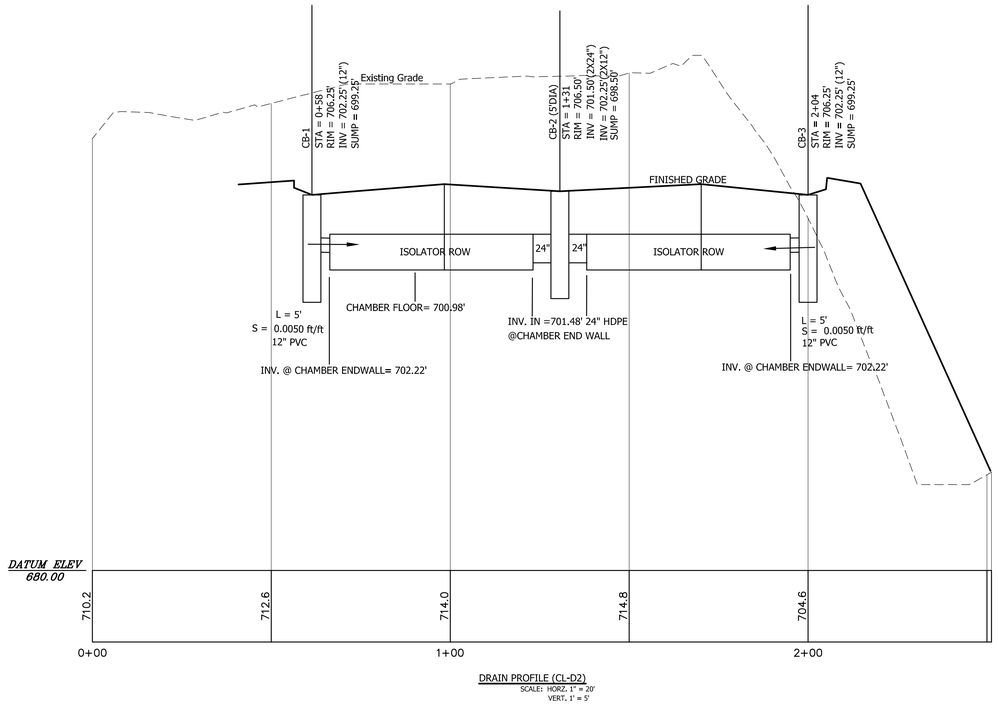
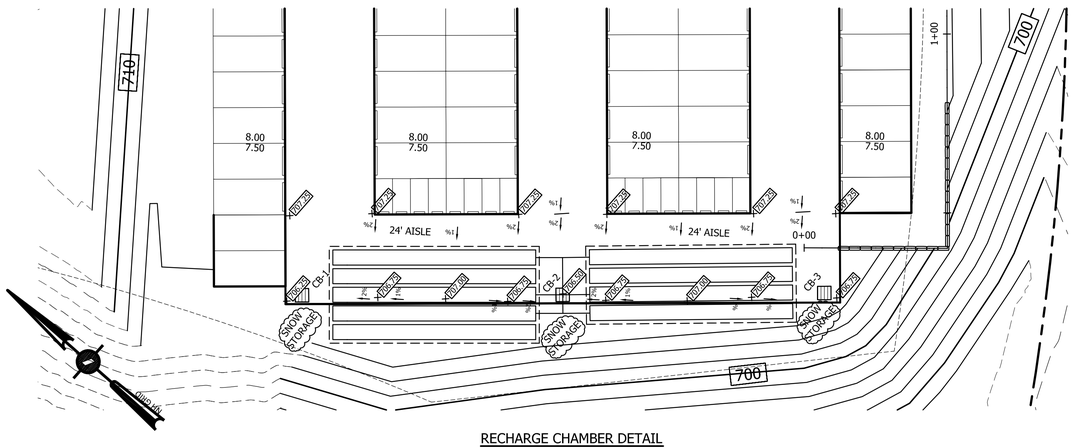
DWG: 20001\20001-PL6

SHEET 10 OF 16



DRAIN PROFILE (CL-D2)
SCALE: HORZ. 1" = 20'
VERT. 1' = 5'



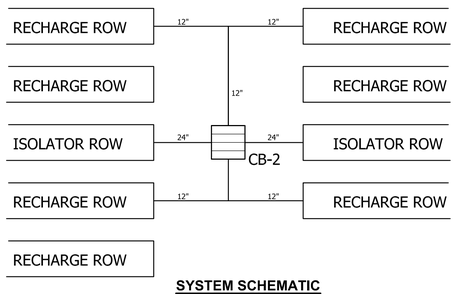
RECHARGE CHAMBER DETAIL
SCALE: 1" = 20'

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
NORTH SEGMENT	1W x 8L (56.9')	ISOLATOR ROW
	4W x 8L (56.9')	TREATMENT/RECHARGE ROWS

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
SOUTH SEGMENT	1W x 8L (56.9')	ISOLATOR ROW
	3W x 8L (56.9')	TREATMENT/RECHARGE ROWS

NOTES:

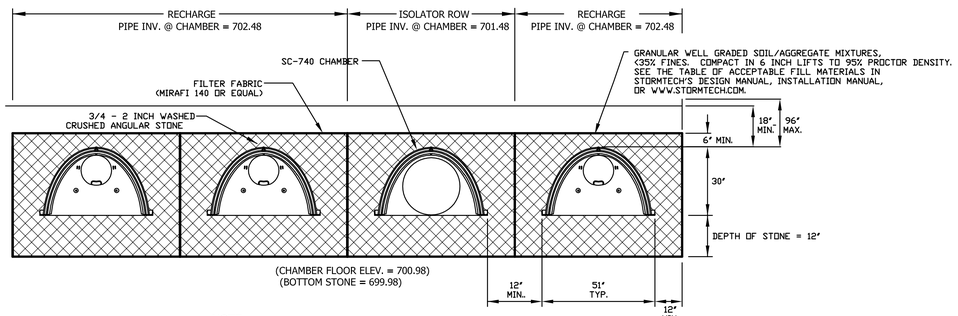
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE INFILTRATION SYSTEM.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
3. AFTER THE AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.



SYSTEM SCHEMATIC
NOT TO SCALE

NOTES:

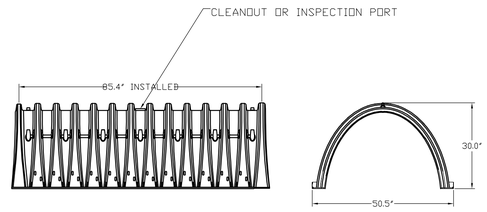
1) SYSTEM COMPOSED OF STORMTECH SC-740 INFILTRATOR CHAMBERS. TYPICAL CHAMBER DIMENSIONS: 50.5"W x 85.4"L (INSTALLED) x 30" H. CHAMBER WEIGHT 75# EACH.
2) ALL DRAIN PIPE SHALL BE PVC, SDR-35, EXCEPT 24" HDPE MAINFOLD AND PIPE TO CHAMBERS.
3) REFER TO DRAIN PROFILE (CL-D2) ON THIS SHEET.



NOTE:

ISOLATOR INVERT/CORE IN END CAP AT INVERT NOTED.

STORMTECH SC-740 CHAMBER SYSTEM
TYPICAL CROSS SECTION (4 ROWS) DETAIL
NOT TO SCALE



STORMTECH SC-740 CHAMBER

NOMINAL CHAMBER SPECIFICATIONS	
SIZE (W x H x INSTALLED LENGTH)	50.5" x 30.0" x 85.4"
CHAMBER STORAGE	45.9 CUBIC FEET
MINIMUM INSTALLED STORAGE	74.0 CUBIC FEET
WEIGHT	75 LBS.

NOTES:

1) REMOVE TOPSOIL AND DELETERIOUS MATERIAL.
2) EXCAVATE TO BOTTOM OF STONE LEVEL.
3) PLACE STONE.
4) STONE BED SHALL BE A MINIMUM OF 12" THICK. ADDITIONAL STONE SHALL BE PLACED TO ACHIEVE CHAMBER FLOOR LEVELS.
5) STONE SIZE MUST BE AS FOLLOWS: 1-1/2" - 2" OVERALL DIA. CLEAN, WASHED, CRUSHED STONE. (WASHED ROUNDED STONE NOT ACCEPTABLE).
6) USE CATERPILLAR D3 OR EQUIVALENT MACHINE.
7) VIBRATORY ROLLER OR PLATE COMPACTOR MUST BE USED AT EACH LEVEL BASED UPON MANUFACTURERS REQUIREMENTS, AS OUTLINED IN THE STORMWATER INSTALLATION INSTRUCTION MANUAL.
8) IN SANDY SOILS, GEOGRID MUST BE USED BETWEEN THE TOP OF THE STONE AND THE PAVEMENT.
9) A MINIMUM OF 6" OF STONE MUST BE PLACED ON TOP ROW OF INFILTRATOR ® CHAMBERS.
10) A MINIMUM OF 18" OF BACKFILL, (INCLUSIVE OF SPECIFIED STONE), MUST BE PLACED ON THE TOP ROW OF INFILTRATOR ® CHAMBERS.
11) DO NOT USE WHEELED VEHICLES ON THE BED DURING CONSTRUCTION.
12) MATERIAL LIFTS SHALL BE COMPACTED TO 95-98% DENSITY (STANDARD PROCTOR METHOD).
13) PROPER SEDIMENTATION CONTROL STRUCTURES MUST BE USED TO LIMIT SILT INTRUSION.

SINGLE LAYER SYSTEM DETAIL
NOTES: (SEE STORMTECH INSTALLATION INSTRUCTION MANUAL)

RECHARGE SYSTEM
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

#	DESCRIPTION	DATE
1	UPDATE	01/24/2022

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
NO. 7937
LICENSED PROFESSIONAL ENGINEER

SURVEYED:	PAYTON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

RECHARGE SYSTEM

C-3

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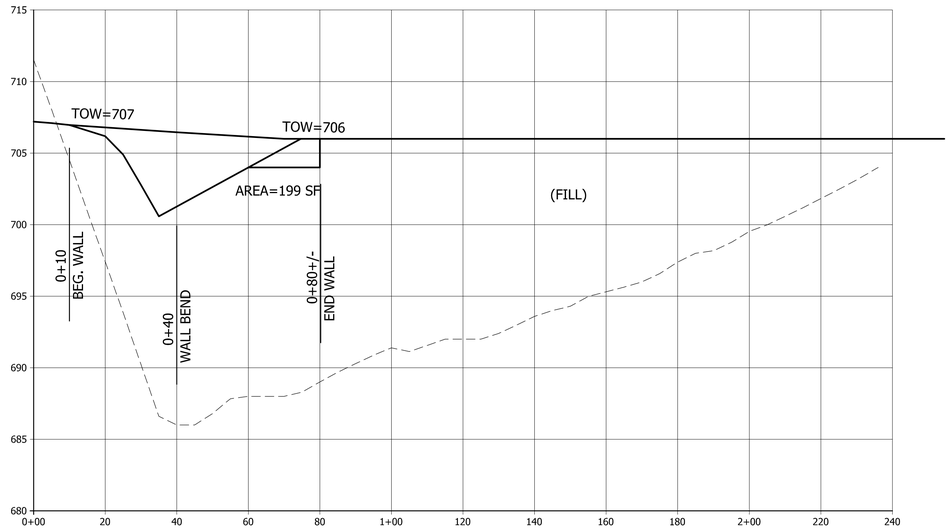
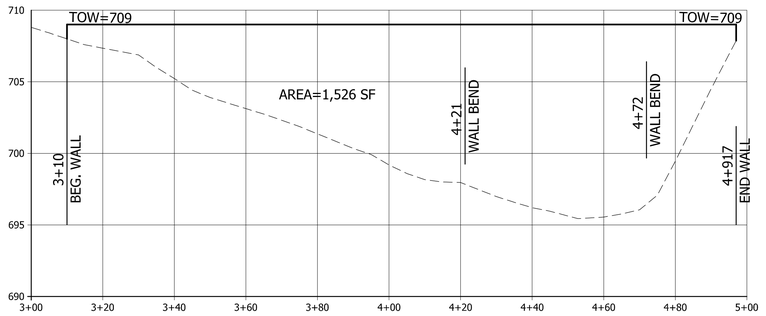
DWG: 20001\20001-PL5



RETAINING WALL PROFILE (CL-RW1)
SCALE: HORZ. 1" = 20'
VERT. 1' = 5'



RETAINING WALL PROFILE (CL-RW2)
SCALE: HORZ. 1" = 20'
VERT. 1' = 5'

WALL NOTES:

1. WALL SHALL BE BUILT WITH REDI-ROCK OR APPROVED EQUAL.
2. STRUCTURAL DESIGN BY OTHERS.
3. WALL SHALL HAVE SAFETY BARRIER AT TOP.

SHEET 12 OF 16

#	REVISIONS	DATE
1	UPDATE	01/24/2022

RETAINING WALL PROFILES
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net



SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

RET.WALL PROFILES

C-4

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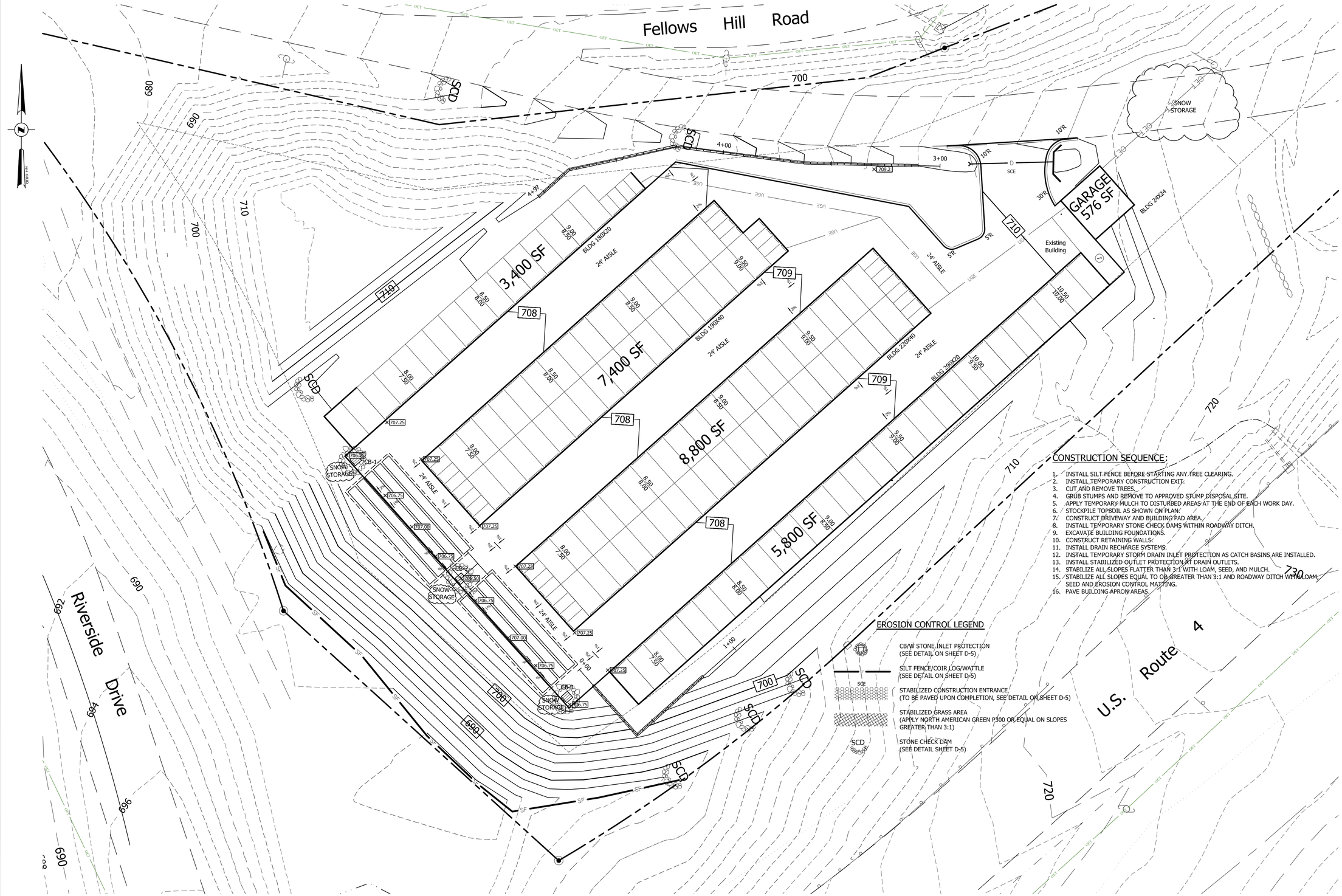
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-PL6



CONSTRUCTION SEQUENCE:

1. INSTALL SILT FENCE BEFORE STARTING ANY TREE CLEARING.
2. INSTALL TEMPORARY CONSTRUCTION EXIT.
3. CUT AND REMOVE TREES.
4. GRUB STUMPS AND REMOVE TO APPROVED STUMP DISPOSAL SITE.
5. APPLY TEMPORARY MULCH TO DISTURBED AREAS AT THE END OF EACH WORK DAY.
6. STOCKPILE TOPSOIL AS SHOWN ON PLAN.
7. CONSTRUCT DRIVEWAY AND BUILDING PAD AREA.
8. INSTALL TEMPORARY STONE CHECK DAMS WITHIN ROADWAY DITCH.
9. EXCAVATE BUILDING FOUNDATIONS.
10. CONSTRUCT RETAINING WALLS.
11. INSTALL DRAIN RECHARGE SYSTEMS.
12. INSTALL TEMPORARY STORM DRAIN INLET PROTECTION AS CATCH BASINS ARE INSTALLED.
13. INSTALL STABILIZED OUTLET PROTECTION AT DRAIN OUTLETS.
14. STABILIZE ALL SLOPES FLATTER THAN 3:1 WITH LOAM, SEED, AND MULCH.
15. STABILIZE ALL SLOPES EQUAL TO OR GREATER THAN 3:1 AND ROADWAY DITCH WITH LOAM, SEED AND EROSION CONTROL MATTING.
16. PAVE BUILDING APRON AREAS.

EROSION CONTROL LEGEND

- CB/W STONE INLET PROTECTION (SEE DETAIL ON SHEET D-5)
- SILT FENCE/COIR LOG/WATTLE (SEE DETAIL ON SHEET D-5)
- SCE — STABILIZED CONSTRUCTION ENTRANCE (TO BE PAVED UPON COMPLETION, SEE DETAIL ON SHEET D-5)
- STABILIZED GRASS AREA (APPLY NORTH AMERICAN GREEN P300 OR EQUAL ON SLOPES GREATER THAN 3:1)
- SCD — STONE CHECK DAM (SEE DETAIL SHEET D-5)

0 10 20 30 Meters
0 20 40 60 80 100 Feet

SHEET 13 OF 16

#	REVISIONS	DATE
1	UPDATE	01/24/2022

7/27/20

EROSION CONTROL PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 3937 LICENSED PROFESSIONAL ENGINEER

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	KH/J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

EROSION CONTROL PLAN

ECP-1

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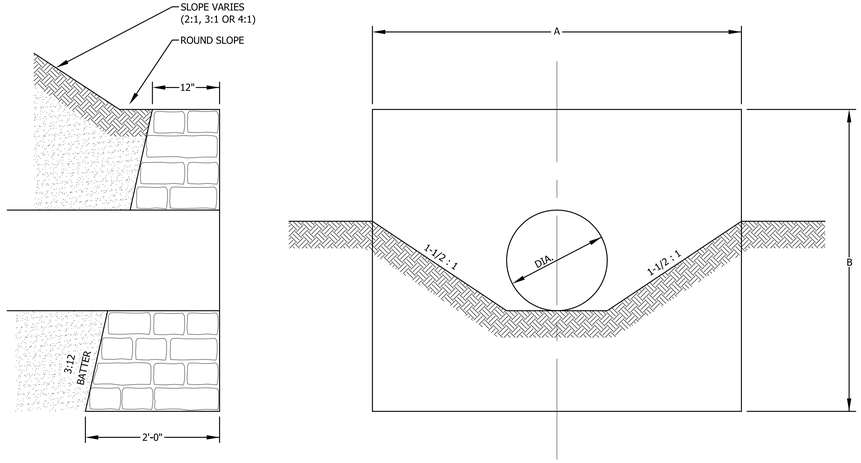
DWG: 20001\20001-PL6



DIMENSIONS SHOWN ARE TO PAYMENT LINES.
MORTAR RUBBLE MASONRY TO BE STEPPED
OUTSIDE PAYMENT LINES ON SLOPING FACES.

NOTE:

FOR PLAN OF "L" OR "U"
HEADWALL, SEE DETAIL.

STRAIGHT HEADWALL
(USE WITH 24" CULVERTS)
N.T.S.

GENERAL NOTES:

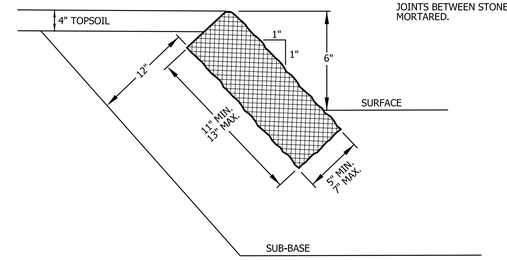
1) ROADWAY CONSTRUCTION SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2016 AND CITY OF LEBANON SUBDIVISION REGULATIONS.

2) GUARD RAIL SHALL BE USED WHERE SIDESLOPES EXCEED 3' HORIZONTAL AND 1' VERTICAL.

3) DESIGN SPEED = 15 M.P.H.

4) UNDERDRAIN REQUIRED WHERE GROUNDWATER WILL BE LESS THAN 4 FEET BELOW FINISHED GRADE. LOCATIONS TO BE DETERMINED IN THE FIELD.

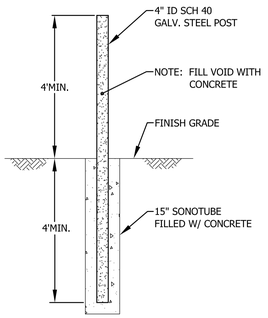
5) THE DESIGN INTENT IS FOR CATCH BASIN RIMS TO BE SET 0.1 FOOT BELOW THE FINISH GRADE OF ADJACENT PAVEMENT.



EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.

JOINTS BETWEEN STONES TO BE MORTARED.

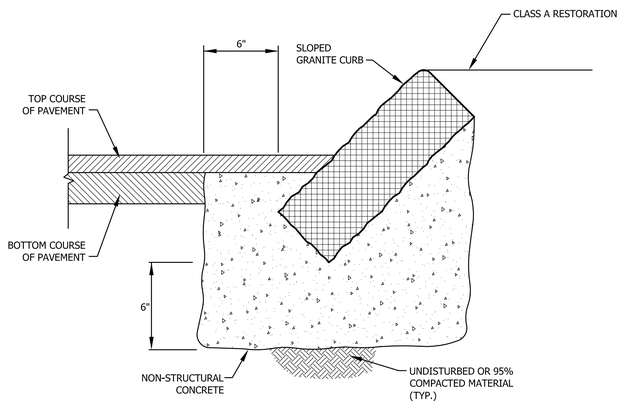
SLOPED GRANITE CURB
N.T.S.



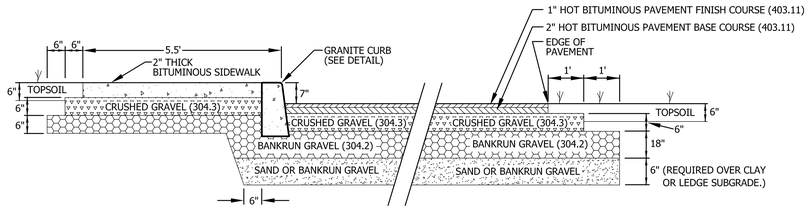
BOLLARD DETAIL
N.T.S.

NOTES:

1. BOLLARDS SHALL BE MINIMUM 4" DIAMETER, CONCRETE FILLED.
2. SPACING SHALL NOT EXCEED 4' ON CENTER.
3. BOLLARDS SHALL BE SET IN BASES OF AT LEAST 15" DIAMETER, AND AT LEAST 4' DEEP.
4. BOLLARDS SHALL EXTEND A MINIMUM 4' ABOVE FINISHED GRADE.
5. BOLLARDS SHALL BE PLACED A MINIMUM OF 3' FROM THE PROTECTED ITEM (DOMES).



CURB SETTING DETAIL
N.T.S.



NOTES:

1.) ALL GRAVEL AND SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR.

2.) ALL MATERIAL USED SHALL COMPLY WITH NHDOT STANDARDS FOR HIGHWAY CONSTRUCTION.

3.) UNDERDRAIN SHALL BE REQUIRED WHEREVER GROUNDWATER SURFACE IS WITHIN 4' OF FINISH GRADE.

TYPICAL PAVEMENT/SIDEWALK/CURB SECTION
N.T.S.

#	REVISIONS	DATE
1	UPDATE	01/24/2022

SITE DETAILS
FOR
OAKES STORAGE, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL A. KENNEY
No. 9937
LICENSED
PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

SITE DETAILS

D-1

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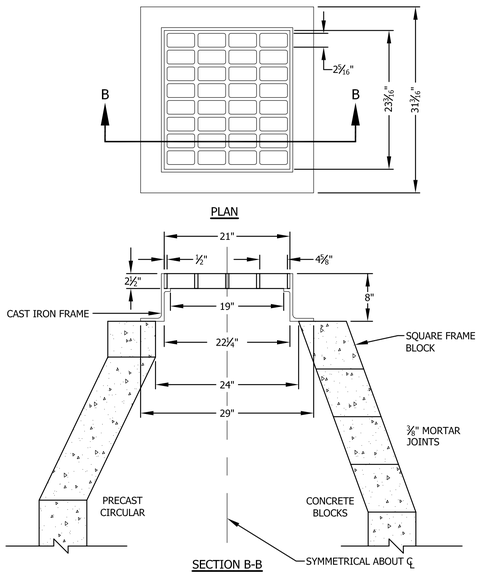
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-DET



INLET GRATE

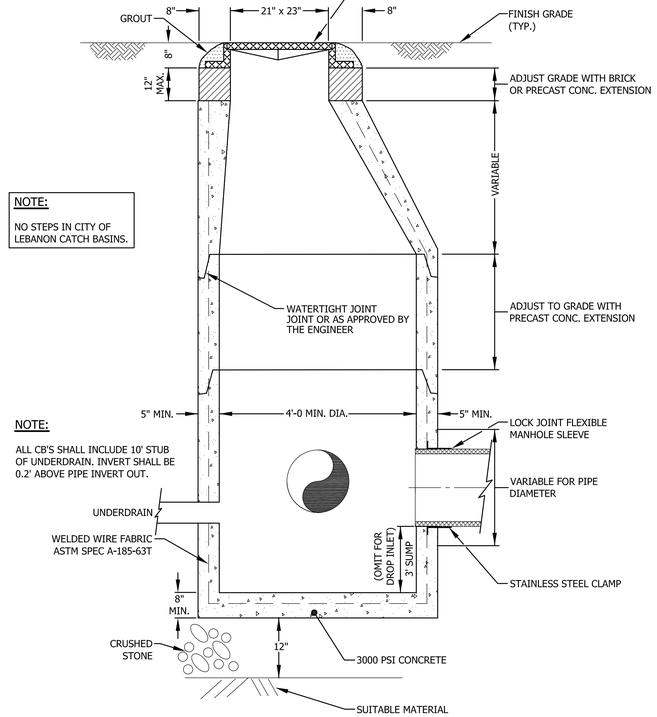
N.T.S

NOTE:

FRAME AND GRATE SHALL BE NEENAH R3570 OR EQUAL APPROVED BY ENGINEER.

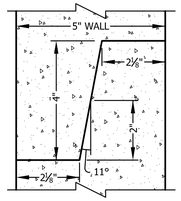
NOTE:

USE OF CONCENTRIC OR ECCENTRIC TOP IS PERMISSIBLE. FLAT TOPS MAY BE USED IF STRUCTURE IS VERTICALLY CONSTRAINED.



PRECAST REINFORCED CATCH BASIN AND DROP INLET

N.T.S.



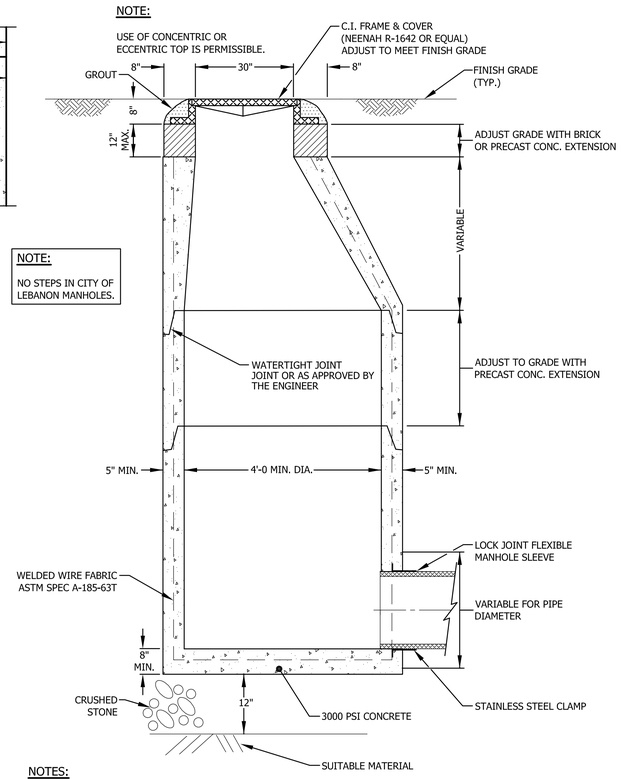
DETAIL OF TONGUE & GROOVE JOINT

NOTE:

USE OF CONCENTRIC OR ECCENTRIC TOP IS PERMISSIBLE.

NOTE:

NO STEPS IN CITY OF LEBANON MANHOLES.



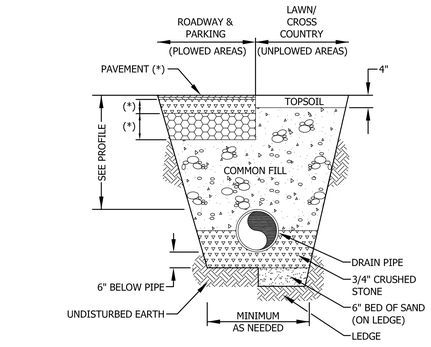
NOTES:

1) A 3 INCH (MINIMUM) LETTER "S" FOR SEWER OR "D" FOR STORM DRAINAGE SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.

2) FRAME AND COVER SEATS TO BE MACHINED.

TYPICAL DRAIN MANHOLE SECTION

N.T.S.



(*) SEE ROADWAY TYPICAL CROSS SECTION

COMMON FILL- SHALL CONTAIN NO STONES, ROCKS, CONCRETE, OR OTHER RUBBLE LARGER THAN 10 INCHES IN DIAMETER. FILL TO BE PLACED IN 12" LIFTS & COMPACTED TO 95% STANDARD PROCTOR.

BR GRAVEL - SHALL BE 12" BANK RUN GRAVEL PLACED IN 6" LIFTS, COMPACTED TO 95% STANDARD PROCTOR.

CRUSHED GRAVEL - SHALL BE 6" CRUSHED GRAVEL SURFACE COURSE COMPACTED TO 95% STANDARD PROCTOR.

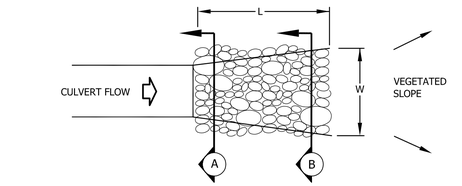
CRUSHED STONE - SHALL BE DURABLE, WASHED CRUSHED STONE AND SHALL BE APPROVED BY PROJECT ENGINEER PRIOR TO USE. (SMOOTH WASHED STONE IS NOT ACCEPTABLE)

SAND - SHALL BE OF CLEAN MINERAL AGGREGATE AND SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO USE. SAND TO BE PLACED IN 6" LIFTS & COMPACTED TO 95% STANDARD PROCTOR.

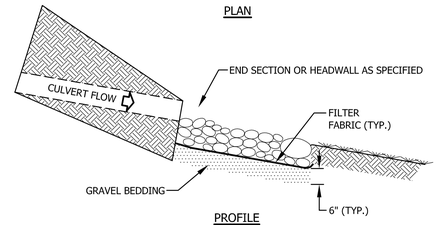
NOTE: CONSTRUCTION MATERIALS SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS.

DRAIN PIPE TRENCH DETAIL

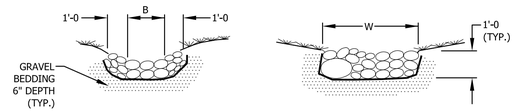
N.T.S.



PLAN



PROFILE

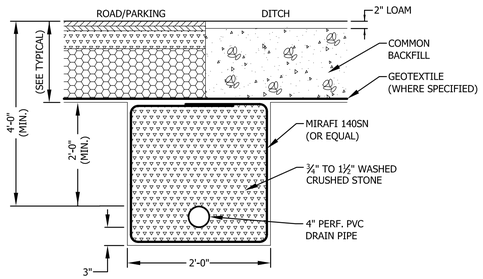


CROSS SECTION (A) CROSS SECTION (B)

PIPE (W)	B (Ft.)	W (Ft.)	L (Ft.)	STONE TYPE
15"	2'	4'	8'	I
18"	2'	4'	8'	I
24"	4'	6'	12'	II
30"	4'	6'	14'	II
36"	4'	6'	16'	II
42"	6'	8'	18'	II
48"	6'	8'	20'	II

STONE DISCHARGE APRON

N.T.S.



UNDERDRAIN DETAIL

N.T.S.

NOTES:

1) MINIMUM 10' STUB REQUIRED AT ALL DRAIN CB/MH.

2) REQUIRED WHERE GROUNDWATER WILL BE LESS THAN 4 FEET BELOW FINISHED GRADE.

NO.	UPDATE	DATE
1		01/24/2022

REVISIONS

DRAINAGE DETAILS
FOR
OAKES STORAGE, LLC
IN
TOWN, STATE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL No. 3937 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

DRAINAGE DETAILS

D-4

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DWG: 20001\20001-DET

EROSION CONTROL PLAN

ROAD, PARKING, BUILDING AND UTILITY CONSTRUCTION

DESIGN BASIS

THE MAJORITY OF THE SOIL TO BE DISTURBED DURING THE PROGRESS OF CONSTRUCTION ON THIS SITE WILL RESULT DURING THE ROAD, PARKING, BUILDING AND UTILITY CONSTRUCTION. CERTAIN CONSIDERATIONS HAVE BEEN MADE AND INCORPORATED IN THE CONSTRUCTION PLAN TO INSURE THAT A RETURN TO THE NATURAL STATE WILL BE EXPEDITIOUS AND RESULT IN PERMANENT CONTROL AGAINST SOIL EROSION AFTER THE PROJECT IS COMPLETE.

SITE PREPARATION

THE ENTIRE CONSTRUCTION SITE MAY BE CLEARED (TREES CUT) ALL AT ONCE BUT STUMPING AND/OR GRUBBING SHALL BE UNDERTAKEN IN A PHASED MANNER ALLOWING FOR COMPLETION WITHIN A REASONABLE TIME PERIOD, USUALLY NOT MORE THAN TWO WEEKS.

1) ALL NECESSARY AND REQUIRED EROSION CONTROL WILL NEED TO BE INSTALLED AND IN PLACE PRIOR TO ANY CLEARING AND GRUBBING.

2) ONCE THE TEMPORARY EROSION CONTROL MEASURES, AS DESCRIBED ON THE PLAN AND AS REQUIRED IN THE FIELD, ARE IN PLACE; GRUBBING, GRADING AND EARTHWORK MAY BEGIN IN PHASES. EACH PHASE, FROM THE BEGINNING OF CLEARING TO FINAL STABILIZATION OF SEEDING AND MULCHING, SHOULD BE ACCOMPLISHED WITHIN A REASONABLE PERIOD OF TIME, USUALLY TWO WEEKS. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF DISTURBANCE THROUGH THE APPLICATION OF TEMPORARY OR PERMANENT EROSION CONTROL MEASURES DESCRIBED HEREIN. IN NO CASE SHALL A DISTURBED AREA REMAIN UNSTABILIZED FOR ANY MORE THAN 45 DAYS.

3) ALL BLASTING WILL BE COMPLETED UNDER BLAST MATS OR EARTH OVERBURDEN IN ORDER TO PREVENT UNCONTROLLED EJECTION OF ROCK FRAGMENTS. BLASTING SHALL ALSO CONFORM TO ALL STATE AND FEDERAL STANDARDS.

4) SLOPES WILL BE BROUGHT TO FINAL GRADE AS RAPIDLY AS POSSIBLE. AT THE END OF EACH DAY'S OPERATION, THE SEGMENT OF THE SLOPE UNDER CONSTRUCTION WILL EITHER BE SEEDED AND MULCHED UPON COMPLETION OF FINAL GRADE, OR ALL EROSION CONTROL MEASURES INSPECTED TO INSURE THAT THEY WOULD FUNCTION PROPERLY IN THE EVENT OF A RAIN DURING THE NON-WORKING PERIODS.

5) AREAS GRUBBED AND NOT GRADED SHALL BE MULCHED AND TRACKED IN WITH A BULLDOZER OR ROLLER WITHIN 7 DAYS. ANY GRADED AREAS NOT BEING WORKED (ROADWAYS, BUILDING PADS) SHALL BE MULCHED AND TRACKED IN WITHIN 7 DAYS OF DISTURBANCE.

6) THE DISTURBED AREA SHALL BE KEPT TO THE SMALLEST AREA PRACTICABLE. IN NO CASE SHALL UNSTABILIZED DISTURBED AREA EXCEED 5 ACRES.

THE BASIS OF DESIGN TO INSURE A MINIMUM OF SOIL EROSION DURING CONSTRUCTION IS AS FOLLOWS:

1) TEMPORARY EROSION CONTROL

ALL FINISH GRADED AREAS SHALL BE MULCHED AND SEEDED EXPEDITIOUSLY AS SOON AS THEY ARE SO GRADED. IT SHOULD BE POSSIBLE TO PLACE SEED AND MULCH WITHIN ONE WEEK OF FINISH GRADING. ALL DITCHES, SWALES, AND THE TREATMENT SWALE SHALL BE STABILIZED PRIOR TO DIRECTING FLOW INTO THEM.

PROBLEM AREAS SUCH AS WET SITE AND INTERMITTENT WATER COURSES WILL BE GIVEN PRELIMINARY SEED AND MULCH COATS PRIOR TO FINAL PLANTING AS AN EXTRA PRECAUTION.

TOP SOIL STOCKPILED FOR FUTURE USE IS TO BE PROTECTED FROM EROSION. IF TOPSOIL IS TO BE STOCKPILED, IT SHALL ONLY BE DONE OUTSIDE ANY DRAINAGE WAYS OR WATER COURSES. A SWALE NOT LESS THAN TWELVE INCHES DEEP SHALL BE CONSTRUCTED AROUND THE PERIMETER OF THE STOCKPILE AND A SILT FENCE SHALL BE CONSTRUCTED AROUND THE SWALE, ON THE DOWNSTREAM HALF OF THE PILE. IF THE STOCKPILE IS TO REMAIN IN POSITION FOR MORE THAN ONE MONTH IT WILL BE SEEDED AND MULCHED. (SEE STOCKPILE TREATMENT DETAIL)

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

- BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
- A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE RIPRAP HAS BEEN INSTALLED; OR
- EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

2) TEMPORARY SEEDING AND MULCHING

ALL ESSENTIAL GRADING AND ALL TEMPORARY STRUCTURES, SUCH AS DIVERSIONS, DAMS, DITCHES, AND DRAINS NEEDED TO PREVENT GULLYING AND REDUCE SILTATION SHOULD BE COMPLETED PRIOR TO SEEDING. REMOVE STONES AND TRASH THAT WILL INTERFERE WITH SEEDING THE AREA. WHERE FEASIBLE, TILL THE SOIL TO A DEPTH OF ABOUT 3 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER INTO SOIL. THE SEEDBED SHOULD BE LEFT IN A FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER POSSIBLE. FERTILIZER SHOULD BE UNIFORMLY SPREAD OVER THE AREA PRIOR TO BEING INCORPORATED INTO THE SOIL. A MINIMUM OF 300 POUNDS PER ACRE (7 POUNDS PER 1,000 SQUARE FEET) OF 10-10-10 FERTILIZER, OR ITS EQUIVALENT, SHOULD BE APPLIED. SEED AND SEEDING RATES MAY BE SELECTED FROM THE TABLE BELOW. THE SELECTION WILL BE BASED ON THE TIME OF YEAR THE SEEDING IS TO BE MADE AND THE LENGTH OF TIME THE VEGETATION IS TO AFFORD THE PROTECTION. THE SEED SHOULD BE SPREAD UNIFORMLY OVER THE AREA. AFTER SEEDING, THE SOIL SHOULD BE FIRMED BY ROLLING OR PACKING. WHERE ROLLING OR PACKING IS NOT FEASIBLE, THE SEED SHOULD BE COVERED LIGHTLY BY RAKING, DISKING, OR DRAGGING. WHERE IT IS IMPRACTICABLE TO INCORPORATE FERTILIZER AND SEED INTO MOIST SOIL, THE SEEDED AREA SHOULD BE MULCHED TO FACILITATE GERMINATION.

SPECIES	PER ACRE	PER 1000 SQ.FT.	REMARKS
WINTER RYE	2 BU. OR 112 LBS.	2.5 LBS.	BEST FOR ALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 5 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	2.5 BU. OR 80 LBS.	2 LBS.	BEST FOR SPRING SEEDINGS. SEED NO LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40 LBS.	1 LB.	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. COVER THE SEED WITH NO MORE THAN 0.25 INCHES OF SOIL.
PERENNIAL RYEGRASS	30 LBS.	0.7 LBS.	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1 AND JUNE 1 AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

3) ROADWAY

THE ROADWAY IS A TYPICAL CUT/FILL OPERATION. IN AREAS WHERE SOILS MAY BE SATURATED BY SEASONAL OR PERMANENT WATER TABLES, IT MAY BE NECESSARY TO PROVIDE ARTIFICIAL SLOPE STABILIZATION BY UNDERDRAIN MEASURES TAKEN AS THEY ARE UNCOVERED DURING CONSTRUCTION. WHERE SATURATED SOILS ARE OBVIOUS WITHOUT EXPLORATION, CUT SECTIONS HAVE BEEN AVOIDED IN AS MUCH AS IS PRACTICAL.

4) CLEARING AND GRUBBING STUMPS ARE TO BE CHIPPED IN PLACE AND ALLOWED TO DECOMPOSE, PLACED IN NON STRUCTURAL FILL SECTIONS OR SHALL BE REMOVED TO AN APPROVED STUMP DUMP.

5) SEEDING AND MULCHING

ALL AREAS WHERE THE NATURAL GROUND SURFACE HAS BEEN DISTURBED AND NATURAL VEGETATION REMOVED OR DESTROYED ARE TO BE SEEDED, FERTILIZED AND MULCHED WITHIN THE WORK PERIOD SPECIFIED TO AVOID SOIL DISPLACEMENT BY EROSION BOTH DURING AND AFTER CONSTRUCTION. STANDARD SOIL CONSERVATION SEED MIX IS TO BE APPLIED AT A RATE OF 60 LBS. PER ACRE (TALL FESCUE - 24 LBS., RED FESCUE - 20 LBS., RED TOP - 2 LBS., AND BIRDSFOOT TREFOIL- 4 LBS.). 10-10-10 FERTILIZER IS TO BE WORKED INTO THE TOP 3 OR 4 INCHES OF SOIL (HYDRAULIC APPLICATION PREFERRED) AT A RATE OF 1,000 LBS. PER ACRE. MULCH CONSISTING OF RIPE SEED CARRYING HAY SHALL BE APPLIED OVER SEEDED AND FERTILIZED AREAS AT A RATE OF 2 TONS PER ACRE.

6) EROSION CONTROL DURING BUILDING CONSTRUCTION

ALL PLACES WHERE NATURAL VEGETATION IS REMOVED OR DESTROYED DURING CONSTRUCTION WILL BE SEEDED AND MULCHED SO AS TO PREVENT DISPLACEMENT OF SOIL BY EROSION. WORK TO BE PERFORMED IN THESE PHASES OF CONSTRUCTION WILL BE SCHEDULED IN SUCH A WAY TO INSURE EROSION WILL BE EFFECTIVELY CONTROLLED.

IN CASES OF PROLONGED INCLEMENT WEATHER LEADING TO RUNOFF, EXPOSURE OF NEW SOIL WILL BE TEMPORARILY HALTED; AND ANY AREAS WHERE SOIL DISPLACEMENT BY EROSION IS OCCURRING WILL BE PROTECTED BY METHODS SUCH AS MULCHING, HAY BALES, DIVERSION DITCHES, ETC.

7) COMMENCEMENT AND COMPLETION

ALL WORK INVOLVING EARTHWORK, LANDSCAPING OR ANY OTHER DISTURBANCES OF THE GROUND SURFACE RESULTING IN THE REMOVAL OR DESTRUCTION OF NATURAL GROUND COVER SHALL NOT BE COMMENCED UNTIL APRIL 1 AND ALL AREAS SO DISTURBED SHALL BE FINISH GRADED, SEEDED AND MULCHED OR TEMPORARILY SEEDED AND MULCHED PRIOR TO NOVEMBER 15. SHOULD THERE BE A NEED TO EXTEND BEYOND THIS DATE, EXTRAORDINARY EROSION CONTROL MEASURES WILL BE INSTITUTED, SUBJECT TO THE REVIEW AND APPROVAL FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES AND OTHER APPLICABLE PERMITTING AGENCIES. PROCESSES SUCH AS THE PLACEMENT OF GRAVEL, PAVING, PLACEMENT OF STONE FILL, CONSTRUCTION OF HEADWALLS, ETC., MAY BE ACCOMPLISHED OUTSIDE OF THESE INCLUSIVE DATES.

8) DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL WITHIN THE PROJECT LIMITS.

CALCIUM CHLORIDE OR WATER WILL BE USED AS NEEDED TO CONTROL DUST.

AT THE END OF EACH DAY OR PRIOR TO CONSTRUCTION SHUTDOWNS FOR WEEKENDS OR FOR LONG PERIODS, ALL EROSION CONTROL MEASURES WILL BE INSPECTED AND WHATEVER MAINTENANCE THAT WOULD BE REQUIRED, BE PERFORMED IN ORDER TO INSURE THAT THE ENTIRE EROSION CONTROL SYSTEM WOULD FUNCTION PROPERLY DURING A RAINFALL EVENT.

IN THE EVENT THAT AN UNUSUAL RAINFALL EVENT OCCURS DURING NON-WORKING HOURS, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSPECT THE EROSION CONTROL MEASURES (WHILE IT IS RAINING) AND TAKE WHATEVER MEASURES THAT ARE NECESSARY WHERE EROSION CONTROL MEASURES ARE NOT FUNCTIONING PROPERLY.

WINTER CONSTRUCTION NOTES:

- ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
- ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS; AND
- AFTER NOVEMBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

EROSION CONTROL CHART

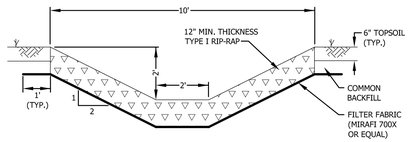
ACTIVITY:	TYPE OF CONTROL:	MAINTENANCE (*):
1) CLEARING AND GRUBBING	SILT FENCE	B
2) ACCESS ROADS AND PARKING	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
	SILT FENCE	B
3) DRAINAGE STRUCTURES	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
4) HOUSE SITES	SILT FENCE	B
	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
5) UTILITIES	GRASS SEED AND MULCH	A

MAINTENANCE INDEX

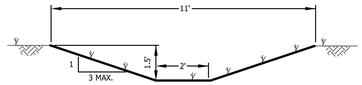
*) DAMAGED EROSION CONTROL MEASURES WILL BE REPAIRED AND/OR REPLACED AS SOON AS POSSIBLE. DAMAGE TO ANY EROSION CONTROL MEASURE AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IMMEDIATELY. EROSION CONTROL MEASURES THAT TRAP SEDIMENT WILL BE EMPTIED WHEN HALF FULL. SEE EROSION CONTROL TEXT FOR IMPLEMENTATION OF THESE EROSION CONTROL MEASURES.

A) TO BE INSPECTED DAILY.

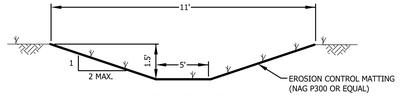
B) TO BE INSPECTED ONCE A WEEK AND AFTER RUNOFF OF 0.5" OR GREATER. REPAIRS SHALL BE MADE WITHIN 24 HOURS OF INSPECTION.



STONE LINED DITCH
(AS NOTED AND ON ROAD DITCHES > 5%)



GRASS LINED DITCH



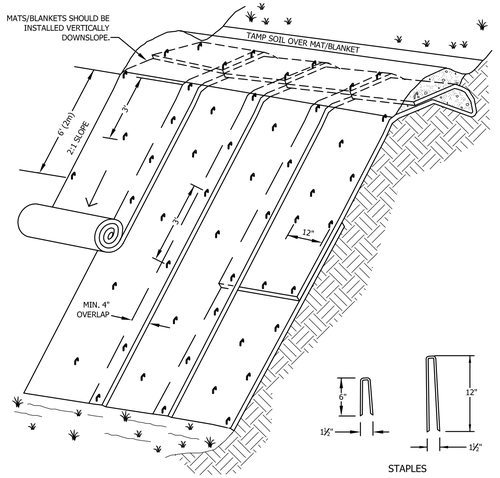
GRASS LINED DITCH

STONE FOR RIP-RAP

STONE FOR RIP-RAP SHALL BE APPROVED, HARD, BLASTED ANGULAR ROCK OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS). THE LEAST DIMENSION OF THE STONE SHALL BE GREATER THAN 1/3 OF THE LONGEST DIMENSION. THE STONE FILL SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE MAXIMUM SIZE STONE SPECIFIED SO AS TO FORM A COMPACT MASS WHEN IN PLACE.

(A) TYPE I. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME SHALL HAVE A LEAST DIMENSION OF 4 INCHES.
(B) TYPE II. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 2 INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME SHALL HAVE A LEAST DIMENSION OF 12 INCHES.

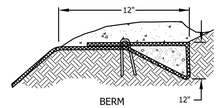
TYPICAL DRAINAGE DITCH SECTIONS
N.T.S.



STAPLES

NOTES:

1) SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2) APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3) LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.



EROSION CONTROL MATTING
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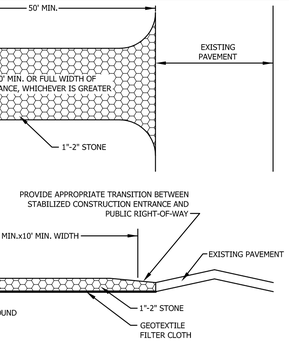
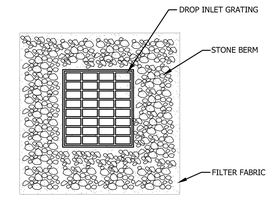


STABILIZED CONSTRUCTION ENTRANCE (BMP-SCE)
N.T.S.

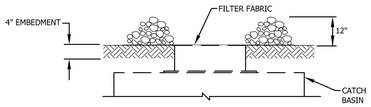
NOTES:

1) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING, WASHING, OR FLOWING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY.
2) ALL SEDIMENT SPILLED, DROPPED, TRACKED OR WASHED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.



PLAN VIEW

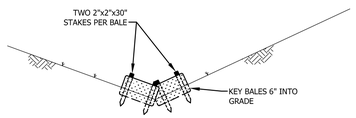
NOTE: PLACE STONE BERM AROUND GRATING AS SHOWN ON EROSION CONTROL PLAN

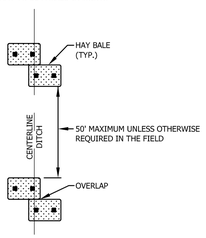


SECTION

TEMPORARY STONE INLET PROTECTION (BMP-SIP)
N.T.S.

*NOTE: TO BE USED AT ALL CATCH BASINS





STAKED HAY BALES (BMP-SHB)
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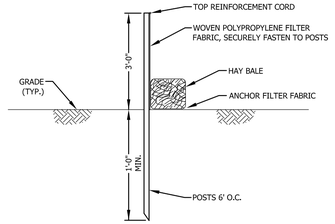

SILT FENCE DETAIL (BMP-SF)
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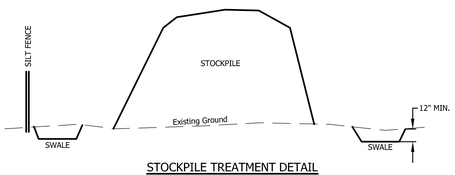
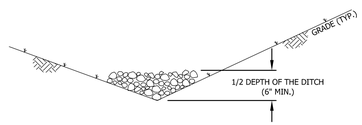
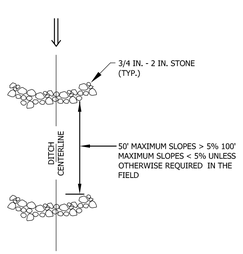


STOCKPILE TREATMENT DETAIL
N.T.S.

NOTES:

1) SWALE AROUND ENTIRE STOCKPILE, MINIMUM 12" DEEP.
2) SILT FENCE AROUND SWALE ON DOWNSTREAM HALF OF PILE.
3) STOCKPILE LEFT OVER 30 DAYS SHALL BE SEEDED AND MULCHED.





STONE CHECK DAMS (BMP - SCD)
N.T.S.

REVISIONS

DATE

EROSION CONTROL DETAILS
FOR
OAKES STORAGE, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL N. SHEA No. 7937 STATE OF NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

EROSION CONTROL DETAILS

D-5

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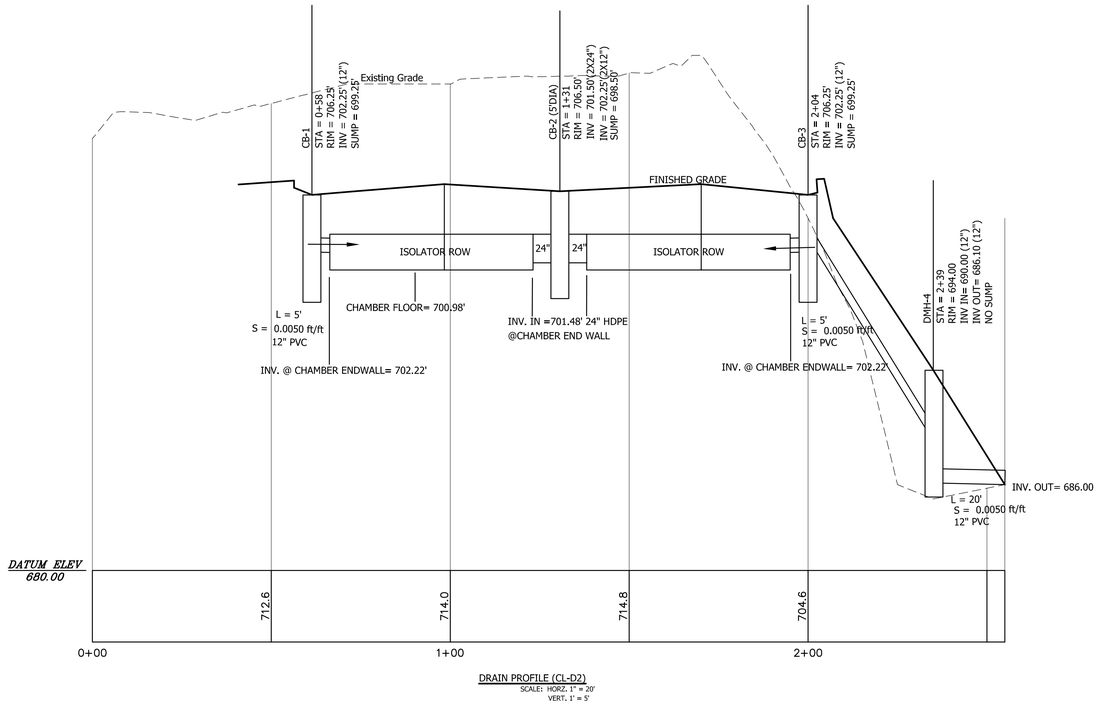
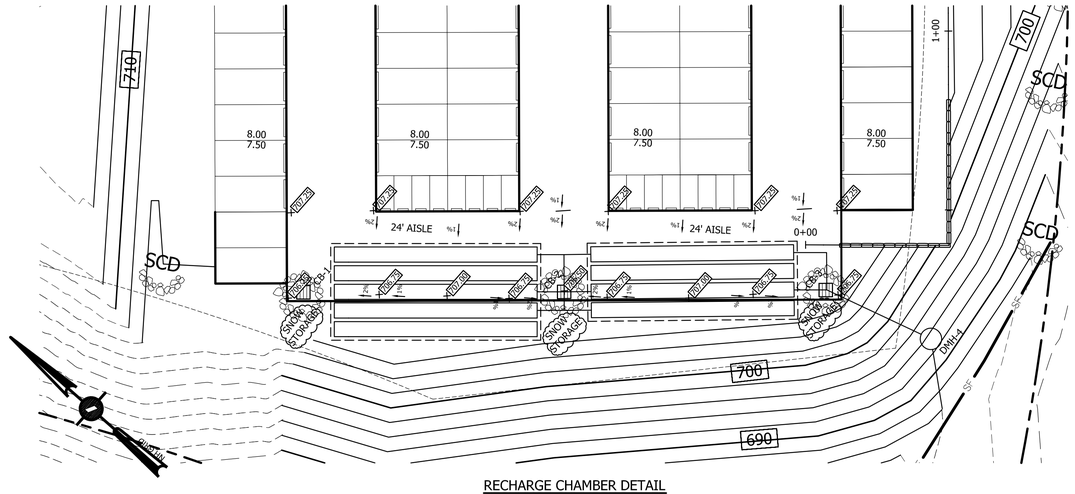
DWG: 20001\20001-DET



DRAIN PROFILE (CL-D2)
SCALE: HORZ. 1" = 20'
VERT. 1' = 5'



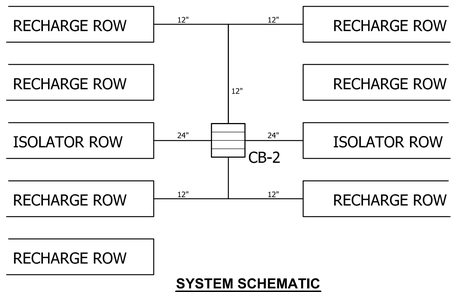
RECHARGE CHAMBER DETAIL
SCALE: 1" = 20'

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
NORTH SEGMENT	1W x 8L (56.9')	ISOLATOR ROW
	4W x 8L (56.9')	TREATMENT/RECHARGE ROWS

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
SOUTH SEGMENT	1W x 8L (56.9')	ISOLATOR ROW
	3W x 8L (56.9')	TREATMENT/RECHARGE ROWS

NOTES:

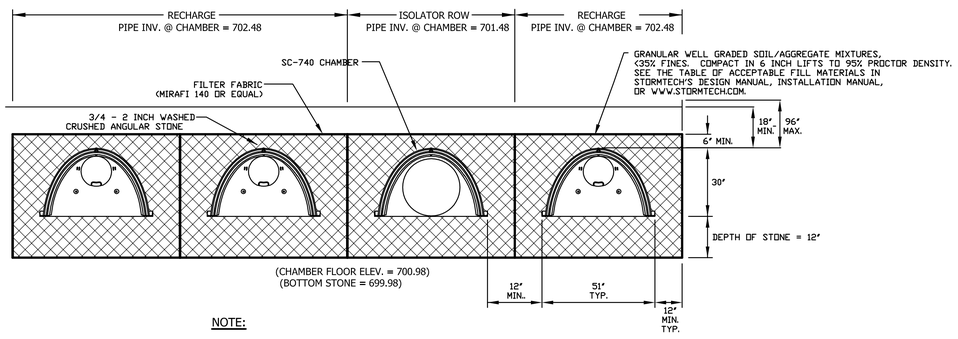
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE INFILTRATION SYSTEM.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
3. AFTER THE AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.



SYSTEM SCHEMATIC
NOT TO SCALE

NOTES:

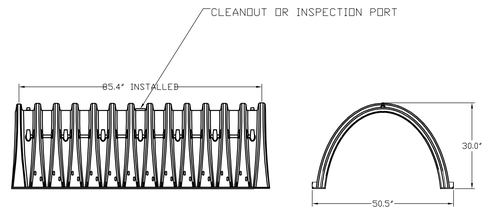
1) SYSTEM COMPOSED OF STORMTECH SC-740 INFILTRATOR CHAMBERS. TYPICAL CHAMBER DIMENSIONS: 50.5"W x 85.4"L (INSTALLED) x 30" H. CHAMBER WEIGHT 75# EACH.
2) ALL DRAIN PIPE SHALL BE PVC, SDR-35, EXCEPT 24" HDPE MAINFOLD AND PIPE TO CHAMBERS.
3) REFER TO DRAIN PROFILE (CL-D2) ON THIS SHEET.



NOTE:

ISOLATOR INVERT/CORE IN END CAP AT INVERT NOTED.

STORMTECH SC-740 CHAMBER SYSTEM
TYPICAL CROSS SECTION (4 ROWS) DETAIL
NOT TO SCALE



STORMTECH SC-740 CHAMBER

NOMINAL CHAMBER SPECIFICATIONS	
SIZE (W x H x INSTALLED LENGTH)	50.5" x 30.0" x 85.4"
CHAMBER STORAGE	45.9 CUBIC FEET
MINIMUM INSTALLED STORAGE	74.0 CUBIC FEET
WEIGHT	75 LBS.

SINGLE LAYER SYSTEM DETAIL

NOTES: (SEE STORMTECH INSTALLATION INSTRUCTION MANUAL)

1) REMOVE TOPSOIL AND DELETERIOUS MATERIAL.
2) EXCAVATE TO BOTTOM OF STONE LEVEL.
3) PLACE STONE.
4) STONE BED SHALL BE A MINIMUM OF 12" THICK. ADDITIONAL STONE SHALL BE PLACED TO ACHIEVE CHAMBER FLOOR LEVELS.
5) STONE SIZE MUST BE AS FOLLOWS: 1-1/2" - 2" OVERALL DIA. CLEAN, WASHED, CRUSHED STONE. (WASHED ROUNDED STONE NOT ACCEPTABLE).
6) USE CATERPILLAR D3 OR EQUIVALENT MACHINE.
7) VIBRATORY ROLLER OR PLATE COMPACTOR MUST BE USED AT EACH LEVEL BASED UPON MANUFACTURERS REQUIREMENTS, AS OUTLINED IN THE STORMWATER INSTALLATION INSTRUCTION MANUAL.
8) IN SANDY SOILS, GEOGRID MUST BE USED BETWEEN THE TOP OF THE STONE AND THE PAVEMENT.
9) A MINIMUM OF 6" OF STONE MUST BE PLACED ON TOP ROW OF INFILTRATOR ® CHAMBERS.
10) A MINIMUM OF 18" OF BACKFILL, (INCLUSIVE OF SPECIFIED STONE), MUST BE PLACED ON THE TOP ROW OF INFILTRATOR ® CHAMBERS.
11) DO NOT USE WHEELED VEHICLES ON THE BED DURING CONSTRUCTION.
12) MATERIAL LIFTS SHALL BE COMPACTED TO 95-98% DENSITY (STANDARD PROCTOR METHOD).
13) PROPER SEDIMENTATION CONTROL STRUCTURES MUST BE USED TO LIMIT SILT INTRUSION.

#	REVISIONS	DATE
2	OVERFLOW PIPING	01/26/2022
1	UPDATE	01/24/2022

RECHARGE SYSTEM
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

SURVEYED:	PAYTON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

RECHARGE SYSTEM

C-3

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ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-PL5

W17-30LY/PCU



Ultra-economy wall pack with a sleek, contemporary look.

Color: Bronze

Weight: 4.7 lbs

Project:	**Type:**
OAKS STOR.	W
Prepared By:	**Date:**
T.BOUCHER	12/9/21

Driver Info

Type	Constant Current
120V	0.25A
208V	0.15A
240V	0.13A
277V	0.11A
Input Watts	28.6W

LED Info

Watts	30W
Color Temp	3000K (Warm)
Color Accuracy	82 CRI
L70 Lifespan	50,000 Hours
Lumens	2,679
Efficacy	93.7 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations. Suitable for mounting within 4 feet of the ground.

Electrical

Driver:

Constant Current, Class 2, 120-277V, 50/60Hz, 120V: 0.25A, 208V: 0.15A, 240V: 0.13A, 277V: 0.11A

THD:

3.64% at 120V, 7.15% at 277V

Power Factor:

99.6% at 120V, 95.2% at 277V

Surge Protection:

2.5kV

Note:

All values are typical (tolerance +/- 10%)

Photocell:

120-277V Button photocell included. Photocell is compatible with 120V-277V.

Performance

Lifespan:

50,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Mounting:

Housing contains two (2) conduit entry points, one on each side, and knockout pattern for junction box or direct wall mounting.

Lens:

Glass

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Technical Specifications (continued)

Construction

Gaskets:

High-temperature silicone

Green Technology:

Mercury and UV free. RoHS-compliant components.

Finish:

Formulated for high durability and long-lasting color

Other

Replacement:

Replaces up to 100W Metal Halide

5 Yr Limited Warranty:

The RAB 5-year, limited warranty covers light output, driver performance and paint finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

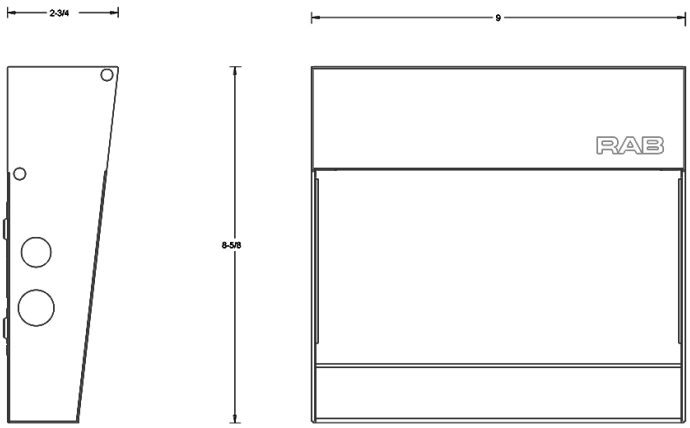
Trade Agreements Act Compliant:

This product is a product of Cambodia and a "designated country" end product that complies with the Trade Agreements Act

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Dimensions



Features

- Ultra-economy wall pack with a sleek, contemporary look
- Covers footprint of small HID wall packs
- Available in various lumen packages

Ordering Matrix

Family	Lumen Package	Color Temp	Options
W17	30L	Y	/PCU
	30L = Small (2900lm, 30W) **36L =** Small (3600lm, 33W) **55L =** Medium (5500lm, 50W) **75L =** Medium (7500lm, 69W) **90L =** Medium (9000lm, 86W) **150L =** Large (15000lm, 139W)	**Blank =** 5000K (Cool) **Y =** 3000K (Warm)	**Blank =** No Option **/PCU =** 120-277V Button Photocell

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IVAT3-45LPA730KU/WS2



Low profile, low glare. Edge-lit technology unlike any other.

Color: Black

Weight: 18.7 lbs

Project:	**Type:**
OAKS STOR	A3
Prepared By:	**Date:**
T.BOUCHER	12/9/21

Driver Info

Type	Constant Current
120V	0.33A
208V	0.19A
240V	0.17A
277V	0.14A
Input Watts	37.8W

LED Info

Watts	38W
Color Temp	3000K (Warm)
Color Accuracy	80 CRI
L70 Lifespan	100,000 Hours
Lumens	4,189
Efficacy	110.8 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80

California Title 24:

Can be used to conform with the requirements of California Title 24 Part 6.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PY9VGLB8

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations at 25°C

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IP Rating:

Ingress protection rating of IP66 for dust and water

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Housing:

Precision die-cast aluminum

IES Classification:

The Type III distribution is ideal for roadway, general parking, and other area lighting applications where a larger pool of lighting is required. It is intended to be located near the side of the area, allowing the light to project outward and fill the area.

Mounting:

Universal pole adapter

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Technical Specifications (continued)

Construction

Lens:

Diffused Polymethyl Methacrylate (PMMA)

Effective Projected Area:

EPA = 0.61

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

Sensor Specifications

Multi Level Motion Sensor:

*40 ft. diameter coverage from 20 ft. height.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B2 U0 G2

Electrical

Driver:

Class 2, 50/60Hz, 120-277V, 4kV standard, 10kV optional

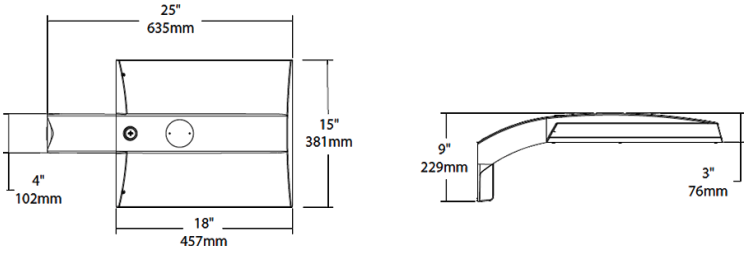
THD:

9.36% at 120V, 17.01% at 277V

Power Factor:

99% at 120V, 92% at 277V

Dimensions



Features

0-10V Dimming, standard

100,000-Hour LED lifespan

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Ordering Matrix

Family	Distribution		Lumen Output	Mounting	CRI/Color Temp	Finish	Voltage/Driver	Sensor Options	Lightcloud Option
IVA	T3	–	45L	PA	730	K	U	/WS2	
	T2 = Type II * **T3 =** Type III * **T4 =** Type IV * **T5S =** Type V Square * **FT =** Forward Throw *		**45L =** 4,500 lumens (38W) **75L =** 7,500 lumens (67W) **100L =** 10,000 lumens (94W) **130L =** 13,000 lumens (117W) [1]	**PA =** Universal Pole Mount **WM =** Wall mount **SF =** Slipfitter	**750 =** 70CRI 5000K **740 =** 70CRI 4000K **730 =** 70CRI 3000K	**Z =** Bronze **W =** White **G =** Roadway Gray **K =** Black	**U =** 120-277V 0-10V Dimming **H =** 347-480V, 0-10V Dimming	**Blank =** No Options **/WS =** 8ft lens Wattstopper **/WS2 =** 20ft lens Wattstopper **/WS4 =** 40ft lens Wattstopper **/7PR =** 7-Pin receptacle	**Blank =** No Lightcloud® **/LC =** Lightcloud® Controller [2]

[1] *Applies to Type IV, V Square*

[2] *Applies 120-277V*

* *All values are nominal with +/- 10% tolerance. See spec sheet for more details.*

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AGD
Advanced Geomatics & Design

13 December 2021
Rev. 26Jan2022

Brian Vincent, PE, City Engineer
51 North Park Street
Lebanon, NH 03766

Re: Drainage Report
Oakes Storage
Fellows Hill Road

Dear Mr. Vincent:

Attached are our drainage calculations for the Oakes Storage facility on Fellows Hill Road.

The site has one discharge point. The Discharge point, DP#1 is at the intersection of Fellows Hill Road and Riverside Drive.

This summary is followed by a comparison sheet. The Sheet compares the 2, 10, 25, 50, and 100 year storms. The project provides a modest overall decrease. Building and pavement apron drainage will be routed to a recharge system; the recharge systems capture and keep runoff levels below pre-development levels.

The recharge functions to keep runoff totals below pre-development levels. The calculation sheet has been modified to reflect 72 chambers. When the system reaches its retention capacity, excess runoff will be diverted to the overflow pipe. The maximum overflow is less than 5cfs.

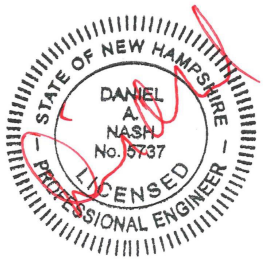
The "stage-both" sheet reflects just the performance of the chambers. The following "stage-site" sheet shows totals for DP#1. It is important to note the system does not allow any overflow up to the 30 minute time of concentration, except for the 100 year storm. At this point in the storm, the overflow and decreased runoff for the rest of the drain areas are still below pre-development levels.

Drainage
Lot 111-16
Fellows Hill Road
26Jan2022

Please let us know if you need any additional materials or information to support this report.

Sincerely,

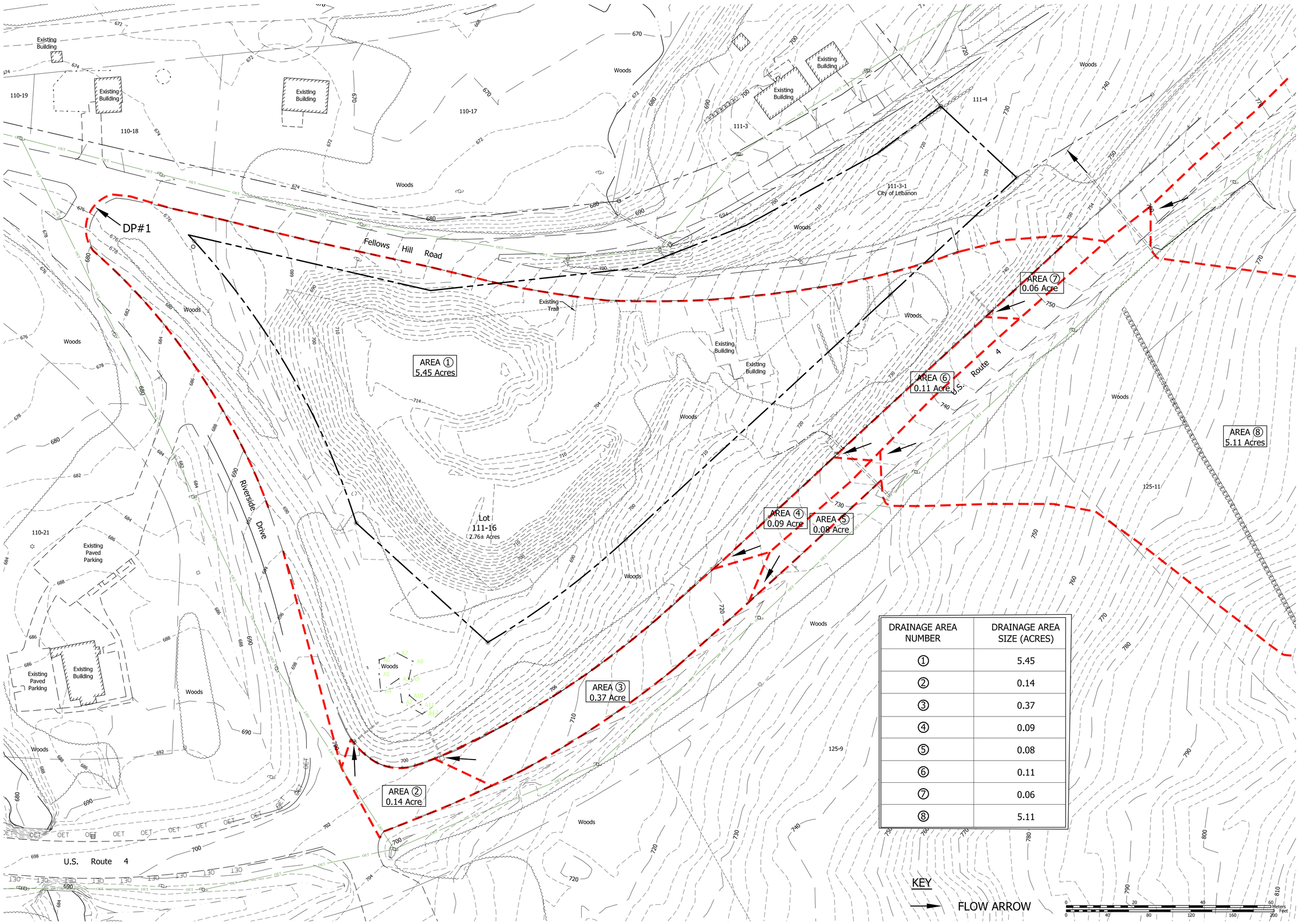
Daniel A. Nash, PE
Principal



CC: Bobby Oakes

M:\2020_projeccts\20-001\drainage\OAKES_drain_26jan22.doc

OAKES STORAGE					
FELLOWS HILL ROAD					
LEBANON, NH					
PRE/POST COMPARISONS					
2 YEAR STORM COMPARISON					
AREA	PRE Q-2		POST Q-2		POST Q-2
			(without detention)		(with detention)
DP#1	9.2		11.1		8.2
10 YEAR STORM COMPARISON					
AREA	PRE Q-10		POST Q-10		POST Q-10
			(without detention)		(with detention)
DP#1	15.2		18.4		13.6
25 YEAR STORM COMPARISON					
AREA	PRE Q-25		POST Q-25		POST Q-25
			(without detention)		(with detention)
DP#1	17.5		21.2		15.7
50 YEAR STORM COMPARISON					
AREA	PRE Q-50		POST Q-50		POST Q-50
			(without detention)		(with detention)
DP#1	19.6		23.9		17.6
100 YEAR STORM COMPARISON					
AREA	PRE Q-100		POST Q-100		POST Q-100
			(without detention)		(with detention)
DP#1	21.5		26.0		19.3



DRAINAGE AREA NUMBER	DRAINAGE AREA SIZE (ACRES)
①	5.45
②	0.14
③	0.37
④	0.09
⑤	0.08
⑥	0.11
⑦	0.06
⑧	5.11

#	UPDATE	REVISIONS	DATE
1			01/26/2022

PRE DRAINAGE PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 9737 LICENSED PROFESSIONAL ENGINEER

SURVEYED: PATON SURVEYS
DESIGNED: DAN
DRAWN: J
CHECKED: DAN
DATE: 12/13/2021

OAKES STORAGE

PRE DRAINAGE PLAN

DR-1

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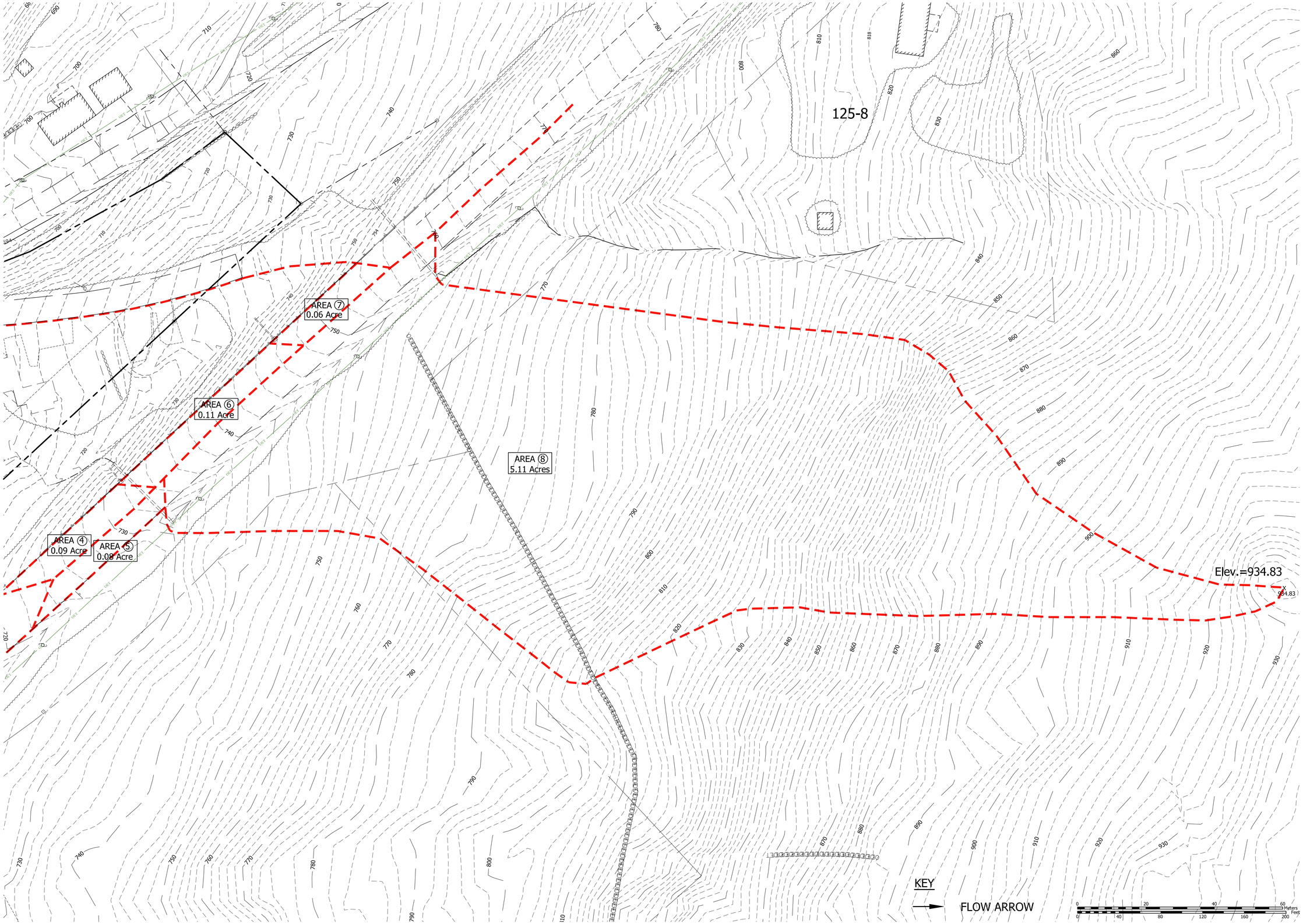
ADVANCED GEOMATICS & DESIGN

DWG: 20001\20001-DR



#	REVISIONS	DATE
1	UPDATE	01/26/2022

PRE DRAINAGE PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 9727
LICENSED PROFESSIONAL ENGINEER

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

PRE DRAINAGE PLAN

DR-2

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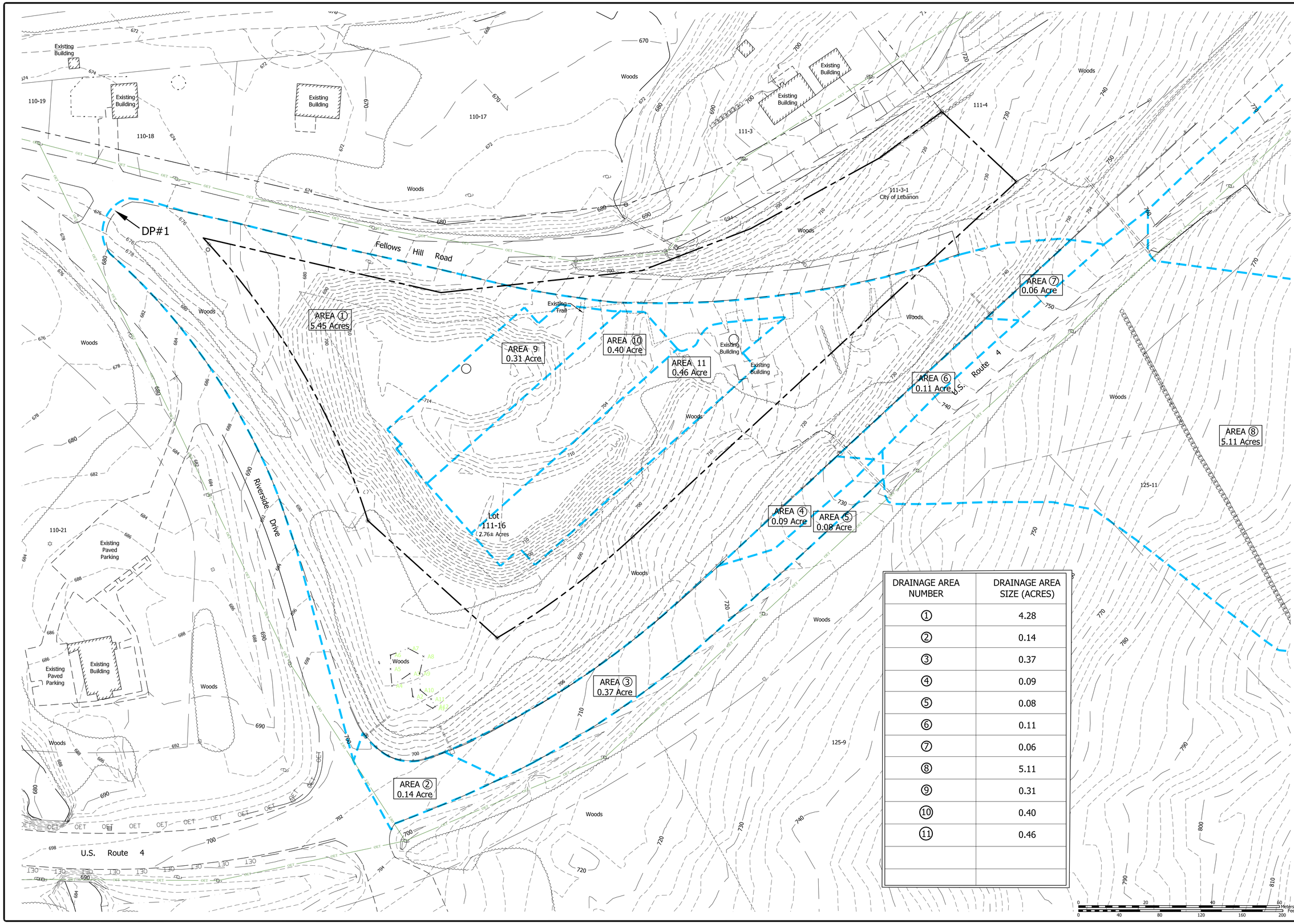
ADVANCED GEOMATICS & DESIGN
DWG: 20001\20001-DR



DRAINAGE AREA NUMBER	DRAINAGE AREA SIZE (ACRES)
①	4.28
②	0.14
③	0.37
④	0.09
⑤	0.08
⑥	0.11
⑦	0.06
⑧	5.11
⑨	0.31
⑩	0.40
⑪	0.46

#	REVISIONS	DATE
1	UPDATE	01/26/2022

POST DRAINAGE PLAN
FOR
OAKES STORAGE, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL A. NASH, No. 7937, LICENSED PROFESSIONAL ENGINEER, STATE OF NEW HAMPSHIRE

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	12/13/2021

OAKES STORAGE

POST DRAINAGE PLAN

DR-3

© 2021
ADVANCED GEOMATICS & DESIGN
DWG: 20001\20001-DR

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DRAIN CALCULATIONS

EXISTING RUNOFF

AREA DESIGNATION	AREA c=.9	AREA c=.6	AREA c=.3	AREA TOTAL	weighted "C"
-TO DISCHARGE POINT #1					
Area 1	0.04		5.41	5.45	0.30
Area 2	0.14			0.14	0.90
Area 3	0.37			0.37	0.90
Area 4	0.09			0.09	0.90
Area 5	0.08			0.08	0.90
Area 6	0.11			0.11	0.90
Area 7	0.06			0.06	0.90
sub-totals by type=	0.89	0.00	5.41		
		Sub-total=		6.30	Ac
		Weighted "c"=			0.38
Area 8	0.20		4.91	5.11	0.32

Q-2

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-2	
Areas 1-7	6.30	2.7	0.38	6.54	
Area 8	5.11	1.6	0.32	2.64	
2 year discharge			Total=	**9.19**	**cfs**

Q-10

-TO DISCHARGE POINT #1	Area (Ac)	i-10	"c"	Q-10	
Areas 1-7	6.30	4.5	0.38	10.91	
Area 8	5.11	2.6	0.32	4.25	
10 year discharge				**15.16**	**cfs**

Q-25

-TO DISCHARGE POINT #1	Area (Ac)	i-25	"c"	Q-25	
Areas 1-7	6.30	5.2	0.38	12.60	
Area 8	5.11	3.0	0.32	4.91	
25 year discharge				**17.51**	**cfs**

Q-50

-TO DISCHARGE POINT #1	Area (Ac)	i-50	"c"	Q-50	
Areas 1-7	6.30	6.0	0.38	14.54	
Area 8	5.11	3.1	0.32	5.07	
50 year discharge				**19.61**	**cfs**

Q-100

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-100	
Areas 1-7	6.30	6.3	0.38	15.27	
Area 8	5.11	3.8	0.32	6.21	
100 year discharge				**21.48**	**cfs**

Note: Tc=10 minutes (minimum) Areas 17. Tc=30min Area 8.
From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DRAIN CALCULATIONS

POST-DEVELOPMENT RUNOFF (WITHOUT DETENTION)

AREA DESIGNATION	AREA c=.9	AREA c=.6	AREA c=.3	AREA TOTAL	weighted "C"	
-TO DISCHARGE POINT #1						
Area 1	0.04		4.24	4.28	0.31	
Area 2	0.14			0.14	0.90	
Area 3	0.37			0.37	0.90	
Area 4	0.09			0.09	0.90	
Area 5	0.08			0.08	0.90	
Area 6	0.11			0.11	0.90	
Area 7	0.06			0.06	0.90	
Area 9	0.31			0.31	0.90	
Area 10	0.40			0.40	0.90	
Area 11	0.46			0.46	0.90	
sub-totals by type=	2.06	0.00	4.24			
		Sub-total=		6.30	Ac	
		Weighted "c"=			0.50	
Area 8	0.20		4.91	5.11	0.32	

Q-2

-TO DISCHARGE POINT #1						
	Area (Ac)	i-2	"c"	Q-2		
Areas 1-7&9-11	6.30	2.7	0.50	8.44		
Area 8	5.11	1.6	0.32	2.64		
2 year discharge			Total=	**11.09**	**cfs**	

Q-10

-TO DISCHARGE POINT #1						
	Area (Ac)	i-10	"c"	Q-10		
Areas 1-7&9-11	6.30	4.5	0.50	14.07		
Area 8	5.11	2.6	0.32	4.30		
10 year discharge			Total=	**18.36**	**cfs**	

Q-25

-TO DISCHARGE POINT #1						
	Area (Ac)	i-25	"c"	Q-25		
Areas 1-7&9-11	6.30	5.2	0.50	16.26		
Area 8	5.11	3.0	0.32	4.96		
25 year discharge			Total=	**21.21**	**cfs**	

Q-50

-TO DISCHARGE POINT #1						
	Area (Ac)	i-25	"c"	Q-50		
Areas 1-7&9-11	6.30	6.0	0.50	18.76		
Area 8	5.11	3.1	0.32	5.12		
50 year discharge			Total=	**23.88**	**cfs**	

Q-100

-TO DISCHARGE POINT #1						
	Area (Ac)	i-2	"c"	Q-100		
Areas 1-7&9-11	6.30	6.3	0.50	19.69		
Area 8	5.11	3.8	0.32	6.28		
100 year discharge			Total=	**25.98**	**cfs**	

Note: Tc=10 minutes (minimum) Areas 17. Tc=30min Area 8.
From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DRAIN CALCULATIONS

POST-DEVELOPMENT RUNOFF (WITH DETENTION)

AREA DESIGNATION	AREA c=.9	AREA c=.6	AREA c=.3	AREA TOTAL	weighted "C"		
-TO DISCHARGE POINT #1 (COURT PARKING CB)							
Area 1	0.04		4.24	4.28	0.31		
Area 2	0.14			0.14	0.90		
Area 3	0.37			0.37	0.90		
Area 4	0.09			0.09	0.90		
Area 5	0.08			0.08	0.90		
Area 6	0.11			0.11	0.90		
Area 7	0.06			0.06	0.90		
Area 9							
Area 10	*AREAS 9-11 TO RECHARGE						
Area 11							
sub-totals by type=	0.89	0.00	4.24				
	Sub-total=			5.13	Ac		
		Weighted "c"=			0.40		
Area 8	0.20		4.91	5.11	0.32		

Q-2 — With Recharge

-TO DISCHARGE POINT #1

	Area (Ac)	i-2	"c"	Q-2	
Areas 1-7&9-11	5.13	2.7	0.40	5.60	
Area 8	5.11	1.6	0.32	2.64	
2 year discharge			Total=	**8.24**	**cfs**

Q-10

-TO DISCHARGE POINT #1

	Area (Ac)	i-10	"c"	Q-10	
Areas 1-7&9-11	5.13	4.5	0.40	9.33	
Area 8	5.11	2.6	0.32	4.30	
10 year discharge			Total=	**13.63**	**cfs**

Q-25

-TO DISCHARGE POINT #1

	Area (Ac)	i-25	"c"	Q-25	
Areas 1-7&9-11	5.13	5.2	0.40	10.78	
Area 8	5.11	3.0	0.32	4.96	
25 year discharge			Total=	**15.74**	**cfs**

Q-50

-TO DISCHARGE POINT #1

	Area (Ac)	i-25	"c"	Q-50	
Areas 1-7&9-11	5.13	6.0	0.40	12.44	
Area 8	5.11	3.1	0.32	5.12	
50 year discharge			Total=	**17.56**	**cfs**

Q-100

-TO DISCHARGE POINT #1

	Area (Ac)	i-2	"c"	Q-100	
Areas 1-7&9-11	5.13	6.3	0.40	13.06	
Area 8	5.11	3.8	0.32	6.28	
100 year discharge			Total=	**19.34**	**cfs**

Note: Tc=10 minutes (minimum) Areas 17. Tc=30min Area 8.
From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour

OAKES STORAGE						
FELLOWS HILL ROAD						
LEBANON, NH						
AREA CHECK						
PRE-AREAS						
-TO DISCHARGE POINT #1						
	Areas 1-7&9-11				6.30	
	Area 8				5.11	
			TOTAL		11.41	Ac
POST AREAS						
-TO DISCHARGE POINT #1						
	Areas 1-7&9-11				6.30	
	Area 8				5.11	
			TOTAL		11.41	Ac

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DRAIN CALCULATIONS

DETENTION/RECHARGE CHAMBERS - SOUTH SYSTEM

AREA PER CHAMBER

			FT	SQ FT	
L=	85.44	/12	7.12	ft	
W=	50.5	(chamber)			
	6	(3" stone each side)			
total=	56.5	/12	4.71	ft	
		Area=		33.52	sf

RECHARGE RATE

WITH ?? Chambers		LEACHING
CHAMBERS (EA)	AREA/CHAM (sf)	BED AREA (sf)
8	33.52	268
10	33.52	335
16	33.52	536
20	33.52	670
24	33.52	805
32	33.52	1,073
40	33.52	1,341

PERCOLATION RATE (IN/HR)	32 CHAMBER DISCHARGE	(RECHARGE RATE - cfs)
4	0.099	

RECHARGE VOLUME

WITH 32 Chambers		LEACHING
CHAMBERS (EA)	VOLUME/CHAM (cf)	BED VOLUME (cf)
32	81.70	2,614

NOTES:
1) ASSUMES USE OF STORMTECH SC-740 CHAMBERS.
2) VOLUME PER CHAMBER = 81.7cf (12" STONE BED)
3) INFILTRATION RATE OF 4 IN/HR USED.
4) RECHARGE RATE=(LEACH AREA-sf)*(INFILTRATION RATE-in/hr)/(12" per foot)/(60 min per hr)/(60 sec per minute).

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DRAIN CALCULATIONS

DETENTION/RECHARGE CHAMBERS - NORTH SYSTEM

AREA PER CHAMBER

			FT	SQ FT	
L=	85.44	/12	7.12	ft	
W=	50.5	(chamber)			
	6	(3" stone each side)			
total=	56.5	/12	4.71	ft	
		Area=		33.52	sf

RECHARGE RATE

WITH ?? Chambers		LEACHING
CHAMBERS	AREA/CHAM	BED AREA
(EA)	(sf)	(sf)
8	33.52	268
10	33.52	335
16	33.52	536
20	33.52	670
24	33.52	805
28	33.52	939
40	33.52	1,341

PERCOLATION	40 CHAMBER
RATE	DISCHARGE
(IN/HR)	(cfs)
1	0.031

RECHARGE VOLUME

WITH 40 Chambers		LEACHING
CHAMBERS	VOLUME/CHAM	BED VOLUME
(EA)	(cf)	(cf)
40	81.70	3,268

NOTES:
1) ASSUMES USE OF STORMTECH SC-740 CHAMBERS.
2) VOLUME PER CHAMBER = 81.7cf (12" STONE BED)
3) INFILTRATION RATES OF 1 IN/HR USED.
4) RECHARGE RATE=(LEACH AREA-sf)*(INFILTRATION RATE-in/hr)/(12" per foot)/(60 min per hr)/(60 sec per minute).

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DETENTION PERFORMANCE (72 CHAMBERS)

	Area (Ac)	"c"	cA		SYSTEM	VOL (cf)	chambers		DISCHARGE RATE (cfs)			
Area 9	0.30	0.9	0.27		NORTH	3,268	40		0.031			
Area 10	0.40	0.9	0.36		SOUTH.	2,614	32		0.099			
Area 11	0.46	0.9	0.41		TOTAL	5,882	72		0.13			
cA=			1.04	=sum cA								

2 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	2.8	1.9	1.6	1.4	1.3	1.1	0.65	0.51	0.43	0.38	0.32	0.29
Q-in (cfs)	2.92	1.98	1.67	1.46	1.36	1.15	0.68	0.53	0.45	0.40	0.33	0.30
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	2.79	1.85	1.54	1.33	1.23	1.02	0.55	0.40	0.32	0.27	0.20	0.17
Volume to Store (cf)	838	1,112	924	799	736	611	1,975	1,449	1,148	960	735	622
Volume Available (cf)	5,882	5,044	3,932	3,008	2,209	1,472	861	-1,114	-2,562	-3,711	-4,671	-5,405
Balance (cf)	5,044	3,932	3,008	2,209	1,472	861	-1,114	-2,562	-3,711	-4,671	-5,405	-6,027
Volume used (cf)	838	1,950	2,874	3,673	4,410	5,021	6,996	8,444	9,593	10,553	11,287	11,909

10 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	4.5	3.8	2.6	2.2	1.8	1.7	1.1	0.79	0.65	0.58	0.48	0.40
Q-in (cfs)	4.70	3.97	2.71	2.30	1.88	1.77	1.15	0.82	0.68	0.61	0.50	0.42
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	4.57	3.84	2.58	2.17	1.75	1.64	1.02	0.69	0.55	0.48	0.37	0.29
Volume to Store (cf)	1,370	2,302	1,551	1,300	1,050	987	3,666	2,501	1,975	1,712	1,336	1,035
Volume Available (cf)	5882	4,512	2,209	659	-641	-1,691	-2,678	-6,344	-8,845	-10,820	-12,532	-13,868
Balance (cf)	4,512	2,209	659	-641	-1,691	-2,678	-6,344	-8,845	-10,820	-12,532	-13,868	-14,903
Volume used (cf)	1,370	3,673	5,223	6,523	7,573	8,560	12,226	14,727	16,702	18,414	19,750	20,785

25 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	5.2	3.8	3.0	2.5	2.2	1.8	1.2	0.9	0.75	0.64	0.55	0.51
Q-in (cfs)	5.43	3.97	3.13	2.61	2.30	1.88	1.25	0.94	0.78	0.67	0.57	0.53
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	5.30	3.84	3.00	2.48	2.17	1.75	1.12	0.81	0.65	0.54	0.44	0.40
Volume to Store (cf)	1,590	2,302	1,801	1,488	1,300	1,050	4,042	2,915	2,351	1,937	1,599	1,449
Volume Available (cf)	5,882	4,292	1,990	189	-1,299	-2,599	-3,649	-7,691	-10,605	-12,956	-14,894	-16,493
Balance (cf)	4,292	1,990	189	-1,299	-2,599	-3,649	-7,691	-10,605	-12,956	-14,894	-16,493	-17,941
Volume used (cf)	1,590	3,892	5,693	7,181	8,481	9,531	13,573	16,487	18,838	20,776	22,375	23,823

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	5.4	3.6	3.0	2.6	2.4	2.4	1.2	0.92	0.74	0.62	0.55	0.49
Q-in (cfs)	5.64	3.76	3.13	2.71	2.51	2.51	1.25	0.96	0.77	0.65	0.57	0.51
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	5.51	3.63	3.00	2.58	2.38	2.38	1.12	0.83	0.64	0.52	0.44	0.38
Volume to Store (cf)	1,652	2,177	1,801	1,551	1,425	1,425	4,042	2,990	2,313	1,862	1,599	1,374
Volume Available (cf)	5,882	4,230	2,053	251	-1,299	-2,725	-4,150	-8,192	-11,182	-13,495	-15,357	-16,956
Balance (cf)	4,230	2,053	251	-1,299	-2,725	-4,150	-8,192	-11,182	-13,495	-15,357	-16,956	-18,330
Volume used (cf)	1,652	3,829	5,631	7,181	8,607	10,032	14,074	17,064	19,377	21,239	22,838	24,212

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.57
Q-in (cfs)	6.58	4.70	3.97	3.34	2.92	2.71	1.57	1.15	0.90	0.76	0.67	0.60
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	6.45	4.57	3.84	3.21	2.79	2.58	1.44	1.02	0.77	0.63	0.54	0.47
Volume to Store (cf)	1,934	2,741	2,302	1,926	1,676	1,551	5,170	3,666	2,764	2,276	1,937	1,674
Volume Available (cf)	5,882	3,948	1,207	-1,095	-3,022	-4,698	-6,248	-11,418	-15,084	-17,848	-20,124	-22,061
Balance (cf)	3,948	1,207	-1,095	-3,022	-4,698	-6,248	-11,418	-15,084	-17,848	-20,124	-22,061	-23,736
Volume used (cf)	1,934	4,675	6,977	8,904	10,580	12,130	17,300	20,966	23,730	26,006	27,943	29,618

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

DETENTION PERFORMANCE (72 CHAMBERS)

	Area (Ac)	"c"	cA		SYSTEM	VOL (cf)	chambers		DISCHARGE RATE (cfs)			
Area 9	0.30	0.9	0.27		NORTH	3,268	40		0.031			
Area 10	0.40	0.9	0.36		SOUTH.	2,614	32		0.099			
Area 11	0.46	0.9	0.41		TOTAL	5,882	72		0.13			
cA(9-11)=			1.04	=sum cA								
cA(1-7)=	5.14	0.4	2.06									
cA(8)=	5.11	0.32	1.64									

2 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	2.8	1.9	1.6	1.4	1.3	1.1	0.65	0.51	0.43	0.38	0.32	0.29
Q-in (cfs)	2.92	1.98	1.67	1.46	1.36	1.15	0.68	0.53	0.45	0.40	0.33	0.30
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	2.79	1.85	1.54	1.33	1.23	1.02	0.55	0.40	0.32	0.27	0.20	0.17
Volume to Store (cf)	838	1,112	924	799	736	611	1,975	1,449	1,148	960	735	622
Volume Available (cf)	5,882	5,044	3,932	3,008	2,209	1,472	861	-1,114	-2,562	-3,711	-4,671	-5,405
Balance (cf)	5,044	3,932	3,008	2,209	1,472	861	-1,114	-2,562	-3,711	-4,671	-5,405	-6,027
Volume used (cf)	838	1,950	2,874	3,673	4,410	5,021	6,996	8,444	9,593	10,553	11,287	11,909
Q (areas 1-7)	5.76	3.91	3.29	2.88	2.67	2.26	1.34	1.05	0.88	0.78	0.66	0.60
Q (area 8)	2.00	2.30	2.62	2.29	2.13	1.80	1.06	0.83	0.70	0.62	0.52	0.47
Q (areas 9-11)	0	0	0	0	0	0	0.55	0.40	0.32	0.27	0.20	0.17
Total	7.76	6.21	5.91	5.17	4.80	4.06	2.95	2.28	1.91	1.67	1.39	1.24

10 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	4.5	3.8	2.6	2.2	1.8	1.7	1.1	0.79	0.65	0.58	0.48	0.40
Q-in (cfs)	4.70	3.97	2.71	2.30	1.88	1.77	1.15	0.82	0.68	0.61	0.50	0.42
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	4.57	3.84	2.58	2.17	1.75	1.64	1.02	0.69	0.55	0.48	0.37	0.29
Volume to Store (cf)	1,370	2,302	1,551	1,300	1,050	987	3,666	2,501	1,975	1,712	1,336	1,035
Volume Available (cf)	5882	4,512	2,209	659	-641	-1,691	-2,678	-6,344	-8,845	-10,820	-12,532	-13,868
Balance (cf)	4,512	2,209	659	-641	-1,691	-2,678	-6,344	-8,845	-10,820	-12,532	-13,868	-14,903
Volume used (cf)	1,370	3,673	5,223	6,523	7,573	8,560	12,226	14,727	16,702	18,414	19,750	20,785
Q (areas 1-7)	9.25	7.81	5.35	4.52	3.70	3.50	2.26	1.62	1.34	1.19	0.99	0.82
Q (area 8)	2.25	3.25	4.25	3.60	2.94	2.78	1.80	1.29	1.06	0.95	0.78	0.65
Q (areas 9-11)	0	0	0	0	0	0	1.02	0.69	0.55	0.48	0.37	0.29
Total	11.50	11.06	9.60	8.12	6.64	6.28	5.08	3.61	2.95	2.62	2.14	1.76

25 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	5.2	3.8	3.0	2.5	2.2	1.8	1.2	0.9	0.75	0.64	0.55	0.51
Q-in (cfs)	5.43	3.97	3.13	2.61	2.30	1.88	1.25	0.94	0.78	0.67	0.57	0.53
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	5.30	3.84	3.00	2.48	2.17	1.75	1.12	0.81	0.65	0.54	0.44	0.40
Volume to Store (cf)	1,590	2,302	1,801	1,488	1,300	1,050	4,042	2,915	2,351	1,937	1,599	1,449
Volume Available (cf)	5,882	4,292	1,990	189	-1,299	-2,599	-3,649	-7,691	-10,605	-12,956	-14,894	-16,493
Balance (cf)	4,292	1,990	189	-1,299	-2,599	-3,649	-7,691	-10,605	-12,956	-14,894	-16,493	-17,941
Volume used (cf)	1,590	3,892	5,693	7,181	8,481	9,531	13,573	16,487	18,838	20,776	22,375	23,823
Q (areas 1-7)	10.69	7.81	6.17	5.14	4.52	3.70	2.47	1.85	1.54	1.32	1.13	1.05
Q (area 8)	2.50	3.75	4.91	4.09	3.60	2.94	1.96	1.47	1.23	1.05	0.90	0.83
Q (areas 9-11)	0	0	0	2.48	2.17	1.75	1.12	0.81	0.65	0.54	0.44	0.40
Total	13.19	11.56	11.07	11.71	10.29	8.39	5.55	4.13	3.42	2.90	2.47	2.28

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	5.4	3.6	3.0	2.6	2.4	2.4	1.2	0.92	0.74	0.62	0.55	0.49
Q-in (cfs)	5.64	3.76	3.13	2.71	2.51	2.51	1.25	0.96	0.77	0.65	0.57	0.51
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	5.51	3.63	3.00	2.58	2.38	2.38	1.12	0.83	0.64	0.52	0.44	0.38
Volume to Store (cf)	1,652	2,177	1,801	1,551	1,425	1,425	4,042	2,990	2,313	1,862	1,599	1,374
Volume Available (cf)	5,882	4,230	2,053	251	-1,299	-2,725	-4,150	-8,192	-11,182	-13,495	-15,357	-16,956
Balance (cf)	4,230	2,053	251	-1,299	-2,725	-4,150	-8,192	-11,182	-13,495	-15,357	-16,956	-18,330
Volume used (cf)	1,652	3,829	5,631	7,181	8,607	10,032	14,074	17,064	19,377	21,239	22,838	24,212
Q (areas 1-7)	11.10	7.40	6.17	5.35	4.93	4.93	2.47	1.89	1.52	1.27	1.13	1.01
Q (area 8)	2.50	3.75	4.91	4.25	3.92	3.92	1.96	1.50	1.21	1.01	0.90	0.80
Q (areas 9-11)	0	0	0	2.58	2.38	2.38	1.12	0.83	0.64	0.52	0.44	0.38
Total	13.60	11.15	11.07	12.18	11.23	11.23	5.55	4.23	3.37	2.81	2.47	2.19

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.57
Q-in (cfs)	6.58	4.70	3.97	3.34	2.92	2.71	1.57	1.15	0.90	0.76	0.67	0.60
Q-out (cfs)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Delta (cfs)	6.45	4.57	3.84	3.21	2.79	2.58	1.44	1.02	0.77	0.63	0.54	0.47
Volume to Store (cf)	1,934	2,741	2,302	1,926	1,676	1,551	5,170	3,666	2,764	2,276	1,937	1,674
Volume Available (cf)	5,882	3,948	1,207	-1,095	-3,022	-4,698	-6,248	-11,418	-15,084	-17,848	-20,124	-22,061
Balance (cf)	3,948	1,207	-1,095	-3,022	-4,698	-6,248	-11,418	-15,084	-17,848	-20,124	-22,061	-23,736
Volume used (cf)	1,934	4,675	6,977	8,904	10,580	12,130	17,300	20,966	23,730	26,006	27,943	29,618
Q (areas 1-7)	12.95	9.25	7.81	6.58	5.76	5.35	3.08	2.26	1.77	1.50	1.32	1.17
Q (area 8)	2.50	3.75	6.21	5.23	4.58	4.25	2.45	1.80	1.41	1.19	1.05	0.93
Q (areas 9-11)	0	0	3.84	3.21	2.79	2.58	1.44	1.02	0.77	0.63	0.54	0.47
Total	15.45	13.00	17.86	15.02	13.13	12.18	6.97	5.08	3.94	3.33	2.90	2.57

OAKES STORAGE						
FELLOWS HILL ROAD						
LEBANON, NH						
RUNOFF VOLUME COMPARISONS						
	Vol(cf)		Vol(cf)	Vol(cf)	Vol(cf)	
	PRE		DP#1	DP#1(Rech)	POST	
2 year storm	95,415		85,631		85,631	
10 year storm	147,048		131,969		131,969	
25 year storm	173,961		155,813		155,813	
50 year storm	196,992		163,190		163,190	
100 year storm	203,018		182,200		182,200	

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

RUNOFF VOLUMES (DP-2)

DP#1 Overall land area total=		11.41	Ac											
DP#1 Overall weighted "c"=		0.36												
DP#1 cA=		4.108												
2 year storm						1hr		3hr			6hr	12hr	18hr	24hr
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	2.7	2.0	1.6	1.3	1.2	1.1	0.7	0.50	0.44	0.38	0.32	0.20	0.15	0.12
DP#1 cA=	4.108													
Q	5.55	8.22	6.57	5.34	4.93	4.52	2.79	2.05	1.81	1.56	1.31	0.82	0.62	0.49
Volume (cf)	1,664	4,929	3,943	3,204	2,957	2,711	10,055	7,394	6,506	5,619	4,732	17,745	13,309	10,647
Cumulative Volume (cf)	1,664	6,593	10,536	13,740	16,697	19,408	29,464	36,857	43,364	48,983	53,715	71,460	84,769	95,415
												total=		95,415
10 year storm														
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	4.5	3.2	2.6	2.2	1.8	1.7	1.1	0.8	0.65	0.55	0.49	0.30	0.23	0.18
DP#1 cA=	4.108													
Q	9.24	13.14	10.68	9.04	7.39	6.98	4.52	3.25	2.67	2.26	2.01	1.23	0.94	0.74
Volume (cf)	2,773	7,887	6,408	5,422	4,436	4,190	16,266	11,682	9,612	8,133	7,246	26,617	20,407	15,970
Cumulative Volume (cf)	2,773	10,659	17,067	22,489	26,925	31,115	47,381	59,063	68,675	76,808	84,054	110,671	131,078	147,048
												total=		147,048
25 year storm														
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.3	3.6	3.0	2.5	2.2	1.8	1.3	0.9	0.75	0.58	0.55	0.38	0.27	0.23
DP#1 cA=	4.108													
Q	10.89	14.79	12.32	10.27	9.04	7.39	5.34	3.70	3.08	2.38	2.26	1.56	1.11	0.94
Volume (cf)	3,266	8,872	7,394	6,161	5,422	4,436	19,224	13,309	11,091	8,577	8,133	33,715	23,956	20,407
Cumulative Volume (cf)	3,266	12,138	19,532	25,693	31,115	35,551	54,775	68,083	79,174	87,751	95,884	129,599	153,554	173,961
												total=		173,961
50 year storm														
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.4	3.7	3.5	2.8	2.4	2.4	1.5	1.2	0.90	0.78	0.55	0.40	0.30	0.25
DP#1 cA=	4.108													
Q	11.09	15.20	14.38	11.50	9.86	9.86	6.16	4.93	3.70	3.20	2.26	1.64	1.23	1.03
Volume (cf)	3,327	9,119	8,626	6,901	5,915	5,915	22,181	17,745	13,309	11,534	8,133	35,490	26,617	22,181
Cumulative Volume (cf)	3,327	12,446	21,072	27,973	33,888	39,803	61,984	79,729	93,037	104,571	112,704	148,194	174,811	196,992
												total=		196,992
100 year storm														
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.40	0.31	0.26
DP#1 cA=	4.108													
Q	12.94	18.48	15.61	13.14	11.50	10.68	6.16	4.52	3.53	3.00	2.63	1.64	1.27	1.07
Volume (cf)	3,882	11,091	9,365	7,887	6,901	6,408	22,181	16,266	12,717	10,795	9,464	35,490	27,504	23,068
Cumulative Volume (cf)	3,882	14,972	24,338	32,224	39,125	45,533	67,714	83,980	96,697	107,492	116,956	152,445	179,950	203,018
												total=		203,018

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

RUNOFF VOLUMES (DP-1)

Land area = 10.24 Ac (non-recharge)
Overall weighted "c"= 0.36

cA= **3.686** (non-recharge)

2 year storm

						1hr		3hr			6hr	12hr	18hr	
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	2.7	2.0	1.6	1.3	1.2	1.1	0.7	0.50	0.44	0.38	0.32	0.20	0.15	0.12
Q(cfs)	4.98	7.37	5.90	4.79	4.42	4.06	2.51	1.84	1.62	1.40	1.18	0.74	0.55	0.44
Volume (cf)	1,493	4,424	3,539	2,875	2,654	2,433	9,024	6,636	5,839	5,043	4,247	15,925	11,944	9,555
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	1,493	4,424	3,539	2,875	2,654	2,433	9,024	6,636	5,839	5,043	4,247	15,925	11,944	9,555
Cumulative Volume (cf)	1,493	5,917	9,456	12,331	14,985	17,418	26,443	33,078	38,917	43,960	48,207	64,132	76,076	85,631

10 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	4.5	3.2	2.6	2.2	1.8	1.7	1.1	0.8	0.65	0.55	0.49	0.30	0.23	0.18
Q	8.29	11.80	9.58	8.11	6.64	6.27	4.06	2.91	2.40	2.03	1.81	1.11	0.85	0.66
Volume (cf)	2,488	7,078	5,751	4,866	3,981	3,760	14,598	10,484	8,626	7,299	6,503	23,888	18,314	14,333
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	2,488	7,078	5,751	4,866	3,981	3,760	14,598	10,484	8,626	7,299	6,503	23,888	18,314	14,333
Cumulative Volume (cf)	2,488	9,566	15,317	20,183	24,164	27,924	42,523	53,007	61,633	68,932	75,435	99,323	117,637	131,969

25 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.3	3.7	3.0	2.5	2.2	1.8	1.2	0.9	0.75	0.64	0.55	0.38	0.27	0.23
Q	9.77	13.64	11.06	9.22	8.11	6.64	4.42	3.32	2.76	2.36	2.03	1.40	1.00	0.85
Volume (cf)	2,931	8,184	6,636	5,530	4,866	3,981	15,925	11,944	9,953	8,493	7,299	30,258	21,499	18,314
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	2,931	8,184	6,636	5,530	4,866	3,981	15,925	11,944	9,953	8,493	7,299	30,258	21,499	18,314
Cumulative Volume (cf)	2,931	11,114	17,750	23,280	28,146	32,127	48,052	59,996	69,949	78,443	85,742	116,000	137,499	155,813

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

RUNOFF VOLUMES (DP-1)

Land area = 10.24 Ac (non-recharge)
Overall weighted "c"= 0.36

cA= **3.686** (non-recharge)

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.0	3.6	3.0	2.5	2.4	2.4	1.2	0.9	0.74	0.62	0.55	0.40	0.30	0.25
Q	11.06	13.27	11.06	9.22	8.85	8.85	4.42	3.39	2.73	2.29	2.03	1.47	1.11	0.92
Volume (cf)	3,318	7,963	6,636	5,530	5,308	5,308	15,925	12,209	9,821	8,228	7,299	31,850	23,888	19,907
Overflow Q(cfs)	0	0	0	0	0	0	0.00	0.00	0.00	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	3,318	7,963	6,636	5,530	5,308	5,308	15,925	12,209	9,821	8,228	7,299	31,850	23,888	19,907
Cumulative Volume (cf)	3,318	11,280	17,916	23,446	28,754	34,062	49,988	62,197	72,018	80,246	87,545	119,395	143,283	163,190

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.40	0.31	0.26
Q	11.61	16.59	14.01	11.80	10.32	9.58	5.53	4.06	3.17	2.69	2.36	1.47	1.14	0.96
Volume (cf)	3,484	9,953	8,405	7,078	6,193	5,751	19,907	14,598	11,413	9,688	8,493	31,850	24,684	20,703
Overflow Q(cfs)	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	3,484	9,953	8,405	7,078	6,193	5,751	19,907	14,598	11,413	9,688	8,493	31,850	24,684	20,703
Cumulative Volume (cf)	3,484	13,437	21,842	28,920	35,113	40,864	60,770	75,368	86,782	96,469	104,963	136,813	161,497	182,200

OMP
City

Fellows Hill Road
Lebanon, NH
Operations and Maintenance Plan (OMP)
13 December 2021

Goal:

This manual was developed by Advanced Geomatics and Design, LLC (A) to assist owners in their regulatory inspections and maintenance (OMP) activities for the stormwater measures implemented at Fellows Hill Road

Site Location and Description:

This project is located on Fellows HIll Rd in Lebanon, New Hampshire. The site is a compilation of storage buildings and access aprons.

Owner and Operator:

BMP Owner..... Oakes Storage

I&M Responsible Party..... Oakes Storage
(Reporting, inspection, and maintenance activities)

Introduction:

The scope of this manual encompasses the access and storage building areas and infiltration basins.

First Few Months Post Construction Activity:

Following construction commencement, the site will need to be inspected after every major storm event for the following three months. Once the infil basins have become more established, less frequent inspections are required.

Key Inspection Check Points (first three months following construction)

- Inspect drainage:
  - Runoff should be seen to infiltrate after a rain event. Standing high water for long periods of time could indicate sediment inundation or functionality issues.
- Inspect vegetation:
  - Vegetation should be flourishing. If this is not the case consider watering, removing dead or unhealthy plants, or replanting areas that are poorly established.
- Inspect for erosion or short circuiting:
  - If erosion or short circuiting is occurring in the wetland soils, fill the area with more soil, compact lightly, and re-seed to prevent further erosion.
- Inspect inlets and outlets for proper function:

- Clean out debris or leaf litter when necessary.

See Attachment 2 for further detailed instructions and reference.

Post construction Activity:

As the infil basins become established less frequent inspections are necessary. Inspection of the infil basins should be performed biannually for two years after implementation and checked after any major storm events to maintain a productive system. If the infil basins show signs of healthy establishment after two years, inspection frequency can decrease to annually.

Key Inspection Check Points (post-construction)

- Inspect drainage:
  - Runoff should be seen to infiltrate after a rain event. Standing high water for long periods of time could indicate sediment inundation or functionality issues.
- Inspect vegetation:
  - Vegetation should be forming a dense root mate and becoming will established. If this is not the case consider watering, removing decaying or unhealthy vegetation, or preforming reinforcement panting to develop robust coverage throughout the system.
  - Every three years the vegetation within the rain gardens should be cut back.
- Inspect for erosion or short circuiting:
  - If erosion or short circuiting is occurring in the rain gardens soils, fill the area with more soil, compact lightly, and re-seed to prevent further erosion.
  - Look for animal burrowing that could also short circuit the system, burrowing would also need to be filled and re-seeded.
- Inspect inlets and outlets for proper function:
  - Clean out debris or leaf litter when necessary.
  - If there is any evidence of structural damage or deterioration, parts should be replaced.
- Inspect for sediment buildup:
  - Sediment buildup should be removed properly and when needed from the rain gardens.

Inspections Sheets and Documentation:

Upon the completion of construction activities that direct stormwater to the rain gardens, I&M activities will be initiated. MS may choose to contract with outside parties to perform I&M on site, but will be responsible for long-term effectiveness of the rain gardens.

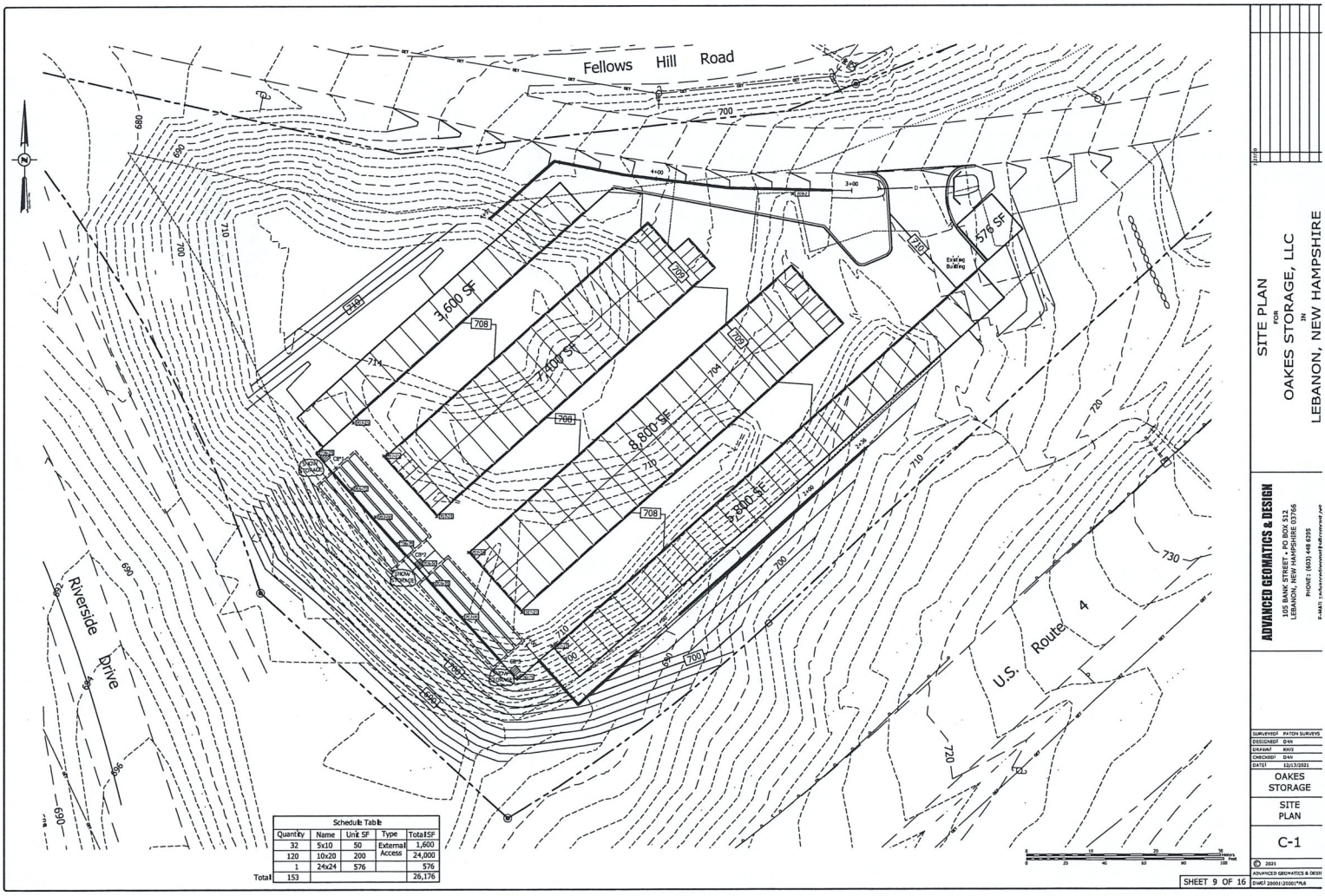
The inspection checklist that is provided as Attachment 3 is made by the University of New Hampshire Stormwater Center, this sheet will be used at to perform each inspection. An I&M Log will also need to be kept up to date and on file to clearly document the dates of each inspection and maintenance required.

All of the record will need to be kept up to date and maintained by the party responsible and be made available to the department upon request.

Appendix:

Attachment 1 Sheet C-1, site plan.

Attachment 2 I&M Log


Fellows Hill Road
Riverside Drive
U.S. Route 4
3,600 SF
7,200 SF
8,800 SF
5,800 SF
576 SF
Existing Building
Schedule Table
Quantity | Name | Unit SF | Type | TotalSF
32 | 5x10 | 50 | External Access | 1,600
120 | 10x20 | 200 | | 24,000
1 | 24x24 | 576 | | 576
Total 153 | | | | 26,176
SITE PLAN FOR OAKES STORAGE, LLC IN LEBANON, NEW HAMPSHIRE
ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
SURVEYED: PATON SURVEYS
DESIGNED: DAN
DRAWN: BMD
CHECKED: DAN
DATE: 12/13/2021
OAKES STORAGE
SITE PLAN
C-1
© 2021 ADVANCED GEOMATICS & DESIGN
SHEET 9 OF 16

Oakes Storage, LLC
Lebanon, NH
Inspections and Maintenance (I&M) Log

Facility Name:	**Oakes Storage, LLC**
Address:	Fellows Hill Road Lebanon, NH 03766
Begin Date:	

Date of Inspection	Inspected By	Comments and Actions Taken	Other Notes

Date of Inspection	Inspected By	Comments and Actions Taken	Other Notes

Agenda
Planning Board
February 14, 2022

Agenda Item #3G
Public Hearing Items

EJB Holdings, LLC (applicant) and Valley Publishing Corp (property owner), 24 Interchange Drive (Tax Map 129, Lot 8), Zoned GC

PB2022-07-CUP

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-07-CUP

APPLICATION INFORMATION

Agenda Item: 3.G

Application Type:
Conditional Use Permit for a proposed warehouse use

Location:
24 Interchange Drive (Tax Map 129, Lot 8)

Applicant/Property Owner:
EJB Holdings, LLC /
Valley Publishing Corp

Zoning District:
General Commercial (GC)

Future Land Use Map:
General Commercial

Property Size: +/-4.18 acres, per the City's assessing records (the property is conforming to the minimum required 50,000 sq. ft. lot size required for lots in the GC District per §305.3 of the Zoning Ordinance)

Overlay Districts:
Floodplain District

Other Approvals Required:
- Building & Zoning Permit

Attachments:
- Application (8 pages total)

HEARING NOTICE

EJB Holdings, LLC (applicant) and Valley Publishing Corp (property owner), 24 Interchange Drive (Tax Map 129, Lot 8), zoned GC: Applicant requests a Conditional Use Permit to convert a portion of the existing building to a warehouse use. PB2022-07-CUP

SUMMARY OF REQUEST

The property (shown in Figure 1 below) is a +/-4.81 acre lot currently improved with a 28,879 sq. ft. building constructed in 1974 (according to the City's assessing records), currently owned by Valley Publishing Corporation. The building is currently utilized as offices for the Valley News. The applicant proposes to purchase the property to use as an office and warehouse for Lock n Lube, LLC, as described in the attached application materials. It is staff's understanding that the Valley News will still occupy a portion of the building.

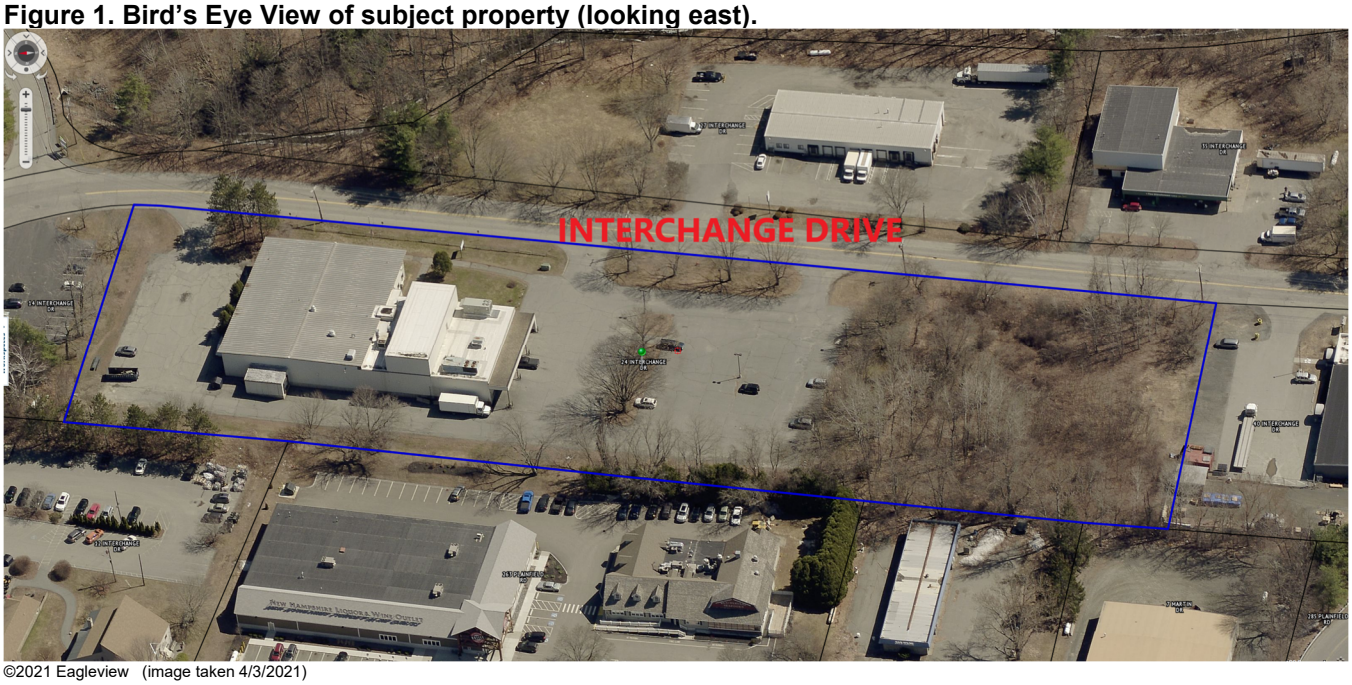
The applicant requests approval to utilize a portion of the building as a "warehouse" which is a use allowed by Conditional Use Permit in the IND-L District. The application materials do not identify any proposed site changes associated with the proposed use.

ZONING ORDINANCE REQUIREMENTS

"Warehouse" is a use is allowed in the GC District by Conditional Use Permit pursuant to Section 305.2 of the Zoning Ordinance. Per Section 302.4.B of the Zoning Ordinance, the Planning Board may grant a Conditional Use Permit if it finds that the proposal meets the Enhanced Performance Standards set forth in Section 302.4.D as follows:

1. 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.

Figure 1. Bird's Eye View of subject property (looking east).



©2021 Eagleview (image taken 4/3/2021)

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 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.

STAFF COMMENTS

Per Section 302.4.E of the Zoning Ordinance, the Planning Board "may impose conditions 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")." Section 802.4.B of the Zoning Ordinance provides as follows:

> [T]he Board may attach whatever conditions it deems necessary to the approval decision in order to assure compliance with the purposes of this Ordinance. Such conditions may include but are not necessarily limited to:
> 1. Increasing the required lot size or yard dimensions in order to protect the adjacent properties.
> 2. Limiting the coverage or height of building because of obstruction to view and reduction of light and air to adjacent properties.
> 3. Controlling the location and number of vehicular access points to the property.
> 4. Increasing the street width adjacent to the property.
> 5. Increasing the number of on-site off street parking or loading spaces required.
> 6. Requiring suitable on-site landscaping and screening where necessary to reduce noise and glare and to maintain the property in character and keeping with the surrounding area.
> 7. Specifying a time limit for initiation of construction, alteration, or enlargement of a structure to house an exception.
> 8. Providing for specific layout of facilities on the property such as location of the building, parking areas, access to the building so as to minimize effect on adjoining property.
> 9. Specifying standards for operation of this [conditional use] so that it will be no more objectionable to the neighborhood by reasons of noise, odors, vibrations, flashing lights or hours of operation than will be the operation of a permitted use at that site.
> 10. Specifying the length of time of the [conditional use] and time of occupancy during the year, or hours of operation.

Attachment

cc: Newspapers of NE, Inc.
Valley Publishing Corp
EJB Holdings, LLC
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): Valley Publishing Corp.

NAME: Newspapers of NE, Inc. TEL.#: % CHIP BROWN - 917-375-0746

MAILING ADDRESS: 24 Interchange Dr. W. Lebanon, NH 03784

E-MAIL ADDRESS: dmccloy@nnenews.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: EJB Holdings, LLC (Lock'n Lube) TEL.#: 612-790-0305

MAILING ADDRESS: P.O. Box 32 Lyme, NH 03768

E-MAIL ADDRESS: jay@locknlube.com

PROJECT LOCATION:

TAX MAP #: 129-8 LOT#: ~~8~~ 129 PLOT #: 8 ZONE: GIC

STREET ADDRESS OF PROJECT: 24 Interchange Dr. W. Lebanon, NH

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

SCOPE OF PROJECT: FOR SALE/PURCHASE OF PROPERTY

Interior work only, no changes or additions to exterior of building or the parking areas.

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 Feb. 14, 2022, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: [signature] DATE: 12/17/21

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: [signature] DATE: 12/17/21

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #
1-6-22	129/8	PB2022-07-CUP	$384.24	1-6-22	18599

(Last Revised 4/04/18)

City of Lebanon, New Hampshire
APPLICATION FOR CONDITIONAL USE PERMIT
SUPPORT STATEMENT

Office Use Only	Date Received: _____	Application No.: _____

I. APPLICATION CHECKLIST

- *Application form*
- *Public Hearing Notification List*
- *Filing fee*
- *This form, including written responses to the Section 302.4.D requirements, outlined below*
- *A site plan*
- *Optional: photos and any other materials in support of your application*

II. PROJECT DESCRIPTION

I (we) hereby request a Conditional Use Permit as provided for in Article(s) 3, Section(s) 305, of the Lebanon Zoning Ordinance.

Please describe your proposed project with as much detail as possible. You can respond in the space provided below or on a separate sheet of paper.

EJB HOLDINGS, LLC (Lock'N Lube), as applicant, proposes to purchase 24 Interchange Dr. and apply for a "warehouse" use for a "Conditional Use Permit".
Please see III A. below for a more detailed descript'n of the proposed use.

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. You must address each criteria in the space provided or on a separate sheet of paper.

A. Specific Criteria

The Conditional Use Permit is authorized by Article 3, Section 305 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*):

The Buyer of the property, LockN Lube LLC, is a brand that sells hand tools for machine maintenance. Office space will be used for admin. purposes and unfinished space in the building will be used to receive finished goods, warehouse those goods, and fulfill orders to customers across North America.

B. General Criteria per Section 302.4.D *(**only for CUPs per Article III**)*

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.

The existing access to the property and parking areas are more than adequate for our needs. Even with the Valley News continuing on as a tenant, will have an excess of parking.

   b. The availability of adequate public services to serve the intended use including emergency services, pedestrian facilities, safe access, and other municipal services.

All of these criteria will be very sufficient to serve our future needs. Access to the parking lots is safe and easy as the lot is very flat and open.

   c. The absence of environmental constraints (floodplain, steep slope, etc.) proposed to be impacted by the intended use.

The lot is flat such that no environmental constraints exist at this time. And the size and overall footprint of the facility will not increase in the near future.

   d. The availability of appropriate utilities to serve the intended use including water, sewage disposal, stormwater treatment, electricity, and similar utilities.

All utilities currently servicing the building appear to be wholly adequate at this time.

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.

There will be no change to any external impacts of the proposed use.

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.

The character of the site will remain effectively the same. At this time no changes to the building and site are anticipated.

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.

No new buildings, additional structures or additions to the existing structure/facility are planned or anticipated.

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.

No changes of any kind are anticipated for the facility and site.

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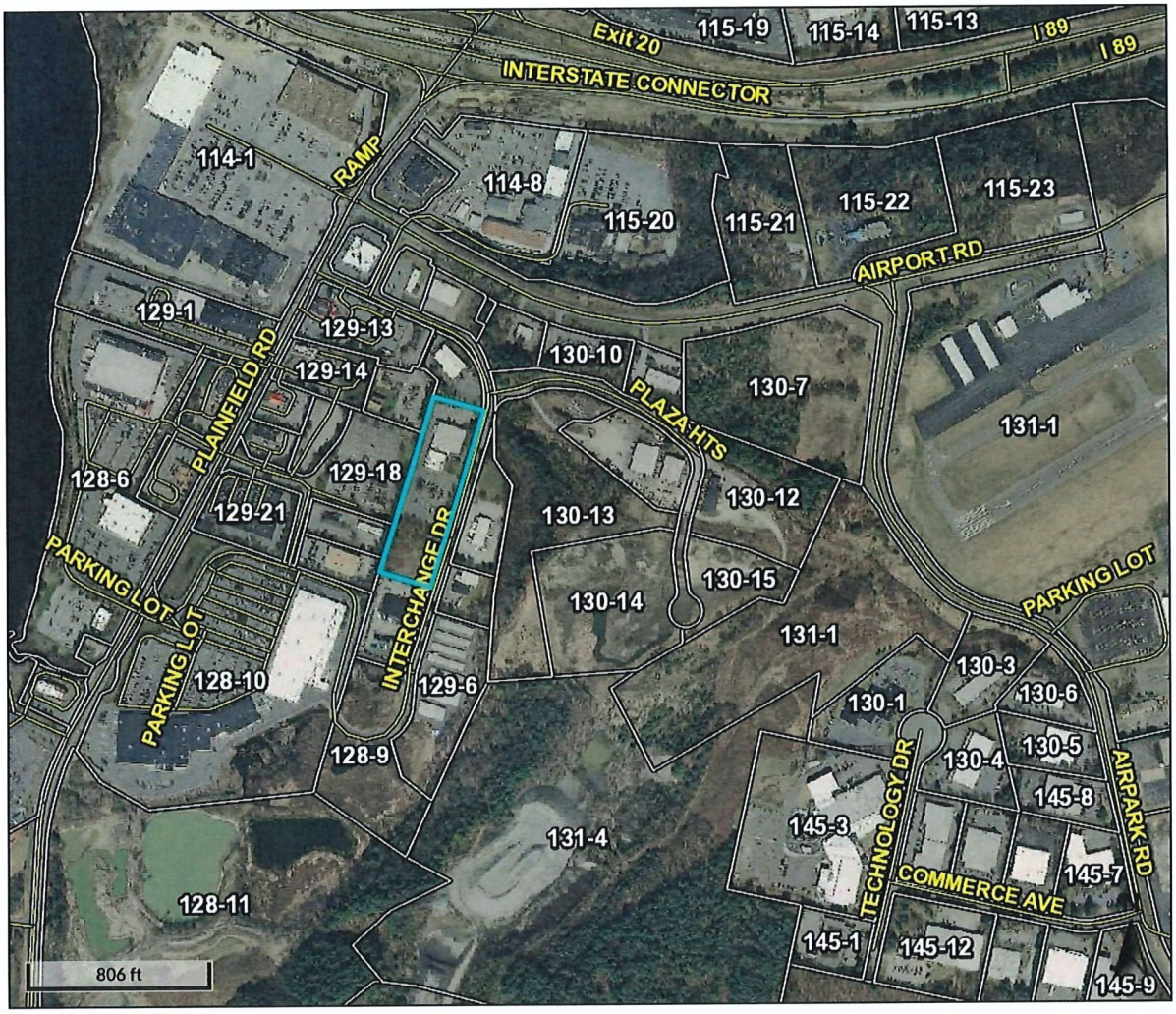

Overview



Legend

- Roads
- Parcel Labels
- Parcels

Parcel ID	129-8	**Alternate ID**	3297	**Owner Address**	VALLEY PUBLISHING CORP
Sec/Twp/Rng	n/a	**Class**	INDUSTRIAL OFFICE		24 INTERCHANGE DR
Property Address	24 INTERCHANGE DR WEST LEBANON	**Acreage**	n/a		WEST LEBANON, NH 03784
District	Leb				
Brief Tax Description	n/a (Note: Not to be used on legal documents)				

Date created: 1/4/2022
Last Data Uploaded: 1/3/2022 7:22:42 PM

Developed by Schneider GEOSPATIAL

LOCK N LUBE

24 EXCHANGE DRIVE, WEST LEBANON, NH 03766

PROJECT TEAM

OWNERS REP: **LOCK N LUBE**
12 COMMERCE AVENUE
WEST LEBANON, NH 03784
EMAIL: jay@locknlube.com
PHONE: 603.795.2298

CONTACT: **JAY BOREN**
OWNER

ARCHITECT: **STUDIO NEXUS**
ARCHITECTS + PLANNERS, LLC
46 SOUTH MAIN STREET, SUITE 206
PO BOX 275
WHITE RIVER JUNCTION, VT 05001

CONTACT: **DOUG SONSALLA**
EMAIL: dougs@studionexusarch.com
PHONE: 802.275.5110 EXT. 502

CODE REVIEW FOR 24 EXCHANGE DRIVE, WEST LEBANON, NH 03766
1st floor 11,046 sf Factory and 8,663 sf Business
2nd floor 7,627 sf Business

IBC 2015
306.2 Moderate Hazard Factory F-1. It could be classified as F-2 low hazard since it involves the fabrication and assembly of metal products
313.3 S-1 is moderate hazard, but it could qualify as low hazard storage S-2
Per table 1012.5 the height and area hazard categories for F-1 and S-1 are the same

Table 508.6
No separation is required between S-1, F-1, B Business uses in either sprinkled or non-sprinklered buildings.
Type IIB construction with sprinkler assumed
Table 504.3: Allowable Height B, F, & S: 75'
Table 504.4 Stories above grade plane: B, 4 stories; F-1, 3 Stories; S-1, 3 Stories
Table 506.2 Area: B, 92,000; F-1 46,500; S-1, 52,500

DRAWING INDEX

G0	COVER SHEET, DRAWING INDEX AND SYMBOLS
A1	FIRST FLOOR PLAN
A2	SECOND FLOOR PLAN

DRAWING SYMBOL LEGEND

ROOM NAME / ROOM # — ROOM LABEL

(#) VIEW NAME / SCALE — DRAWING LABEL

ELEVATION NAME / ELEVATION — ELEVATION LEVEL INDICATOR

/ SHEET — BUILDING/WALL SECTION DETAIL

/ # SHEET # / # — ELEVATION INDICATOR

/ SHEET — DETAIL REFERENCE TO PLAN OR SECTION DETAIL ENLARGEMENT

COL. — COLUMN CENTER LINE

(#) — DOOR TYPE INDICATOR

(A) — WINDOW TYPE INDICATOR

A — WALL TYPE INDICATOR

WALLS

EXISTING WALL OR COMPONENT TO REMAIN, UNLESS NOTED OTHERWISE

WALL OR COMPONENT TO BE REMOVED

NEW WALL OR COMPONENT

STUDIO NEXUS
ARCHITECTS + PLANNERS
PO Box 275, White River Junction, VT 05001
802 275 5110 | studionexusarch.com

LOCK N LUBE
BUILDING RENOVATIONS

ISSUED FOR:
PRELIMINARY PRICING

Date: December 16, 2021
Scale: 1/4" = 1'-0"

COVER SHEET, DRAWING INDEX AND SYMBOLS

Project No.: Project Number

G0

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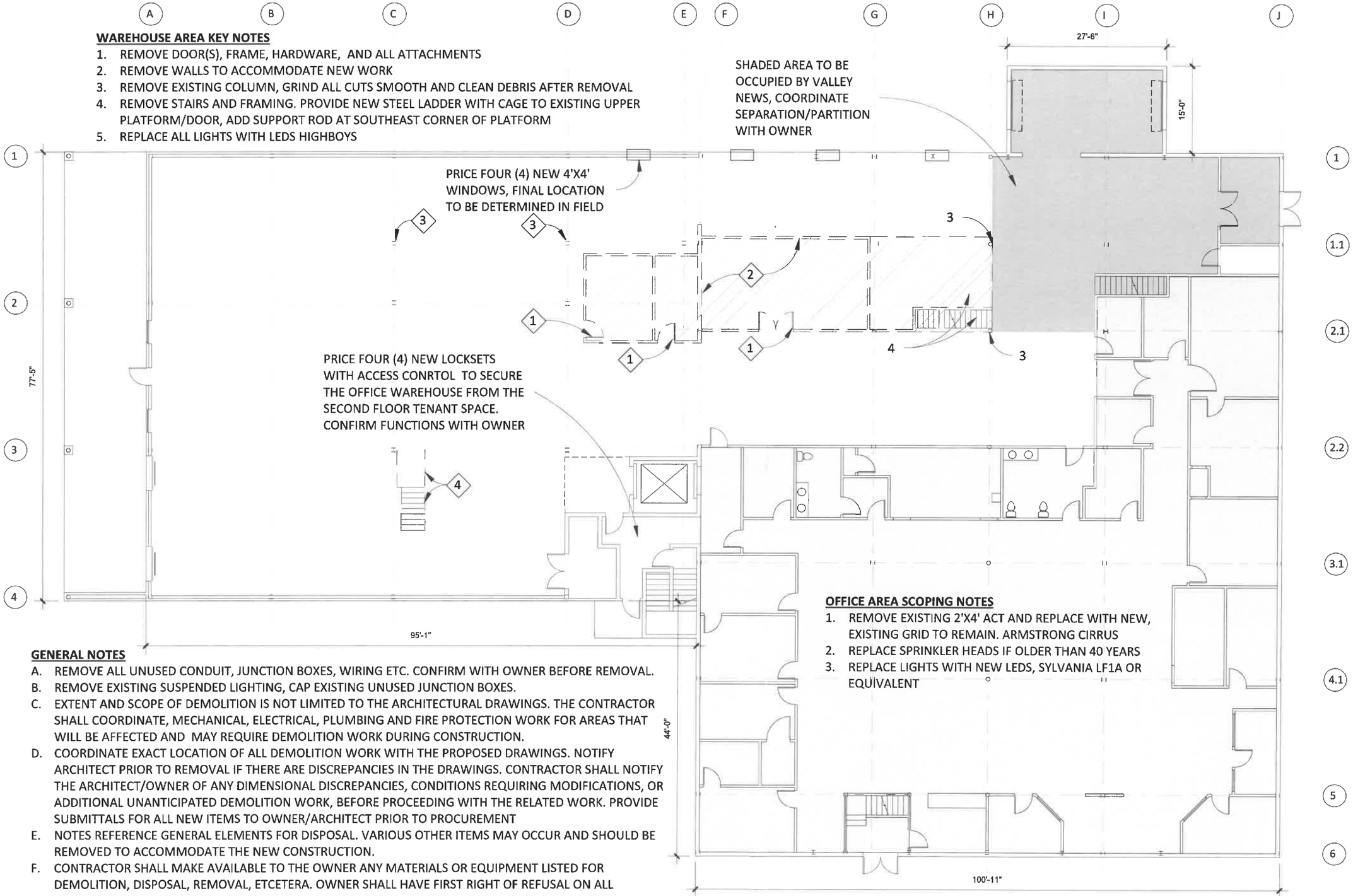

WAREHOUSE AREA KEY NOTES

1. REMOVE DOOR(S), FRAME, HARDWARE, AND ALL ATTACHMENTS
2. REMOVE WALLS TO ACCOMMODATE NEW WORK
3. REMOVE EXISTING COLUMN, GRIND ALL CUTS SMOOTH AND CLEAN DEBRIS AFTER REMOVAL
4. REMOVE STAIRS AND FRAMING. PROVIDE NEW STEEL LADDER WITH CAGE TO EXISTING UPPER PLATFORM/DOOR, ADD SUPPORT ROD AT SOUTHEAST CORNER OF PLATFORM
5. REPLACE ALL LIGHTS WITH LEDS HIGHBOYS

OFFICE AREA SCOPING NOTES

1. REMOVE EXISTING 2'X4' ACT AND REPLACE WITH NEW, EXISTING GRID TO REMAIN. ARMSTRONG CIRRUS
2. REPLACE SPRINKLER HEADS IF OLDER THAN 40 YEARS
3. REPLACE LIGHTS WITH NEW LEDS, SYLVANIA LF1A OR EQUIVALENT

GENERAL NOTES

A. REMOVE ALL UNUSED CONDUIT, JUNCTION BOXES, WIRING ETC. CONFIRM WITH OWNER BEFORE REMOVAL.
B. REMOVE EXISTING SUSPENDED LIGHTING, CAP EXISTING UNUSED JUNCTION BOXES.
C. EXTENT AND SCOPE OF DEMOLITION IS NOT LIMITED TO THE ARCHITECTURAL DRAWINGS. THE CONTRACTOR SHALL COORDINATE, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION WORK FOR AREAS THAT WILL BE AFFECTED AND MAY REQUIRE DEMOLITION WORK DURING CONSTRUCTION.
D. COORDINATE EXACT LOCATION OF ALL DEMOLITION WORK WITH THE PROPOSED DRAWINGS. NOTIFY ARCHITECT PRIOR TO REMOVAL IF THERE ARE DISCREPANCIES IN THE DRAWINGS. CONTRACTOR SHALL NOTIFY THE ARCHITECT/OWNER OF ANY DIMENSIONAL DISCREPANCIES, CONDITIONS REQUIRING MODIFICATIONS, OR ADDITIONAL UNANTICIPATED DEMOLITION WORK, BEFORE PROCEEDING WITH THE RELATED WORK. PROVIDE SUBMITTALS FOR ALL NEW ITEMS TO OWNER/ARCHITECT PRIOR TO PROCUREMENT
E. NOTES REFERENCE GENERAL ELEMENTS FOR DISPOSAL. VARIOUS OTHER ITEMS MAY OCCUR AND SHOULD BE REMOVED TO ACCOMMODATE THE NEW CONSTRUCTION.
F. CONTRACTOR SHALL MAKE AVAILABLE TO THE OWNER ANY MATERIALS OR EQUIPMENT LISTED FOR DEMOLITION, DISPOSAL, REMOVAL, ETCETERA. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL SALVAGEABLE ITEMS.
G. COORDINATE WITH OWNER AND SCHEDULE IN ADVANCE INTERRUPTIONS OF ELECTRICAL, MECHANICAL, FIRE PROTECTION, PLUMBING, COMMUNICATION AND OTHER SERVICES.

STUDIO NEXUS
ARCHITECTS + PLANNERS
PO Box 275, White River Junction, VT 05001
802 275 5110 | studionexusarch.com

LOCK N LUBE
BUILDING RENOVATIONS

ISSUED FOR:
PRELIMINARY PRICING

Date: December 16, 2021
Scale: 1/16" = 1'-0"

FIRST FLOOR PLAN

Project No.: Project Number

A1

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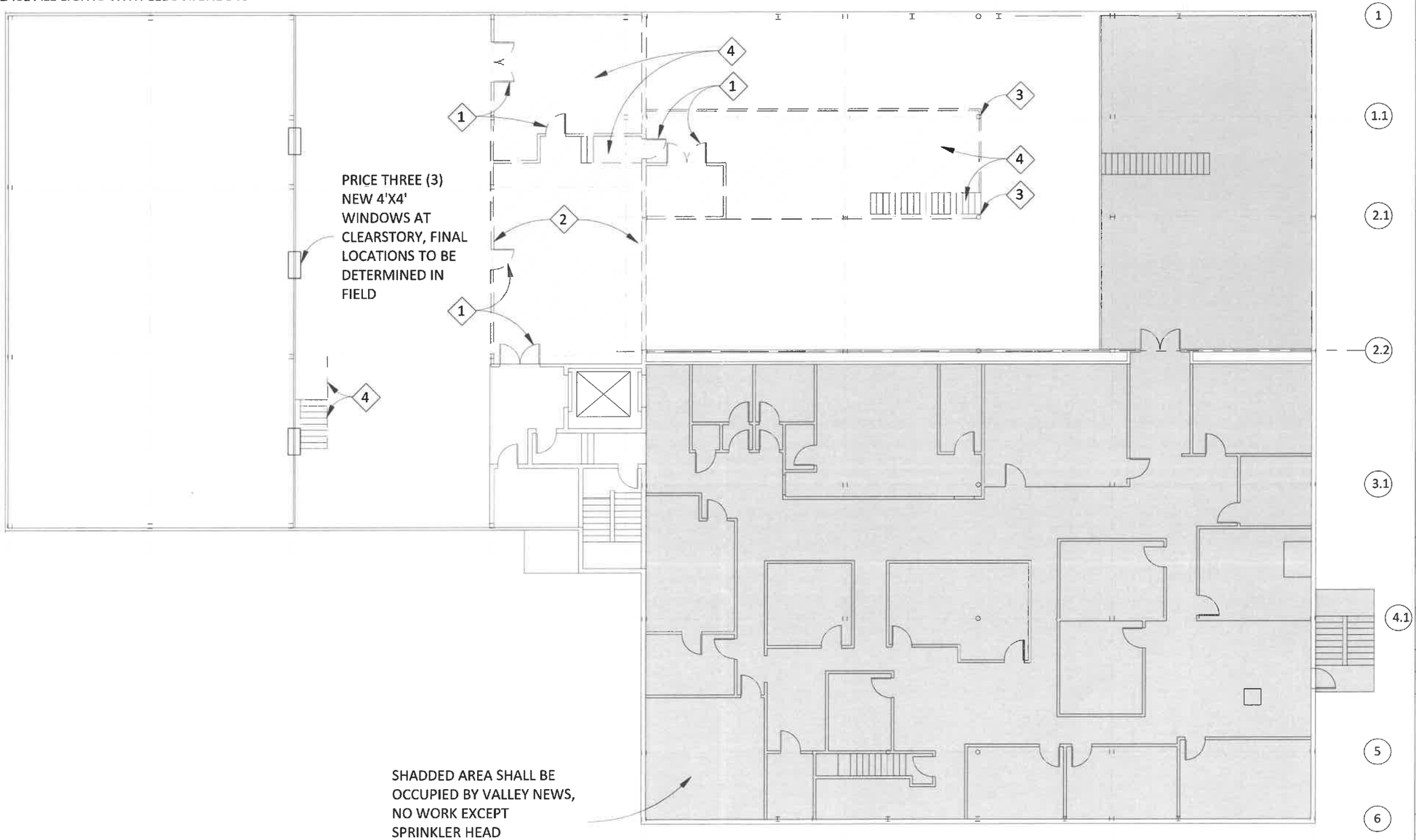
WAREHOUSE AREA KEY NOTES

1. REMOVE DOOR(S), FRAME, HARDWARE, AND ALL ATTACHMENTS
2. REMOVE WALLS TO ACCOMMODATE NEW WORK
3. REMOVE EXISTING COLUMN, GRIND ALL CUTS SMOOTH AND CLEAN DEBRIS AFTER REMOVAL
4. REMOVE STAIRS AND FRAMING. PROVIDE NEW STEEL LADDER WITH CAGE TO EXISTING UPPER PLATFORM/DOOR, ADD SUPPORT ROD AT SOUTHEAST CORNER OF PLATFORM
5. REPLACE ALL LIGHTS WITH LEDS HIGHBOYS



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LOCK N LUBE
BUILDING RENOVATIONS

ISSUED FOR:
PRELIMINARY PRICING

Date: December 16, 2021
Scale: 1/16" = 1'-0"

SECOND FLOOR PLAN

Project No.: Project Number

A2

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Agenda
Planning Board
February 14, 2022

Agenda Item #3H
Public Hearing Items

Unifirst Corporation, 125 Etna Road (Tax Map 26, Lot 6), zoned INDL

PB2022-08-SPA

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-08-SPA

APPLICATION INFORMATION

Agenda Item: 3.H

Application ID#: PB2022-08-SPA

Application Type: Amendment to the conditions of approval for a site plan approved on March 3, 1987

Property Location & Tax Map: 125 Etna Road (Tax Map 26, Lot 6)

Property Owner/Applicant: Unifirst Corporation

Property Size (per City Assessor): +/-9.3 acres

Zoning District: R-1, R-3, and RL-3

Zoning Overlay Districts: Wetlands Conservation District

LEGAL NOTICE

Unifirst Corporation, 125 Etna Road (Tax Map 26, Lot 6), zoned IND-L, RL-2, and RL-3: Site Plan approval for the existing industrial laundry facility was granted on March 3, 1987. Applicant requests removal of the Planning Board's condition of approval requiring bi-annual groundwater monitoring. PB2022-08-SPA

APPLICATION MATERIALS

- Application form
- Application for Waivers
- Letter from David Rosengarten, of Fuss & O'Neill, P.A. dated January 5, 2022, with attachments

COMPLETENESS REVIEW

This application has been reviewed in accordance with the Lebanon Site Plan Review Regulations. The Planning and Development Department recommends that the Board find that the application is complete enough to accept jurisdiction and to commence review.

APPLICATION OVERVIEW

On March 3, 1987, the Planning Board granted Site Plan approval to Unifirst Corporation to construct a 32,000 sq. ft. industrial laundry facility at the subject property. The Planning Board's approval included the following condition (see page 4 of the March 3, 1987 Notice of Decision, attached to the January 5, 2022 letter from David Rosengarten):

> 2. Water samples from all on-site wells, Chiron Springs, and all wells within 2,000 feet of the UniFirst property lines (if permission is given by land owners) shall be collected and tested four times a year (January, April, July, October). The samples shall be collected and tested by a firm selected by the City of Lebanon. The results of the tests shall be presented to the City of Lebanon and to all owners of the wells tested.

An amendment to the site plan to allow construction of a larger building was approved by the Planning Board on September 21, 1988, the conditions for which incorporated the conditions of the original March 3, 1987 approval. As explained in the attached letter dated January 4, 2022, from David Rosengarten of Fuss & O'Neill, Unifirst requests an amendment to the Planning Board's 1987 approval to remove the above-referenced condition.

Figure 1. Bird's Eye View (looking west).



Image ©2021 Eagleview (image taken 4/4/2021)

WAIVER REQUESTS

Given the limited nature of the request, the applicant, pursuant to Section 7.1 ("Waiver of Regulations") of the Site Plan Review Regulations, has requested a general waiver from the Article V submission requirements and the Article VI design requirements.

STAFF COMMENTS

Understanding that all required groundwater monitoring to date has never detected any volatile organic compounds (VOCs) in the monitoring wells, staff has no concerns with or objections to the applicant's request to remove condition D.2 from the March 3, 1987 Planning Board site plan approval for the subject property.

Attachments
cc: Unifirst Corporation (via e-mail)
David Rosengarten, Fuss & O'Neill (via e-mail)
File

APPLICATION FOR

SPECIAL EXCEPTION	☐	☐	SITE PLAN REVIEW
VARIANCE	☐	☐	SUBDIVISION
MOTION FOR REHEARING	☐	☐	LOT LINE ADJUSTMENT
APPEAL OF AN ADMIN. DECISION	☐	☐	CONDITIONAL USE PERMIT

☒ OTHER Site Plan Review Amendment

PROPERTY OWNER (APPLICANT):

NAME: UniFirst Corporation TEL.#: (978) 527-4048

MAILING ADDRESS: 68 Jonspin Rd Wilmington, MA 01887

E-MAIL ADDRESS: sarah_white@unifirst.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Fuss & O'Neill TEL.#: (802) 698-0370 x2212

MAILING ADDRESS: 205 Billings Farm Rd White River Jct., VT 05001

E-MAIL ADDRESS: drosengarten@fando.com

PROJECT LOCATION:

TAX MAP #: 26 LOT#: 6 PLOT #: ZONE: IND-L & RL-2

STREET ADDRESS OF PROJECT: 125 Etna Rd

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☒ YES ☐ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

SCOPE OF PROJECT:

Request modification of Site Plan Approval to remove Condition D.2.

which requires groundwater monitoring twice annually.

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: Essential service

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 February 14, 2022, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: Sarah White DATE: 1.7.22

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 #
1-10-22	26/6	PB2022-08-SPA	$375.68	1/10/22	186000

City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: UniFirst Corporation

Project Name: Request for removal of required groundwater monitoring

Project Address: 125 Etna Road Lebanon, NH

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).]

1. Section 5 & 6 of the (*circle one*) (Site Plan Review) / Subdivision Regulations. A Waiver of this Section meets (*circle one*) (Criteria A) / Criteria B because The project is narrow in scope and not relevant to the details required in a complete site plan which would be burdensome to develop. Supporting items provided are sufficient to characterize the scope of the project.

2. Section ___ of the (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because _____

3. Section ___ of the (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because _____

_____

_____

_____

4. Section ___ of the (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this 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: _____ Date: 1/10/2021

FUSS & O'NEILL

January 5, 2022

Lebanon Planning Board
51 N. Park St.
Attn: Planning & Development
Lebanon, NH 03766

RE: Request for Removal of Groundwater Monitoring Condition

Dear Planning Board,

The Planning Board Notice of Decision dated March 3, 1987, condition D.2. requires groundwater testing in the vicinity of the UniFirst facility on Etna Rd. in Lebanon. This condition was modified sometime prior to 2001 to reduce the frequency of testing from quarterly to twice annually. The City planning office was unable to locate this decision. The groundwater data record includes samples collected from June 2001 - June 2009 and October 2016-Present. Pathways Consulting has informed us that groundwater sampling was discontinued at the City's direction but is not well documented. Neither the City or UniFirst has any data record during the gap and the data was never requested by the City. When UniFirst updated their environmental compliance program in 2016 sampling resumed as a due diligence effort. During the entire period of reporting, all samples meet water quality standards on average, with no significant temporal trends observed and outliers attributable to environmental factors unrelated to the UniFirst facility.

The UniFirst facility was constructed in accordance with the approved plans including engineering controls to protect groundwater. All chemical storage and processes are contained within the building. All discharge from within the building is directed into the municipal sewer system. UniFirst performs treated process wastewater discharge sampling in accordance with the current Industrial Discharge Permit issued by Lebanon. UniFirst is also required by this permit to conduct an annual sulfate study in the downstream collection system.

We would now like to request the groundwater monitoring condition be officially removed from the site plan approval and no further regular testing of the groundwater wells be required based on the record of data collected, the absence of any apparent mechanism for potential groundwater contamination, and the ongoing wastewater monitoring program. Please see attached documentation in support of this request.

205 Billings Farm Road
Suite 6B
White River Junction, VT
05001
802.698.0370

www.fando.com

California
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Best Regards,

David Rosengarten

Attached: Initial 1986 Planning Board Action, Recent 2021 Groundwater Monitoring Report, Data Summary, Well Report, Industrial Discharge Permit, Sulfate Study, Wastewater Monitoring Report. Site plan

For your info —

OFFICE OF PLANNING BOARD

CITY OF LEBANON N.H. INCORPORATED JULY 4 1761 ESTABLISHED 1958

Telephone
603-448-1451

PLANNING BOARD NOTICE OF DECISION
LEBANON, NH

Prentice Knight moved to APPROVE the request of UniFirst Corporation for site plan review of proposed 32,000 sq. ft. industrial laundry with attendant offices, Etna Road, Lebanon, NH, in the IND zone, with the CONDITIONS as listed in the conditions section below. Site plan was drawn by T&M Surveys, Inc., dated March 1986, last revised April 4, 1986, project #197486.

The following reports and studies are hereby incorporated into and made part of this proposal:

a. "Environmental Planning and Pretreatment Study for UniFirst Corporation's Proposed Industrial Laundry in Lebanon, NH, dated December 1986, by Johnson Engineering." (This study will hereafter be referred to as EPPSU.)

b. An addendum to the EPPSU study submitted by Johnson Engineering dated January 1987.

c. A report submitted by Roy Weston, Inc., "Technical Review of Environmental Issues Relating to the Proposed UniFirst Corporation Facility, Etna Road, Lebanon, NH, dated July 1986 (Draft Copy)".

d. A second report submitted by Roy Weston, Inc., "Draft City of Lebanon Recommended Industrial Pretreatment Limits, dated August 1986".

e. Memorandum (including attachments) dated February 18, 1987, from Daniel Nash, Lebanon Public Works Director, to the Planning Board.

CONDITIONS OF APPROVAL:

A. DESIGN

1. In developing the final site plan, final building design, and final pretreatment system design, UniFirst shall adhere to all procedures and conditions presented in the EPPSU report and in the Planning Board approval.

2. Prior to the issuance of a building permit, UniFirst shall comply with the summary conditions A through F as stated in Daniel Nash,s memorandum of February 18, 1987

000268

ZO-1020-4-89 (43)

(copy attached), except that the restoration bond in summary condition "C" shall be $100,000.00 rather than $20,000.00.

3. The building and whole tank area shall be underlayed by an impervious layer to protect the aquifer, the type, amount and design of the layer to be determined by the Public Works Director.

4. Prior to the issuance of a building permit, Weston Engineering (or another consulting firm selected by the Lebanon Director of Public Works) shall submit to the City of Lebanon a written evaluation of the degree to which the final site plan, building design, and pretreatment system design meet the specifications and design objectives presented in the EPPSU report and adhere to conditions of Planning Board approval. The building permit shall not be issued until the Director of Public Works reviews the consultant's report and makes other investigations necessary to indicate in writing his approval of the final design of the project.

B. CONSTRUCTION PHASE

1. During construction, UniFirst shall adhere to all procedures and conditions presented in the EPPSU report and the Planning Board approval.

2. During construction, UniFirst shall permit unannounced, random site inspection by Weston Engineering (or another consulting firm selected by the Director of Public Works) and by representatives of the City of Lebanon. An on-site engineer shall be hired by the City to monitor construction, the cost will be borne by UniFirst.

OK. X 3. Prior to the issuance of a Certificate of Occupancy, one or more wells shall be constructed on-site for the purpose of testing ground water quality. Number, location, and design specifications of the wells shall be determined by the Director of Public Works after review of specific written recommendations from Weston Engineering. A minimum of one well must be constructed.

OK. X 4. Prior to the issuance of a Certificate of Occupancy, UniFirst shall submit to and have approved by the Director of Public Works details on its contingency planning program and the pretreatment system operation and maintenance procedures.

OK. + 5. Prior to the issuance of a Certificate of Occupancy,

000269 42

ZB 5-20-4-87

Weston Engineering (or another consulting firm selected by the Director of Public Works) shall submit to the City of Lebanon a written evaluation of the degree to which the completed site, building, and pretreatment system meed the specifications and objectives presented in the EPPSU report and in the Planning Board approval. The Certificate of Occupancy shall not be issued until the Director of Public Works reviews the consultant's report and makes other investigations necessary to indicate in writing his approval of the completed site, building, and pretreatment system.

C. OPERATION

1. In the operation of its facility, UniFirst shall adhere to all the procedures and conditions presented in the EPPSU report and in the Planning Board approval.

2. UniFirst shall adhere to all City, State, and Federal regulations relating to wastewater discharge, chemical handling, storage, and spill procedures and sludge handling.

3. UniFirst shall maintain all wells constructed on-site for the purpose of testing ground water quality.

4. No dry cleaning of any kind is allowed at the site.

5. All loading and unloading of materials shall take place within the building. Loading and unloading outside the building are specifically prohibited.

6. No materials used in processing or generated by processing shall be stored for any period of time outside the building.

7. No dumping or burial of any materials used in processing or generated by processing is allowed on the site.

8. The wetlands shall not be disturbed.

9. Laundering of the following items at the Lebanon facility is prohibited: wipers from printing and wood finishing operations; items which contain asbestos or lead particle contamination.

10. Washroom detergents and additives which contain significant amounts of solvent materials shall not be used at the Lebanon facility.

D. TESTING AND INSPECTION

1. Once every year, the manufacturer of the pretreatment

system shall inspect the facility and make a written evaluation of the condition of the pretreatment system and of the quality of the operation of the system. The report shall include specific recommendations for maximizing the efficiency of the pretreatment system and for minimizing the likelihood of a malfunction or failure of the system. If the manufacture of the pretreatment system is unwilling or unable to inspect and evaluate the system, the City of Lebanon shall hire a consultant (of the City's choice) to inspect and evaluate the pretreatment system. A copy of the report shall be submitted to the City of Lebanon and to UniFirst.

2. Water samples from all on-site wells, Chiron Springs, and all wells within 2,000 feet of the UniFirst property lines (if permission is given by land owners) shall be collected and tested four times a year (January, April, July, October). The samples shall be collected and tested by a firm selected by the City of Lebanon. The results of the tests shall be presented to the City of Lebanon and to all owners of the wells tested.

3. UniFirst shall permit unannounced operational and safety inspections of site, building, and facility by representatives of the City of Lebanon, and/or other authorized representatives.

E. RESPONSIBILITY

1. UniFirst Corporation shall grant the Lebanon Director of Public Works the authority to stop operation of the Lebanon facility if clear evidence is found of violations of the standards and procedures set in the EPPSU report and in the Planning Board approval. The facility shall remain closed until the violations are corrected.

2. UniFirst shall bear all costs of the studies, inspections, tests, and reviews required by this Planning Board decision.

3. Should the UniFirst operation, in the opinion of the City of Lebanon, contaminate the aquifer, UniFirst shall bear the cost of extending public water to those properties suffering from such private well damage.

4. UniFirst shall bear all costs of correcting any damage to the public welfare, to the environment, and/or to the Lebanon Wastewater System caused by operation of the UniFirst facility.

000271
EB 10-20-87 (40)

5. Prior to the issuance of a building permit, the City of Lebanon shall receive a letter from the Chief Executive Officer of UniFirst Corporation agreeing to all conditions of the Planning Board approval.

The motion was seconded by Ronald Bailey.

The vote on the motion was 5 in favor and 4 opposed (Mr. Arnold, Mr. Cole, Mrs. Schneider and Mrs. Dudley).

SIGNED: _____
Planning Aide, City of Lebanon

DATED: March 3, 1987

FUSS & O'NEILL

November 16, 2021

Ms. Christina Hall, PE, City Engineer
City Hall
51 North Park Street
Lebanon, NH 03766

RE: Lebanon UniFirst Corporation
Second Semi-Annual 2021 Self-Monitoring Report - Groundwater
Industrial Discharge Permit LEB-105
Fuss & O'Neill File no. 20-0186.A10

Dear Ms. Hall:

Enclosed please find the semi-annual self-monitoring groundwater sampling report submitted on behalf of UniFirst Corporation (UniFirst) for 2020. The groundwater sampling was performed on October 12, 2021 and the results were generally within the ranges of variability observed previously, with some variations from historical data. Higher specific conductivity value was recorded in well MW-1, MW-4, and MW-6 and appears to be an outlier from previous records.

Other parameters observed including pH, chemical oxygen demand (COD), alkalinity, specific conductance, chloride and volatile organic compounds (VOCs) concentrations are within normal groundwater quality ranges, varied by seasonal conditions.

Please do not hesitate to contact us if you have any questions concerning the report.

Sincerely,

205 Billings Farm Road
Suite 6B
White River Junction, VT
05001
802.698.0370

www.fando.com

California
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Philip Forzley, PE
Vice President | Office Manager

Cc: Jose Cavazos, Plant Manager, UniFirst Corporation
Philip Breen, Plan General Manager, UniFirst Corporation
Sarah F White, Environmental Compliance Specialist, UniFirst Corporation

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SCALE:	
HORZ.:	1 = 200'
VERT.:	
DATUM:	
HORZ.:	
VERT.:	

0 100 200
GRAPHIC SCALE

FUSS & O'NEILL
205 BILLINGS FARMS ROAD, SUITE 6B
WHITE RIVER JUNCTION, VT 05001
802.698.0370
www.fando.com

UNIFIRST CORPORATION

GROUNDWATER MONITORING WELLS

125 ETNA ROAD

LEBANON NEW HAMPSHIRE

PROJ. No.: 20200186.A10
DATE: 10/14/2020

LOC-01

File Path: \\private\dfs\Project Data\P2020\0186\A10\Deliverables\2020 Groundwater Report\Site Map.dwg Layout: 08.5X11-P Plotted: Tue, October 13, 2020 - 6:40 PM User: drosengarten
MS VIEW: LAYER STATE: Plotter: DWG TO PDF.PC3 CTB File: FO.STB

Date	Well	pH	ALKALINITY	SPEC. COND.	COD	CHLORIDE	VOCs
Jun-01	MW-1	6.24	20	584	<8	142	BDL
Dec-01	MW-1	5.39	30	268	<8	44	BDL
Dec-02	MW-1	NA	21	NA	<8	85	BDL
Nov-03	MW-1	6.13	16	482	8.4	116	BDL
Apr-04	MW-1	5.84	22	629	<8	172	BDL
Oct-04	MW-1	6.01	32	363	<8	82	BDL
May-05	MW-1	6.06	23	559	9.9	136	BDL
Nov-05	MW-1	5.36	23	448	<8	97	BDL
Jun-06	MW-1	5.48	45	323	<8	52	11
Dec-06	MW-1	5.74	44	313	<8	56	BDL
Jun-07	MW-1	6.42	37	250	<10	36	BDL
Oct-07	MW-1	5.95	33	210	<10	28	BDL
May-08	MW-1	6.16	16	330	10.0	73	BDL
Oct-08	MW-1	5.99	31	430	<10	93	BDL
Jun-09	MW-1	5.90	19	1100	<10	280	BDL
Oct-16	MW-1	7.36	22	1062	39.3	330	BDL
Apr-17	MW-1	6.05	25	1385	42.1	388	BDL
Oct-17	MW-1	6.18	21	1423	36.4	22	BDL
Apr-18	MW-1	6.33	23	1308	26.3	414	BDL
Oct-18	MW-1	6.30	22	1314	25.9	395	BDL
Apr-19	MW-1	6.20	20	1590	<25	409	BDL
Oct-19	MW-1	5.86	47	756	141.0	2380	BDL
Apr-20	MW-1	6.08	27	345	66.1	1060	BDL
Sep-20	MW-1	6.15	48	377	64.7	1130	BDL
Jun-21	MW-1	6.18	14	837	<8	248	BDL
Oct-21	MW-1	5.96	45	2900	56.8	1070	BDL
Jun-01	MW-4	6.27	13	349	<8	85	BDL
Dec-01	MW-4	4.31	13	392	<8	101	BDL
Dec-02	MW-4	NA	12	NA	<8	159	BDL
Nov-03	MW-4	5.68	9	585	<8	213	BDL
Apr-04	MW-4	5.62	10	450	<8	129	BDL
Oct-04	MW-4	5.66	10	597	<8	187	BDL
May-05	MW-4	5.34	9	500	11.3	129	BDL
Nov-05	MW-4	5.51	6	638	<8	175	BDL
Jun-06	MW-4	5.63	10	345	<8	78	BDL
Dec-06	MW-4	5.41	10	762	11.8	221	1
Jun-07	MW-4	6.37	9	420	<10	94	BDL
Oct-07	MW-4	6.23	12	390	20.0	84	BDL
May-08	MW-4	5.84	8	410	10.0	120	BDL
Oct-08	MW-4	5.34	12	690	<10	160	BDL
Jun-09	MW-4	5.77	<10	980	<10	240	BDL
Oct-16	MW-4	7.30	45	244	32.8	708	BDL
Apr-17	MW-4	5.77	34	387	65.3	1210	BDL
Oct-17	MW-4	6.40	48	232	25.9	18	BDL
Apr-18	MW-4	6.51	60	360	57.7	1320	BDL
Oct-18	MW-4	6.59	50	241	36.4	772	BDL
Apr-19	MW-4	6.26	68	219	<25	529	BDL
Oct-19	MW-4	5.98	63	406	55.8	1240	BDL
Apr-20	MW-4	6.30	82	412	55.0	1260	BDL
Sep-20	MW-4	6.17	65	403	64.7	1160	BDL
Jun-21	MW-4	6.05	10	453	8.1	120	BDL
Oct-21	MW-4	6.18	65	6230	97.6	1950	BDL

Notes:
1. All results in milligrams per liter (mg/l) except pH in standard units (SU) and specific conductance in micro siemens (µs)
2. BDL = Below detection limit
3. NA = Not Analyzed

Date	Well	pH	ALKALINITY	SPEC. COND.	COD	CHLORIDE	VOCs
Jun-01	MW-5	6.60	36	117	<8	7	BDL
Dec-01	MW-5	4.96	15	246	10.5	62	BDL
Dec-02	MW-5	NA	20	NA	21.0	11	BDL
Nov-03	MW-5	6.00	16	90	9.7	8	BDL
Apr-04	MW-5	5.84	25	103	8.5	7	BDL
Oct-04	MW-5	5.56	11	53	8.2	3	BDL
May-05	MW-5	6.15	103	293	21.6	12	BDL
Nov-05	MW-5	5.25	38	146	<8	6	BDL
Jun-06	MW-5	5.47	97	246	8.8	14	BDL
Dec-06	MW-5	5.45	43	134	28.2	4	BDL
Jun-07	MW-5	6.48	41	130	10.0	7	BDL
Oct-07	MW-5	6.08	24	83	20.0	3	BDL
May-08	MW-5	6.37	105	107	20.0	72	BDL
Oct-08	MW-5	6.02	34	89	<10	6	BDL
Jun-09	MW-5	6.62	28	140	<10	11	BDL
Oct-16	MW-5	7.25	21	105	28.5	334	BDL
Apr-17	MW-5	6.24	141	1551	33.9	330	BDL
Oct-17	MW-5	5.97	16	190	<25	24	BDL
Apr-18	MW-5	5.90	58	588	<25	137	BDL
Oct-18	MW-5	6.08	20	165	<25	13	BDL
Apr-19	MW-5	6.14	140	235	<25	546	BDL
Oct-19	MW-5	5.74	30	213	<25	31	BDL
Apr-20	MW-5	6.18	145	278	50.6	7000	BDL
Sep-20	MW-5	6.18	34	315	32.6	61	BDL
Jun-21	MW-5	6.13	16	105	8.4	12	BDL
Oct-21	MW-5	5.61	14	122	26.7	57	BDL
Jun-01	MW-6	6.64	78	1230	<8	328	BDL
Dec-01	MW-6	4.93	131	655	<8	106	BDL
Dec-02	MW-6	NA	92	NA	<8	44	BDL
Nov-03	MW-6	6.43	98	631	<8	126	BDL
Apr-04	MW-6	6.11	84	1460	<8	487	BDL
Oct-04	MW-6	6.36	103	1120	8.2	274	BDL
May-05	MW-6	6.48	85	1660	<8	479	BDL
Nov-05	MW-6	6.30	104	1190	<8	297	BDL
Jun-06	MW-6	6.28	54	1950	<8	633	BDL
Dec-06	MW-6	5.85	61	1720	<8	547	BDL
Jun-07	MW-6	6.65	94	930	<10	180	BDL
Oct-07	MW-6	6.39	116	530	20.0	81	BDL
May-08	MW-6	7.13	95	860	<10	137	BDL
Oct-08	MW-6	6.35	85	1700	<10	360	BDL
Jun-09	MW-6	6.46	87	1800	<10	390	BDL
Oct-16	MW-6	6.77	94	462	73.9	10	BDL
Apr-17	MW-6	6.22	58	333	40.2	1020	BDL
Oct-17	MW-6	6.49	101	405	47.0	1130	BDL
Apr-18	MW-6	6.44	81	392	68.2	1420	BDL
Oct-18	MW-6	6.48	100	365	70.2	1170	BDL
Apr-19	MW-6	6.58	95	444	<25	1240	BDL
Oct-19	MW-6	6.43	101	770	132.0	2270	BDL
Apr-20	MW-6	6.54	115	787	245.0	4690	BDL
Sep-20	MW-6	6.77	132	410	48.6	1140	BDL
Jun-21	MW-6	6.71	100	649	16.1	177	BDL
Oct-21	MW-6	6.51	156	7260	119.0	2170	BDL

Notes:
1. All results in milligrams per liter (mg/l) except pH in standard units (SU) and specific conductance in micro siemens (µs)
2. BDL = Below detection limit
3. NA = Not Analyzed

Data Summary

pH IDP standard range 6-11, Meets standard on average, low values attributed to rainfall

Usefull link: pH of rainfall in the USA, 2002 | U.S. Geological Survey (usgs.gov)

Well	Min	Average	Max
MW-1	5.36	6.05	7.36
MW-4	4.31	5.94	7.30
MW-5	4.96	6.01	7.25
MW-6	4.93	6.41	7.13

Alkalinity NH standards 200 Max, all samples meet standard

Usefull link: New Hampshire Surface Water Quality Regulations, Chapter 1700 (epa.gov)

Well	Min	Average	Max
MW-1	14	28	48
MW-4	6	29	82
MW-5	11	49	145
MW-6	54	96	156

Conductivity No standard, stable record with recent outlier attributed to chloride

Usefull link: Indicators: Conductivity | US EPA

Well	Min	Average	Max
MW-1	210	783	2900
MW-4	219	684	6230
MW-5	53	234	1551
MW-6	333	1189	7260

COD IDP standard 300 Max, all samples meet standard

Usefull link: Chemical oxygen demand - Wikipedia

Well	Min	Average	Max
MW-1	8.4	43.9	141.0
MW-4	8.1	39.5	97.6
MW-5	8.2	20.4	50.6
MW-6	8.2	74.0	245.0

Chloride NH standard range 230(chronic) - 860(acute), high values attributed to road salt

Usefull link: New Hampshire Surface Water Quality Regulations, Chapter 1700 (epa.gov)

Well	Min	Average	Max
MW-1	22	359	2380
MW-4	18	479	1950
MW-5	3	338	7000
MW-6	10	804	4690

VOCs Nearly all samples below detection limit, no significant VOCs observed

317 Elm Street
Milford, NH 03055

(603) 673-5440
Fax (603) 673-0366
Sales@chemservelab.com

Monday, November 01, 2021

Albert Vanesse
UniFirst
68 Jospin Rd
Wilmington MA 01887

Project Name: Semi-Annual Groundwater
Project #: N/A
Project Location: 125 Etna Rd
Control #: 122905

Lab ID: 21100134
Date Received: 10/12/2021

Dear Albert Vanesse

Enclosed please find the laboratory results for the above referenced samples that were received by the ChemServe sample custodian on the above referenced date. Any abnormalities to the samples upon receipt would be noted on the enclosed chain of custody document. This report is not valid without a completed chain of custody with the corresponding control number, attached.

All samples analyzed by ChemServe are subject to quality standards. These standards are as stringent or more stringent than those established under NELAC, 40 CFR Part 136, state certification programs, and corresponding methodologies. ChemServe has a written QA/QC Procedures Manual that outlines these standards, and is available for your reference, upon request. Unless otherwise stated on the Chain of Custody or within the report, all holding times, preservation techniques, container types, and analytical methods are analogous with those outlined by NELAC. All units are based on "as received" weight unless denoted "dry".

Residual chlorine, sulfite and pH are intended to be performed as an immediate field analysis. Should any of these analyses be performed in the lab instead of in the field it will result in those analyses being performed out of holding time.

Acrolein and 2-chloroethylvinyl ether require an additional analysis with an un-preserved sample. If unpreserved vials were not submitted for these compounds then acrolein and 2-CEVE are not reported due to not meeting method requirements, but may be reported as estimated upon request for EPA 624.1 or EPA 524.2.

I certify that I have reviewed the above referenced analytical data and state forms, and I have found this report within compliance with the procedures outlined within NELAC. ChemServe's certified parameter list can be found at http://www.chemservelab.com/Laboratory-Information-and-Documentation.aspx

Dr. Jamie Fitzgerald PhD
President/Laboratory Director

NELAP ACCREDITED TNI LABORATORY

Certificate Number 1008

317 Elm Street
Milford, NH 03055
(603) 673-5440
Sales@chemservelab.com

UniFirst
Albert Vanesse
68 Jospin Rd
Wilmington MA 01887

Control #: 122905
Project Number: N/A
Project Name: Semi-Annual Groundwater
Project Location: 125 Etna Rd

Lab ID: 21100134
Date: 11/1/2021

Lab ID: 21100134

Sample Receiving and Comment Summary

Were samples received with a chain of custody?	Yes
Do all samples received match the chain of custody?	Yes
Were all samples received within applicable holding times?	Yes
Were all containers intact when received?	Yes
Were samples for volatile organic analysis free of headspace (per method)?	Yes
Was there evidence of cooling or submitted the same day as sampling?	Yes
Were samples collected with appropriate preservative if required?	Yes
Were samples for dissolved metals already filtered by the client or field sampling?	N/A
Were samples for O-phos filtered in the field?	N/A
Were samples received in the appropriate containers?	Yes
Were samples acceptable per any temperature requirements?	Yes

Sample	Method	Client Identity	Matrix	Analyst
21100134-001	SW 9056	MW-1	Groundwater	PaulF

Comment: no comment

** Blank comment sections denote "No Comment"*

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford, NH 03055
(603) 673-5440
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UniFirst
Albert Vanesse
68 Jospin Rd
Wilmington MA 01887

Control #: 122905
Project Number: N/A
Project Name: Semi-Annual Groundwater
Project Location: 125 Etna Rd

Analytical Results

Lab ID: 21100134
Date: 11/1/2021

Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-001	MW-1	10/12/2021 1:24:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 1:24:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Total Alkalinity	SM 2320B	45.0 mg/L		10/18/2021	1	HeatherS
COD	SM 5220D	56.8 mg/L		10/27/2021	25	HeatherS
1,1,1,2-Tetrachloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,1-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,2,2-Tetrachloroethane	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
1,1,2-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloropropene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dibromo-3-Chloropropane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
1,2-Dibromoethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,4-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Butanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Ethoxy-2-Methyl Propane (ETBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Hexanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Methoxy-2-Methyl Butane (TAME)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methoxy-2-Methyl Propane (MTBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methyl-2-Propanol (TBA)	SW 8260C	< 20 ug/L		10/25/2021	20	LauraB
4-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Isopropyltoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Methyl-2-Pentanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acetone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acrolein	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Acrylonitrile	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Benzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB

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Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-001	MW-1	10/12/2021 1:24:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 1:24:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Bromobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromodichloromethane	SW 8260C	< 0.6 ug/L		10/25/2021	0.6	LauraB
Bromoform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromomethane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
Carbon Disulfide	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Carbon Tetrachloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Dibromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dibromomethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dichlorodifluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Diethyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Di-Isopropyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Ethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Hexachlorobutadiene	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
Isopropylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
M/P-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Methylene Chloride	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Naphthalene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Propylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
O-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Sec-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Styrene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tert-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrachloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrahydrofuran	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Toluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Trichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trichlorofluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Vinyl Chloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloride	SW 9056	1070 mg/L		10/19/2021	1	PaulF

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Control #: 122905
Project Number: N/A
Project Name: Semi-Annual Groundwater
Project Location: 125 Etna Rd

Analytical Results
Lab ID: 21100134
Date: 11/1/2021

Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-002	MW-4	10/12/2021 2:24:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 2:24:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Total Alkalinity	SM 2320B	65.0 mg/L		10/18/2021	1	HeatherS
COD	SM 5220D	97.6 mg/L		10/27/2021	25	HeatherS
1,1,1,2-Tetrachloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,1-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,2,2-Tetrachloroethane	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
1,1,2-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloropropene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dibromo-3-Chloropropane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
1,2-Dibromoethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,4-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Butanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Ethoxy-2-Methyl Propane (ETBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Hexanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Methoxy-2-Methyl Butane (TAME)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methoxy-2-Methyl Propane (MTBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methyl-2-Propanol (TBA)	SW 8260C	< 20 ug/L		10/25/2021	20	LauraB
4-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Isopropyltoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Methyl-2-Pentanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acetone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acrolein	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Acrylonitrile	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Benzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB

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Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-002	MW-4	10/12/2021 2:24:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 2:24:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Bromobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromodichloromethane	SW 8260C	< 0.6 ug/L		10/25/2021	0.6	LauraB
Bromoform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromomethane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
Carbon Disulfide	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Carbon Tetrachloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Dibromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dibromomethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dichlorodifluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Diethyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Di-Isopropyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Ethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Hexachlorobutadiene	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
Isopropylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
M/P-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Methylene Chloride	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Naphthalene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Propylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
O-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Sec-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Styrene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tert-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrachloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrahydrofuran	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Toluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Trichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trichlorofluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Vinyl Chloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloride	SW 9056	1950 mg/L		10/19/2021	1	PaulF

ChemServe ENVIRONMENTAL ANALYSTS

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Control #: 122905
Project Number: N/A
Project Name: Semi-Annual Groundwater
Project Location: 125 Etna Rd

Analytical Results
Lab ID: 21100134
Date: 11/1/2021

Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-003	MW-5	10/12/2021 2:48:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 2:48:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Total Alkalinity	SM 2320B	14.0 mg/L		10/18/2021	1	HeatherS
COD	SM 5220D	26.7 mg/L		10/27/2021	25	HeatherS
1,1,1,2-Tetrachloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,1-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,2,2-Tetrachloroethane	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
1,1,2-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloropropene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dibromo-3-Chloropropane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
1,2-Dibromoethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,4-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Butanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Ethoxy-2-Methyl Propane (ETBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Hexanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Methoxy-2-Methyl Butane (TAME)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methoxy-2-Methyl Propane (MTBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methyl-2-Propanol (TBA)	SW 8260C	< 20 ug/L		10/25/2021	20	LauraB
4-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Isopropyltoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Methyl-2-Pentanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acetone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acrolein	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Acrylonitrile	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Benzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB

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Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-003	MW-5	10/12/2021 2:48:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 2:48:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Bromobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromodichloromethane	SW 8260C	< 0.6 ug/L		10/25/2021	0.6	LauraB
Bromoform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromomethane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
Carbon Disulfide	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Carbon Tetrachloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Dibromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dibromomethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dichlorodifluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Diethyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Di-Isopropyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Ethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Hexachlorobutadiene	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
Isopropylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
M/P-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Methylene Chloride	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Naphthalene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Propylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
O-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Sec-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Styrene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tert-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrachloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrahydrofuran	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Toluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Trichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trichlorofluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Vinyl Chloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloride	SW 9056	56.7 mg/L		10/19/2021	1	PaulF

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford, NH 03055
(603) 673-5440
Sales@chemservelab.com

UniFirst
Albert Vanesse
68 Jospin Rd
Wilmington MA 01887

Control #: 122905
Project Number: N/A
Project Name: Semi-Annual Groundwater
Project Location: 125 Etna Rd

Analytical Results
Lab ID: 21100134
Date: 11/1/2021

Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-004	MW-6	10/12/2021 1:56:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 1:56:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Total Alkalinity	SM 2320B	156 mg/L		10/18/2021	1	HeatherS
COD	SM 5220D	119 mg/L		10/27/2021	25	HeatherS
1,1,1,2-Tetrachloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,1-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1,2,2-Tetrachloroethane	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
1,1,2-Trichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,1-Dichloropropene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,3-Trichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2,4-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dibromo-3-Chloropropane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
1,2-Dibromoethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3,5-Trimethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,3-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
1,4-Dichlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2,2-Dichloropropane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Butanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Ethoxy-2-Methyl Propane (ETBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Hexanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
2-Methoxy-2-Methyl Butane (TAME)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methoxy-2-Methyl Propane (MTBE)	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
2-Methyl-2-Propanol (TBA)	SW 8260C	< 20 ug/L		10/25/2021	20	LauraB
4-Chlorotoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Isopropyltoluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
4-Methyl-2-Pentanone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acetone	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Acrolein	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Acrylonitrile	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Benzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB

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Sample	Client Sample Identity	Start Date/Time Sampled:	Matrix
21100134-004	MW-6	10/12/2021 1:56:00 PM	Groundwater

Composite Start Date and Time 10/12/2021 1:56:00 PM **Composite End Date and Time**

Parameter	Method	Result	Qualifier	Date/Time Analyzed	RDL	Analyst
Bromobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromodichloromethane	SW 8260C	< 0.6 ug/L		10/25/2021	0.6	LauraB
Bromoform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Bromomethane	SW 8260C	< 2 ug/L		10/25/2021	2	LauraB
Carbon Disulfide	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Carbon Tetrachloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chlorobenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloroform	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Cis-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Dibromochloromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dibromomethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Dichlorodifluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Diethyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Di-Isopropyl Ether	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Ethylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Hexachlorobutadiene	SW 8260C	< 0.5 ug/L		10/25/2021	0.5	LauraB
Isopropylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
M/P-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Methylene Chloride	SW 8260C	< 5 ug/L		10/25/2021	5	LauraB
Naphthalene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
N-Propylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
O-Xylene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Sec-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Styrene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tert-Butylbenzene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrachloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Tetrahydrofuran	SW 8260C	< 12 ug/L		10/25/2021	12	LauraB
Toluene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,2-Dichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trans-1,3-Dichloropropene	SW 8260C	< 0.4 ug/L		10/25/2021	0.4	LauraB
Trichloroethene	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Trichlorofluoromethane	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Vinyl Chloride	SW 8260C	< 1 ug/L		10/25/2021	1	LauraB
Chloride	SW 9056	2170 mg/L		10/19/2021	1	PaulF

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Qualifier:	Description:
B-	Method blank contaminated with target analyte.
B1-	BOD had total oxygen loss. Result reported as ">"the highest dilution.
B2-	BOD had no oxygen loss. Result reported as "<" the lowest dilution.
G-	Reporting limit elevated due to matrix interference.
H-	Method prescribed holding time exceeded.
J-	Indicates an estimated value. Value is less than the quantitation limit.
IL-	Internal Standard(s) recovery was low due to matrix. Result may be biased high.
IH-	Internal Standard(s) recovery was high due to matrix. Result may be biased low.
LH-	Laboratory control spike(s) was high. Results may be biased high.
LL-	Laboratory control spike(s) was low. Results may be biased low.
MH-	Matrix spike recovery high due to matrix. Results may be biased high.
ML-	Matrix spike recovery low due to matrix. Results may be biased low.
N-	Non-target compound. Reported as a TIC.
NC-	Spike recovery was not calculated due to the concentration of the analyte being >4 times the concentration of the spike added.
R-	RPD outside acceptable recovery limits.
RO-	Sample received out of holding time.
SH-	Surrogate recovery high due to matrix
SL-	Surrogate recovery low due to matrix
U-	BOD/CBOD blank had an oxygen depletion greater than the suggested amount of 0.200.
V-	Sample pH for analysis was not within the required range when checked at time of analysis.
Z	Too numerous to count (TNTC)

An "A" in the result column on the report indicates absent for presence/absent bacteria and a "P" indicates present for presence/absent bacteria.

ChemServe ENVIRONMENTAL ANALYSTS

Surrogate Report

Client: UniFirst **Order #:** 21100134

Matrix: Groundwater

Units: ug/L

Sample Number	Surrogate	Method	Percent Recovery	Control Limits	Surrogate Amount	Surrogate Result
21100134-001	4-Bromofluorobenzene	SW 8260C	97.05	70-130	20	19.41
21100134-001	Dibromofluoromethane	SW 8260C	86.85	70-130	20	17.37
21100134-001	Toluene-D8	SW 8260C	99.9	70-130	20	19.98
21100134-002	4-Bromofluorobenzene	SW 8260C	96.3	70-130	20	19.26
21100134-002	Dibromofluoromethane	SW 8260C	113.65	70-130	20	22.73
21100134-002	Toluene-D8	SW 8260C	95.8	70-130	20	19.16
21100134-003	4-Bromofluorobenzene	SW 8260C	97.5	70-130	20	19.50
21100134-003	Dibromofluoromethane	SW 8260C	114.75	70-130	20	22.95
21100134-003	Toluene-D8	SW 8260C	96.85	70-130	20	19.37
21100134-004	4-Bromofluorobenzene	SW 8260C	98.85	70-130	20	19.77
21100134-004	Dibromofluoromethane	SW 8260C	115.35	70-130	20	23.07
21100134-004	Toluene-D8	SW 8260C	97.65	70-130	20	19.53

FIELD SAMPLING
CUSTOMER CHAIN OF CUSTODY (COC) INFORMATION

Unifirst

DATE: 10/12/2021

TECHNICIAN: J Fitzgerald

Time	Well #	Size/ Type	Total Depth (ft)	Depth to Water (ft)	Total Purge (Gals)	pH	Spec. Con u/S	Field Notes
13:28	MW-1	2" PVC	52.2	24.93	13.3	5.96	2900	
14:26	MW-4	2" PVC	40.7	25.00	7.7	6.18	6230	
14:50	MW-5	2" PVC	25.2	8.31	8.3	5.61	122.1	
13:58	MW-6	2" PVC	34.6	26.39	4.0	6.51	7260	

Chain of Custody No. 122905

Multiple COC's Yes No

ChemServe ENVIRONMENTAL ANALYSTS

CHAIN OF CUSTODY

317 Elm Street Milford, NH 03055
(603) 673-5440/ Fax (603) 673-0366

A CUSTOMER INFORMATION

CUSTOMER: Unifirst

ADDRESS: 125 ~~Edna~~ (SE) Etna Rd

CITY/STATE/ZIP Lebanon NH 03766

TELEPHONE: 603-448-0011

REPORT TO: ~~Jose Cavazos~~ Albert Vanesse

EMAIL TO:

B PROJECT INFORMATION

JOB NAME: Semi-Annual Groundwater Monitoring

JOB NUMBER:

LOCATION:

INVOICE EMAIL:

INVOICE TO:

P.O. NUMBER:

C SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE:)

10 DAY STANDARD — RUSH (MUST BE PRE-APPROVED)

7day 5 day 4 day 3 day 2 day 1 day Same Day

MCP ☐ YES ☒ NO ☐ GW1 ☐ GW2 ☐ GW3

STATION # (D)	SAMPLE IDENTIFICATION & LOCATION (E)	COLLECTED (F) DATE	COLLECTED (G) TIME	SAMPLE TYPE GRAB (H)	SAMPLE TYPE COMP	(I) MATRIX SOLID (S) GROUND WATER (G) DRINKING WATER (D) WASTE WATER (W)	(J) # OF CONTAINERS	(K) CONTAINER AND PRESERVATIVE 500ml(P) N/P (1)	60ml(P) H2SO4 (2)	500ml(P) N/P (3)	40ml(G) HCl (4)						(L) ANALYSIS
	MW-1	10/12/21	1324	✓		G	5	1	1	1	2						(1) Chloride
	MW-4	10/12/21	1424	✓		G	5	1	1	1	2						(2) COD
	MW-5	10/12/21	14048	✓		G	5	1	1	1	2						(3) Alkalinity
	MW-6	10/12/21	1356	✓		G	5	1	1	1	2						(4) VOC 8260
		DATE	TIME														
		DATE	TIME														
		DATE	TIME														
		DATE	TIME														

M CUSTODY

SAMPLER: James Fitzgerald (print name)

SIGNATURE: [signature]

	DATE	MILITARY TIME
	10/12/21	1448
RELINQUISHED:	DATE	TIME
RECEIVED:	DATE	TIME
RELINQUISHED: [signature]	10/12/21	1642
RECEIVED FOR LAB: [signature]	10/12/21	1642

SAMPLE CHECK LIST:

RECEIVED WITHIN HOLD TIME ~~YES~~ OR NO

RECEIVED IN GOOD CONDITION ~~YES~~ OR NO

TEMP BLANK 9.5 °C

SHIPPED OR ~~HAND~~ DELIVERED

SAMPLES WERE PROPERLY PRESERVED ~~YES~~ NO N/A

SAMPLES WERE FILTERED IN FIELD ~~LAB~~ ~~N/A~~

IF NO EXPLAIN:

GROUP # 2100134 10/26

FIELD READING(S) & COMMENTS:

pH

Spec Con

Static H2O elevation

September 29, 2016

Sarah F. White
Environmental Compliance Specialist
UniFirst Corporation
68 Jonspin Road
Wilmington, MA 01887

Re: **Monitoring Well Conditions Assessment**
UniFirst Lebanon Facility
CLD Reference No. P16-0261

Dear Ms. White:

CLD Consulting Engineers, Inc. (CLD) is pleased to present the results of our monitoring well assessment for the above-referenced site.

It is our understanding that UniFirst is being required by the City of Lebanon, consistent with a condition of Site Plan Review approval at the Planning Board in 1987, to monitor the site for potential VOC contaminants. Four monitoring wells were installed upon completion of the building construction in the late 1980's. This monitoring program was active until approximately the end of 2009, at which time it inadvertently became inactive. However, the City is now requiring that the program be reinstated given that it was a condition of approval at the Planning Board. To reinstate the sampling program, it is important to ensure that the existing monitoring wells are in good working order after many years of inactivity.

On September 20, 2016, Brian Vincent of CLD Engineers performed a visual well assessment. Refer to Figure 1 for approximate location of each monitoring well. The following are the results of this assessment:

Results

MW-1

Condition of Concrete Pad:	None installed.
Condition of steel riser pipe:	Good, but surface rust. Solid with no play or movement.
PVC Riser Pipe:	Good condition
PVC pipe cap:	Good
Water Level:	25.6' from top of PVC (23.9' from ground surface)
Depth:	52.2' from PVC (50.5' from ground surface)
Standing groundwater in well:	26.6'
Clarity:	Very clear/low turbidity

MW-4

Condition of Concrete Pad:	None installed.
Condition of steel riser pipe:	Good, but surface rust. Solid with no play or movement.
PVC Riser Pipe:	Good condition
PVC pipe cap:	Poor
Water Level:	25.8' from top of PVC (23.6' from ground surface)
Depth:	40.7' from PVC (38.5' from ground surface)
Standing groundwater in well:	14.9'
Clarity:	Very clear/low turbidity

MW-5

Condition of Concrete Pad:	None installed.
Condition of steel riser pipe:	Fair; was likely struck by plow, some surface rust. Solid with no play or movement.
PVC Riser Pipe:	Good condition
PVC pipe cap:	Good
Water Level:	19.8' from top of PVC (17.8' from ground surface)
Depth:	25.2' from PVC (23.2' from ground surface)
Standing groundwater in well:	5.4'
Clarity:	Very clear/low turbidity

MW-6

Condition of Concrete Pad:	Good to Fair condition, evidence of slight frost heave.
Condition of steel riser pipe:	Good, but surface rust. Solid with no play or movement.
PVC Riser Pipe:	Good condition
PVC pipe cap:	Good condition
Water Level:	27.1'from top of PVC (25.2' from ground surface)
Depth:	34.6' from PVC (33.7' from ground surface)
Standing groundwater in well:	7.5'
Clarity:	Very clear/low turbidity

Based on water level and depth readings, the monitoring wells should have sufficient standing groundwater for sampling going forward. The low turbidity indicates that there is little or no siltation in the wells.

Recommendations

Replace monitoring well MW-4 PVC cap.
Consider installing pad locks on each monitoring well to prevent vandalism.

CLD appreciates the opportunity to provide these engineering services to UniFirst. Should you have any questions, please do not hesitate to call.

Very truly yours,

Brian A. Vincent, P.E.
Regional Office Manager



PROJECT #:	DATE:
16-0261	09/21/16
DWG. NO.:	SCALE:
FIG 1	1"=200'

UniFirst Corp.
MONITORING WELLS
ETNA ROAD
LEBANON, NH 03766
AERIAL
LOCATION MAP

CONSULTING ENGINEERS
28 Gates Street Suite 100
White River Junction, VT 05001
(802) 698-0370 Fax: (877) 895-4949

OWNER:
UNIFIRST CORPORATION

125 ETNA ROAD
LEBANON, NH

CITY OF LEBANON, NEW HAMPSHIRE
INDUSTRIAL DISCHARGE CLASS I PERMIT

Permit NO. LEB 105

In accordance with the provisions of the Code of the City of Lebanon, Chapter 136

UNIFIRST CORPORATION
125 ETNA ROAD
LEBANON, NEW HAMPSHIRE 03766
(603) 448-0011

is hereby authorized to discharge industrial wastewater from the above identified facility and through the outfalls identified herein into the City of Lebanon Publicly Owned Treatment Works (POTW) in accordance with the conditions set forth in this Permit. Compliance with this Permit does not relieve the permittee of its obligation to comply with any or all applicable pretreatment regulations, standards, or requirements under local, state, and federal laws, including any such regulations, standards, requirements, or laws that may become effective during the term of this Permit.

Noncompliance with any term or condition of this Permit shall constitute a violation of the Code of the City of Lebanon and shall be subject to the penalty provisions contained therein.

This Permit is issued in accordance with the application submitted on August 18, 2018 and amendments thereto and in conformity with all plans, specifications and other applicable data submitted to the City in support of the above application.

This permit shall become effective on April 1, 2019 and shall expire at midnight on March 31, 2022

Permit Issued By: City of Lebanon Authorization:

Adam Lewis, Chief of Quality Assurance — Dan Knox, Wastewater Treatment Superintendent

Authorized Representative: Phillip Breen – General Manager

I hereby acknowledge as well as assent to the terms and conditions of this Industrial Discharge Permit provided in accordance with the Code of the City of Lebanon. Any misrepresentation in obtaining this permit, lack of compliance with any applicable federal, state or city laws or regulations and/or failure to comply with any terms of conditions of this permit shall constitute a violation of said permit. A violation of this Industrial Discharge Permit may result in the following: A) Revocation of the permit; B) Fines/penalties as authorized by the Code of the City of Lebanon; C) An enforcement or injunction action brought in a court of competent jurisdiction; and/or D) Any other remedies available under the law

Signature/Title, Industrial User Authorized Representative — Date

THIS PERMIT CONTAINS:

- Cover Page
- Discharge Limitations
- Monitoring Requirements
- Reporting Requirements
- Special Conditions
- Compliance Schedule
- Standard Conditions
- Definitions
- Fact Sheet

PART 1 - DISCHARGE LIMITATIONS **Expiration date: Oct. 21, 2015**

A. During the effective period, the permittee is authorized to discharge wastewater to the City of Lebanon, New Hampshire sewer system from the outfall(s) listed below.

Outfall	Descriptions
001	Laundry wastewater sewer prior to combination with sanitary waste - water in manhole situated on the east side of the Unifirst parking lot.
002	Sanitary sewer service prior to connection with laundry wastewater sewer in manhole situated on east side of Unifirst parking lot.

B. During the effective period, the discharge from the outfall(s) listed above shall not exceed the the following limitations:

Permitted Flows (GPD) by Process at Outfall(s)

	Daily Maximum	Monthly Average	Outfall
Industrial Laundering	69,000	69,000	001
Sanitary Flow, GPD	1,225	875	002
Regulated (process) Flow, GPD *	**69,000**	**69,000**	001

Parameter		Limitations (milligrams per liter, except as noted) Daily Maximum	Monthly Average	Mass Limits Pounds/Day Daily Maximum	Mass Limits Pounds/Day Monthly Average
Biochemical Oxygen Demand *	§	300	300	173	173
Total Oil and Grease *	§	250	250	144	144
Total Petroleum Hydrocarbons *	§	100	100	58	58
pH range (Standard Units) *		6.0 - 11.0 SU	NA		
Sulfate *	§	150	150	86	86
Sulfide	§	1	1	0.58	0.58
Sulfite *	§	280	280	161	161
Total Suspended Solids *	§	350	350	201	201
Nitrogen (TKN) *	§	45	45	25.9	25.9
Phenol *	§	50	50	29	29
Phenols (Total) *	§	1	1	0.58	0.58
Formaldehyde *	§	26.9	26.9 *	15	15
Volatile Organic Compounds *	§	Screening Levels are Compound-Specific	Screening Levels are Compound-Specific		
Aluminum *	§	460	460	264.7116	264.7116
Arsenic *	§	0.22	0.22	0.1266012	0.1266012
Cadmium *	§	0.034	0.034	0.01956564	0.01956564
Chromium (total) *	§	4.11	4.11	2.3651406	2.3651406
Copper *	§	9.66	9.66	5.5589436	5.5589436
Cyanide, Total		** 0.04 **	** 0.04 **	0.0230184	0.0230184
Lead *	§	0.36	0.36	0.2071656	0.2071656
Mercury *	§	0.069	0.069	0.03970674	0.03970674
Nickel *	§	5.14	5.14	2.9578644	2.9578644
Selenium		** 0.002 **	** 0.002 **	0.00115092	0.00115092
Silver *	§	0.73	0.73	0.4200858	0.4200858
Zinc *	§	2.7	2.7	1.553742	1.553742

§ *Screening levels*

* *Self-monitoring reports are required for these parameters. See Part 2 (A), of this permit.*

** # ** *Indicates that the permittee shall not discharge at concentrations significantly greater than the normal domestic background concentrations, cut-off levels are shown.*

Mass limits: "Day Max" based on Daily Maximum Permitted Process Flow and Daily Maximum concentration limit; "Month Avg" based on Monthly Average Permitted Process Flow and Monthly Average concentration limit.

C. General Prohibitions - An Industrial User shall not introduce into the POTW pollutants which cause Pass Through or Interference.

D. Specific Prohibitions - During the effective period of this permit, the Permittee is authorized to discharge process wastewater to the POTW from the points identified in Part 1 whose effluent characteristics shall not exceed the values listed therein.

The permittee shall comply with all prohibited discharges of the Code of the City of Lebanon, Chapter 136 and comply with all State and federal pretreatment standards and requirements. This shall include but not be limited to the following:

1. Any gasoline, benzene, naphtha, fuel oil or other flammable or explosive liquid, gas or solid, or any substance which may generate or form any flammable, explosive, or combustible substance, fluid, gas, vapor, or mixture when combined with air, water, or other substances found in sewers. This includes but is not limited to pollutants which cause an exceedance of ten percent of the lower explosive limit (LEL) at any point in the POTW or with a closed cup flashpoint of less than 140 degrees Fahrenheit.

2. Any waters or wastewaters having a pH lower than 5.0 or higher than 12.0 or having any other corrosive property which may be capable of causing damage or hazard to structures, equipment, and/or personnel of the sewage works, or with acidity or alkalinity in such quantities that the City believes may cause, alone or in combination with other discharges, interference or pass-through.

3. Any solid or viscous substances, including waters or wastewaters which contain fats, wax, greases or oils, or any substances, whether emulsified or not, which may solidify or become viscous at a temperature between 32 degrees Fahrenheit and 150 degrees Fahrenheit, in quantities or of such size capable of causing obstruction to the flow in sewers or causing other interference with the proper operation of the sewage works.

4. Any waters or wastewaters containing pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

5. Any waters or wastewaters having a temperature higher than 150 degrees Fahrenheit (65 degrees Celsius) or heat in amounts which will inhibit biological activity in the sewage treatment plant resulting in interference, but in no case heat in such quantities that the temperature of the sewage treatment plant influent exceeds 104 degrees Fahrenheit (40 degrees Celsius).

6. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil in amounts that will cause interference or pass through.

7. Any waters or wastes containing odor-producing substances exceeding limits which may be established by the City.

8. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the City or by applicable State or federal regulations.

9. Any quantities of flow, concentrations, or both which constitute a "slug" as defined herein.

10. Medical, infectious, pharmaceutical, radiological and hazardous wastes as defined by Env-Ws 904 Standards for Pretreatment of Industrial Wastewater.

11. Any pH that, alone, or in combination with other discharges, contributes to or causes the pH at the Headworks of the treatment plant to exceed 9.0 or fall below 6.0.

E. Removed Substances - Solids, sludges, or other pollutants removed in the course of treatment or control of wastewater shall be disposed of in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act, as well as in accordance with all applicable State and local requirements.

F. Dilution Prohibited - The permittee shall not increase the use of process water, or in any other way attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with a pretreatment standard or requirement.

G. Uncontaminated Water - No sanitary sewer shall be used to receive and convey or dispose of any storm or surface water, or any other uncontaminated or unpolluted drainage. These shall be discharged into storm drains, or to a natural outlet, as approved by the City of Lebanon and in accordance with any NPDES permitting requirements.

PART 2 - MONITORING REQUIREMENTS

A. Scheduled Monitoring and Reporting - Sampling and measurements as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit. Monitoring points shall not be changed without notification to and approval from the City. From the period beginning on the effective date of the permit, the permittee shall collect and analyze representative samples not less frequently than indicated in Table 1.

TABLE 1

PARAMETER	FREQUENCY[2]	SAMPLE TYPE [1] / LOCATION	DATE(S) REPORTS DUE[3]
Flow (gpd): Daily maximum and average daily[4]	Continuous	Maintain records from flow meter for process wastewater discharge @ outfall 001	January 15, April 15, July 15, October 15
Total Suspended Solids, Total Kjeldahl Nitrogen, Sulfate, Sulfide, Aluminum, Arsenic, Chromium, Copper, Iron, Lead, Mercury, Nickel, Selenium, Silver, Zinc [6]	Once every three months	Composite of at least four grabs[5] @ Outfall 001	January 15, April 15, July 15, October 15
BOD[7]	Once every three months	Composite of at least four grabs[5] @ Outfall 001	January 15, April 15, July 15, October 15
Sulfite, Total Oil and Grease, Total Petroleum Hydrocarbons	Once every three months	Single grab collected during a normal discharge day @ Outfall 001	January 15, April 15, July 15, October 15

pH	Continuous	Maintain effluent pH records and report dates, times, and durations of all pH discharges outside the allowable range @ Outfall 001	January 15, April 15, July 15, October 15
Sulfate, pH, H2S (in headspace)	Once per year	Single Grabs at outfall 001, SMH 1540, SMH 516, sampling manhole 4, and sampling manhole 5	July 15
Narrative Statement	Reports shall include a narrative statement identifying: • Source(s) of process wastewaters and • Compliance status with applicable pretreatment standards and, if not in compliance, what additional operation and maintenance practices and/or pretreatment are necessary.		January 15, April 15, July 15, October 15
As required at time of permit reapplication	Once every three years	Flow-proportional composite representative of process discharges	60 days prior to permit expiration

NOTES:

(1) Samples must be collected in containers that have been appropriately preserved and analyzed in accordance with 40 CFR Part 136.

(2) If the permittee monitors any pollutant more frequently than required by this permit, using test procedures prescribed in 40 CFR Part 136 or amendments thereto, or as specified in this permit, the results of such monitoring shall be included in the January, April, July, and October reports.

(3) Reports shall cover the periods January through March, April through June, July through September, and October through December.

(4) Flow reports shall consist of monthly average and maximum daily process flows in gallons per day.

(5) Composites of discrete grab samples shall be flow proportioned and are to be collected over the period of a normal discharge day.

(6) All metals are total; refer to Part 4, Special Conditions for required detection limits.

(7) Subject to excess strength surcharge. Reports due by January 15, April 15, July 15, and October 15.

Signatory Requirements - All reports shall be signed by an Authorized Representative as defined in the definitions section of this permit.

Certification - Signed reports shall include the following statement: *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

B. Monitoring Scheduling Requirements - The scheduling of sampling events and sample protocol is subject to approval by the City. The permittee shall contact the Lebanon Wastewater Department at least

five working days in advance of all proposed sampling events in order to obtain approval for an actual sampling date and protocol.

C. Resampling - If sampling performed indicates a violation, the City shall be notified within 24 hours of becoming aware of the violation, in accordance with Part 3 (D) of this permit. The Industrial User may be required to repeat the sampling and analysis and submit the results of the repeat analysis to the City within 30 days after becoming aware of the violation, except resampling is not required if the industry samples at least once a month or the City has sampled between the time when the initial sampling was performed and the time when the Industrial User received the results of this sampling.

D. Effluent Monitoring Devices - If effluent monitoring is required by this permit, then the following shall apply:

1. The appropriate devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of monitored discharges.

2. All monitoring devices and sampling stations must be approved by the Lebanon Wastewater Department.

3. The devices shall be installed, calibrated, and maintained to ensure the measurements are consistent with the accepted capability of that type of device and shall demonstrate the accuracy of the monitoring devices upon the request of the Lebanon Wastewater Department.

4. The permittee shall accept the estimates of quantities of wastewater flows and other parameters, as established by the Lebanon Wastewater Department, during all periods in which required devices fail to operate properly.

E. Sampling and Analytical Methods - Any sampling, preservation, handling, and analytical methods used must conform to 40 CFR Part 136 and amendments thereto, unless otherwise approved by EPA, or as specified in this permit.

F. Additional Monitoring by the Permittee - If sampling of any pollutant is performed more frequently than required by this permit, using test procedures prescribed in 40 CFR Part 136, then the results of this monitoring shall be included in the permittee's effluent monitoring report or as required by the Lebanon Wastewater Department.

G. Reduced Monitoring Requirements - Monitoring as specified in Table 1 shall not be required for those pollutants that are demonstrated as being absent from the permittee's wastewater discharge to the City's sewer unless the pollutants are known to be used in the permittee's processes and/or are present at the permittee's facility. For the purposes of this section, upon request from an industry, a pollutant will be considered as being absent from the permittee's wastewater, at the discretion of the Public Works Director, after 2 consecutive monitoring events show that the pollutant concentration does not exceed 1.2 times the respective domestic background concentration.

PART 3 - REPORTING REQUIREMENTS

A. Verbal Reporting - Verbal notification as required in this permit shall be directed to the following unless otherwise noted in a specific section:

1. During normal business hours (7:00 a.m. through 3:30 p.m., Monday through Friday):

   Chief of Quality Assurance (603) 298-5986

2. At all other times, notify:

   Lebanon Police Department (603) 448-1212

B. **Written Reporting** - All written reports required by this permit shall be submitted to the Lebanon Wastewater Department at the following address:

City of Lebanon
Wastewater Treatment Plant
Attn: Chief of Quality Assurance
28 Market Street
West Lebanon, New Hampshire 03784

C. **Effluent Monitoring Reports** - Industrial Users shall submit periodic reports as required in Part 2, Section A - Scheduled Monitoring and Reporting. These reports may require:

1. Information indicating the nature and concentration of pollutants in the discharge from the regulated processes governed by pretreatment standards;

2. Maximum and daily flow for these process units;

3. Statements on compliance with applicable pretreatment standards on a consistent basis, and if not, what additional operation and maintenance practices and/or pretreatment are necessary; and

4. Complete sampling and analytical laboratory records.

D. **Violation of Effluent Limits - Reporting** - In the event that effluent monitoring indicates a violation, the Wastewater Treatment Plant Superintendent, or other available representative identified in Section A above, shall be verbally notified within 24 hours of becoming aware of the violation. A written follow-up report signed by an authorized representative shall be filed with the City within five (5) days. The report shall specify:

1. Description of the noncompliance, cause of the occurrence, and its impact on the permittee's compliance status;

2. Anticipated time the condition of noncompliance is expected to continue, or if such conditions have been corrected, the duration of the period of noncompliance;

3. Steps taken by the permittee to reduce and eliminate the noncomplying discharge; and

4. Steps taken by the permittee to prevent recurrence of the condition of noncompliance.

E. **Spills, Potentially Harmful Discharges - Reporting** - Immediate notification by the permittee is required upon the occurrence of an accidental discharge of substances prohibited by the Code of the City of Lebanon, Chapter 136 or any slug loads or spills that may enter the public sewer. This shall also include immediate notification of any discharge which has the potential to cause a problem for the POTW.

Verbal notification shall be made to the parties identified in Part 3, Section A above. The notification shall include location of discharge, date and time thereof, type of waste (including concentration and volume), and corrective actions taken. The permittee's notification in accordance with the requirements of this section does not relieve it of other reporting requirements that arise under local, State, or federal laws.

Within five (5) days following an accidental discharge, the permittee shall submit to the Lebanon Wastewater Department a detailed written report signed by an authorized representative. The report shall specify:

1. The description and cause of the slug load or accidental discharge and the impact on the permittee's compliance status. The description shall also include the location of discharge and the type, concentration, and volume of waste;

2. The duration of the period of the discharge, including exact dates and time of the discharge, and if the discharge is continuing, the time by which control of the discharge and compliance is reasonably expected to occur;

3. All steps taken by the permittee to reduce and eliminate the slug load, accidental discharge, or other potentially harmful discharge;

4. Steps to be taken by the permittee to prevent recurrence of the condition of noncompliance.

F. Operating Upset/Bypass Report - In the event the permittee is unable to comply with any of the conditions of this permit due to a breakdown of pretreatment facilities or emergency bypass, the permittee shall provide an immediate verbal report to the parties identified in Part 3, Section A. A written follow-up report signed by an authorized representative shall be filed with the Lebanon Wastewater Department within five (5) days. The report shall contain the same information as required for the written report in Part 3, Section C above.

G. Changed Discharge Reporting - The permittee shall report changes in the nature and/or volume of the discharge pursuant to Part 6, Section I of this permit.

H. Effluent Monitoring Records - The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample measurement, report, or application.

All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities shall be retained and preserved by the permittee until all enforcement activities have concluded and all periods of limitation with respect to any and all appeals have expired.

If samples are collected, such records shall include for each sample:

1. The date, exact place, time, and methods of sampling or measurements, and sample preservation techniques or procedures;

2. The name of the analytical laboratory performing the analyses;

3. Who performed the sampling or measurements;

4. The date(s) analyses were performed;

5. Who performed the analyses;

6. The EPA-approved method reference number for each analyte reported;

7. The full name of each analyte, including whether results are total or dissolved;

8. The results of such analyses;

9. Quality assurance information performed by the laboratory indicating if quality assurance results were acceptable;

10. The method detection limit for each analyte reported;

11. Units in which results are expressed; and

12. A copy of the chain-of-custody forms, properly completed, which accompany all samples submitted to the laboratory.

I. Falsifying Information - Knowingly making any false statement on any report or other document required by this permit and/or knowingly rendering any monitoring device or method inaccurate is a crime and may result in the imposition of criminal sanctions and/or civil penalties.

J. Duty to Provide Information - The permittee shall furnish to the City of Lebanon within 15 days any information which the City of Lebanon may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also, upon request, furnish to the City of Lebanon within 15 days copies of any records required to be kept by this permit.

K. Anticipated Noncompliance - The permittee shall give advance notice to the Lebanon Wastewater Department of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this permit.

L. Signatory Requirements - All applications, reports, and information submitted to the Lebanon Wastewater Department as a requirement of this permit shall be signed by an Authorized Representative of the permittee as defined by the Code of the City of Lebanon, Chapter 136.

PART 4 - SPECIAL CONDITIONS

A. The permittee shall operate and maintain its pretreatment systems to treat industrial wastewater as needed to meet the effluent limitations of this permit.

1.) As a part of the wastewater pretreatment system, the permittee shall operate and maintain an in-line turbidimeter located on the final effluent piping prior to discharge to the City's sewer. The turbidimeter shall monitor the effluent for the purpose of alerting the wastewater pretreatment system operator of effluent of unacceptable quality and preventing violations of this permit. If the turbidimeter is taken offline the City shall be notified.

B. The permittee shall operate and maintain its flow metering device to obtain accurate measurements of

wastewater flow as required to meet the conditions of this permit.

C. The permittee shall adhere to quality assurance/quality control practices required to ensure and demonstrate the accuracy of the effluent pH, turbidity, and flow monitoring systems.

D. The following detection limits (or lower) are required for monitoring reports required by this permit:

PARAMETER	MAXIMUM DETECTION LIMIT
Aluminum	0.05 mg/l
Arsenic	0.001 mg/l
Cadmium	0.001 mg/l
Chromium	0.001 mg/l
Copper	0.01 mg/l
Iron	0.2 mg/l
Lead	0.002 mg/l
Mercury	0.0002 mg/l
Nickel	0.003 mg/l
Selenium	0.001 mg/l
Silver	0.001 mg/l
Zinc	0.02 mg/l
Cyanide	0.02 mg/l

E. The permittee shall provide a wastewater treatment plant operator, certified by the State of New Hampshire, to oversee the operation and maintenance of the Unifirst process wastewater pretreatment system.

1. Proof of operator certification shall be submitted to the City for any of the following reasons:
   - Upon hire of a new certified operator.
   - Upon changes in the operator's certification status.
   - Upon request by an authorized City representative.

F. In the event of a plant shutdown for routine maintenance, vacations, etc. the permitee shall notify the City of the time, duration, and date of its occurrence. Notification shall be made 24 hours prior to plant shutdown. Notification is not required during holidays.

G. BOD results exceeding 300 mg/l shall be surcharged at a rate consistent with the Code of the City of Lebanon. Surcharges will be based on process wastewater flow and BOD at outfall 001 for the billing period.

H. The permittee shall continue to implement all elements of the "Emergency Response and Spill Prevention Plan for Unifirst Corporation" and amendments thereto, as required by the City of Lebanon.

I. Results for sulfate from monitoring have continued to be in excess of the historical screening level. Monitoring of the collection system is required annually. Manholes shall be monitored in accordance with the approved procedure received in June 2014. In addition to outfall 001, manholes that require monitoring are detailed in Appendix A. Two of the manholes are detailed on the engineering plans for the new sewer line that services Etna Road, they are labeled SMH 516 and SMH 1540. The additional two manholes are detailed on a map from the City's GIS system, they are labeled Sampling Manhole 4 and Sampling Manhole 5. Results from the manhole monitoring are due July 15th each year. If sulfate levels are found in excess of 150 mg/L at SMH 516 alternative forms of pH adjustment may be required.

PART 6 - STANDARD CONDITIONS

A. Severability - The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit, to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

B. Duty to Comply - All discharges authorized herein shall be consistent with the terms and conditions of this permit and the Code of the City of Lebanon, Chapter 136. Failure to comply with the requirements of this permit may be grounds for administrative action, or enforcement proceedings, including civil or criminal penalties, injunctive relief, and summary abatements, as provided for in the Code of the City of Lebanon, Chapter 136, RSA 149:19, and/or Clean Water Act.

C. Duty to Mitigate - The permittee shall take all reasonable steps to minimize or correct any adverse impact to the POTW or the environment resulting from noncompliance with this permit including, but not limited to:

1. Accelerated or additional monitoring;

2. Halting or reducing production activities;

3. Providing alternate methods of treatment; and/or

4. Halting or reducing discharges.

Upon reduction of efficiency of operation or loss or failure of all or part of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Permit Modification, Suspension, Revocation - After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for causes including, but not limited, the following:

1. To incorporate any new or revised federal, State, or local pretreatment standards or requirements;

2. Material or substantial alterations or additions to the discharger's operation processes, or discharge volume or character, which were not considered in drafting the effective permit;

3. A change in any condition of either the Industrial User or the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;

4. Information indicating that the permitted discharge poses a threat to the City of Lebanon's collection and treatment systems, POTW personnel, or the receiving waters;

5. Violation of any terms or conditions of the permit;

6. Misrepresentation or failure to disclose fully all relevant facts in the permit application or in any required reporting;

7. Revision of, or a grant of, variance from such categorical standards pursuant to 40 CFR 403.13;

8. To correct typographical or other errors in the permit;

9. To reflect transfer of the facility ownership and/or operation to a new owner/operator;

10. Upon request of the permittee, provided such request does not create a violation of any applicable requirements, standards, laws, or rules and regulations;

11. Tampering with monitoring equipment;

12. Refusing to allow timely access to the facility premises and records;

13. Failure to pay fines or sewer charges;

14. Failure to meet compliance schedules; and

15. To incorporate any new or revised requirements developed by the City of Lebanon as are necessary to ensure POTW compliance with its NPDES permit and with applicable sludge management requirements promulgated by the U.S. EPA or State of New Hampshire.

The filing of a request by the permittee for a permit modification, revocation, and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Permit Appeals - The permittee may petition to appeal the terms of this permit within thirty (30) days of the effective date.

This petition must be in writing; failure to submit a petition for review shall be deemed to be a waiver of the appeal. In its petition, the permittee must indicate the permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to be placed in the permit.

The effectiveness of this permit shall not be stayed pending reconsideration by the City Manager. If, after considering the petition and any arguments put forth by the Wastewater Superintendent, the City Manager determines that reconsideration is proper, he shall remand the permit back to the Wastewater Superintendent for reissuance. Those permit provisions being reconsidered by the Wastewater Superintendent shall be stayed pending reissuance.

The City Manager's decision not to reconsider a final permit shall be considered final administrative action for purpose of judicial review. The permittee seeking judicial review of the City Manager's final action must do so by filing a complaint with the Lebanon District Court for Grafton County within the State of New Hampshire.

F. Property Rights - The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any violation of federal, State, or local laws or regulations.

G. Change in Ownership - In the event that the permittee undergoes a major change in ownership of either its corporate voting stock or control of its corporate stock or of the building to which this contract relates, then the permit may be reassigned or transferred if:

1. At least thirty (30) days advance notice is provided to the Lebanon Wastewater Department.

2. The new owner provides written notice that there is no immediate intent to change the facility's operations and processes, and identifies the specific date on which the transfer is to occur; and

3. The new owner acknowledges full responsibility for complying with the terms of this permit.

H. Repermitting - If the permittee desires to continue to discharge after the expiration of this permit, it shall reapply on the application forms then in use at least sixty (60) days before this permit expires. Under no circumstances shall the permittee continue to discharge without an effective permit. An expired permit will continue to be effective and enforceable until the permit is reissued if:

1. The Industrial User has submitted a complete permit application at least sixty (60) days prior to the expiration date of the user's existing permit; and

2. The failure to reissue the permit, prior to expiration of the previous permit, is not due to any act or failure to act on the part of the Industrial User.

I. Changes in Discharge - Approval for modifications, additions, and/or expansions that increase or decrease the quality and/or quantity of wastewater discharged to the Lebanon POTW must be requested in writing to the City at least sixty (60) days prior to the proposed starting date for the change. This permit may then be modified or reissued to reflect such changes. No change in the permittee's discharge may be made unless reported to and approved by the Lebanon Wastewater Department and State of New Hampshire Department of Environmental Services. In no case shall new connections, increased flows, or significant changes in effluent quantity and/or quality be permitted if such will cause violation of the effluent limitations specified herein.

J. Compliance with Applicable Pretreatment Standards and Requirements - Compliance with this permit does not relieve the permittee from its obligations regarding compliance with any and all applicable local, State, and federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.

K. Confidential Information - Except for data determined to be confidential or proprietary, all information required for and by this permit shall be available for public inspection.

L. Proper Operation and Maintenance - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes but is not limited to: effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

M. Flow Measurements - If flow measurement is required by this permit, the appropriate flow measurement devices and methods consistent with approved scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.

N. Bypass of Treatment Facility

1. Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury or severe property

damage or no feasible alternatives exist.

2. The permittee may allow bypass to occur which does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation.

3. Notification of Bypass

a. Anticipated bypass. If the permittee knows in advance of the need for bypass, it shall submit prior written notice to the Wastewater Department at least ten (10) working days in advance.

b. Unanticipated bypass. The permittee shall immediately notify the Wastewater Department and submit a written notice within five (5) working days. The report shall specify:

- A description of the bypass, it's cause and duration;
- Whether the bypass has been corrected; and
- The steps being taken to reduce, eliminate, and prevent a recurrence of the bypass.

O. Inspection and Entry - The permittee shall allow authorized City of Lebanon personnel, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit;

4. Sample or monitor, for the purposes of assuring permit compliance, any substances or parameters at any locations; and

5. Inspect any production, manufacturing, fabricating, or storage area where pollutants regulated under the permit could originate, be stored, or be discharged to the sewer system.

P. Civil and Criminal Liability - Nothing in this permit shall be construed to relieve the permittee from civil and/or criminal penalties for noncompliance under local, State, or federal laws or regulations.

Q. City Remedies - The City reserves all rights and remedies that it has under or by reason of any statutory law, Code, or common law to enforce any condition of this permit, including, but not limited to:

1. Civil and/or criminal penalties;

2. Recovery of expenses incurred as a result of noncompliance;

3. Permit revocation;

4. Emergency City action to halt or prevent any imminently harmful discharge;

5. Fines and/or imprisonment; and

6. Newspaper publication of significant violators.

R. Other Requirements - The conditions listed in this permit are not intended to be all inclusive. The City shall be notified if questions arise regarding the permittee's responsibilities. The City reserves the right to make revisions to this permit in order to implement the requirements of the Code of the City of Lebanon, Chapter 136.

PART 7 - DEFINITIONS

Act or "the Act" - The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 *et seq.*

Authorized Representative - An authorized representative shall be:

a. (I) A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

(II) The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. By a general partner or proprietor if the Industrial User is a partnership or sole proprietorship respectively.

c. By a duly authorized representative of the individual designated in paragraph (a) or (b) of this section if:

(I) The authorization is made in writing by the individual described in paragraph (a) or (b);

(II) The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the industrial discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

(III) The written authorization is submitted to the City.

d. If an authorization under paragraph (c) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph (c) of this section

must be submitted to the City prior to or together with any reports to be signed by an authorized representative.

Biochemical Oxygen Demand (BOD) - The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20° Centigrade, usually expressed as a concentration (e.g., mg/l), as determined by 40 CFR Part 136. Subject to surcharge at $.20 per pound.

Categorical Pretreatment Standard or Categorical Standard - Any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307(b) and (c) of the Act (33 U.S. C. § 1317) which apply to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

Chain-of-Custody - A form documenting the handling of samples from the time of collection to the time received by the laboratory. Information required includes time and date sampled, sampler identification, location, all individuals handling the sample, times and dates of transfers and any other information necessary to document the validity of the sample.

City - Shall mean the City of Lebanon, New Hampshire.

City Manager - The City Manager of the City of Lebanon, New Hampshire, or his authorized agent.

Code of the City of Lebanon - Refers to the Code of the City of Lebanon and amendments thereto.

Daily Maximum - The maximum allowable discharge of pollutant or flow during a calendar day. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of concentration, the daily maximum is the measurement of representative sample(s) obtained as specified in Part 2, Section A of this permit.

Environmental Protection Agency or EPA - The United States Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, or other duly authorized official of said agency.

Excess Strength Surcharge - Surcharge for Biochemical Oxygen Demand (BOD). Applies to users discharging wastewater containing BOD in excess of 300 mg/l.

Flow Recorder - Shall mean a weir, meter of flume, or other device which will measure and record the volume of wastewater discharged.

Hazardous Substance - Any substance designated under 40 CFR Part 116 pursuant to Section 311 of "the Act."

Industrial User - Shall mean any person contributing any non-domestic source of pollutants into the POTW.

Industrial (Process) Wastewater - The wastewater from industrial processes, trade, or business as distinct from domestic or sanitary sewage.

Interference - A discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its sludge processes, use, or disposal; and, therefore, is a cause of a violation of the City's NPDES permit or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent State or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any State regulation contained in any State sludge management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

Lebanon Wastewater Department - Shall mean an authorized agent of the Lebanon Public Works Department established to operate and maintain the City's Wastewater Treatment Facilities.

Lower Explosive Limit (LEL) - This refers to the lowest concentration of gas or vapor (% by volume in air) that will burn or explode if an ignition source is present and at ambient temperatures.

Monthly Average - The arithmetic mean for effluent samples collected during a calendar month or specified 30-day period.

Method Detection Limit - The minimum concentration of a substance that can be measured and reported as defined and determined in 40 CFR, Part 136, Appendix B.

NHDES - New Hampshire Department of Environmental Services.

NPDES - National Pollutant Discharge Elimination System; the national program for issuing and enforcing permits for the discharge of pollutants from any point source into waters of the United States, under Sections 402, 318,

and 405 of the Clean Water Act.

Pass Through - A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the City's NPDES permit, including an increase in the magnitude or duration of a violation.

Pretreatment (Treatment, Treat) - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of discharging or otherwise, introducing such pollutants into the POTW.

Pretreatment Standards (Standards, Effluent Limitations) - Shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.

Priority Pollutants - A group of toxic chemicals listed by the EPA in 40 CFR Part 403, Appendix B as requiring restriction from entering municipal sewers or any receiving waters.

Prohibited Discharge Standards or Prohibited Discharges - Absolute prohibitions against the discharge of certain substances; these prohibitions appear in Code of the City of Lebanon, Chapter 136 and 40 CFR 403.5(b).

Publicly Owned Treatment Works (POTW) - The treatment works owned by the City. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances which convey wastewater to the POTW treatment plant.

Sample - Shall mean a portion of the wastewater obtained for analytical purposes. This portion may be:

a. Composite Sample - A sample that is collected over time, formed either by continuous sampling or by mixing discrete samples. The sample may be composited either as a:

(I) Time Composite - Composed of discrete sample aliquots collected in one container at constant time intervals providing representative samples irrespective of stream flow; or

(II) Flow Proportional Composite - Collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increases while maintaining a constant time interval between aliquots.

b. Grab Sample - An individual sample collected in less than 15 minutes without regard to flow or time.

Sampler - A device used with or without flow measurement to obtain a portion of water or wastewater for analytical purposes. May be designed for taking single (grab), composite samples, continuous samples, or periodic samples.

Sampling Station - A specified site where monitoring takes place on a regular basis.

Sanitary (Domestic) Wastewater - Shall mean normal wastewater from household and toilet wastes discharged from any improved property, excluding ground, surface, or storm water.

Screening Level – Numerical values above which actions are initiated to evaluate, prevent or reduce adverse impacts due to flammability, chemical reactivity, organics/solids loading, interference, toxicity, pass though, or worker health and safety.

Shall - is mandatory; May - is permissive.

Significant Industrial User -

a. A user subject to categorical pretreatment standards; or

b. A user that:

(I) Discharges an average of twenty-five thousand (25,000) gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling, and boiler blowdown wastewater);

(II) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(III) Is designated as such by the City on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

Suspended Solids (SS) - Shall mean the solids that either float on the surface of, or are in suspension in, wastewater and which are largely removable by laboratory filtering, as determined by 40 CFR part 136.

Slug Load or Slug - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, at a flow rate or concentration which would cause a violation of the prohibited discharge standards in the Code of the City of Lebanon, Chapter 136 or 40 CFR 403.5(b).

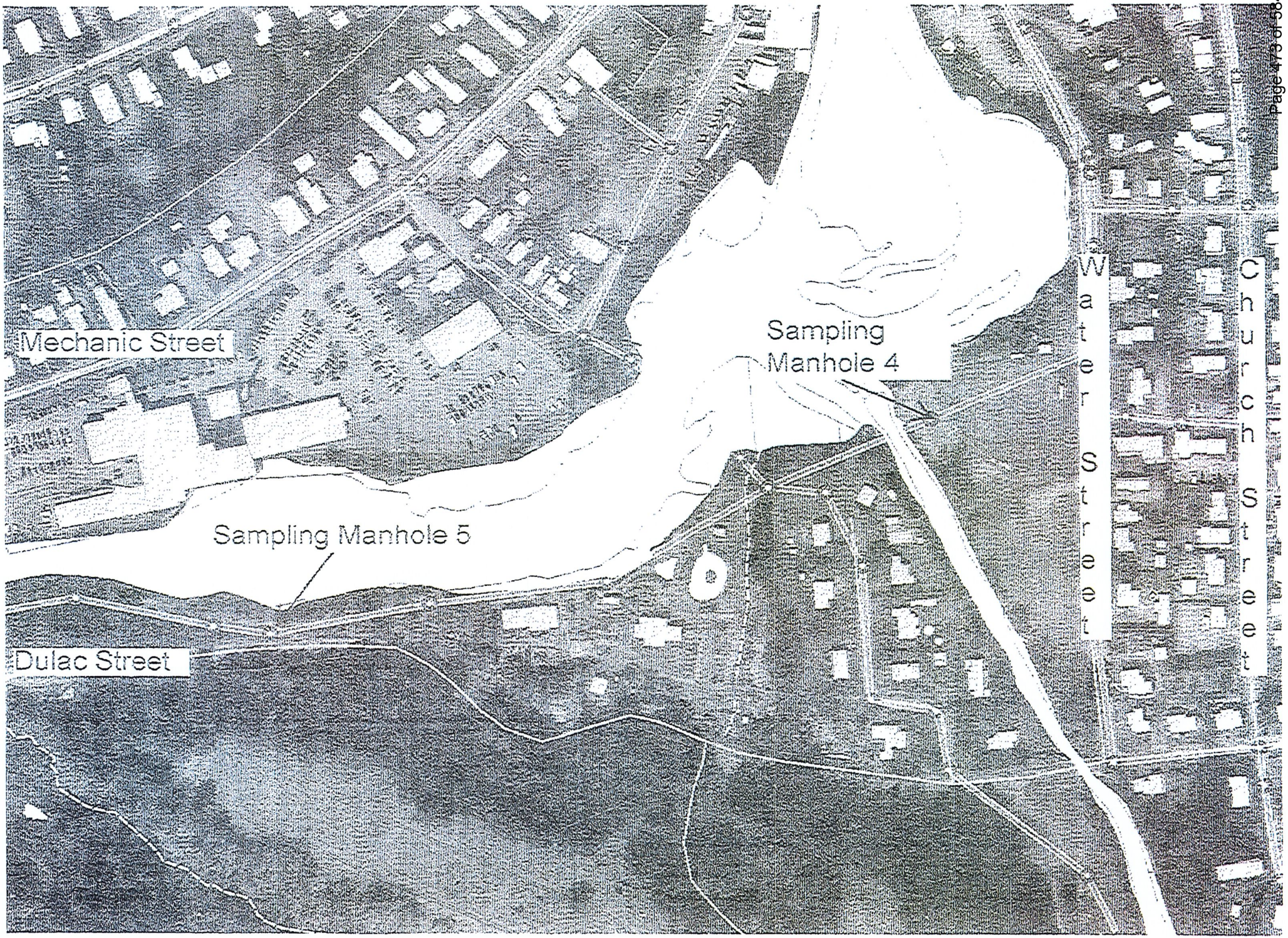
Slug Control Plan - A plan prepared by an Industrial User to control slug discharges. Elements of the plan include: description of discharge practices, description of stored chemicals, procedures for notifying the POTW of slug discharges, and procedures to prevent adverse impact from accidental spills.

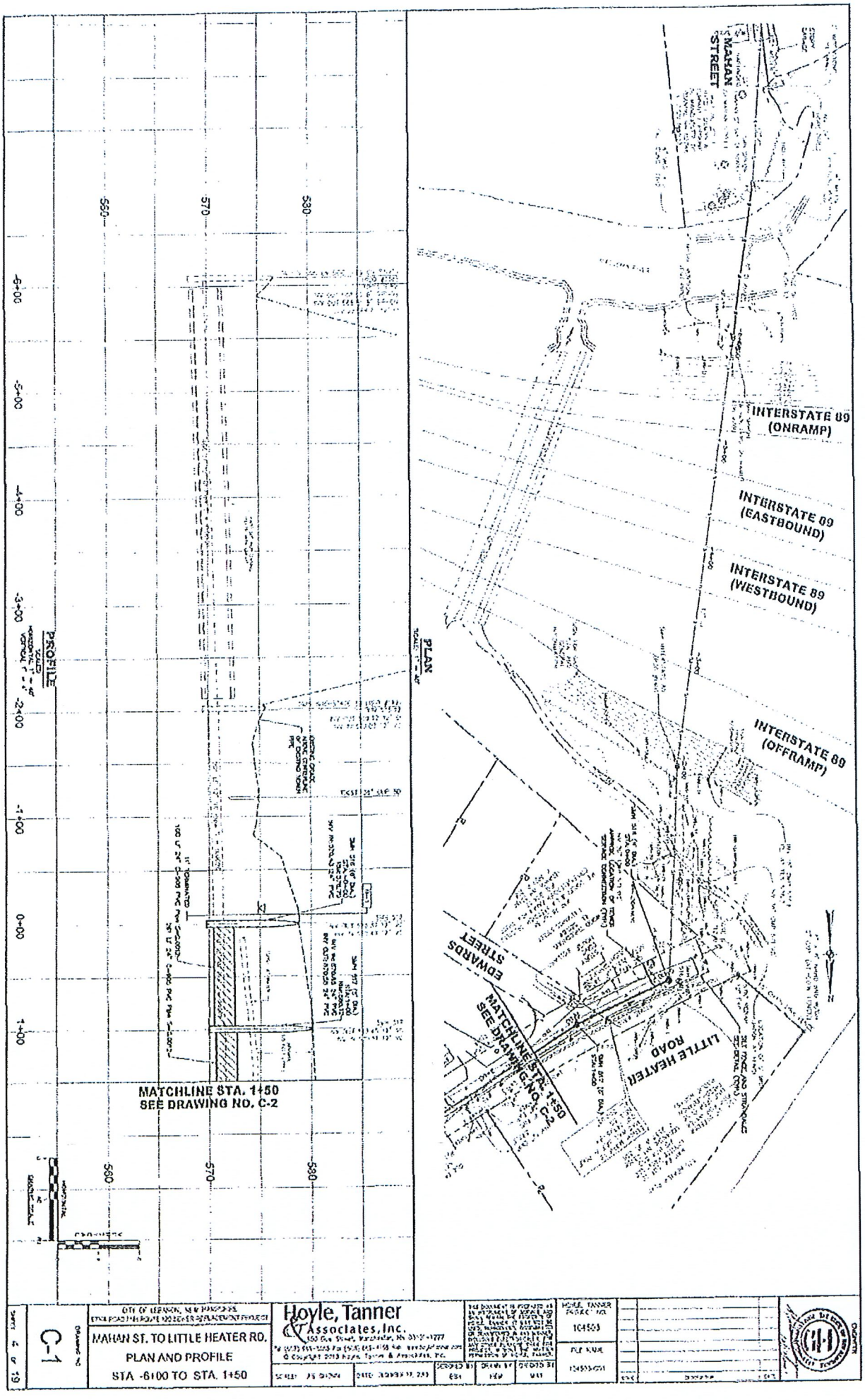
Standard Industrial Classification (SIC) Codes - A four-digit code number which classifies individual business firms. SIC code listings are published by the United States Office of Management and Budget. See *Standard Industrial Classification Manual*, Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

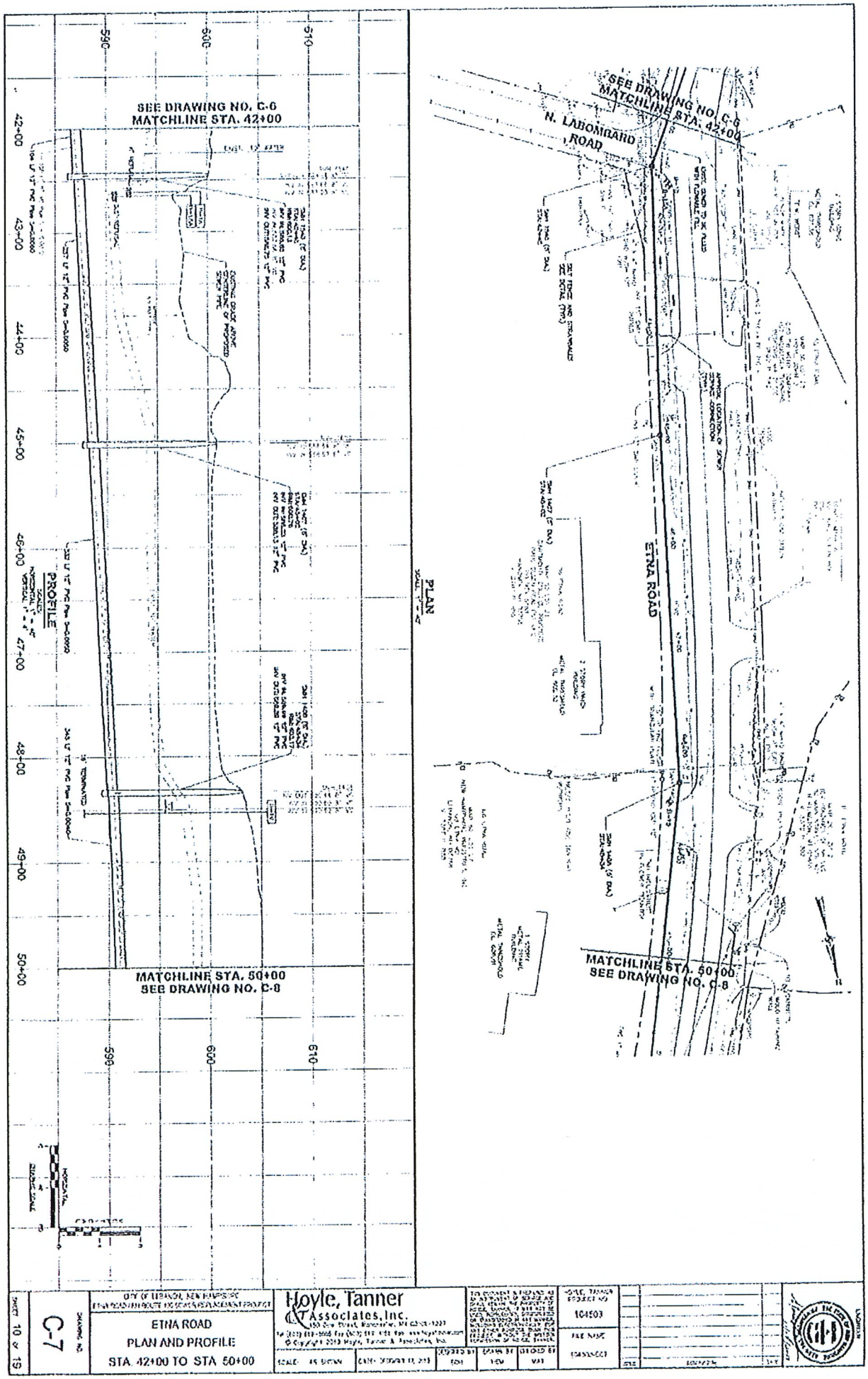
Superintendent - The person designated by the City to supervise the operation of the POTW, and who is charged with certain duties and responsibilities, or a duly authorized representative.

Wastewater Treatment Plant or Treatment Plant - That portion of the POTW which is designated to provide treatment of municipal sewage and industrial waste.

Appendix A


Mechanic Street
Sampling Manhole 4
Sampling Manhole 5
Dulac Street
Water Street
Church Street


PROFILE
PLAN
560
570
580
-6+00
-5+00
-4+00
-3+00
-2+00
-1+00
0+00
1+00
MAHAN STREET
INTERSTATE 89 (ONRAMP)
INTERSTATE 89 (EASTBOUND)
INTERSTATE 89 (WESTBOUND)
INTERSTATE 89 (OFFRAMP)
EDWARDS STREET
LITTLE HEATER ROAD
MATCHLINE STA. 1+50 SEE DRAWING NO. C-2
MATCHLINE STA. 1+50 SEE DRAWING NO. C-2
MAHAN ST. TO LITTLE HEATER RD.
PLAN AND PROFILE
STA -6100 TO STA. 1+50
C-1
Hoyle, Tanner & Associates, Inc.


SEE DRAWING NO. C-6
MATCHLINE STA. 42+00
PROFILE
MATCHLINE STA. 50+00
SEE DRAWING NO. C-8
SEE DRAWING NO. C-6
MATCHLINE STA. 42+00
N. LABOMBARD ROAD
ETNA ROAD
PLAN
MATCHLINE STA. 50+00
SEE DRAWING NO. C-8
CITY OF LEBANON, NEW HAMPSHIRE
ETNA ROAD
PLAN AND PROFILE
STA. 42+00 TO STA. 50+00
Hoyle, Tanner & Associates, Inc.
104503
C-7
SHEET 10 of 19

FACT SHEET

Unifirst Corporation
125 Etna Road
Lebanon, New Hampshire 03766

Mr. Phillip Breen, General Manager
(603) 448-0011

CHANGES THIS PERMIT

This change is for renewal of the IDP issued to Unifirst effective 1/1/16 and expired 12/31/18.

CLASSIFICATION

Unifirst is classified as a Class I (Significant) Industrial User due to discharge of non-domestic wastewater in excess of 25,000 gpd and the ability to adversely impact the City of Lebanon POTW.

MONITORING REQUIREMENTS

Based on analytical data obtained during sampling events conducted from 2016 through the first quarter 2019, parameters of concern detected in Unifirst Corporation's wastewater discharge include: Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn, Formaldehyde, BOD, TSS, TKN Sulfate, Sulfite, Phenol, Total Phenols, O&G, TPH, and VOC's

Based on a comparison of detected parameters to the average domestic concentrations present in the City sewer system, the following exceed the domestic concentrations by more than 100-percent and therefore must be monitored: Al, As, Cr, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn, sulfate, and TKN. Therefore routine monitoring is required.

TSS could readily be exceeded without proper operation of the pretreatment system, therefore, monitoring is also required for this parameter. Regular maintenance of an online turbidimeter is required to help prevent against discharges of TSS that are in excess of the screening level.

BOD historically has been higher than the screening level and subject to extra strength surcharge fees. Continued monitoring for BOD is warranted.

Petroleum Hydrocarbons and Oils and Grease are commonly found in the items laundered by Unifirst, therefore monitoring is warranted.

Sulfite and Sulfate can, under the right conditions, become byproducts of the sulfuric acid used to adjust the pH of Unifirst's discharge. Due to this, regular monitoring is required.

Continuous monitoring for pH is required since Unifirst performs pH adjustment of its process wastewater discharge. Further justification for continuous monitoring of pH results from Unifirst's history of pH violations.

REPORTING REQUIREMENTS

Unifirst is a Class 1 industrial user with a discharge requiring a high level of pretreatment, a large number of pollutants and potential for adversely impacting the POTW. Therefore, quarterly monitoring and reporting is required by this permit.

WASTEWATER VOLUME

This permit represents no change to existing wastewater flow limitations and is based on the IDP application

amendment dated 2/18/19. There is currently a moratorium on flow increases east of the Terry Dudley Bridge due to the downtown Lebanon interceptor leading to the wastewater treatment plant nearing capacity.

DISCHARGE LIMITATIONS

Monitoring requirements and pollutant limitations contained in this Industrial Discharge Permit apply to non-domestic wastewater resulting from Unifirst's laundering operation. Wastewater volume, including domestic, is limited by the condition and hydraulic capacity of the interceptor downstream of Unifirst as described above.

SPECIAL CONDITIONS

Unifirst has reported BOD monitoring results in excess of the levels indicated in the Code of the City of Lebanon, Chapter 136 and therefore is subject to an excess strength surcharge for BOD. Surcharges will be based on quarterly metered flow of non-domestic wastewater discharged from the facility and BOD concentrations exceeding 300 mg/l during corresponding quarterly periods.

Results for sulfate from monitoring are in excess of the screening levels specified on page 2 of this Industrial Discharge Permit. A study was proposed upon request to evaluate the condition of the affected sewer system. An annual visual inspection as well as sampling for head space hydrogen sulfide is required in outfall 001 and the manholes outlined in Appendix A.

Due to Unifirst's history of accidental discharges, continued internal enforcement of the Emergency Response and Spill Prevention Plan is required by the City to minimize the potential for subsequent events.

The screening level for TKN has been raised above the historic screaning level of 35 mg/L to 45 mg/L. The total plant loading for TKN is below the design loading allowing for increased concentrations from industrial sources. If the plant loading exceeds the design loading the screening level of 35 mg/L may become a local limit.

FUSS & O'NEILL

August 3, 2021

Adam Lewis, Chief of Quality Assurance
Lebanon Wastewater Department
28 Market Street
West Lebanon, New Hampshire 03784

RE: UniFirst Corporation
City of Lebanon Sewer System Sulfate Study 2021
Fuss & O'Neill Reference No. 20160186A20

Dear Mr. Lewis:

As part of the industrial wastewater treatment process, UniFirst Corporation (UniFirst) utilizes sulfuric acid to enhance solids removal and to provide final pH adjustment, if required. The use of sulfuric acid adds sulfate loading to the wastewater later discharged to the City Of Lebanon (City) wastewater collection (sewer) system.

Historically Sulfate periodically exceeded the UniFirst Industrial Discharge Permit (IDP) Discharge Limitations at Outfall 001 since the parameter became part of regular monitoring in the 2012 iteration of the IDP. On April 21, 2014, the City Department of Public Works (DPW) Wastewater Treatment Plant (WWTP) issued a letter addressing exceedances of the sulfate screening level, and the City required that an appropriate engineering evaluation be completed to determine if there is a potential impact on the collection system or the wastewater treatment facility caused by the increased discharge of sulfate (in accordance with the Sewer Use Ordinance Chapter 136). Although this has been historically called a "sulfate study", it includes measuring concentrations of hydrogen sulfide (H2S) in several sanitary manholes in the City sewer system.

Currently this sulfate study is an annual permit requirement and UniFirst contracted Fuss & O'Neill to assist in maintaining permit compliance. This sulfate study was performed in accordance with the UniFirst Corporation, Class 1 IDP NO. LEB 105, dated April 1, 2019.

205 Billings Farm Road
Suite 6B
White River Junction, VT
05001
802.698.0370

www.fando.com

California
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Sampling Locations

Wastewater discharge from the UniFirst Corporation facility flows through the City collector sewer system and was sampled at several locations as follows: Wastewater discharges from the facility to Outfall 001 which flows into the municipal sewer on Etna Road. The municipal sewer system then flows in a southerly direction towards SMH-1540, which is the sewer junction between Labombard Road and Etna Road. The sewer then connects to the Route 120 collector sewer, which continues onto Heater Road and Little Heater Road where SMH-516 is located. The sewer system then continues under Interstate 89 and the Mascoma River before splitting into separate sewer alignments extending alongside the Mascoma River and down Mahan Street. Wastewater from south and east of the Mascoma River eventually combines on Water Street next to Howard Logan Field at which point

the wastewater flows through SMH-4. The sewer system then flows under a tributary to the Mascoma River toward Dulac Street and then through the final sampling location, Sampling SMH-5E (Sewer Manhole directly downgradient, and east of SMH-5).

Hydrogen Sulfide Screening – August 3, 2021

Screening locations for the 2021 sulfate study were at the identical locations as the August 26, 2020 sulfate study, Figure 1 shows the locations of each screening location, along with municipal sewer system GIS layers. Photographs taken on the day of the sulfate study are included in the attached photo log.

The parameter screened at each sampling location was H_2S using a RAE Systems QRAE 3 Gas Meter calibrated with 10 parts per million (ppm) H_2S gas. Air space immediately above the sewer flow was screened for a minimum of 30 seconds, at each sampling location with the average reading recorded. The concentration of H_2S was 0.0 parts per million (ppm) in the first and last structure, consistent with at least the last two sampling rounds. SMH-1540 and SMH-4 had positive results at 1.4 and 3.6 ppm, respectively, within the range of previously observed values. SMH-516 was inaccessible due to construction. Refer to Table A for a summary of results at each location. This is consistent with previous observations. No significant concrete deterioration of manholes, or other sewer system components was observed at sampling locations (see attached photo log).

TABLE A: HYDROGEN SULFIDE SAMPLING RESULTS

SAMPLE ID	LOCATION	H2S (ppm)			
		8/22/18	7/8/19	8/26/20	8/3/21
OUTFALL 001	UNIFIRST CORPORATION	0.0	0.0	0.0	0.0
SMH-1540	NORTH LABOMBARD RD	0.8	2.1	0.0	1.4
SMH-516	LITTLE HEATER RD	5.8	3.4	1.0	N/A
SMH-4	BALL PARK	2.0	1.2	0.0	3.6
SMH-5E	DULAC ST	0.8	0.0	0.0	0.0

Summary

Hydrogen sulfide is of concern due to its corrosive nature and likelihood to form in municipal sewer systems under anaerobic conditions. When H_2S combines with moisture in sewer structures in the presence of air, it forms sulfuric acid that can break down concrete, mortar, and other sewer components. Given these results, and field observations, it is unlikely that the presence H_2S has had a significant impact on the structural integrity of the sewer system. No significant concrete deterioration of manholes, or other sewer system components was observed at sampling locations during the August 3, 2021 screening. Therefore, based on the field measurements and visual observations, the discharge of sulfate from the UniFirst Corporation facility located at 125 Etna Road does not appear to have had a significant impact on the structural integrity of the City sewer system to date.

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Feel free to contact us if you have any questions.

Sincerely,

Phil Forzley, PE
Vice President

Attachments: Phot Log, Sanitary Sewer Overview Map

Cc: Sarah F White, Environmental Compliance Specialist, UniFirst Corporation
Albert Vanasse, Asst Plant Manager, UniFirst Corporation
Philip Breen, Plant General Manager, UniFirst Corporation

Photo Log
All photos taken on 8/26/2020





Outfall 001





SMH-1540



SMH-516





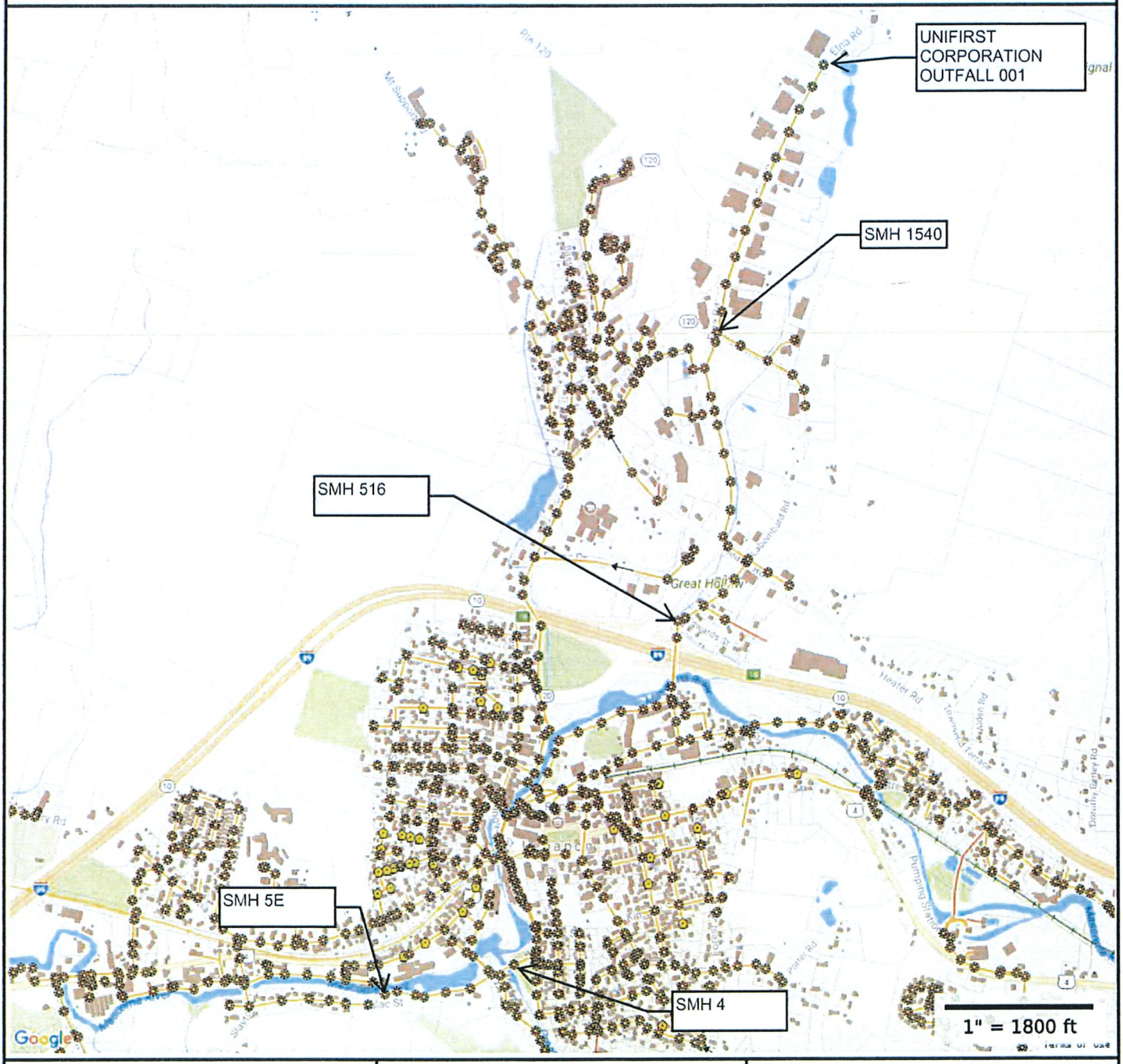
SMH-4





SMH-5E

OVERVIEW MAP



MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

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

Parcels updated 7/1/2015
Properties updated 10/22/2017

FIGURE. 1

UniFirst

UniFirst Corporation
125 Etna Road
Lebanon, NH 03784
Ph: 603.448.0011

October 15, 2021

Adam Lewis
Chief of Quality Assurance
City of Lebanon
Wastewater Department
28 Market Street
West Lebanon, NH 03784

RE: UniFirst Corporation
Quarter 3 Self-Monitoring Report 2021
Industrial Discharge Permit LEB-105

Dear Mr. Lewis,

Please find enclosed the monitoring data from wastewater sampling performed on July 20, 2021, at UniFirst Corporation, 125 Etna Road, Lebanon, NH to represent wastewater discharged from July 1, 2021 to September 30, 2021. A copy of the laboratory report is enclosed. Table 1 is a summary of wastewater results and Table 2 is a daily accounting of wastewater discharge volume from metering data. The daily maximum flow volume limit (69,000 gpd) was not exceeded.

Do not hesitate to contact me regarding this or any other UniFirst matter. I may be reached at 603.493.9605 or by Email: Sarah_White@UniFirst.com

Sincerely,

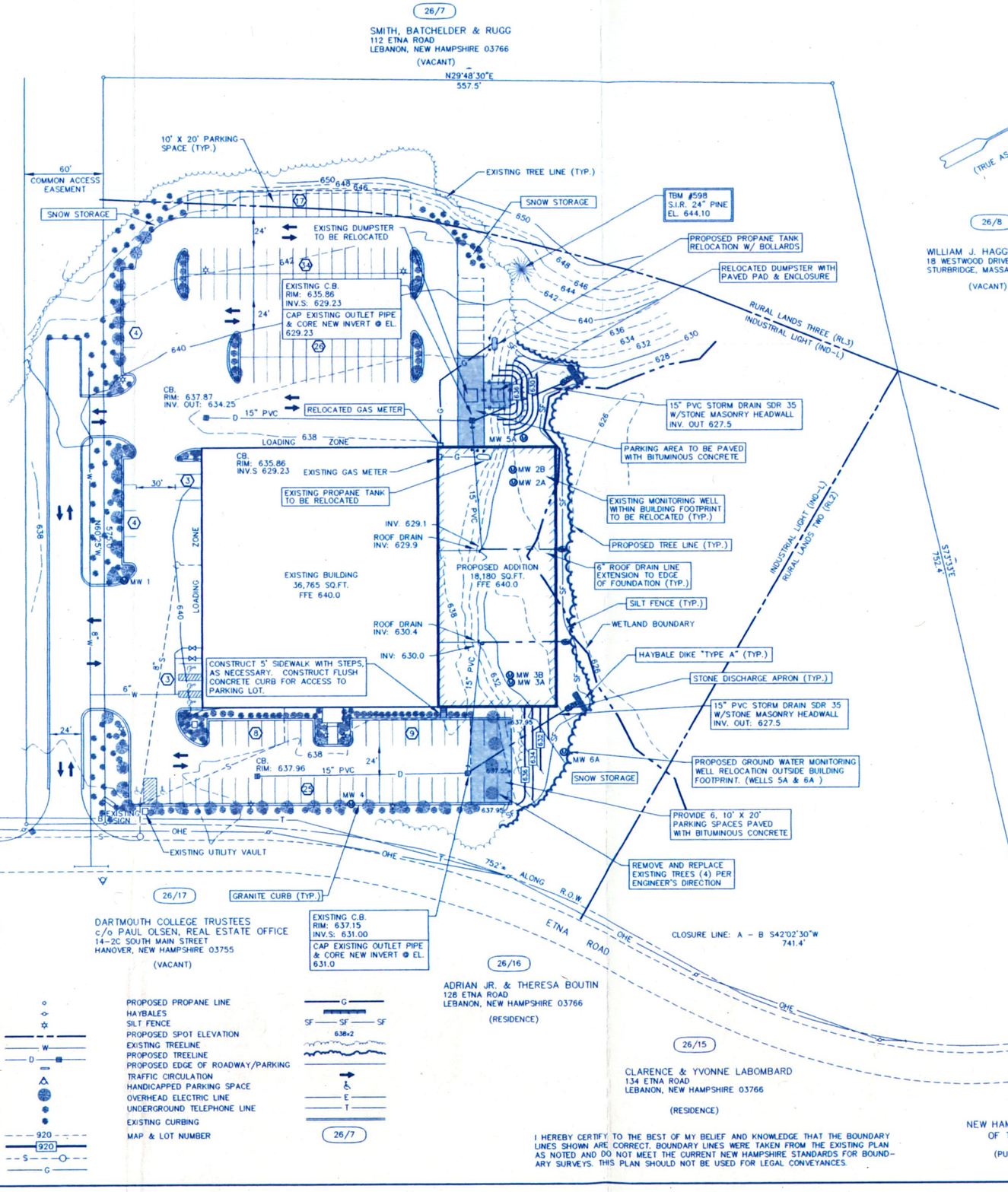
Sarah F White
UniFirst Environmental Compliance

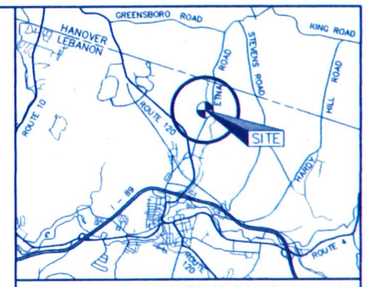
UniFirst Corporation
Lebanon NH
Wastewter Volume Summary
Q3 2021

	July 2021	August 2021	September 2021
Day of Month	Wastewater Volume - Gallons	Wastewater Volume - Gallons	Wastewater Volume - Gallons
1	47,431		48,022
2	38,365	44,805	42,486
3		50,864	47,565
4		44,057	
5		46,743	
6	48,104	48,695	
7	48,837		44,289
8	42,860		37,774
9	33,144	47,049	40,310
10		49,966	37,849
11		45,112	
12	47,423	39,644	
13	43,160	46,294	42,711
14	44,730		48,919
15	45,852		48,927
16	39,794	48,396	44,648
17		45,778	47,730
18		28,656	
19	30,444	54,903	
20	34,849	48,994	42,112
21	37,250		44,499
22	36,734		44,738
23	47,947	45,703	43,758
24		43,085	43,758
25		45,404	
26	39,794	41,806	
27	46,077	47,423	41,731
28	46,825		47,356
29	48,919		47,573
30	49,218	47,431	42,636
31		49,443	
Total	**850,326**	**1,010,249**	**929,390**
Daily Average	**42,516**	**45,920**	**44,257**
Daily Max	**49,218**	**54,903**	**48,927**

TABLE 1
Unifirst Corporation
Wastewater Discharge
Laboratory Analyses Summary
Q3 2021 SMR
July 20, 2021

Parameter	Results (mg/L)	Permit Limit (mg/L)
Aluminum	1.61	460
Arsenic	0.003	0.22
Cadmium	0.002	0.034
Chromium	0.008	4.11
Copper	0.285	9.66
Iron	1.09	3440
Lead	0.011	0.36
Mercury	<0.0001	0.069
Nickel	0.044	5.14
Silver	<0.001	0.73
Zinc	0.373	2.7
pH	9.48	6.0 - 11.0
Temperature	33.3	
BOD	349	300
Formaldehyde	0.550	26.9
Phenols (Total)	<0.05	1.0
Sulfate	142	150
Sulfide	<0.1	1
Sulfite	3.00	280
Total Kjeldahl Nitrogen	19.5	45
Total Oil and Grease	143	250
Total Petroleum Hydrocarbon	73.1	100
Total Suspended Solids	104	350
VOCs - 624.1		
Any hits are listed below - see lab report for details		
Chloroform	81 ug/L	
Toluene	12 ug/L	





SITE LOCATION PLAN

SITE INFORMATION

MAP & LOT NUMBER:	MAP 26 LOT 6		
ZONING DISTRICT:	INDUSTRIAL LIGHT (IND-L) RURAL LANDS TWO (RL2) RURAL LANDS THREE (RL3)		
USE:	INDUSTRIAL		
AREA OF LOT:	9.3 ACRES		
PARKING:	REQUIRED: 92 SPACES (54,945/600)	EXISTING: 147 SPACES	PROVIDED: 134 SPACES
GROSS AREA OF BUILDINGS:	EXISTING:		
EXISTING :	36,765 SQ.FT.		
PROPOSED ADDITION:	18,180 SQ.FT.		
TOTAL	54,945 SQ.FT.		
LOADING SPACES:	AS SHOWN		
NUMBER OF STORIES:	2		
BUILDING HEIGHT:	MAXIMUM 65'	PROPOSED: LESS THAN 65'	
BUILDING SETBACKS:	REQUIRED:	EXISTING:	PROPOSED:
FRONT	40'	90'	90'
SIDE	20'	75'	75'
REAR	20'	285'+	285'+
LOT COVERAGE:	ALLOWED: 25%	EXISTING: 9.1%	PROPOSED: 13.6%
WETLANDS CONSERVATION DISTRICT/FLOODPLAIN DISTRICT:	THE SITE IS WITHIN THE WETLANDS CONSERVATION DISTRICT, BUT NOT IN THE 100 YR. FLOODPLAIN DISTRICT.		
AIR SAFETY REGULATIONS:	SECTION 318, AIR SAFETY REGULATIONS OF THE ZONING ORDINANCE DOES NOT APPLY TO THE SITE.		

RECEIVED
JAN 10 2022

NOTE:
1. REFERENCE IS MADE TO THE FOLLOWING PLAN:
A. "SUBDIVISION PLAN SMITH, BATCHELDER & RUGG - ETNA ROAD - LEBANON, N.H." PROJECT NO. 20385C PREPARED BY K.A. LECLAIR ASSOCIATES, INC.

RUSSELL
APR - 8 1998
GENERAL CONTRACTORS

OWNER OF RECORD: UNIFIRST CORPORATION
MAP 26 LOT 6
68 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887

I HEREBY CERTIFY TO THE BEST OF MY BELIEF AND KNOWLEDGE THAT THE BOUNDARY LINES SHOWN ARE CORRECT. BOUNDARY LINES WERE TAKEN FROM THE EXISTING PLAN AS NOTED AND DO NOT MEET THE CURRENT NEW HAMPSHIRE STANDARDS FOR BOUNDARY SURVEYS. THIS PLAN SHOULD NOT BE USED FOR LEGAL CONVEYANCES.

REV. NO.	DATE	DESCRIPTION	MADE BY	CHKD BY	APP'D BY
2	04/07/98	NEW SIDEWALK	PAB	PAB	FDM
1	03/25/98	LAYOUT DUMPSTER & PROPANE TANK LOCATION	GC	PAB	FDM

SITE PLAN FOR
UNIFIRST CORPORATION
ETNA ROAD - LEBANON, NEW HAMPSHIRE

1

T&M ASSOCIATES, INC.
ENGINEERING & SURVEYING
254 DARTMOUTH COLLEGE HIGHWAY
LEBANON, NEW HAMPSHIRE 03766
(603) 448-1295

SHEET: 1 OF 2
SCALE: 1"= 40'
DES. BY: BMB
DRAWN BY: GG/PB
CHKD. BY: JSG
DATE: JUNE, 1996
PROJ.NO. 450295

Agenda
Planning Board
February 14, 2022

Agenda Item #3I
Public Hearing Items

Lebanon School District SAU #88, 38 Dana Street (Tax Map 73, Lot 41) and 5 White Avenue (Tax Map 73, Lot 93), zoned R-3

PB2022-09-SPR

CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-09-SPR

APPLICATION INFORMATION

Agenda Item: 3.I

Application ID#:
PB2022-09-SPR

Application Type:
Site Plan Review (advisory)

Property Location:
38 Dana Street (Tax Map 73, Lot 41) and 5 White Avenue (Tax Map 73, Lot 93)

Property Owner/Applicant:
Lebanon School District SAU #88

Existing Use:
Public elementary school

Proposed Improvements:
Building and parking lot expansion

Overlay Districts:
none

HEARING NOTICE

Lebanon School District SAU #88, 38 Dana Street (Tax Map 73, Lot 41) and 5 White Avenue (Tax Map 73, Lot 93), zoned R-3: Request for Site Plan Review to construct additions to the Mount Lebanon Elementary School, parking utilities upgrade, landscaping, and lighting. PB2022-09-SPR

NOTE: This application will be reviewed as a Governmental Land Use pursuant to NH RSA 674:54).

PLANS AND OTHER SUBMISSIONS

- Application form
- Letter to David Brooks, Planning Director, from Rodrick Finley, PE, of Pathways Consulting, LLC, dated January 10, 2022 (2 pages) (project description)
- Plan set titled "Site Plan for Mt. Lebanon School – Additions & Renovations" prepared by Pathways Consulting, LLC and Marinace Architects, dated January 24, 2022 (7 sheets total)

COMPLETENESS REVIEW

This application is being reviewed in accordance with New Hampshire RSA 674:54, Governmental Land Uses. As such, there is no completeness review for this project. In addition, any comments on the proposal by the Planning Board and City staff are considered non-binding on the applicant.

APPLICATION OVERVIEW

5 White Avenue is owned by the Lebanon School District and is improved with the Mount Lebanon elementary school. The School District proposes to construct two building additions, totaling 6,140 sq. ft., as well as a new 20 space parking area on the adjacent property at 38 Dana Street (formerly occupied by a single family home and now owned by the School District), as well as other associated site improvements as described in further detail in the attached letter from Rod Finley of Pathways Consulting, LLC, dated January 10, 2022.

The size of the proposed building and parking lot expansion exceeds the thresholds required for site plan review. However, because the property is owned by the School District and is improved with a public school, the

project qualifies as a Governmental Land Use pursuant RSA 674:54 and, therefore, is not subject to the Site Plan Review Regulations. Nevertheless, the Planning Board is permitted to conduct a public hearing on the project, as set forth in NH RSA 674:54, II:

> The […] city […] shall give written notification to the […] planning board […] of a municipality of any proposed governmental use of property within its jurisdiction, which constitutes a substantial change in use or a substantial new use. Written notification shall contain plans, specifications, explanations of proposed changes available at the time, a statement of the governmental nature of the use as set forth in paragraph I, and a proposed construction schedule. Such notification shall be provided at least 60 days prior to the beginning of construction. Either the governing body or planning board of the municipality may conduct a public hearing relative to the proposed governmental use. A representative of the governmental entity which provided notice shall be available to present the plans, specifications, and construction schedule, and to provide explanations. The governing body or planning board may issue nonbinding written comments relative to conformity or nonconformity of the proposal with normally applicable land use regulations to the sponsor of the governmental use within 30 days after the hearing.

Although site plan review is advisory only, note that the building will still need to obtain a building permit and construction must comply with the City Code including but not limited to the Building Code.

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 School District & SAU#88 TEL.#: (603) 790-8500

MAILING ADDRESS: 20 Seminary Hill, West Lebanon, New Hampshire 03784

E-MAIL ADDRESS: joroberts@sau88.net

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Pathways Consulting, LLC TEL.#: (603) 448-2200

MAILING ADDRESS: 240 Mechanic Street, Suite 100

E-MAIL ADDRESS: pathways@pathwaysconsult.com

PROJECT LOCATION:

TAX MAP #: 73 LOT#: 41 & 93 PLOT #: ZONE:

STREET ADDRESS OF PROJECT: 38 Dana Street & 5 White Avenue

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☐ YES ☒ NO

SCOPE OF PROJECT:

The project consists of additions to the Mount Lebanon Elementary School, parking, utilities upgrade, landscaping, and lighting.

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:~~ Proposed school additions and renovations.

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 February 14, 2022, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: Timothy Ball DATE: 1/10/22

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: Tim Ball DATE: 1/10/22

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #
1-10-22	73/41 73/93	PB2022-09-SPR	$177.76	1-10-22	18601

(Last Revised 4/04/18)

PATHWAYS CONSULTING, LLC
Planning • Civil & Environmental Engineering • Surveying • Construction Assistance
240 Mechanic Street • Suite 100
Lebanon, New Hampshire 03766
(603) 448-2200 • Fax: (603) 448-1221

January 10, 2022

David Brooks, Director
Planning and Development Office
City of Lebanon
51 North Park Street
Lebanon, New Hampshire 03766

RE: APPLICATION FOR SITE PLAN REVIEW, LEBANON SCHOOL DISTRICT, MOUNT LEBANON SCHOOL ADDITIONS AND RENOVATIONS, 5 WHITE AVENUE, WEST LEBANON, NEW HAMPSHIRE (Project No. 12567-01)

Dear David:

Please find enclosed application materials for Site Plan Review to construct additions and make renovations to the Mount Lebanon Elementary School in accordance with Section 9.1 of the City of Lebanon (City) Site Plan Review Regulations (Regulations). The application includes this cover letter, an application, a fee schedule, a check in the amount $177.76, a certified notification list, a technical checklist, eight sets of plans, and an electronic version of the plans on a disk.

The Lebanon School District (District) proposes to construct two additions, totaling 6,140 square feet, make miscellaneous renovations within the existing school, construct a new 20 space parking area on an adjacent parcel, reconstruct the existing parking area, construct new pedestrian sidewalks and handicap access ramps, upgrade the sewer service, install a grease trap to serve the new kitchen, separate existing roof drains (in one area of the school) from the sanitary sewer, install a new sprinkler service, install new site lighting fixtures, and improve site landscaping. Simultaneously, the City's Public Works Department will reconstruct White Avenue including the existing angled parking spaces and the adjacent curb and sidewalk.

We offer the following as a Support Statement for Site Plan Review for this project on behalf of the District (the applicant), in accordance with Section 5.1 of the Regulations.

1. **Names and Addresses of Contributing Persons and Firms:** All names of contributing parties to the assembly of the project Site Plan, supporting data, or submission materials have been included on the Site Plan and the certified notification list.

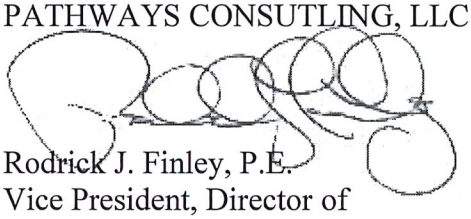
2. **Conservation Easements on Abutting Parcels:** There are no known conservation or agricultural easements on the property and abutting properties.

3. **Timetable for Construction and Completion of Project:** The District plans to begin construction in the spring of 2022.

We look forward to discussing this project at staff review and presenting this application to the Planning Board. Please do not hesitate to contact us if you have any questions.

Sincerely,

PATHWAYS CONSUTLING, LLC



Rodrick J. Finley, P.E.
Vice President, Director of
Engineering Services

RJF:sef

Enclosures

cc: Dr. Joanne Roberts w/enclosures
Paul Marinace w/enclosures

SITE PLAN FOR

MT. LEBANON SCHOOL - ADDITIONS & RENOVATIONS

5 WHITE AVENUE
WEST LEBANON, NEW HAMPSHIRE

JANUARY 24, 2022



LOCATION MAP

SITE INFORMATION

TAX MAP & LOT NUMBER: MAP 73 LOTS 41 & 93
ZONING DISTRICT: RESIDENTIAL THREE (R3) (CLASS 1)
AREA OF LOTS: 0.34 ACRES (73-41) AND 5.31 ACRES (73-93) [PER CITY LEBANON TAX RECORDS]
EXISTING USE: VACANT (73-41) AND SCHOOL (73-93)

GROSS AREA OF BUILDINGS:	EXISTING	ADDITIONS	TOTAL
	33,480 SQ. FT.	6,140 SQ. FT.	39,620 SQ. FT.
EXISTING PARKING:	54 SPACES		
PROPOSED PARKING:	55 SPACES		
NUMBER OF STORIES:	1		

BUILDING HEIGHT:	MAXIMUM	EXISTING	PROPOSED
	35'	MAX. 14'	MAX. 20'
BUILDING SETBACKS:	MINIMUM	EXISTING	PROPOSED
FRONT:	20'	59.9'	24.6'
SIDE:	10'	40.3'	40.3'
REAR:	20'	>20'	>20'
LOT COVERAGE (BUILDING):	ALLOWED	EXISTING	PROPOSED
	25%	33,480 SQ. FT. (14.0%)	39,620 SQ. FT. (16.6%)
IMPERVIOUS AREA:	EXISTING	PROPOSED	
	63,904 SQ. FT. (26.8%)	71,207 SQ. FT. (29.8%)	

THE SITE IS NOT WITHIN THE WETLANDS CONSERVATION DISTRICT, FLOOD PLAIN DISTRICT, AND THE SHORELAND WATER QUALITY PROTECTION JURISDICTION.

TABLE OF CONTENTS

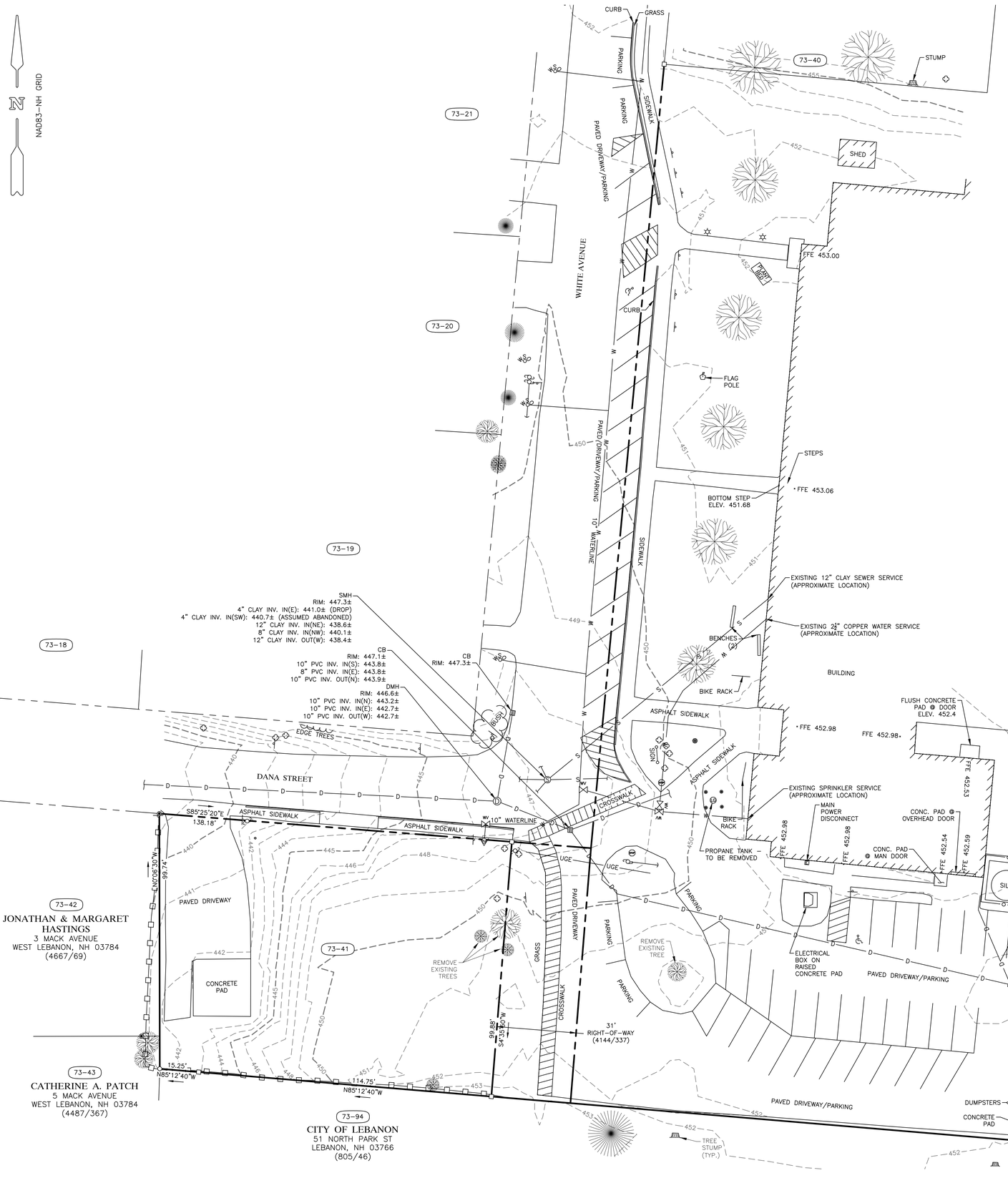
SHEET NO.	DRAWING NAME
	COVER, INDEX OF SHEETS & LOCATION PLAN
C1.0	EXISTING CONDITIONS PLAN
C1.1	SITE LAYOUT PLAN
C1.2	UTILITY PLAN
C2.0	SITE, SANITARY, AND WATER DETAILS
C2.1	LANDSCAPE AND LIGHTING DETAILS
C2.2	DRAINAGE & EROSION CONTROL DETAILS

CIVIL ENGINEER:
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100
LEBANON, NEW HAMPSHIRE 03766
(603) 448-2200

ARCHITECT:
MARINACE ARCHITECTS
BOX 429
NEW HAMPTON, NEW HAMPSHIRE 03256
www.marinacearchitects.com

RECORD OWNER & APPLICANT:
LEBANON SCHOOL DISTRICT & SAU #88
20 SEMINARY HILL
WEST LEBANON NH 03784

STATE OF NEW HAMPSHIRE - RODRICK J. FINLEY No. 7466 LICENSED PROFESSIONAL ENGINEER



PLANS OF REFERENCE:

1. REFERENCE IS MADE TO THE FOLLOWING PLANS RECORDED AT THE GRAFTON COUNTY REGISTRY OF DEEDS:
   A. (PLAN) BOOK 588, PAGE 43 ENTITLED "GREEN ACRES, WEST LEBANON, NEW HAMPSHIRE."
   B. (PLAN) BOOK 814, PAGE 314 ENTITLED "PLAN OF LAND OWNED FORMERLY BY THOMAS J. MCNAMARA, WEST LEBANON, NEW HAMPSHIRE," DATED NOVEMBER 1951.

GENERAL SURVEY NOTES:

1. HORIZONTAL DATUM: NH STATE PLANE GRID NAD83 (SURVEY FEET) FROM GPS OBSERVATION.
2. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAV88) FROM GPS OBSERVATION.
3. UNDERGROUND UTILITIES ARE APPROXIMATE AND NOT WARRANTED TO BE EXACT OR COMPLETE AND ARE TO BE FIELD VERIFIED PRIOR TO ANY EXCAVATION OR SITE MODIFICATIONS.
4. PATHWAYS CONSULTING, LLC COLLECTED DATA FOR THIS PLAN IN NOVEMBER–DECEMBER 2021.

LEGEND (EXISTING):

IRON PIPE OR REBAR	◉
CONCRETE MONUMENT	□
CAPPED REBAR TO BE SET	○
BOUNDARY LINE	
RIGHT–OF–WAY	
CONTOUR	500
DRAIN PIPE	D
SANITARY PIPE	S
WATER LINE	W
UNDERGROUND ELECTRICAL	UGE
HYDRANT	
WATER SHUT–OFF VALVE	WSO
WATER VALVE	WV
CATCH BASIN	
DRAIN MANHOLE	D
UTILITY POLE	
LIGHT POLE	
GUY WIRE	
SANITARY MANHOLE	S
SIGN	
STOP SIGN	STOP
BOLLARD	
HANDICAP PARKING	
WOODEN FENCE	
CHAIN LINK FENCE	
BUSH	
HARDWOOD TREE	
SOFTWOOD TREE	
TAX MAP–LOT NUMBER	73–19
DEED BOOK/PAGE	BOOK/PAGE

RECORD OWNER: LEBANON SCHOOL DISTRICT & SAU #88
MAP 73, LOT 41 — 20 SEMINARY HILL, WEST LEBANON NH 03784
DEED REFERENCE: BOOK 4144, PAGE 336

0 20 40 60 80 100
IN FEET

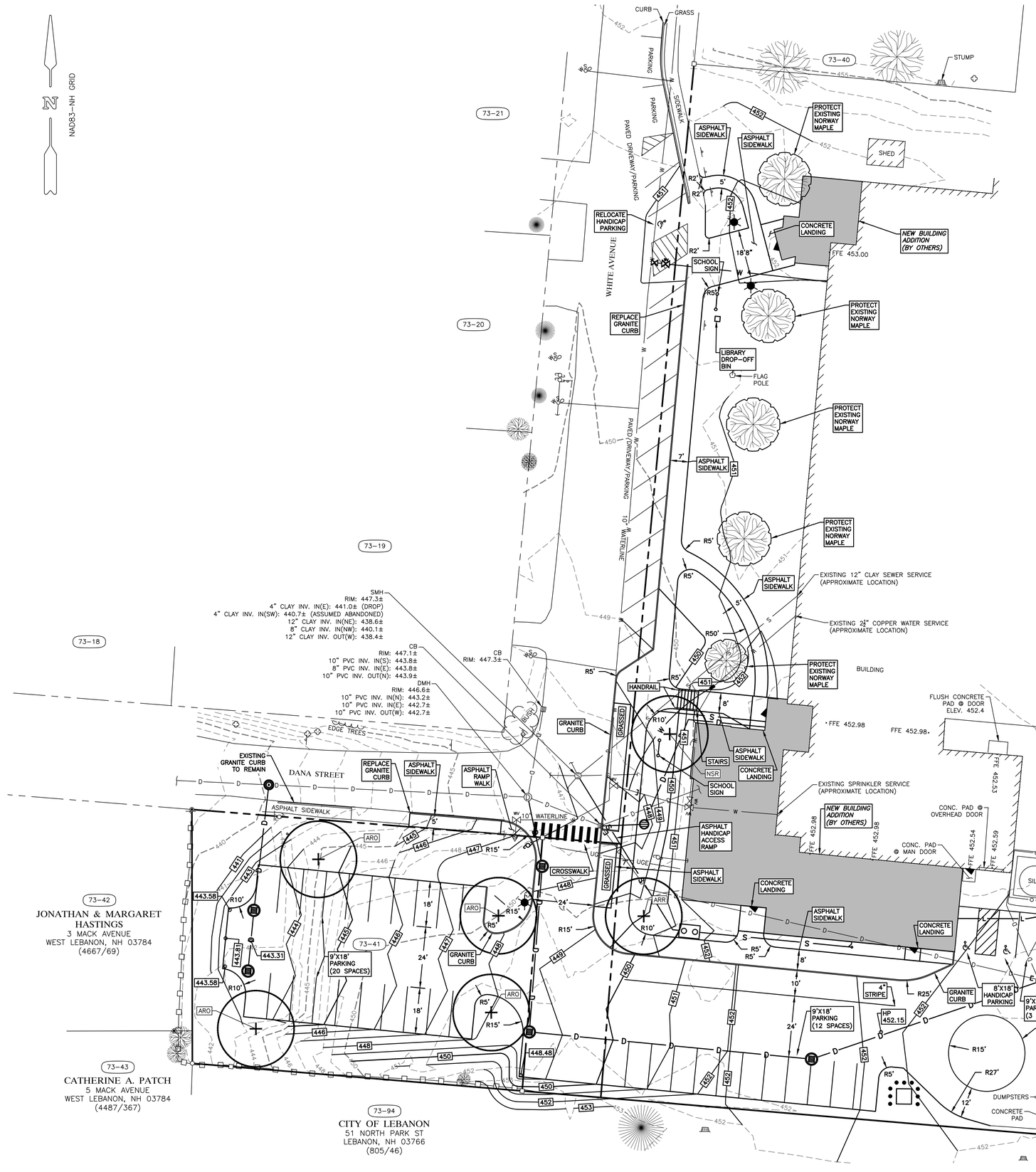
MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256 www.marinacearchitects.com
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

date: 01-24-22
scale: Noted
project #: 2100

Existing Conditions Plan

Mt Lebanon School - Additions & Renovations
Lebanon, NH

C1.0



LEGEND (EXISTING):

- IRON PIPE OR REBAR
- CONCRETE MONUMENT
- CAPPED REBAR TO BE SET
- BOUNDARY LINE
- RIGHT–OF–WAY
- CONTOUR (500)
- DRAIN PIPE
- SANITARY PIPE
- WATER LINE
- UNDERGROUND ELECTRICAL
- HYDRANT
- WATER SHUT–OFF VALVE
- WATER VALVE
- CATCH BASIN
- DRAIN MANHOLE
- UTILITY POLE
- LIGHT POLE
- GUY WIRE
- SANITARY MANHOLE
- SIGN
- STOP SIGN
- BOLLARD
- HANDICAP PARKING
- WOODEN FENCE
- CHAIN LINK FENCE
- BUSH
- HARDWOOD TREE
- SOFTWOOD TREE
- TAX MAP–LOT NUMBER (73–19)
- DEED BOOK/PAGE (BOOK/PAGE)

LEGEND (PROPOSED):

- CONTOUR (450)
- GRANITE CURB
- DRAIN PIPE
- SANITARY PIPE
- WATER LINE
- WATER VALVE
- CATCH BASIN
- YARD DRAIN
- DRAIN MANHOLE
- UTILITY POLE
- LIGHT POLE
- PROPANE LINE
- BOLLARD
- HANDICAP PARKING
- TREE
- PROPOSED WORK (PROPOSED)

MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256 www.marinacearchitects.com
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

date: 01-24-22

scale: Noted

project #: 2100

Site Layout Plan

Mt Lebanon School - Additions & Renovations
Lebanon, NH

C1.1

N

NAD83–NH GRID

CURB
GRASS
PARKING
PARKING
SIDEWALK
PAVED DRIVEWAY/PARKING
WHITE AVENUE
PAVED DRIVEWAY/PARKING
10" WATERLINE
73–40
STUMP
SHED
73–21
73–20
73–19
73–93
WALL MOUNTED AREA LIGHT (TYP.). SEE ARCHITECTURAL PLANS.
FFE 453.00
SPRINKLER SERVICE
10"X6" TAPPING SLEEVE & VALVE
6" D.I. PIPE
2 RELOCATED RAB FIXTURES AND POLES (TYP.)
FLAG POLE
WATER SERVICE
2½" CORPORATION STOP
2½" COPPER
2½" COUPLER
SMH
RIM: 447.3±
4" CLAY INV. IN(E): 441.0± (DROP)
4" CLAY INV. IN(SW): 440.7± (ASSUMED ABANDONED)
12" CLAY INV. IN(NE): 438.6±
8" CLAY INV. IN(NW): 440.1±
12" CLAY INV. OUT(W): 438.4±
EXISTING 12" CLAY SEWER SERVICE (APPROXIMATE LOCATION)
EXISTING 2½" COPPER WATER SERVICE (APPROXIMATE LOCATION)
73–18
CB
RIM: 447.1±
10" PVC INV. IN(S): 443.8±
8" PVC INV. IN(E): 443.8±
10" PVC INV. OUT(N): 443.9±
CB
RIM: 447.3±
DMH
RIM: 446.6±
10" PVC INV. IN(N): 443.2±
10" PVC INV. IN(E): 442.7±
10" PVC INV. OUT(W): 442.7±
BUILDING
WALL MOUNTED AREA LIGHT (TYP.). SEE ARCHITECTURAL PLANS.
FFE 452.98
FFE 452.98
FLUSH CONCRETE PAD @ DOOR ELEV. 452.4
EDGE TREES
DANA STREET
DRAIN MANHOLE
RIM: 440.15
ASPHALT SIDEWALK
WATER LINE AND VALVES TO BE REMOVED AND CAPPED
EXISTING SPRINKLER SERVICE (APPROXIMATE LOCATION)
10" WATERLINE
YARD DRAIN
RIM: 447.5
CONC. PAD @ OVERHEAD DOOR
CONC. PAD @ MAN DOOR
PAVED COURTS
CONC. PAD
PROPANE TANK
RELOCATED UTILITY POLE
WALL MOUNTED AREA LIGHT (TYP.). SEE ARCHITECTURAL PLANS.
SILO
443.58
CATCH BASIN
RIM: 443.08
CATCH BASIN
RIM: 447.5
EXISTING DRAIN PIPE TO BE REMOVED AND CAPPED
73–42
JONATHAN & MARGARET HASTINGS
3 MACK AVENUE
WEST LEBANON, NH 03784
(4667/69)
443.31
443.58
CATCH BASIN
RIM: 443.08
73–41
RAB FIXTURE ON 20' HIGH POLE
4" SDR 35 PVC
CLEANOUT
SHED
1,000 GALLON GREASE TRAP
CATCH BASIN
RIM: 448.22
HP
452.15
CATCH BASIN
RIM: 451.2
CB
RIM: 450.7±
10" PVC INV. IN(E): 445.0±
8" PVC INV. IN(N): 446.7±
10" PVC INV. OUT(W): 445.0±
448.48
73–43
CATHERINE A. PATCH
5 MACK AVENUE
WEST LEBANON, NH 03784
(4487/367)
DUMPSTERS
CONCRETE PAD
PAVED AREA
ELECTRICAL TRANSFORMER & BOLLARDS
73–94
CITY OF LEBANON
51 NORTH PARK ST
LEBANON, NH 03766
(805/46)

LEGEND (EXISTING):

IRON PIPE OR REBAR	◉
CONCRETE MONUMENT	□
CAPPED REBAR TO BE SET	○
BOUNDARY LINE	
RIGHT–OF–WAY	
CONTOUR	500
DRAIN PIPE	D
SANITARY PIPE	S
WATER LINE	W
UNDERGROUND ELECTRICAL	UGE
HYDRANT	
WATER SHUT–OFF VALVE	
WATER VALVE	
CATCH BASIN	
DRAIN MANHOLE	D
UTILITY POLE	
LIGHT POLE	
GUY WIRE	
SANITARY MANHOLE	S
SIGN	
STOP SIGN	
BOLLARD	
HANDICAP PARKING	
WOODEN FENCE	
CHAIN LINK FENCE	
BUSH	
HARDWOOD TREE	
SOFTWOOD TREE	
TAX MAP–LOT NUMBER	73–19
DEED BOOK/PAGE	BOOK/PAGE

LEGEND (PROPOSED):

CONTOUR	
GRANITE CURB	
DRAIN PIPE	
SANITARY PIPE	S
WATER LINE	W
WATER VALVE	
CATCH BASIN	
YARD DRAIN	
DRAIN MANHOLE	D
UTILITY POLE	
LIGHT POLE	
PROPANE LINE	
BOLLARD	
HANDICAP PARKING	
TREE	
PROPOSED WORK	PROPOSED

0 20 40 60 80 100
IN FEET

STATE OF NEW HAMPSHIRE – RODRICK FINLEY No. 7488 – LICENSED PROFESSIONAL ENGINEER

MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256 www.marinacearchitects.com
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

date: 01-24-22

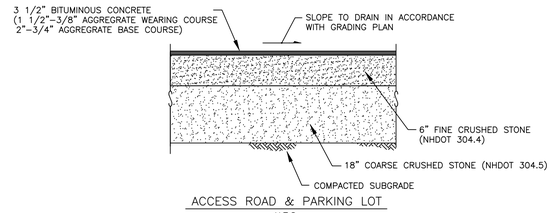
scale: Noted

project #: 2100

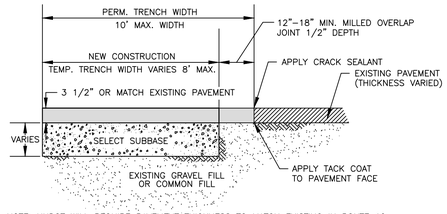
Utility Plan

Mt Lebanon School - Additions & Renovations
Lebanon, NH

C1.2

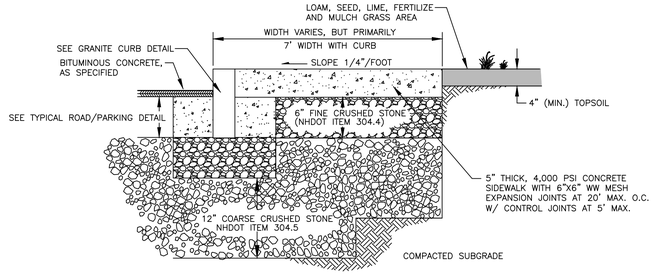


ACCESS ROAD & PARKING LOT
N.T.S.

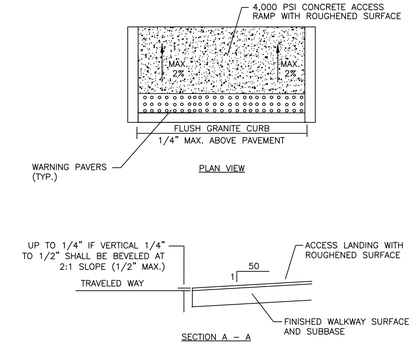


NOTE: NHDOT WILL REQUIRE PAVEMENT THICKNESS TO MATCH EXISTING IN ROUTE 10.

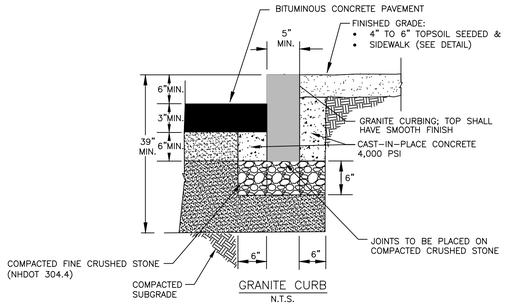
PAVEMENT SAWCUT & TRENCH PAVEMENT
N.T.S.



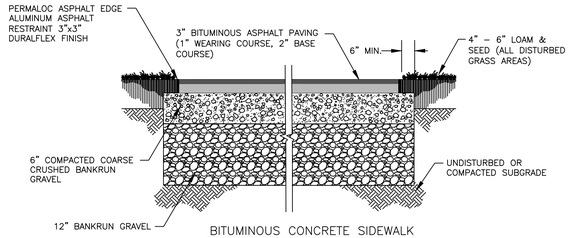
CONCRETE SIDEWALK
N.T.S.



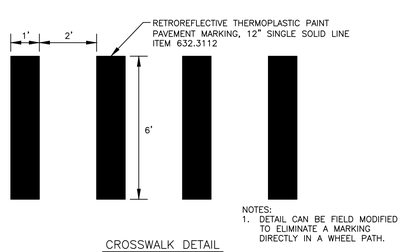
HANDICAP ACCESS RAMP DETAIL
N.T.S.



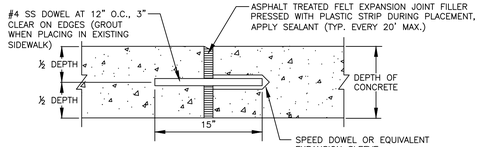
GRANITE CURB
N.T.S.



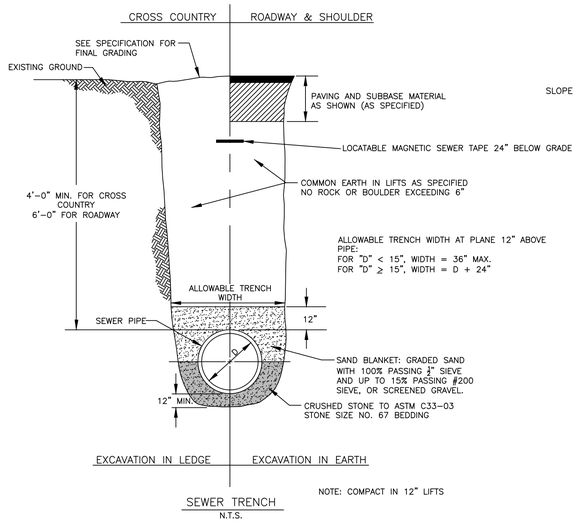
BITUMINOUS CONCRETE SIDEWALK
N.T.S.



CROSSWALK DETAIL
N.T.S.



CONCRETE DOWEL
N.T.S.



SEWER TRENCH
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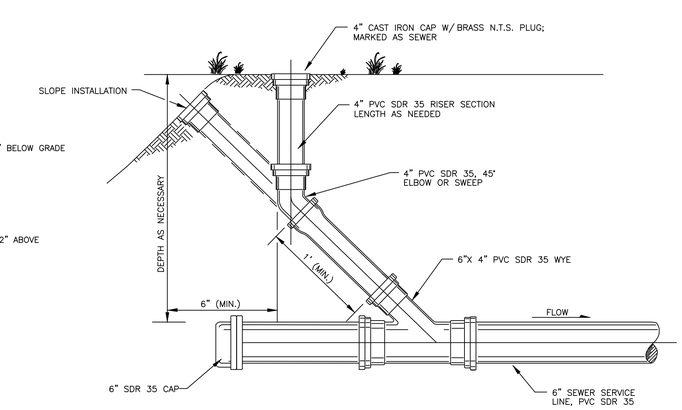

PVC SEWER SERVICE CLEANOUT
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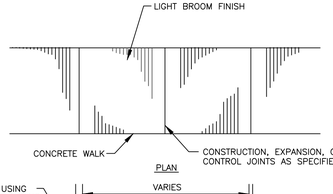

CONCRETE JOINT
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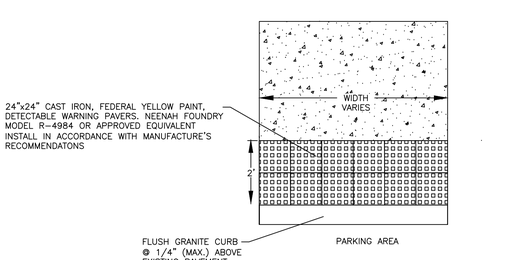
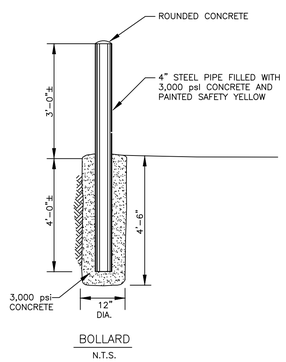


TYPICAL SIDEWALK WARNING PAVERS



BOLLARD
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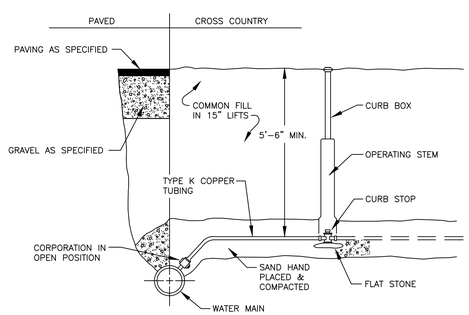
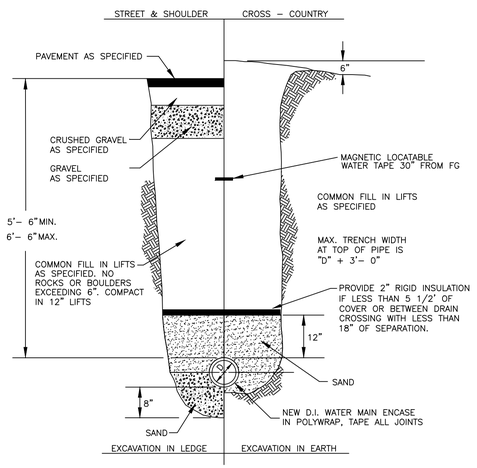


SERVICE CONNECTION
N.T.S.



DUCTILE IRON WATER MAIN TRENCH
N.T.S.

MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256 www.marinacearchitects.com
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

date: 01-24-22

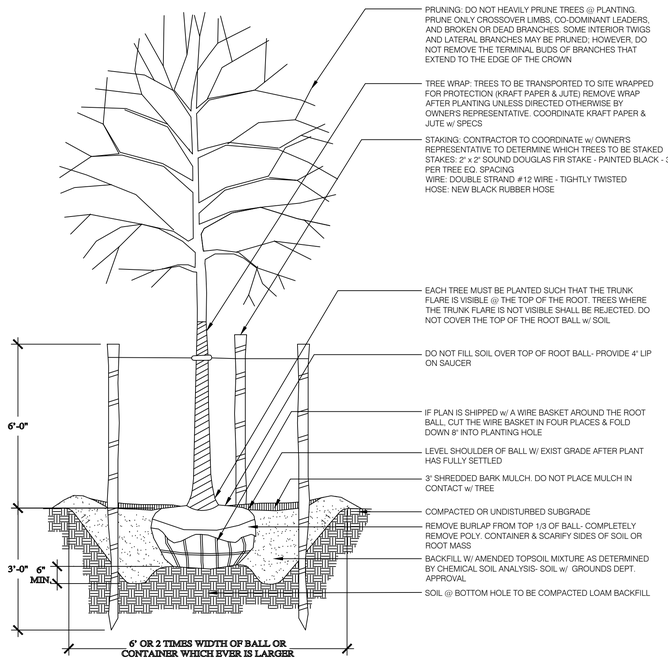
scale: Noted

project #: 2100

Site, Sanitary, and Water Details

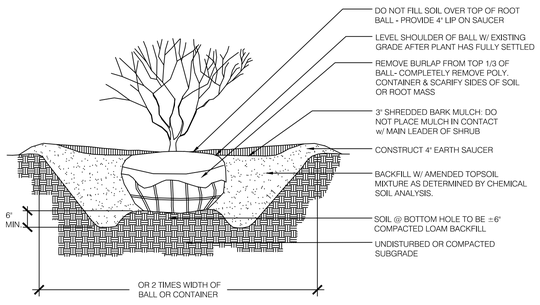
Mt Lebanon School - Additions & Renovations
Lebanon, NH

C2.0



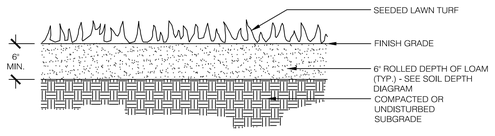
TYPICAL DECIDUOUS TREE PLANTING DETAILS

SCALE: N.T.S.



TYPICAL SHRUB PLANTING DETAIL

SCALE: N.T.S.



TYPICAL LOAM AND SEED DETAIL

SCALE: N.T.S.

PLANTING NOTES:

1. The Contractor shall review the written specifications for tree and shrub planting, groundcover & plants and seeding prior to submitting bid. No extraneous requirements have been included in the Specifications and Drawings. The Contractor shall also become familiar with existing and proposed site conditions prior to submitting bid.
2. The Contractor shall coordinate this work with other contractors performing work on the site.
3. The Contractor shall verify all grades, dimensions, and existing conditions and report any discrepancies to the Landscape Architect.
4. The Contractor shall locate and verify all existing and newly installed underground utilities prior to any lawn work or tree and shrub planting and shall immediately report any
5. The Contractor shall supply all plant material in quantities sufficient to complete the planting shown on the drawings. Quantities in Plant Schedule are for reference only.
6. All new plant material shall be nursery-grown stock and shall conform to guidelines established by the "American Standards for Nursery Stock" published by the American Association of Nurserymen: latest edition (ANSI Z60.1).
7. No plant or cultivar substitutions will be acceptable.
8. Plant material shall be inspected by Owner's Representative for acceptance prior to planting.
9. Locations of new plant material shall be staked or set out by Contractor and approved and faced by the Landscape Architect prior to planting.
10. Refer to Planting Details and Specifications for information relating to planting pit dimensions and extent and composition of backfill material.
11. The trees shall bear the same relationship to tree pit finish grade as to the original grade prior to digging.
12. The Contractor shall remove all plastic materials from around the root balls of the plants after positioning in the plant pits. Remove burlap, rope, and wire from around the trunks sufficiently so that no burlap, rope, or wire will be exposed after backfilling.
13. Contractor shall exercise extreme care in working in areas of existing trees. Existing plants to remain and be protected which are injured or destroyed during construction shall be replaced by Contractor with plants of equal size and species at no cost to the Owner.
14. All areas that have been disturbed by construction activity and not paved or occupied by site structures, etc., shall be topsoiled and seeded / reconditioned as specified.
15. The trees and shrubs shall be watered by the contractor twice during the first 24 hours of planting.
16. The plants shall be maintained by the contractor during the warranty period.
17. At the time of planting, all deciduous trees shall be a minimum 2.5 to 3 inches in caliper, measured 6 inches above the finish grade level; all evergreen trees shall be a minimum of 6 to 7 feet n height.
18. Shrubs shall be planted as a mix, ranging from 50% to 70% flowering, with the remainder being evergreen. At the time of planting, all shrubs whether deciduous or evergreen, shall be 24 to 30 inches in height and/or 18 to 24 inches in spread.
19. The Property Owner shall be responsible for maintaining all landscaping, to include grass and mulch, in a 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.
20. After the issuance of a Certificate of Occupancy, the storage, display, or parking of motor vehicles, boats, mobile homes, trailers, or construction equipment within the landscaped areas, buffers, or screens, shown as such on the approved landscape plan, is expressly prohibited and a violation of the Notice of Action.

Key	Qty.	Botanical Name	Common Name	Size	Root	Comment
Trees						
ARO	4	Acer rubrum 'October Glory'	October Glory Red Maple	2 ½" - 3" caliper	B&B	Matched
ARR	1	Acer rubrum 'Redpointe'	Redpointe Red Maple	2 ½" - 3" caliper	B&B	Specimen
NSR	1	Nyssa sylvatica "Red Rage	Red Rage Tupelo	2 ½" - 3" caliper	B&B	Specimen

ALED26N

RAB



Color: Bronze

Weight: 6.3 lbs

Project: Type:

Prepared By: Date:

Driver Info

Type	Constant Current
120V	0.22A
208V	0.13A
240V	0.11A
277V	0.10A
Input Watts	28.9W

LED Info

Watts	26W
Color Temp	4000K (Neutral)
Color Accuracy	70 CRI
L70 Lifespan	100,000 Hours
Lumens	3,738
Efficacy	129.3 lm/W

Technical Specifications

Compliance

UL Listed: Suitable for wet locations

IESNA LM-79 & IESNA LM-80 Testing: RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.

DLC Listed: This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities. Designed to meet DLC 5.1 requirements.
DLC Product Code: P000017SR

Performance

Lifespan: 100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

Construction

IES Classification: The Type IV distribution (also known as a Forward Throw) is especially suited for mounting on the sides of buildings and walls, and for illuminating the perimeter of parking areas. It produces a semicircular distribution with essentially the same candlepower at lateral angles from 90° to 270°.

Housing: Precision die-cast aluminum housing, lens frame

Gaskets: High-temperature silicone

Effective Projected Area: EPA = 0.27.

Finish: Formulated for high durability and long-lasting color

Green Technology: Mercury and UV free. RoHS-compliant components.

Ambient Temperature: Suitable for use in up to 40°C (104°F)

Cold Weather Starting: Minimum starting temperature is -40°C (-40°F)

LED Characteristics

Lumen Maintenance: The LED will deliver 70% of its initial lumens at 100,000 hours of operation

Color Consistency: 3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Need help? Tech help line: **(888) 722-1000** Email: **sales@rablighting.com** Website: **www.rablighting.com**

PR4-11-15D2

RAB



Color: Bronze

Weight: 91.0 lbs

Project: Type:

Prepared By: Date:

Technical Specifications

Compliance

CSA Listed: Suitable for wet locations

Construction

Description: Steel pole 4" round 11 gauge 15 foot drilled two sides square base

Shaft: 46,000 p.s.i. minimum yield.

Hand Holes: Reinforced with grounding lug and removable cover

Base Plates: Slotted base plates 36,000 p.s.i.

Color: Bronze powder coating

Height: 15 FT

Gauge: 11

Wall Thickness: 1/8"

Shaft Size: 4"

Anchor Bolt Templates: WARNING Template must be printed on 11" x 17" sheet for actual size. CHECK SCALE BEFORE USING. Templates shipped with anchor bolts and available online.

Max EPA's/Max Weights: 70MPH 11.7 ft./650 lb. 80MPH 8.5 ft./595 lb. 90MPH 6.2 ft./530 lb. 100MPH 4.6 ft./430 lb. 110MPH 3.4 ft./325 lb. 120MPH 2.5 ft./295lb. 130MPH 1.8 ft./220 lb. 140MPH 1.3 ft./200 lb. 150MPH 0.8 ft./165 lb

Accessories: Base/Cap: BCK-R4 Anchor Bolts: BOLT4/11

Other

Terms of Sale: Pole Terms of Sale is available online.

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ALED26N

RAB

Technical Specifications (continued)

LED Characteristics

Color Stability: LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity: RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Electrical

Driver: Constant Current, Class 2, 120-277V, 50/60Hz, 120V: 0.22A, 208V: 0.13A, 240V: 0.11A, 277V: 0.10A

Dimming Driver: Driver includes dimming control wiring for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims down to 10%.

THD: 10.02% at 120V, 10.55% at 277V

Power Factor: 98.3% at 120V, 95.4% at 277V

Other

Patents: The ALED design is protected by U.S. PATENT D608,040 and patents pending in the U.S., Canada, China, Taiwan and Mexico.

Equivalency: Equivalent to 125W Pulse Start Metal Halide

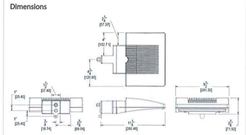
Warranty: RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and future finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance: RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating: B1 U0 G0

Dimensions



Features

- High-output LED light engine
- Maintains 70% of initial lumens at 100,000-hours
- Weatherproof high temperature silicone gaskets
- Superior heat sinking with die cast aluminum housing and external fins

Need help? Tech help line: **(888) 722-1000** Email: **sales@rablighting.com** Website: **www.rablighting.com**

PR4-11-15D2

RAB

Technical Specifications (continued)

Other

Buy American Act Compliance: RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Dimensions



Features

- Designed for ground mounting
- Heavy duty TGIC polyester coating
- Reinforced hand holes with grounding lug and removable cover for easy wiring access
- Pole caps, base covers & bolts are sold separately
- Custom manufactured for each application

Ordering Matrix

Family	Shape	Size	Gauge	Height	Drilled/Welded Tenon
P	R	4	11	15	D2
	R = Round TR = Taped Round	4 = 4" 5 = 5" 6 = 6" 7 = 7" 8 = 8"	7 = 7 11 = 11	10 = 10' 15 = 15' 20 = 20' 25 = 25' 30 = 30'	D2 = Drilled WT = Welded Tenon

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MARINACE ARCHITECTS
box 429, new hampton, new hampshire 03256 www.marinacearchitects.com
PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER - RODERICK FINLEY No. 7468 LICENSED

date: 01-24-22

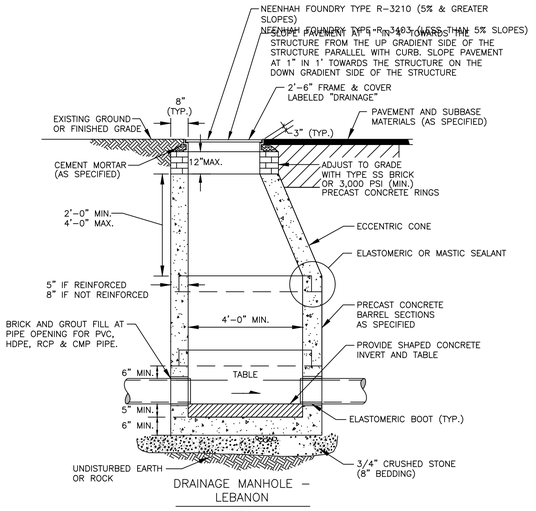
scale: Noted

project #: 2100

Landscape & Lighting Details

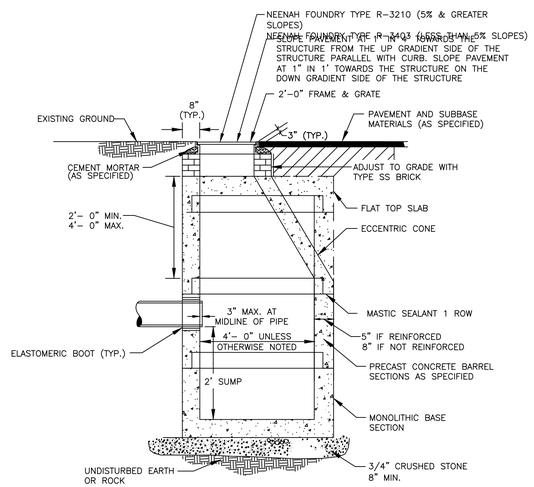
Mt Lebanon School - Additions & Renovations
Lebanon, NH

C2.1



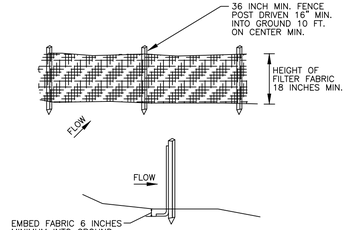
DRAINAGE MANHOLE – LEBANON

N.T.S.



PRECAST CONCRETE CATCH BASIN

N.T.S.

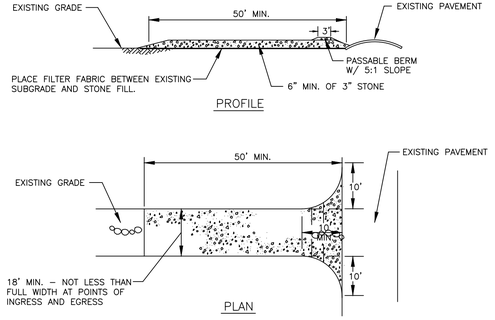


CONSTRUCTION SPECIFICATIONS

1. SILT FENCE MAY BE EITHER PREMANUFACTURED OR PREPARED ON SITE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL BE LOCATED AS SHOWN ON THE PLAN AND WHEREVER CONSTRUCTION ACTIVITIES MAY RESULT IN A TEMPORARY RUNOFF TO A STREAM OR WETLAND WHICH MAY CARRY SILT OR SEDIMENT.
3. THE TRENCH SHALL BE TOED IN PLACE BY PLACEMENT IN A 6 INCH TRENCH AND BACKFILLING WITH A SUITABLE MATERIAL.
4. WHEN A TRENCH CANNOT BE CONSTRUCTED, THE FABRIC MAY BE FOLDED AT THE BASE IN A MANNER SUCH THAT A MINIMUM OF 6 INCHES OF FABRIC LIES ON THE GROUND TOWARD THE DIRECTION OF FLOW. THE FOLDED FABRIC SHALL BE COVERED TO A DEPTH OF 6 INCHES WITH SUITABLE MATERIAL EXTENDING A MINIMUM OF 4 INCHES BEYOND THE FABRIC.
5. SUPPORTING STAKES SHALL BE PLACED NO MORE THAN 10 FEET APART.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED. FENCING SHALL BE REPLACED WHEN TORN, WHEN TRENCHING IS DISTURBED, WHEN THE FENCE DISPLAYS PLUGGING AS EVIDENCED BY SILT-LADEN APPEARANCE, WHEN WATER IS EXCESSIVELY RETARDED BY THE FENCE, OR WHENEVER "BULGES" APPEAR.

SILT FENCE

N.T.S.



PROFILE

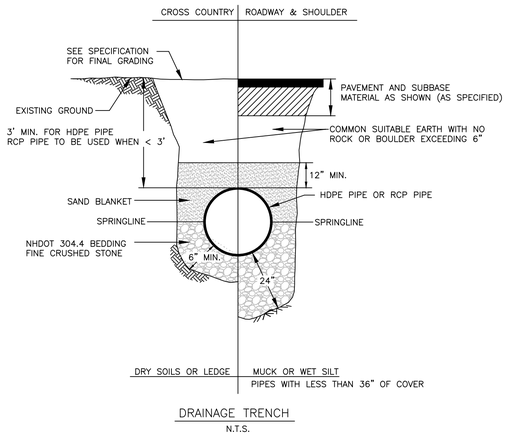
PLAN

NOTES:

1.) MAINTAIN ENTRANCE TO PREVENT TRACKING OF SEDIMENT INTO PUBLIC R.O.W., REDUCE TRACKING OF SILTS ONTO PUBLIC R.O.W. BY CLEANING OR TOP DRESSING STONE FILL.
2.) PROVIDE SEPARATE WHEEL CLEANING AREA WITH SUITABLE SEDIMENTATION BASIN, AS NEEDED.

STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



DRAINAGE TRENCH

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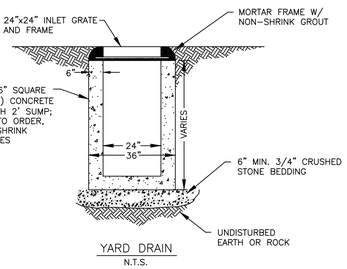

YARD DRAIN

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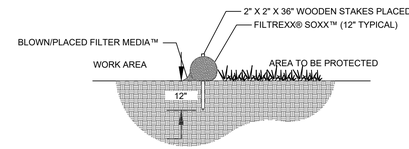
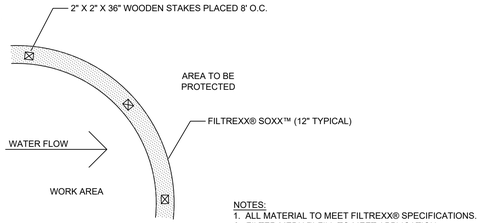


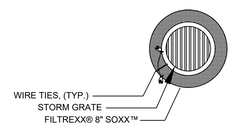
SECTION
NTS



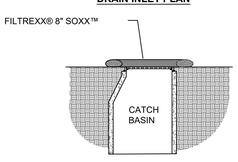
PLAN
NTS

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® SEDIMENT CONTROL
NTS



DRAIN INLET PLAN



DRAIN INLET SECTION

NOTES:
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2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® INLET PROTECTION
NTS

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PATHWAYS CONSULTING, LLC
240 MECHANIC STREET, SUITE 100 LEBANON, NEW HAMPSHIRE 03766

date: 01-24-22
scale: Noted
project #: 2100

Drainage & Erosion Control Details

Mt Lebanon School - Additions & Renovations
Lebanon, NH

C2.2

Agenda
Planning Board
February 14, 2022

Agenda Item #3J
Public Hearing Items

Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L

PB2022-10-SPR

CITY OF LEBANON ~ PLANNING & DEVELOPMENT

PLANNING BOARD

February 14, 2022 Meeting

Staff Memorandum – PB2022-10-SPR

APPLICATION INFORMATION

Agenda Item: 3.J

Application ID: PB2022-10-SPR

Application Type:
Site Plan Review for a parking lot for a proposed car wash use

Property Location & Tax Map:
9 Pershing Street (Tax Map 78, Lot 48)

Applicant/Property Owner:
Edwards Properties, LLC

Zoning District:
Light Industrial (IND-L)

Future Land Use Map:
Mixed Use

Property Size: +/-0.61 acres, per the City's assessing records (the property is non-conforming to the minimum required 2 acre lot size required for lots in the IND-L District per §303.3 of the Zoning Ordinance)

Overlay Districts:
- Floodplain District
- Airport Protection District

Staff Exhibits:
- May 7, 2017 Planning Board Notice of Action (PB2017-12-SPR)
- Approved Site Plan for subject property (PB2017-12-SPR) (titled "Site Plan for 9 Pershing Street, LLC," prepared by Schall Engineering, P.C. and Rockwood Land Services, LLC, dated April 6, 2017, and revised April 19, 2017)

LEGAL NOTICE

Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L: Request for Site Plan Review to construct a parking lot for a proposed car wash use. PB2022-10-SPR

PLANS AND APPLICATION MATERIALS

- Application form
- Letter dated January 10, 2022, from Daniel Nash, PE, of Advanced Geomatics & Design (project description; 2 pages)
- Letter dated January 10, 2022, from Daniel Nash, PE, of Advanced Geomatics & Design (project support statement; 1 page)
- Letter dated January 24, 2022, from Daniel Nash, PE, of Advanced Geomatics & Design (response to staff comments; 2 pages)
- Application for Waivers, undated (2 pages)
- Site Plan Review Regulations Technical Checklist dated August 9, 2021, revised August 30, 2021 (10 pages)
- Easement deed dated May 8, 1991 (2 pages)
- Plan set titled "9 Pershing Street," prepared by Advanced Geomatics & Design, dated January 10, 2022, revised January 24, 2022, PN: 21-017 (14 sheets)
- Plan sheet titled "Building Elevations," prepared by Advanced Geomatics & Design, dated January 10, 2022
- Letter dated January 10, 2022, from Daniel Nash, PE, of Advanced Geomatics & Design (drainage report; 12 pages)
- Operations and Maintenance Plan, prepared by Advanced Geomatics & Design, dated January 10, 2022 (6 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. NH RSA 676:4, I(c)(1). Section 4.7.C.2 ("Initial Completeness Determination") of the Site Plan Review Regulations provides as follows:

a. The Planning & Development Department shall review the application for completeness pursuant to the requirements of Section 4.7.A and Section 5.1. If the Planning & Development finds that the application is complete, or lacks only those items or documents for which waiver requests have been submitted, then the Planning & Development Department shall make preliminary determination of whether the waiver requests meet the standards of Section 7.2 of these Regulations, and if so, then the Planning & Development Department shall recommend to the Board acceptance of the application for review.

b. If the Planning & Development Department finds that the application is not complete or that one or more of the waiver requests do not meet the standards of Section 7.2, the Planning & Development Department shall so advise the Applicant, who can elect to complete the missing submission requirements. […]

The Planning and Development Department has reviewed the application in accordance with the Lebanon Site Plan Review Regulations and, per Section 4.7.C.2.b, has determined that the following requirements of the Site Plan Review Regulations have not been satisfied:

- **Sections 5.1.E.5 and 5.1.E.22** – requiring the plan to depict the location of the City's drainage easement
- **Section 5.1.E.8** – requiring the plan to indicate any "The plan shall indicate those natural and man-made features that are to be removed, retained, or altered". *The plan does not show existing landscaping and does not identify the pavement proposed to be removed.*
- **Section 6.5.I** – bicycle parking requirements.
- **Section 6.7.C.1** - requiring a uniformity ratio of lighting in parking areas of no greater than 4:1.
- **Section 6.6** – additional information is needed pursuant to the stormwater management requirements of Section 6.6. See comments #1 and #2 of the City Engineer under the City Engineering/Public Works section below.

If the Board accepts the application as complete, staff recommends that prior to closing the public hearing, the applicant should either provide the required information or apply for a waiver (or waivers).

Also, the applicant is providing parking spaces using the "automotive services" category in Section 607 of the Zoning Ordinance which requires 4 on-site parking spaces per bay. The applicant indicates that the building has 3 bays and 1 "double" bay which requires 20 parking spaces to be provided (4 spaces x 4 bays and a "double" bay). Utilizing the maximum parking allowance of up to 120% of the minimum required parking, the applicant proposes 24 new parking spaces (20 x 120% = 24 spaces).

However, staff questions whether the provision of so much parking is necessary or appropriate based on the applicant's own description of the use given during the Conditional Use Permit hearing, and further notes that there are other ways the required parking can be calculated per Section 607 that are more representative of the use as described. Even if using the "automotive services" category, staff notes that there is no reference in Section 607 to a standard for "double bays".

Staff recommends that the Board discuss the parking calculations prior to completeness, based on Section 4.4 of the Site Plan Review Regulations which provides that "[when approvals from the Zoning Board of Adjustment (ZBA) are required by the Lebanon Zoning Ordinance, such ZBA approvals shall be obtained before the Site Plan application will be deemed complete by the Planning Board."

BACKGROUND

The property (outlined in red in Figure 1 below) is a +/-0.61 acre lot located at the corner of Little Heater Road and Pershing Street. The current property configuration was recently created by the voluntary merger of 25 Little Heater Road and 9 Pershing Street (PB2021-22-VLM).

The portion of the property consisting of what was formerly 25 Little Heater Road (outlined in yellow in Figure 2) was occupied by a one-family dwelling which has since been removed. The remainder of the property (outlined in blue in Figure 2), is improved with a 3,420 sq. ft. commercial building and is currently permitted to be used as a contractor's yard, which is a use allowed by Special Exception from the Zoning Board of Adjustment per Section 303.2 of the Zoning Ordinance. A Special Exception for the contractor's yard was granted to a predecessor in title by the Zoning Board on October 17, 2016 (ZB2016-24-SE). Subsequently, the Planning Board granted Site Plan approval for the contractor's yard on May 8, 2017 (PB2017-12-SPR). A copy of the Planning Board's Notice of Action and the approved site plan are attached for reference.

On October 4 and October 5, 2021, Planning and Development Department staff observed that a newly paved surface had been installed on the portion of the property consisting of what was formerly 25 Little Heater Road. Judging by observation and subsequently measuring the area using the City's online GIS tool, it appears that the new surface (depicted in the photo in Figure 3 below, taken on October 5, 2021) is approximately 9,000 sq. ft. or more in size.

The paved surface was installed in violation of the City's land use ordinances and without the required approvals. Consequently, on October 14, 2021, the Planning and Development Department issued a Notice of Violation identifying violations of Zoning Ordinance §§303.2 and 901.1.D, and of Site Plan Review Regulations §§1.6.A and 3.1.D.

Figure 1. Bird's Eye View of subject property (looking east).



©2021 Eagleview (image taken 4/4/2021)

Following the issuance of the Notice of Violation, it came to the attention of the Planning and Development Department that the building at 9 Pershing Street was being used as a car wash. Although a "car wash is allowed in the IND-L District by Conditional Use Permit issued by the Planning Board, no such approval has been granted for the property. Consequently, the Planning and Development Department issued a second Notice of Violation on December 6, 2021, identifying violations of Zoning Ordinance §§303.2, 402.2, and 901.1.D, and of City Code Chapter 74, Sections 74-9 and 74-14. These violations are in addition to those outlined in the October 14th Notice of Violation.

APPLICATION OVERVIEW

In response to the December 6th Notice of Violation, the applicant submitted an application for a Conditional Use Permit to operate a car wash at the subject property (PB2022-02-CUP), and the subject application for Site Plan Review to approve the parking expansion. The public hearing for the Conditional Use Permit application was continued to the February 14, 2022 Planning Board meeting so that it could be heard concurrently with the Site Plan Review application.

According the attached letter from Dan Nash, dated January 24, 2022: "11,305sf+/- of paving was placed without site plan review. Approximately 3,880sf of that paving will be removed to create landscape spaces and reduce impervious coverage to the minimum needed to support the parking area. 7,425sf+/- of new paving will remain."

Figure 2. Aerial View of Subject Property.

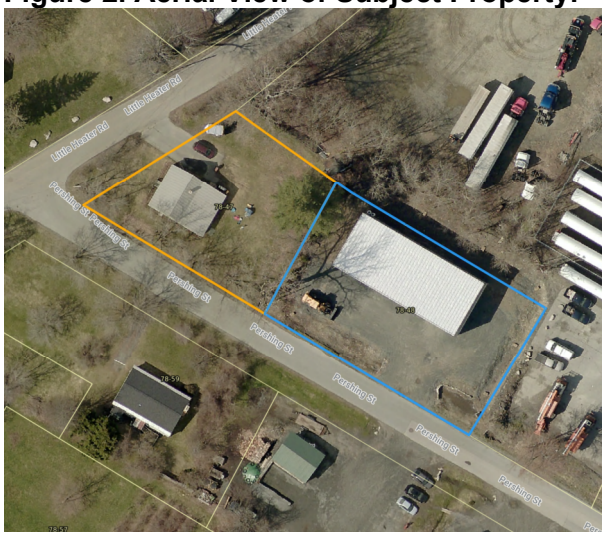


Figure 3. Newly installed pavement at the subject property.



STAFF COMMENTS

PLANNING

I. GENERAL COMMENTS:

a. As a condition of approval, staff recommends that the Planning Board require that the property be brought into compliance with the existing site plan approval from 2017 (attached), including for example, installation of the stockade fencing to shield the outdoor storage area.

b. The applicant has requested a waiver from Section 6.5.D.5 which requires sidewalks along the property's frontage. Staff recommends that a sidewalk at least be installed along the Little Heater Road frontage.

c. There is a large amount of paved surface to the south and east of the existing building. The plans should more clearly depict the uses of the areas and indicate that they will not be used for vehicle storage or parking.

d. Staff recommends that the Board consider restricting overnight parking of vehicles. Based on the description of the applicant's use during the hearing for the car wash Conditional Use Permit application, it doesn't appear that overnight parking is required.

II. SITE PLAN REVIEW REGULATIONS:

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.

Waiver Requests

Pursuant to Section 7.1 ("Waiver of Regulations"), the applicant has requested waivers from certain provisions of the Site Plan Review Regulations, as set forth in the attached Application for Waivers and as listed below:

- **Section 6.2.E.1** – parking lot shading requirements
  - *Note that this waiver is not required as the plans appear to comply with Section 6.2.E.1*
- **Partial Waiver of Section 6.6.E.** – stormwater design general requirements
- **Section 6.5.D.5** ***(incorrectly identified as 6.5.B.4 on the applicant's Application for Waivers)*** – requiring sidewalks along the property's frontage

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.

As noted above under "Completeness Review", staff has identified additional requirements of the Site Plan Review Regulations with respect to which the applicant will either need to demonstrate compliance with or request a waiver (or waivers).

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.

SECTION 6 – DESIGN AND CONSTRUCTION REQUIREMENTS

6.2 (Landscaping Standards): The applicants have submitted a landscaping plan for the development area 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.

6.6 (Stormwater Management): The applicants' proposed stormwater management system is depicted on Sheets 9 and 10 of the plan set. As noted above under "completeness review" and the Engineering/Public Works comments below, additional information is required in order to verify compliance with Section 6.6.

6.7 (Lighting): The applicants have 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 (except as noted below). The applicant is proposing to install 2 pole-mounted light fixtures in the parking lot and 5-wall mounted light fixtures on the proposed building. The proposed lighting consists of LED fully-cut off fixtures. The applicant has provided a lighting plan that shows that the proposed lighting trespass complies with the current lighting standards. The applicant has not provided the uniformity ratio for the exterior parking area, but it appears that the area should not exceed the 4:1 ratio uniformity ratio. Staff recommends that the applicant update the lighting plan to reflect the uniformity ratio for the site.

6.8 (Off-Site Improvements): The applicant does not propose any off-site improvements.

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.*

CITY ASSESSOR
No comment at this time.

BUILDING INSPECTOR
No comment at this time.

ENGINEERING/PUBLIC WORKS

Staff recommends that the applicant satisfactorily address the following comments of the City Engineer prior to the close of the public hearing:

1. The proposed infiltration system does not appear to have a controlled emergency overflow discharge. It is noted that there is no closed drainage system within the nearby public streets. The applicant has indicated that the overflow will flow out of the catch basins into nearby drainage ditches in larger storm events. Staff recommends that a better-controlled overflow system be incorporated consistent with Section 6.6.E.4 of the Site Plan Review Regulations. It is noted that the applicant has requested a partial waiver from 6.6.E ("Design Standards-General Standards"). It is not clear from which of the Design Standards the Applicant is requesting a waiver. Nonetheless, staff does not support the waiver request as the basis of the drainage design relies heavily on several of the elements required by Section 6.6.E including using the observed field conditions as the basis of design and controlling stormwater in flooding conditions to the extent possible.

2. Estimate Seasonal High Water Table (ESHWT) information, soil information, and soil Saturated Hydraulic Conductivity (Ksat) information is required to be submitted for proposed stormwater infiltration systems as noted in Section 6.6.E.9 of the Site Plan Review Regulations (SPRR). Also requested is the noted data, collection methodologies, any test pits logs/results, published soils data, and overall result and conclusions to the drainage narrative. This information is necessary for review as it is typically the basis of design for stormwater infiltration practices.

3. The site plans should note and show the Base Flood Plain elevation.

4. A painted crosswalk detail shown on Sheet D-1, however, no crosswalk is shown on the site plan.

5. A sidewalk detail shown on sheet D-1, no sidewalk is shown on the site plan.

6. The applicant appears to show bollards in the City Right of Way (ROW). If this is the case, the applicant will be required to file an Excavation Permit with the Department of Public Works (DPW). However, DPW would not support the placement of bollards in the City's ROW.

7. It is noted that this property has filed a floodplain application for review by the City, which is currently under review.

8. It is noted that this property has filed a driveway permit application for review by the City, which is currently under review.

FIRE DEPARTMENT
Planning staff has provided the plans to the Fire Department and anticipates receiving written comment prior to the February 14th hearing.

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:

Conditions to be Satisfied Prior to Any Construction Activities

1. The applicants shall make the following revisions to the plan set to the satisfaction of the Planning and Development Department and the City Engineer:
    a) Add a sidewalk design and details along the Little Heater Road frontage.
    b) Update the lighting plan to identify the uniformity ratio for the parking area.
    c) Add a note to the plan to prohibit the overnight parking of vehicles.
    d) Add a note to the plan to prohibit the parking of vehicles except within the designated parking spaces as shown on the plan.
    e) Amend the cover sheet to provide description of plan revisions (5.1.E.4.d).

    The applicants shall provide the Planning and Development Department with one (1) full size copy of the revised plan set, and a digital copy of the revised plan set saved in a PDF-A format for archival purposes.

2. All engineering review fees shall be paid in full as required by Section 4.7.E.1 of the Site Plan Review Regulations.

3. The applicant shall apply for and obtain a Building Permit and a Zoning Permit per Section 901.1 of the Zoning Ordinance.

4. The applicant shall apply for and be granted a Floodplain Permit pursuant to Section 402 of the Zoning Ordinance and Chapter 74 of the City Code.

5. The applicant shall obtain a Driveway Permit and, for any site work in the public right-of-way, an Excavation Permit from the Department of Public Works prior to any work in the right-of-way.

6. The applicant shall obtain or update (if appropriate) any required State approvals.

Conditions to be Satisfied Prior to the Issuance of a Certificate of Occupancy

7. The applicant shall verify that the property has been brought into compliance with the Planning Board's May 7, 2017 Notice of Action and approved site plan for PB2017-12-SPR, including without limitation, installation of the stockade fencing to shield the outdoor storage area.

8. 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 Subdivision Regulations and Site Plan Review Regulations.

General Conditions

9. In lieu of engaging a third-party, the applicant shall coordinate with the City Engineer to observe the installation of the stormwater system.

10. 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.

11. The applicant shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.

12. 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).

Attachment
cc: Johanna Cicotte (jcicotte1@aol.com)
Dan Nash (advancedgeomatics@comcast.net)
File

NOTICE OF ACTION
LEBANON PLANNING BOARD

Notice is hereby given that on **May 8, 2017**, the following action was taken by a majority of the Lebanon Planning Board in accordance with the City of Lebanon Site Plan Review Regulations.

Carl Porter moved that the Lebanon Planning Board finds the application **9 PERSHING STREET, LLC** for site plan review, #PB2017-12-SPR, is complete enough to accept jurisdiction and commence review.

The motion was seconded by Seconded by Sarah Welsch. The vote on the motion was unanimous in favor.

Notice is hereby given that on **May 8, 2017**, the following action was taken by a majority of the Lebanon Planning Board in accordance with the City of Lebanon Site Plan Review Regulations.

Carl Porter moved that the Lebanon Planning Board **approve** the application **9 PERSHING STREET, LLC**, for a Site Plan Review to construct a 3,490-square-foot building, with associated site improvements, for a contractor's yard at 9 Pershing Street, Tax Map 78, Lot 48, Lebanon, NH, in the IND-L zone, #PB2017-12-SPR, as shown on a site plan titled "Site Plan for 9 Pershing Street, LLC," prepared by Schall Engineering, P.C. and Rockwood Land Services, LLC, dated April 6, 2017, and revised April 19, 2017, including any and all supplemental submissions, and testimony provided during the public hearing, with the following conditions:

1. The applicant shall provide a digital record drawing (CAD .dwg format using NH State Plane Coordinate system) to the Planning Office prior to the issuance of the Final Certificate of Occupancy.

2. The applicant shall implement and maintain NHDES Site Specific Best Management Practices before, during, and after construction.

3. Prior to the issuance of the Certificate of Occupancy, the applicant shall provide as-built plans, to the satisfaction of the Department of Public Works.

4. The construction of new building space shall be subject to City of Lebanon Impact Fees, pursuant to Section 213 of the Zoning Ordinance. The Impact Fee shall be calculated at the time of Building Permit issuance based on the Impact Fee Schedule adopted on May 23, 2016, and such fees shall be due and payable at the time of issuance of a Certificate of Occupancy. 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.

5. Prior to the issuance of a Building Permit, the applicant shall work with the Department of Public Works for the purpose of calculating water and sewer flows, the amount of any required utility connection fees, and to verify whether the application is subject to Chapter 181 of the City Code (Water and Sewer Main Extensions).

6. Prior to the issuance of a Building Permit, the applicant shall apply for and be granted a Floodplain Permit by the City Engineer.

7. The applicant shall obtain an Excavation Permit from the Department of Public Works for any site work in the public right-of-way prior to any work in the right-of-way.

8. The applicant shall obtain a Driveway Permit from the Department of Public Works for the installation of a new driveway prior to any work in the right of-way.

9. Prior to the issuance of a building permit for the project, the applicant shall provide an updated lighting plan identifying the uniformity ratio for the exterior parking area, to the satisfaction of the Planning Office.

10. The applicant shall provide additional perimeter landscaping along the western perimeter boundary as appropriate to the site, to the satisfaction of the Planning Office.

The Lebanon Planning Board approve the waivers as requested by the applicant (Sections 5.1.E(8), 5.1.E(15), and 6.6 of the Site Plan Review Regulations).

The motion was seconded by Lewis Greenstein. The vote on the motion was unanimous in favor.

SIGNED: _____DATE:_____
The City of Lebanon, Planning Board Chair

Notes

(1) THIS PLAN IS INTENDED FOR PERMITTING PURPOSES ONLY. PARCEL LINES, EASEMENTS AND OTHER LINES REPRESENTATIVE OF POSSIBLE OWNERSHIP SHOWN ON THIS PLAN ARE FOR PERMITTING PURPOSES ONLY. THEY DO NOT DEFINE LEGAL RIGHTS OR MEET THE LEGAL REQUIREMENTS OR STANDARDS FOR A BOUNDARY SURVEY PLAN AND SHALL NOT BE USED AS THE BASIS OF ANY LAND TRANSFER, EASEMENT OR ESTABLISHMENT OF PROPERTY RIGHTS AND OR REQUIRED SETBACKS THEREFROM.

(2) SCHAAL ENGINEERING, P.C. HAS PROFESSIONAL RESPONSIBILITY FOR GRADING AND STORM DRAINAGE ONLY.

(3) ELEVATIONS REFERENCED TO NGVD 1929 DATUM DERIVED WITH GPS RTK OBSERVATIONS UTILIZING VT CORS STATION VTWR.

(4) NORTH ORIENTATION REFERENCED TO NH STATE PLANE GRID NORTH DERIVED WITH GPS RTK OBSERVATIONS UTILIZING VT CORS STATION VTWR.

(5) NO WETLANDS WITNESSED OR LOCATED BY ROCKWOOD LAND SERVICES, LLC.

(6) EXISTING UTILITIES ESTABLISHED FROM LIMITED FIELD OBSERVATIONS AND ARE ASSUMED OR APPROXIMATE AND TO BE USED AS A GENERAL GUIDE ONLY. CRITICAL POINT OF CONNECTIONS OR CROSSINGS SHALL BE HORIZONTALLY AND VERTICALLY VERIFIED PRIOR TO CONSTRUCTION.

(7) CONTRACTOR SHALL CONTACT INVOLVED UTILITIES AND MAKE ARRANGEMENTS TO HAVE LINES ACCURATELY MARKED AND COORDINATE THEIR RELOCATION AND OR STABILIZATION THROUGH CONSTRUCTION.

(8) CONTRACTOR SHALL NOTIFY THE CITY OF LEBANON DEPARTMENT OF PUBLIC WORKS AND DIG-SAFE A MINIMUM OF 5 BUSINESS DAYS PRIOR TO COMMENCING ANY EXPLORATORY EXCAVATIONS OR INSTALLATION RELATED EXCAVATIONS.

(9) CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL ALONG PERSHING STREET DURING CONSTRUCTION AS NEEDED OR REQUIRED BY THE CITY OF LEBANON.

(10) CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION OF ANY DISCREPANCIES BETWEEN FIELD DATA AND PLANS. CONSTRUCTION SHALL NOT COMMENCE UNTIL AUTHORIZED BY THE ENGINEER IN THE EVENT OF DISCREPANCIES.

(11) THE SUBJECT PARCEL IS IN LEBANON'S LIGHT INDUSTRIAL DISTRICT (IND-L). THE CURRENT MINIMUM LOT REQUIREMENTS ARE: 2 ACRES WITH 200 FT OF FRONTAGE AND SETBACK OF FRONT 40 FT, SIDE 20 FT AND REAR 20 FT. CITY WATER AND SEWER LINES RUN WITHIN PERSHING STREET.

(12) OVERHEAD WIRES MEANDER ALONG PERSHING STREET. THE PARCEL MAY BE SUBJECT TO UTILITY EASEMENTS.

(13) THE SUBJECT PARCEL IS WITHIN THE 1% FLOOD LIMITS, E.EVATION 583 AS SHOWN ON FIRM MAP NUMBER 33009C0913E.

(14) NO EXTERIOR TRASH STORAGE ON-SITE.

(15) NEW WORK IDENTIFIED BY: NEW WORK

(16) ZONING DESIGNATION OF LOT: LIGHT INDUSTRIAL (IND-L)

(17) ASSESSOR'S LOT DESIGNATION: TAX MAP 78, LOT 48

(18) AREA OF LOT: 0.267 ACRES

(19a) EXISTING GROSS FLOOR AREA: 0 SQ. FT. (PREVIOUSLY DEMOLISHED)
(19b) PROPOSED GROSS FLOOR AREA: 3,420 SQ. FT.

(20a) NUMBER OF EXISTING PARKING SPACES: 0 SPACES
(20b) NUMBER PROPOSED PARKING SPACES: 2 EXTERIOR/ 3 INTERIOR

(21) NUMBER OF LOADING SPACES: NONE PROPOSED

(22) MAXIMUM HEIGHT OF BUILDINGS: 65'
a. HEIGHT OF EXISTING BUILDING: 0 FT. (PREVIOUSLY DEMOLISHED)
b. HEIGHT OF PROPOSED BUILDING: 22 FT. MAX.

(23) NUMBER OF STORIES/GROSS AREA EACH: 1 STORY HIGH/ 3,420 SQ. FT.

(24) PROPOSED USE: CONTRACTORS YARD WITH GARAGE AND STORAGE STRUCTURE

(25) REQUIRED AND PROPOSED BUILDING SETBACKS

	FRONT	W. SIDE	E. SIDE	REAR
REQUIRED	40'	20'	20'	20'
PROVIDED	41.4'	24.8'	44.7'	20.1'

(26) MAXIMUM ALLOWABLE BUILDING COVERAGE: 50% LOT AREA
a. EXISTING COVERAGE: 0% (PREVIOUSLY DEMOLISHED)
b. PROPOSED: 29.4%

(27) APPLICABLE OVERLAY DISTRICTS: LOT IS SUBJECT TO THE FLOOD PLAIN OVERLAY DISTRICT

(28) IMPERVIOUS AREA: 7,686 SQ. FT. OR 65.9% OF THE LOT AREA

Legend

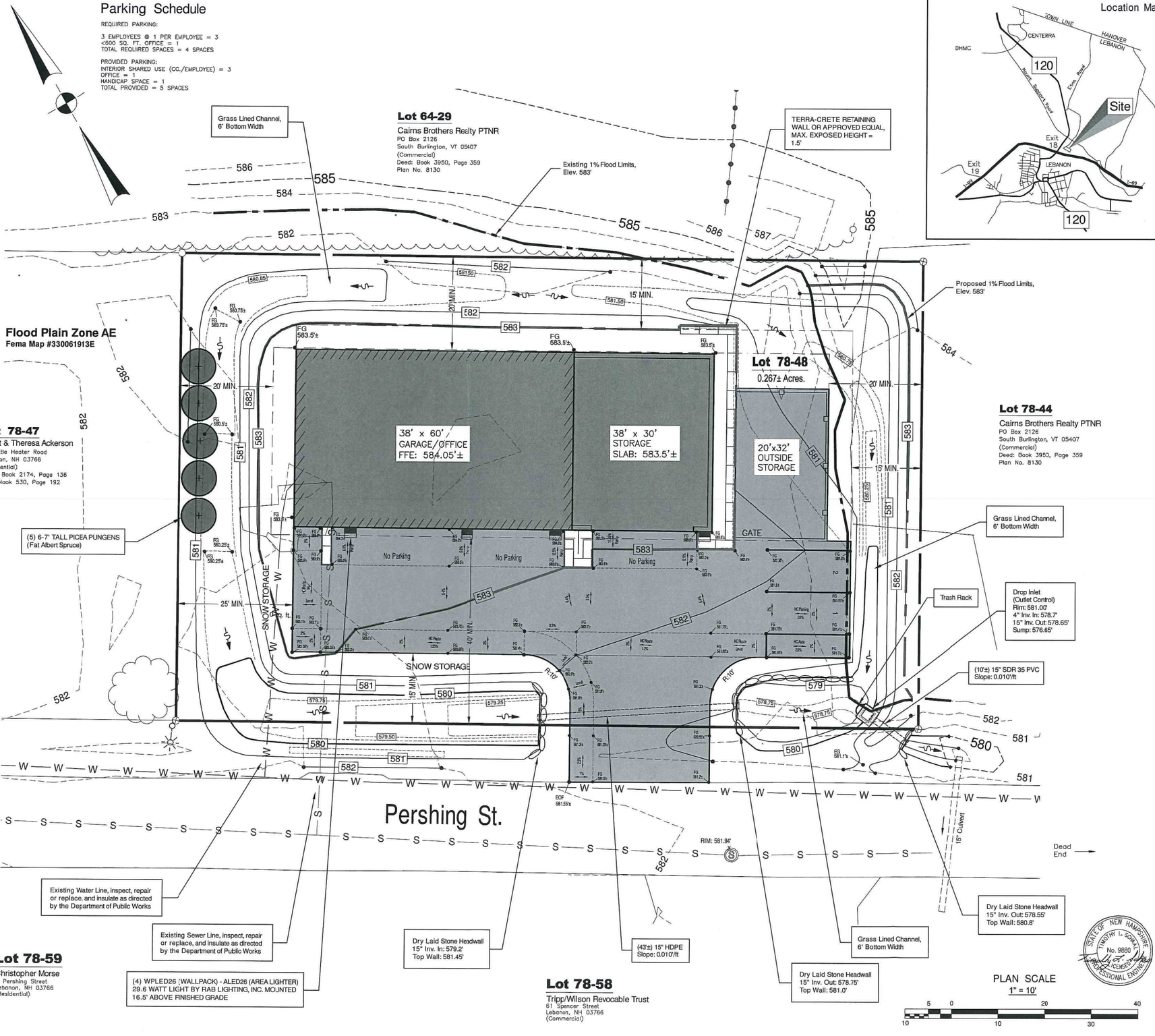
- UTILITY POLE
- STREET LIGHT
- SEWER MANHOLE
- PROPOSED DROP INLET
- 30 WATT LED AREA LIGHT
- DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- APPROXIMATE PARCEL LINE
- FLOOD PLAIN LIMITS
- APPROXIMATE OVERHEAD UTILITIES (OHU)
- CHAIN LINK FENCE
- APPROXIMATE WATER LINE (W)
- APPROXIMATE SEWER LINE (S)
- CONTOUR LINE (580)
- PROPOSED FLOOD PLAIN LIMITS
- PROPOSED CONTOUR LINE (580)
- PROPOSED STOCKADE FENCE

Parking Schedule

REQUIRED PARKING:

3 EMPLOYEES @ 1 PER EMPLOYEE = 3
<600 SQ. FT. OFFICE = 1
TOTAL REQUIRED SPACES = 4 SPACES

PROVIDED PARKING:
INTERIOR SHARED USE (CC./EMPLOYEE) = 3
OFFICE = 1
HANDICAP SPACE = 1
TOTAL PROVIDED = 5 SPACES



PLAN SCALE
1" = 10'

5 0 20 40
10 10 30

Rockwood Land Services, LLC
VERMONT AND NEW HAMPSHIRE LAND SURVEYOR
24 COBB HILL ROAD, HARTLAND, VERMONT 05048
TELEPHONE: (802) 436-2930
EMAIL: rockls@vermontel.net

SCHAAL ENGINEERING, P.C.
451 VALLEY VIEW ROAD
WHITE RIVER JUNCTION • VERMONT 05001
TEL: (802) 295-2002
EMAIL: tschool@vtinet.com

REV.	DESCRIPTION	BY:	DATE:
1	HANDICAP PARKING/ACCESS ROUTES	C.D.H.	4/12/17
2	OUTSIDE STORAGE/FENCING, PARKING SCHEDULE	C.D.H.	4/19/17

Site Plan
For
9 Pershing Street, LLC
9 Pershing Street
City of Lebanon
Grafton County, New Hampshire

DRAWN BY:	CHECKED BY:	DATE:	PROJ. NO.
C.D.H.	T.W.R./ T.L.S.	4/06/17	1132

STATE OF NEW HAMPSHIRE TIMOTHY L. SCHAAL No. 9880 LICENSED PROFESSIONAL ENGINEER

C1
SHEET NUMBER

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: Johanna M. Cicotte TEL.#: Tel#: 603-448-6363

MAILING ADDRESS: Edwards Properties, LLC, PO Box 600, Lebanon, NH 03766

E-MAIL ADDRESS: jcicotte1@aol.com

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Dan Nash TEL.#: 802-356-4928

MAILING ADDRESS: 105 Bank St, Lebanon, NH 03766

E-MAIL ADDRESS: AdvancedGeomatics@comcast.net

PROJECT LOCATION:

TAX MAP #: 78 LOT#: 48 PLOT #: ZONE: IND-L

STREET ADDRESS OF PROJECT: 9 Pershing Street

IS THIS PROPERTY LOCATED IN THE: **WETLANDS** ☐ YES ☒ NO **HISTORIC DISTRICT** ☐ YES ☒ NO

FLOOD PLAIN ☒ YES ☐ NO

SCOPE OF PROJECT:

Expand paved parking for car wash.

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: car wash

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 14 Feb, 2022, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: _____ DATE: 1/10/22

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: 1/10/22

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	FEE - $ AMOUNT	DATE PAID	VOUCHER #
1-10-22	78/48	PB2022-10-SPR	$389.24	1-10-22	18602

AGD
Advanced Geomatics
& Design

10 January 2022

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Site Plan Amendment Lot 78-48
Pershing Street

Dear Mr. Corwin:

Edwards Properties, LLC owns the project parcel on Pershing Street. The site was a former contractors yard for Hess Maintenance. The building and paved apron around the building are existing and on former Lot 78-48. A residential structure and garage on Lot 78-47 were removed and the lots merged. The site contractor removed the buildings, foundations, roots and other deleterious materials. The soil was replaced with a sandy/gravely soil material, a portion was paved, and the remainder was loamed, seeded and mulched. Approximately 11,376sf of pavement was added. The pavement was placed without getting Site plan amendment approval. This application is intended to correct that action and legitimize the additional paved area.

The use proposed, car wash, is a use allowed by Conditional Use permit in the IND-L zone. Applicant has applied for a CU permit; the application is to be heard by the board on 10Jan22. The owner of the car wash, Edwards Properties, LLC, has entered into a contract with a third-party to provide car wash services and the car wash will not be open or available for general use by the public.

The applicant contacted the city prior to utilizing the facility as a car wash. Applicant was instructed to install a grit/oil separator. This device removes sand and grit, as well as oil and grease from the wastewater flow. These components are undesirable in the sewer system. This device was installed and approved by the city. Carwashing was done for a short while before it was discovered that the operation required a CU permit. The use has been halted while the review and approval process is underway.

The elevation views of the existing building are photographs, as architectural drawings are not available. There will be no changes to the structure of the building.

Lighting is proposed to be minimal. Lighting for user access will be motion activated. Some low level lighting will be provided for security. All lighting will be down lit LED.

The proposed landscaping addresses the lot area merged to the existing, approved site. It does not address the existing building. The proposed site plan does propose to landscape the west side of the building. Approximately 2,295sf of paving will have to be removed to provide the required 15' landscape area around the new paved area.

The snow storage will be on several corners of the site. Excess snow will be hauled off.

Table 607.2 stipulates parking for automotive services at 4 spaces per bay. This building has 3 single bay and one double bay for a total of 5 bays. This places required parking at 20 spaces. With the 120% allowance, the 24 spaces proposed meet the parking requirements.

The existing site was prepared through an approved site plan. That site plan included a stormwater system in the SE corner of the property. It appears to have been functioning adequately. The proposed plan addresses the new impervious area created by the new paved area.

Regarding traffic, we anticipate an extremely low trip generation from this site.

Please let us know if you need any additional materials to support this request.

Sincerely,

Daniel A. Nash, PE
Principal

Attached:
-Support Statement
-Application
-Fee calc
-Fee check
-Abutters
-Checklist
-Waivers
-Drain Report (separate)
-OMP (separate)

CC: Edwards Properties

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AGD
Advanced Geomatics & Design

10 January 2022

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Support Statement
Site Plan Lot 78-48
Pershing Street

Dear Mr. Corwin:

We provide the following support statement information:

1. Consultants. The team members are listed in the abutters list.
2. Restrictions. We are not aware of any conservation, preservation, or agricultural preservation restrictions on the subject parcel.
3. Utilities. The site is currently served by electric, telephone, and cable services.
4. Zoning. The proposed use is allowed by Conditional Use permit, to be heard by the Planning Board on 10Jan2022.
5. Drainage. The site includes an existing stormwater system for the former contractors yard. The proposed plan includes a drainage recharge facility for the new paving that reduces overall site runoff.
6. Timetable. We anticipate a Spring'22 construction start. The site modifications are scheduled to be complete by Fall'22.
7. Fire Protection. The site is a low hazard use.
8. Water and Sewer. The site is served by municipal water and sewer. A grit/oil separator was installed at city request in Oct '21.
9. Waivers. Waiver requests will be provided under separate cover.

Sincerely,

Daniel A. Nash, PE
Principal

CC: Edwards Properties

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AGD
Advanced Geomatics & Design

24 January 2022

Tim Corwin, Planning Office
City of Lebanon
51 North Park Street
Lebanon, NH 03766

Re: Site Plan Amendment Lot 78-48
Pershing Street

Dear Mr. Corwin:

Edwards Properties, LLC has submitted revised plans separately.

We offer the following comments to your 14Jan22 review email:

-Parking. We disagree with staff's position that this parcel should be considered "other commercial". A car wash is clearly an automotive service. The parking area is for use of the carwash only. It will not be used for inventory storage for the dealership or for dealership employee parking. Sufficient parking is needed to store cars to be washed and to have space for them to be stored until they can be returned to their owners.

-Development area. A line denoting the development area (new paving) has been added to the plans. It separates the new site work from the existing approved site plan.

-Flood plain. The parcel is above the flood plain. The flood plain is at elevation 580.28. Most of the new paving is above elevation 583. There are no new buildings planned. Just the new paving needs a flood permit, which has been submitted and is currently under review.

-New paving. 11,305sf+/- of paving was placed without site plan review. Approximately 3,880sf of that paving will be removed to create landscape spaces and reduce impervious coverage to the minimum needed to support the parking area. 7,425sf+/- of new paving will remain. The owner, at the time, did not think it was a problem to replace the existing impervious (house and driveway) area of 2,199sf+/- with the new paving. Obviously, the owner is now aware approval should have been sought first. The parking spaces have been reduced to 16' and the aisle to 26'.

-Sidewalk. We do not believe this is necessary. There are now sidewalks in the vicinity. There is no longer any neighborhood with pedestrians to use a sidewalk. The area has extremely low traffic, making it reasonably safe for pedestrians to use the roadway. In addition, due to the narrow ROW, a SW cannot be constructed without installing a closed drainage system (no room

for a ditch) and curbing. The closed drain system would have to extend all the way to the interstate fence for it to discharge. Requiring a sidewalk is clearly an unreasonable request.

The elevation views of the existing building are photographs, as architectural drawings are not available. There will be no changes to the structure of the building. This sheet has been removed from the plan set, as you requested.

Lighting is proposed to be minimal. Lighting for user access will be motion activated. Some low level lighting will be provided for security. All lighting will be down lit LED.

The drain easement note on the boundary survey does not appear to directly impact the project parcel. See attached deed.

Updated waiver requests are attached.

Please let us know if you need any additional materials to support this request.

Sincerely,

Daniel A. Nash, PE
Principal

Attached:
-Deed 1916-0429
-Sheet A-1, Elevations (Photos)
-Waivers

CC: Edwards Properties

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City of Lebanon, New Hampshire
APPLICATION FOR WAIVERS

Office Use Only	Date Received: _____	File No.: _____

PROJECT INFORMATION

Name of Applicant: Edwards Properties, LLC, PO Box 600, Lebanon, NH 03766

Project Name: Pershing Street Car Wash

Project Address: 9 Pershing Street

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).]

1. Section 6.2.E.1 (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because _____

A partial waiver is requested. the Eastern portion of the site was previously approved through site plan. the submitted plans comply with landscape requirements

2. Section 6.6.E (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because _____

A partial waiver is requested. the Eastern portion of the site was previously approved through site plan. The existing stormwater system appears to be functioning properly. the new information submitted applies to the newly paved area.

3. Section 6.5.B.4 (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this Section meets (*circle one*) Criteria A / Criteria B because _____

There is no need for a sidewalk in this area. There is no neighborhood to generate pedestrians. There are no connecting sidewalks anywhere near. The ROW has inadequate width to support a sidewalk without a closed drain system. A closed drain system would have to extend to the end of Little Heater Road, well beyond the scope of this project. The closed drain system would also necessitate curbing.

4. Section ___ of the (*circle one*) Site Plan Review / Subdivision Regulations. A Waiver of this 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: _____ Date: 1/10/22
rev. 1/24/22

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: Pershing Street Car Wash	
APPLICANT: Edwards Properties, LLC, PO Box 600, Lebanon, NH 03766	**DATE:** 10Jan22
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.

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]

Plan Requirements	Info. Provided	Waiver Sought
5.1.E(1) - Vicinity sketch (suggested scale: 1" = 500').	☒	N/A
5.1.E(2) - Names and mailing addresses of Applicant; Owner(s) of Record of site; Owners of abutting properties; and Holders of any easements, rights-of-way, or other restrictions.	☒	N/A
5.1.E(3) - 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 to the Board.	☒	N/A
5.1.E(4) - The following information shall be provided on the first page (or cover page, if applicable) of the Site Plan:		
a. Name of the City and County in which the development is proposed;	☒	N/A
b. North arrow;	☒	N/A
c. Scale of the plan;	☒	N/A
d. Date of the plan and of any revisions to the plan; (NOTE: The date on the plan at the time of initial submission for application review shall be included on all subsequent submissions to the City. Any subsequent change(s) to the plan shall include a revision date and description of the revision(s).)	☒	N/A
e. The following basic site information in TABLE FORM:		
1. Zoning designation for subject property;	☒	N/A
2. Tax Map and Lot number(s) for subject property;	☒	N/A
3. Area of lot;	☒	N/A
4. Gross floor area of existing and proposed buildings/additions;	☒	N/A
5. Number of existing and proposed on- and off-street parking spaces as a table. The table must identify (i) the number of required (minimum) parking spaces and the permitted (maximum) number of parking spaces and the calculations for each, (ii) future proposed, and (iii) existing parking capacity. If the site is part of an existing development or subdivision, the master table must provide such information for all related sites and phases, individually and as a project total;	☒	N/A
6. Number of existing and proposed short- and long-term bicycle storage spaces;	N/A	N/A
7. Number of existing and proposed loading spaces;	N/A	N/A
8. Height of existing and proposed buildings/additions;	☒	N/A
9. Number of stories and gross square footage of each;	☒	N/A
10. Proposed use;	☒	N/A
11. Required and proposed front, side, and rear yard setbacks	☒	N/A
12. Maximum allowable lot coverage with existing and proposed calculations;	☒	N/A
13. Indication of whether or not the property is subject to any City Overlay districts (for example, the Wetlands Conservation District or Flood Plain District) or to NHDES Shoreland Water Quality Protection jurisdiction.	☒	N/A
5.1.E(5) - Current survey certified by a land surveyor licensed in NH, depicting perimeter boundaries of the lot(s), with compass bearings, distances, and lot areas, and depicting the location of existing improvements on property.	☒	☐
5.1.E(5) - Width and location of rights-of-way and/or easements on property.	N/A	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
5.1.E(6) - Existing and proposed grades, including topographic contours with spot elevations, (referenced to USGS or FEMA Flood Insurance Rate Map datums, as appropriate) prepared by a professional engineer or land surveyor licensed in NH. (Where grades are less than 20%, contours shall be at 2 ft. intervals; otherwise they shall be at 5 ft. intervals.)	☒	☐
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, if any, 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.	N/A	☐
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	N/A	☐
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. *(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.)*	☒	☐

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, 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.	N/A	☐
5.1.E(15) - 100-yr flood elevation, floodway, and floodplain limits, where relevant.	☒	☐
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, where necessary.	☒	☐
5.1.E(17) - Drainage plans prepared by a professional engineer registered in NH, whose seal and signature shall appear on plan(s).	☒	☐
5.1.E(18) – Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☒	☐
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.	☒	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
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 is granted by the City Engineer.	☒	☐
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.	N/A	☐
5.1.E(23) - For multi-family structures, plans for on-site recreational facilities.	N/A	☐
5.1.E(24) - Plans for fire protection including emergency vehicle turn radius diagrams, if requested by the Lebanon Fire Department.	☒	☐
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.	N/A	☐
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.	N/A	☐

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: _____ 10-Jan 22

(Last Revised 4/19/2021)

CITY OF LEBANON, NH **STORMWATER REVIEW REGULATIONS** **TECHNICAL CHECKLIST**	
PROJECT NAME: Pershing Street Car Wash	
APPLICANT: Edwards Properties, LLC, PO Box 600, Lebanon, NH 03766	**DATE:** 10Jan22

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]

Plan Requirements	Info. Provided	Waiver Sought
6.6.C.1 (1) - 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	☒	☐
6.6.C.1 (2) - 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	N/A	☐

Plan Requirements (cont.)	**Info. Provided**	**Waiver Sought**
g. Plan references and notes (including sequence of soil disturbance)	☒	☐
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.	☒	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate.	☒	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. 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. *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*	☒	☐

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) 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).	☒ ☒ ☒	☐ ☐ ☐
6.6.D - 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: _____ 10 Jan 22

(Last Revised 04/19/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

EASEMENT DEED

Know all men by these presents, that Decalley Enterprises, a New Hampshire General Partnership, having a principal place of business at Heater Road in Lebanon, Grafton County, State of New Hampshire, for consideration paid grants to City of Lebanon, a municipal corporation, duly organized and existing under the laws of the State of New Hampshire and having a mail address of 51 N. Park St., Lebanon, N.H. 03766, with Quitclaim Covenants, a certain easement over property now owned by Decalley Enterprises, located on the southerly side of Heater Road in said Lebanon, N.H., which property is more particularly described as Lot 23-3 on a certain plan entitled "Boundary Line Adjustment Plan Prepared for Decalley Enterprises", done by T & M Associates, Inc. as project no. 181985B on October 3, 1990, a copy of which is on record with the City of Lebanon. Reference is also made to a plan entitled "Revised Site Plan Prepared for Decalley Enterprises", done by T & M Associates, Inc. as project no. 163784A on March 8, 1991, also on record with the City of Lebanon.

By these presents, the City of Lebanon, its successors and assigns shall have the right, in perpetuity, to maintain an existing drain pipe which is shown on the plan entitled "Revised Site Plan Prepared for Decalley Enterprises" (as described above). The drain pipe is shown on said plan as extending from a catch basin at or near property owned by B.P.O.E. Elks, as shown on said plan (on the northerly side of Heater Road), and extending in a southerly direction, generally, across property of Decalley Enterprises to the southerly side of its property.

This easement shall be binding upon the grantor, its successors and assigns. In the event the grantee, its successors and assigns shall utilize this easement, they will leave the property in "as good" condition when they are finished utilizing the easement.

Dated at Lebanon, N.H. this 8th day of May, 1991.

Decalley Enterprises

by: _____
General Partner, duly auth.

0084 13

BK1916 PG0429

The State of New Hampshire
Grafton, ss.

Then came R. Peter Decato, who took oath that the foregoing statements made by him are true to the best of his knowledge and belief and that he had the requisite authority of the partnership to sign this deed. Before me, this May 8, 1991.

Justice of the Peace/Notary Public
DIANNE M. PERKINS, Notary Public
My Commission Expires October 3, 1994

RECEIVED
91 JUN 26 AM 8:35
GRAFTON COUNTY
REGISTRY OF DEEDS

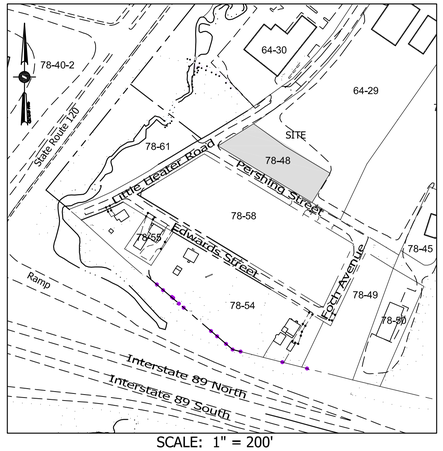
EXAMINED, ATTEST Carol A. Elliott
GRAFTON COUNTY REGISTRY OF DEEDS

BK1916 PG0430

9 PERSHING STREET

LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE

SITE PLAN AMENDMENT



SCALE: 1" = 200'

OWNER/APPLICANT
EDWARDS PROPERTIES, LLC
PO BOX 600
LEBANON, NH 03766

CONSULTANTS

CIVIL ENGINEER
DANIEL A. NASH, PE
ADVANCED GEOMATICS AND DESIGN
PO BOX 512
105 BANK STREET
LEBANON, NH 03766
advancedgeomatics@comcast.net

LAND SURVEYOR
PATON LAND SURVEY, LLC
150 SOUTHRIDGE STREET
SPRINGFIELD, VT 05156

LANDSCAPE DESIGN
MARA LANDSCAPE DESIGN
16 MYRTLE AVENUE
NEWBURYPORT, MA 01950

LIGHTING DESIGN
DEFIANCE ELECTRIC
78 CHOSEN VALE LANE
ENFIELD, NH 03748

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14	EROSION CONTROL DETAILS	D-5

ZONING COMPARISON - IND-L DISTRICT

	EXISTING	PROPOSED	REQUIRED
LOT SIZE	0.65± Acres	0.65 Acres	2 Acres
	28,362sf	28,362sf	
FRONTAGE: PERSHING STREET	309'	309'	200'
FRONT YARD: PERSHING	41'	41'	40'
FRONT YARD: LITTLE HEATER	120'	120'	40'
SIDE YARD:			
EAST	48'	48'	20'
NORTH	20'	20'	20'
BUILDING FOOTPRINT (s.f.):			
EXISTING BUILDING (RES):	1,154sf	-	
EXISTING BUILDING (SHOP):	3,600sf	3,600sf	
TOTAL BUILDING:	4,754sf	3,600sf	
% BLDG.COVERAGE	17%	13%	50%
IMPERVIOUS AREA (sf)	10,793sf	16,039sf	
% IMPERVIOUS COV.	38%	57%	NONE
HEIGHT	30±'	30±'	65' max.
USE: -EXISTING	CONTRACTOR'S YARD		
USE: -PROPOSED	CAR WASH		
PARKING (REG./HC.)	2	23/1	24 (TOTAL)

PARKING PER TABLE 607.2, AUTOMOTIVE SERVICE
REQUIRED PARKING 4SPACES/BAY
3 SINGLE BAYS, PLUS ONE DOUBLE BAY= 5 BAYS
REQUIRED PARKING=4 X 5=20
MAX ALLOWED=120% = 24

NOTES:

1. THIS PARCEL IS SHOWN AS LOT 78-48 THE LEBANON TAX MAPS.
2. THIS PARCEL IS SERVED BY MUNICIPAL WATER AND SEWER.
3. THIS PARCEL IS NOT SUBJECT TO THE WETLANDS OVERLAY DISTRICT.
4. THIS PARCEL IS SUBJECT TO THE FLOOD OVERLAY DISTRICT.
5. SUBJECT PARCEL IS ZONED IND-L.

STATE OF NEW HAMPSHIRE DANIEL A. NASH No. 7937 LICENSED PROFESSIONAL ENGINEER

1/24/2022
~~1/10/2022~~
SITE PLAN AMENDMENT
PN: 21-017

EXISTING LEGEND

	Boundary Corner
	Iron Pipe (Found)
	Rebar (Found)
	Stone Monument (Found)
	Survey Traverse Point
	Survey Control Disk
	Shrub
	Hardwood Tree
	Softwood Tree
C.O.	Cleanout
	Utility Pole
	Light Pole
	Bollard Light
	Light
	Utility Pole Anchor
E	U.g. Electric Junction Box
ET	U.g. Electric Transformer
T	U.g. Telephone Box
C	U.g. Cable Tv Box
	Curb Stop
	Gate Valve
	Fire Hydrant
W	Drilled Well
M	Monitor Well
	Catch Basin
D	Drain Manhole
S	Sewer Manhole
R	Riser
T	Telephone Manhole
E	Electric Manhole
C	Communication Manhole
P	Propane Tank
	Sign

EXISTING LEGEND(CONT.)

X 66.9	Spot Elevation
	Approximate Boundary Line
	Approximate RIght-Of-Way Line
	Existing 1'/2' Contour
760	Existing 5'/10' Contour
	Curb
	Edge Of Pavement
	Edge Of Gravel
	Painted White Line
	Painted Yellow Line
OET	Overhead Electric/Telephone
OHE	Overhead Electric
OHT	Overhead Telephone
UETC	U.g. Electric/Telephone/Cable
	Edge Of Brook/River
	Edge Of Wetland
	Guard Rail
	Stonewall
	Wire Fence
	Chainlink Fence
	Rail Fence
D	Drain Line
UD	Underdrain Line
W	Water Line
S	Sewer Line
FM	Sewer Forcemain
UGE / E	U.g. Electric
UGT	U.g. Telephone
	Edge Of Woods
	Retaining Wall
UGP	U.g. Propane
	Edge Of building

PROPOSED LEGEND

	BOLLARD
C.O.	CLEANOUT
	UTILITY POLE
	UTILITY POLE ANCHOR
	LIGHT POLE
	LIGHT
S	SEWER MANHOLE
D	DRAIN MANHOLE
R	RISER
	CATCH BASIN
	YARD DRAIN
E	ELECTRIC MANHOLE
T	TELEPHONE MANHOLE
C	COMMUNICATION MANHOLE
P	PROPANE TANK
T	U.G. TELEPHONE BOX
C	U.G. CABLE TV BOX
E	U.G. ELECTRIC JUNCTION BOX
ET	U.G. ELECTRIC TRANSFORMER
	GATE VALVE
	CURB STOP
	FIRE HYDRANT
W	DRILLED WELL
	SIGN
5	PARKING SPACE NUMBER
	HANDICAP PARKING SPACE
SWTD	STORM WATER TREATMENT DEVICE
	DETECTABLE SURFACE (TRUNCATED DOME)
×66.93	SPOT ELEVATION
UD	UNDERDRAIN
D	DUMPSTER
BR	BIKE RACK

PROPOSED LEGEND(CONT.)

	DUMPSTER FENCE
	PAINTED/NO PARKING
762	2' CONTOUR
760	10' CONTOUR
	GAS LINE
	DRAIN LINE
	UNDERDRAIN LINE
	WATER LINE
	SEWER LINE
	SEWER FORCEMAIN
	U.G. ELECTRIC
UGT	U.G. TELEPHONE
	U.G. ELECTRIC/TELEPHONE
UETC	U.G. ELECTRIC/TELEPHONE/CABLE
(RET.)	RETAINING WALL
(RET.)	REDI-ROK RETAINING WALL
	CENTERLINE ROAD
	CURB
	EDGE OF WOODS
	LIMIT OF DISTURBED
	BARRIER FENCE
	UNDERGROUND PROPANE TANK
	BUILDING ADDITION
TW = ??	TOP OF WALL ELEVATION
GT	GREASE TRAP/GRIT-OIL SEPARATOR

NOTES:

1. Lower case text on all plan sheets indicates existing data.
2. UPPER CASE TEXT ON ALL PLAN SHEETS INDICATES PROPOSED DATA.

SHEET 2 OF 14

#	REVISIONS	DATE
1	UPDATE	01/24/2022

PERSHING ST CAR WASH
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 9737
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:
DESIGNED:
DRAWN: DAN
CHECKED: DAN
DATE: 1/10/2022

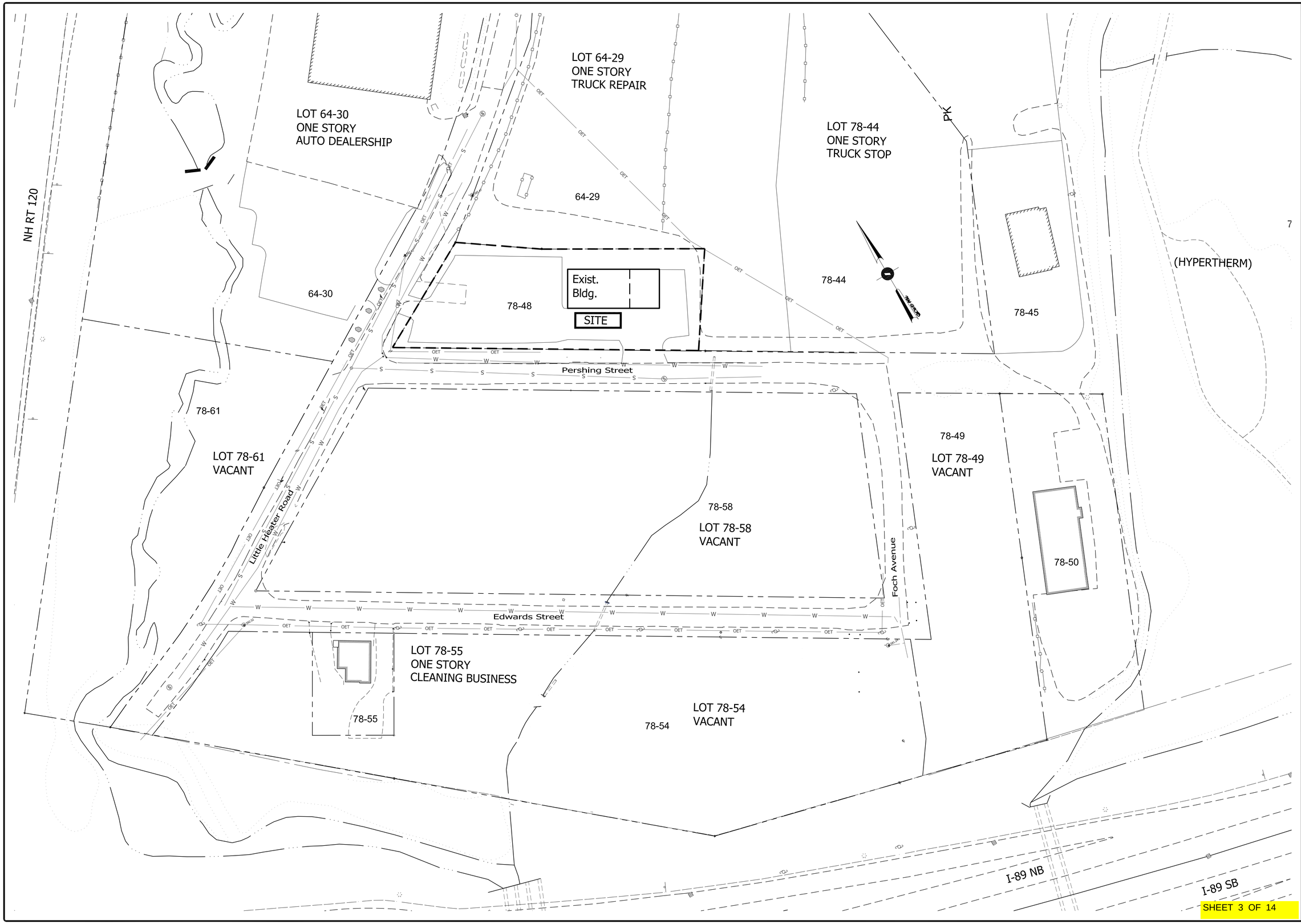
PERSHING ST CAR WASH

LEGEND

G-1

© 2022
ADVANCED GEOMATICS & DESIGN

DWG: 21017\LEGEND



OVERALL PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NEW HAMPSHIRE

#	REVISIONS	DATE
	PATON	

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL A. NASH No. 7937 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SURVEYED:	
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	01/10/2022

EDWARDS PROPERTIES

OVERALL PLAN

OA-1

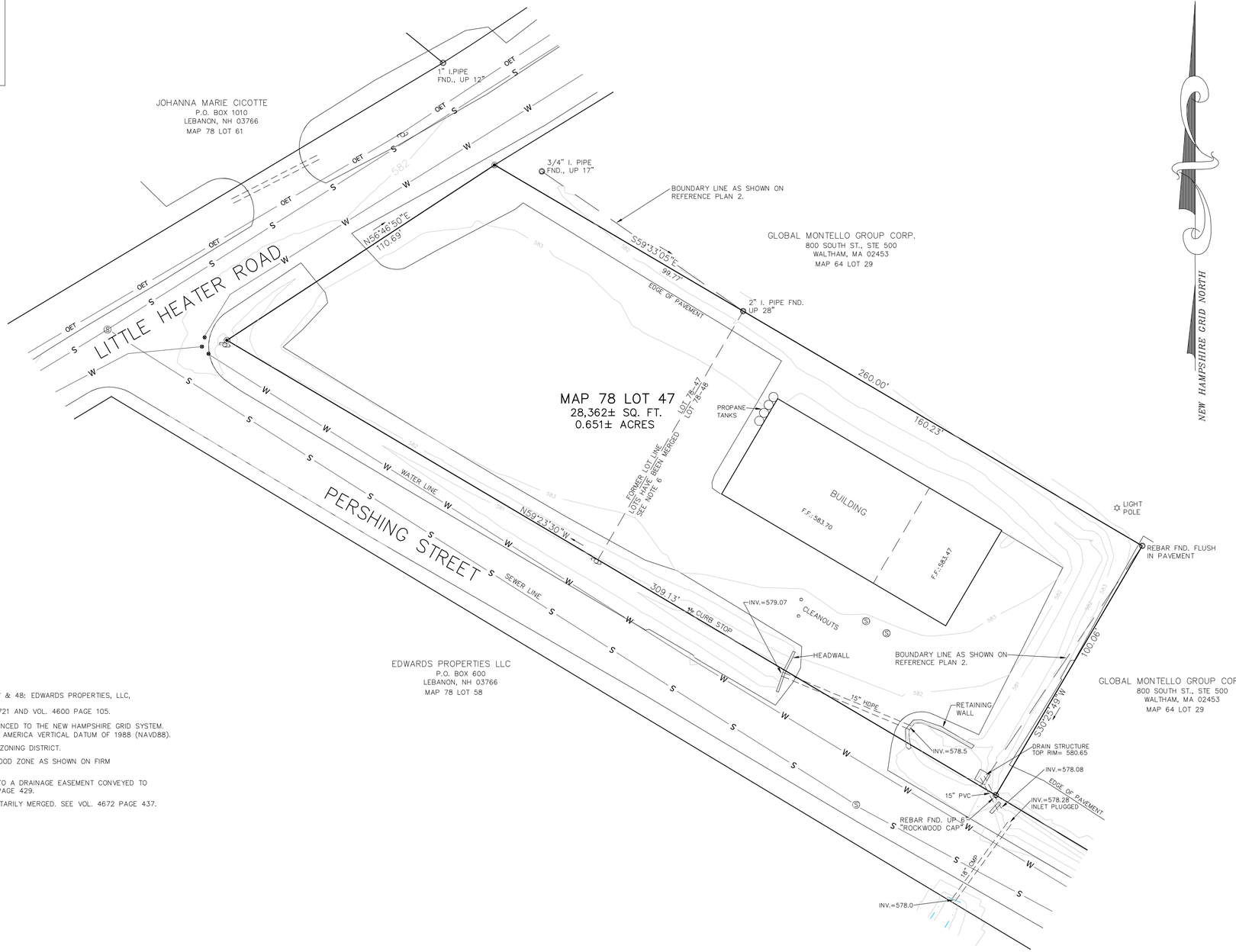
© 2022

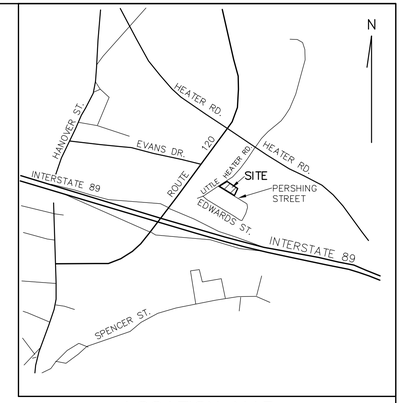
ADVANCED GEOMATICS & DESIGN

DWG: 20010-BA

SHEET 3 OF 14

FOR REGISTRY USE





LOCATION MAP

NOTES

1. OWNER OF RECORD OF MAP 78 LOTS47 & 48: EDWARDS PROPERTIES, LLC, P.O. BOX 600, LEBANON, NH 03766. DEED REFERENCES: VOL. 4583 PAGE 721 AND VOL. 4600 PAGE 105.
2. BEARINGS SHOWN HEREON ARE REFERENCED TO THE NEW HAMPSHIRE GRID SYSTEM. VERTICAL DATUM IS BASED ON NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).
3. THE SUBJECT PARCEL IS IN THE INDL ZONING DISTRICT.
4. THE SUBJECT PARCEL IS IN AN AE FLOOD ZONE AS SHOWN ON FIRM MAP NO. 33009C0913E.
5. THE FORMER LOT 78-47 IS SUBJECT TO A DRAINAGE EASEMENT CONVEYED TO THE CITY OF LEBANON IN VOL. 1916 PAGE 429.
6. LOTS 78-47 AND 78-48 WERE VOLUNTARILY MERGED. SEE VOL. 4672 PAGE 437.

LEGEND

- CONCRETE BOUND FOUND
- IRON PIPE OR PIN FOUND
- REBAR TO BE SET
- BOUNDARY CORNER – UNMARKED
- UTILITY POLE
- OE — OVERHEAD ELECTRIC
- SEWER MANHOLE
- HYDRANT
- WATER GATE VALVE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REFERENCE PLANS

1. "HEATER ROAD PLAT"; DATED JULY 1925; PREPARED BY L.G. BASSO, C.E.; RECORDED IN BOOK 530 PAGE 192 G.C.R.D.
2. "BOUNDARY LINE ADJUSTMENT PLAN PREPARED FOR DECATO BROS., INC., HEATER ROAD, LEBANON, NH"; DATED 10/7/1994; PREPARED BY T & M ASSOCIATES; RECORDED AS PLAN 8130 G.C.R.D.
3. "BOUNDARY SURVEY PLAT FOR 9 PERSHING STREET, LLC, 9 PERSHING ST., LEBANON, NH"; DATED JAN. 10, 2019; PREPARED BY ROCKWOOD LAND SERVICES, LLC; RECORDED AS PLAN 15665 G.C.R.D.

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

DECEMBER 11, 2021
DATE

Christopher T. Paton
LICENSED LAND SURVEYOR (SEAL)

STATE OF NEW HAMPSHIRE — No. 887 — CHRISTOPHER T. PATON — LICENSED LAND SURVEYOR
Christopher T. Paton
SIGNATURE

BOUNDARY AND TOPOGRAPHIC PLAN PREPARED FOR

EDWARDS PROPERTIES, LLC

LITTLE HEATER ROAD & PERSHING STREET
GRAFTON COUNTY, LEBANON, NEW HAMPSHIRE

PREPARED BY

PATON LAND SURVEYING, LLC

150 SOUTHRIDGE ST., SPRINGFIELD, VT 05156

DATED: DEC. 11, 2021	SCALE: 1"=20'
DRAWN BY: CP	CK'D BY CTP
SURVEYED BY: TR, CTP, JM	
PROJ. NO. 2021-282-60	

SHEET 4 OF 14

Edwards Property Plant Schedule					
Qty	Symbol	Botanical Name	Common Name	Size- See Landscape Notes	
	Trees				
5	MP	Malus 'Prairiefire'	Prairiefire crabapple	2.5"-3" Cal.	B&B
8	TC	Tilia cordata 'Greenspire'	Greenspire Littleaf Linden	2.5"-3" Cal.	B&B
	Shrubs:				
		Botanical Name	Common Name	Size	
5	JV	Juniperus virginiana 'Grey Owl'	Grey Owl Juniper	#5	
46	IR	Illex verticillata 'Red Sprite'	Red Sprite Winterberry	#5	
4	IV	Illex verticillata 'Jim Dandy'	Jim Dandy Male Winterberry	#5	
5	RP	Rhododendron PJM	PJM Rhododendron	3-4'	B&B
	Perennials				
		Botanical Name	Common Name	Size	
124	HR	Hemerocalis 'Happy' Returns'	Happy Returns Daylily	1 Gal.	

15' Landscape Requirement	6,553 s.f. (Perimeter around area to be disturbed-new parking area)
Total number of trees required=	11
Total number of trees provided=	13
Total number of shrubs required=	55
Total number of trees/shrubs provided=	73 Plus 124 Daylilies

Parking Lot Shade Requirement	
total parking lot	8,440 s.f.
Number of Shade Trees	8
Total percentage of lot to be shaded	43%

Landscape Notes:

1). Please refer to Engineer's site plan for all UT locations.
Some UT locations are not shown in this viewport for clarity.

2). All new plant material shall be grown to nursery stock.

3). Contractor shall guarantee all plant material for up to one growing season from date of install.

4). Any substitutions made to this plan must be approved by the client and are subject to review by the city of Lebanon Planning Board.

5). All Plantings shall be planted in loam containing 5% of organic material.

6). All Landscape beds shall be cut in and receive 2" of aged dark mulch. Bark mulch shall be kept away from the trunk of the tree.

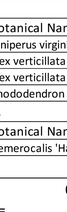
7). Per site plan req. 6.2.B.3 "All new plant material shall be nursery grown stock."

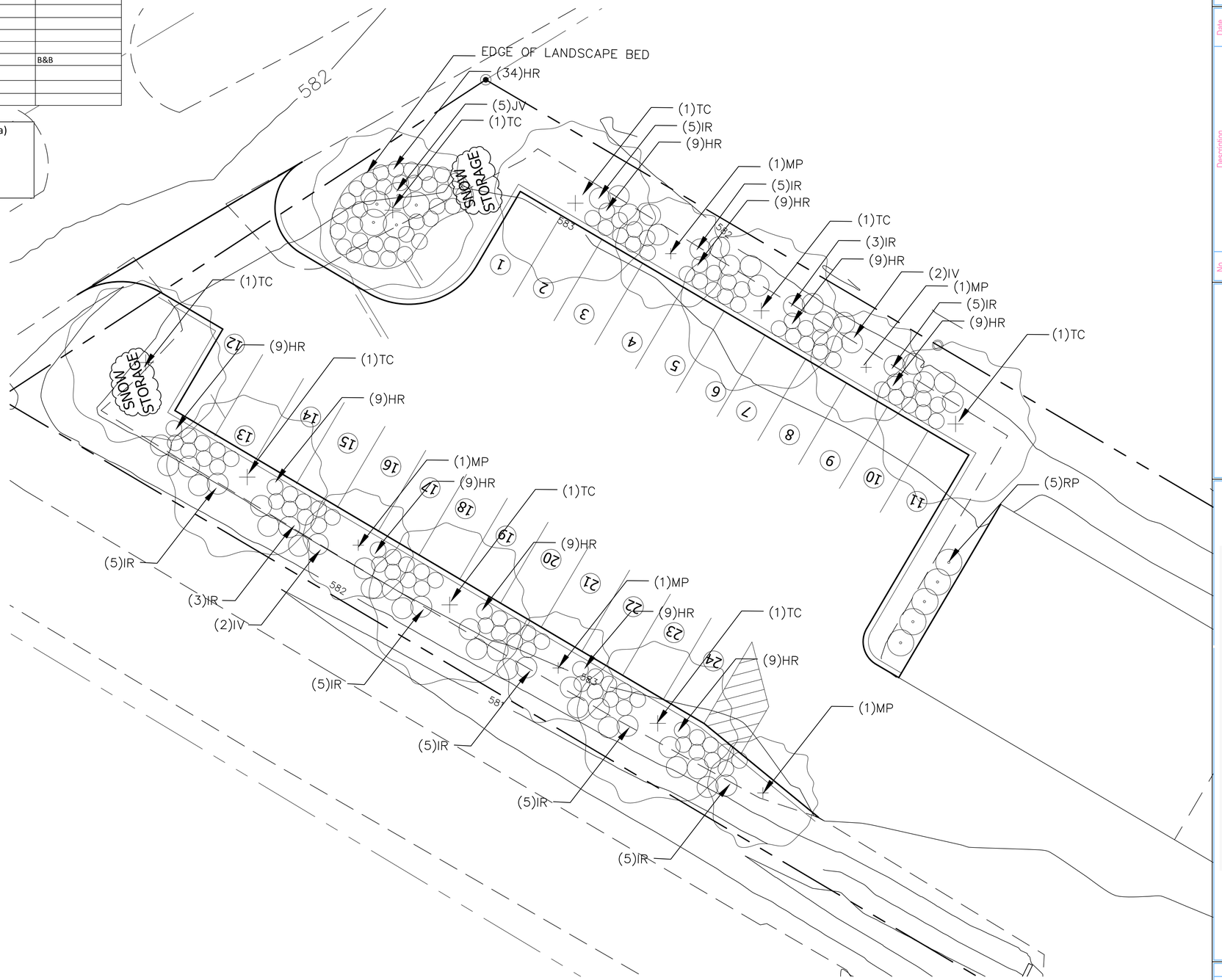
8). Per site plan req. 6.2.B.4 "At the time of planting, all decidious trees shall be a minimum of 2.5-3" in caliper, measured 6" above finish grade level; all evergreen trees shall be a minimum of 6-7' in height. All shrubs shall be 24-30" in height or 18-24" in spread."

9). Per site plan req. 6.2.H.1 "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 an orderly appearance."

10). Per site plan req. 6.2.H.1 "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 an orderly appearance."

11). Per site plan req. 6.2.K "After the issuance of a certificate of occupancy the storage, display, or parking of motor vehicles, boats, mobile homes, trailers, or construction equipment within landscaped areas, buffers, or screens, shown as such on the approved landscape plan is expressly prohibited and a violation of the Notice of Action."





GRAPHIC SCALE

−10 0 5 10 20 60

1 inch =10 ft.

SHEET 5 OF 14

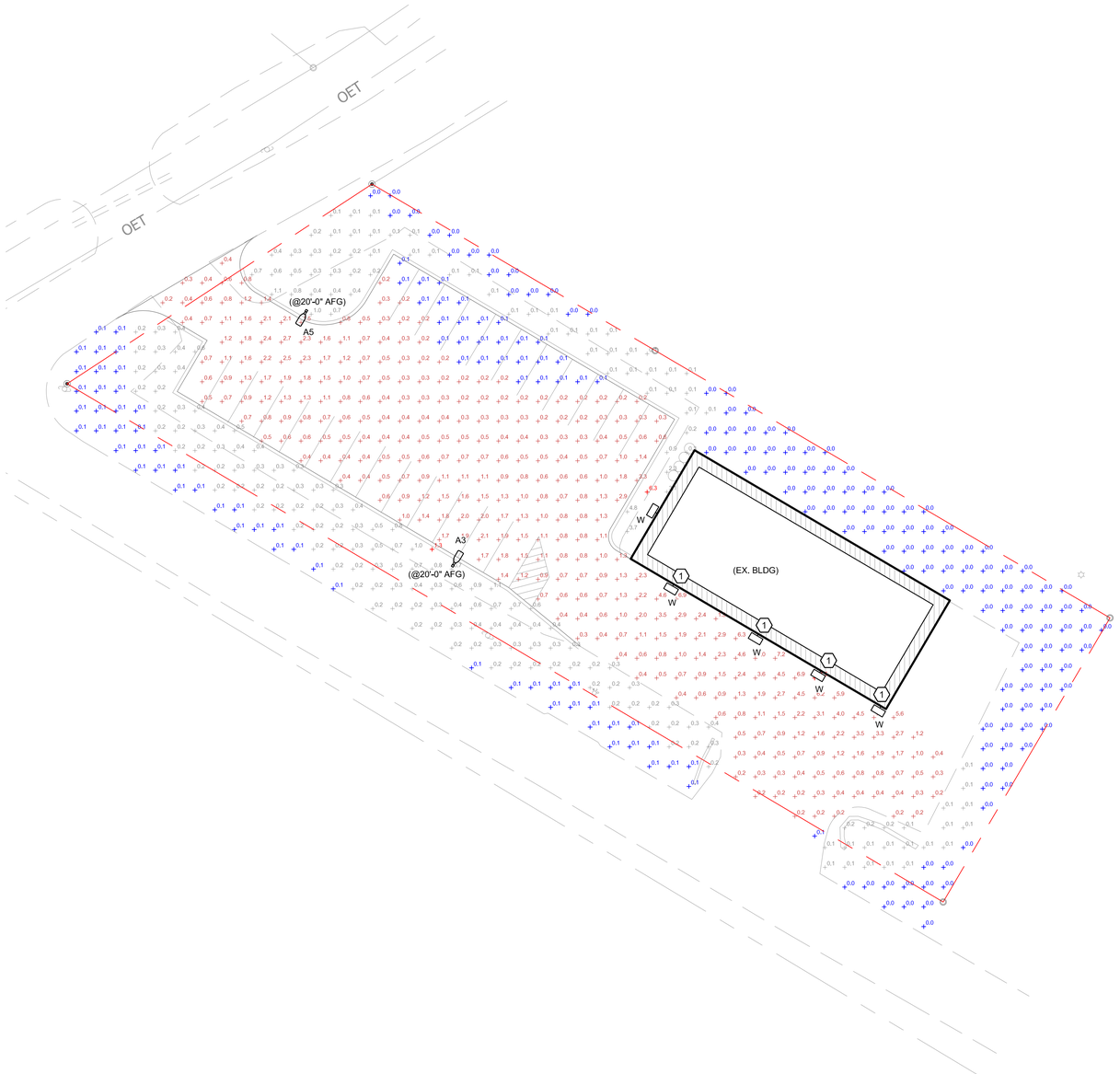
Date
Description
No.

LANDSCAPE PLAN
Prepared for:
Edwards Properties, LLC
Lebanon, NH

Mara landscape design, LLC
16 Myrtle Ave. Newburyport, MA 01950

Scale: 1"
Date: 1/2/

L-1



1 PROPOSED SITE LIGHTING PLAN

SCALE: 1" = 20'-0"

NOTES

1. PROPOSED FIXTURES ARE "FULL CUTOFF" TYPE
2. EXTERIOR FIXTURES TO BE 3000K COLOR TEMPERATURE
3. TYPE "A" FIXTURES ARE CALCULATED AT A MOUNTING HEIGHT OF 20'-0" ABOVE FINISHED GRADE (AFG) AND A SETBACK OF 36" FROM EDGE OF PAVEMENT.
4. BUILDING MOUNTED FIXTURES ARE CALCULATED AT 12'-0" AFG
5. CALCULATION PLANE IS AT GRADE (0'-0" AFG)

KEYED NOTES

(1) EXISTING LOCATION REPLACED WITH NEW

EXTERIOR FIXTURE SCHEDULE

LABEL	QTY	DESCRIPTION	LUMENS	WATTS	COLOR TEMP
A3	1	FULL CUTOFF, VISUAL COMFORT DIFFUSED LED AREA LIGHT WITH TYPE 3 DISTRIBUTION, MTD @ 20'-0" AFG AND INTEGRAL PHOTOCELL/MOTION SENSOR	4,189	38 W	3000K
A5	1	FULL CUTTOF, VISUAL COMFORT DIFFUSED LED AREA LIGHT WITH TYPE 5 DISTRIBUTION, MTD @ 20'-0" AFG AND INTEGRAL PHOTOCELL/MOTION SENSOR	4,550	38 W	3000K
B	5	FULL CUTOFF, LOW GLARE LED WALLPACK MTD @ 12'-0" WITH INTEGRAL PHOTOCELL	2,679	30 W	3000K

EXTERIOR CALCULATED FOOTCANDLES

DESCRIPTION	SYMBOL	AVG	MAX	MIN	*MAX/MIN	*AVG/MIN
EXTERIOR FC @ GRADE	+	1.1 fc	11.5 fc	0.0 fc	N/A	N/A

*UNIFORMITY RATIOS ARE N/A WHEN SHOWING 0.0 FC

SHEET 6 OF 14

DEFIANCE ELECTRIC LLC
SINCE 1978
86 CHOSEN VALE LANE SUITE 202
ENFIELD, NH 03748
P: (603).632.4982
www.DefianceElectric.com

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
1	FOR PERMIT	01/06/22

CLIENT
ADVANCED GEOMATICS & DESIGN
LEBANON, NH

PROJECT
PERSHING STREET
LIGHTING PLANS

DWG TITLE
CALCULATED LIGHTING LEVELS IN FOOTCANDLES (FC)

PROJECT NUMBER N/A
DATE 01/06/22
DRAWN BY T.BOUCHER

L-2

SCALE AS NOTED

IVAT3-45LPA730KU/WS2



Low profile, low glare. Edge-lit technology unlike any other.

Color: Black Weight: 18.7 lbs

Project:	Type:
PERSHING ST	A3
Prepared By:	Date:
T.BOUCHER	1.6.22

Driver Info

Type	Constant Current
120V	0.33A
208V	0.19A
240V	0.17A
277V	0.14A
Input Watts	37.8W

LED Info

Watts	38W
Color Temp	3000K (Warm)
Color Accuracy	80 CRI
L70 Lifespan	100,000 Hours
Lumens	4,189
Efficacy	110.8 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80

California Title 24:

Can be used to conform with the requirements of California Title 24 Part 6.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.
DLC Product Code: PY9VGLB8

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations at 25°C

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IP Rating:

Ingress protection rating of IP66 for dust and water

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Housing:

Precision die-cast aluminum

IES Classification:

The Type III distribution is ideal for roadway, general parking, and other area lighting applications where a larger pool of lighting is required. It is intended to be located near the side of the area, allowing the light to project outward and fill the area.

Mounting:

Universal pole adapter

IVAT3-45LPA730KU/WS2

Technical Specifications (continued)

Construction

Lens:

Diffused Polymethyl Methacrylate (PMMA)

Effective Projected Area:

EPA = 0.61

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

Sensor Specifications

Multi Level Motion Sensor:

*40 ft. diameter coverage from 20 ft. height.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B2 U0 G2

Electrical

Driver:

Class 2, 50/60Hz, 120-277V, 4kV standard, 10kV optional

THD:

9.36% at 120V, 17.01% at 277V

Power Factor:

99% at 120V, 92% at 277V

Dimensions

Features

0-10V Dimming, standard

100,000-Hour LED lifespan

IVAT3-45LPA730KU/WS2

Ordering Matrix

Family	Distribution		Lumen Output	Mounting	CRI/Color Temp	Finish	Voltage/Driver	Sensor Options	Lightcloud Option
IVA	T3	–	45L	PA	730	K	U	/WS2	
	T2 = Type II * T3 = Type III * T4 = Type IV * T5S = Type V Square ^ FT = Forward Throw ^		45L = 4,500 lumens (38W) 75L = 7,500 lumens (67W) 100L = 10,000 lumens (94W) 130L = 13,000 lumens (117W) 1	PA = Universal Pole Mount WM = Wall mount SF = Slipfitter	750 = 70CRI 5000K 740 = 70CRI 4000K 730 = 70CRI 3000K	Z = Bronze W = White G = Roadway Gray K = Black	U = 120-277V 0-10V Dimming H = 347-480V, 0-10V Dimming	Blank = No Options /WS = 8ft lens Wattstopper /WS2 = 20ft lens Wattstopper /WS4 = 40ft lens Wattstopper /7PR = 7-Pin receptacle	Blank = No Lightcloud® /LC = Lightcloud® Controller 2

[1] Applies to Type IV, V Square
[2] Applies 120-277V
[3] All values are nominal with +/- 10% tolerance. See spec sheet for more details.

IVAT5S-45LPA730KU/WS2



Low profile, low glare. Edge-lit technology unlike any other.

Color: Black Weight: 14.4 lbs

Project:	Type:
PERSHING ST	A5
Prepared By:	Date:
T.BOUCHER	1.6.22

Driver Info

Type	Constant Current
120V	0.33A
208V	0.19A
240V	0.17A
277V	0.14A
Input Watts	37.9W

LED Info

Watts	38W
Color Temp	3000K (Warm)
Color Accuracy	80 CRI
L70 Lifespan	100,000 Hours
Lumens	4,550
Efficacy	120.1 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80

California Title 24:

Can be used to conform with the requirements of California Title 24 Part 6.

DLC Listed:

This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities.
DLC Product Code: P2SFQVH5

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations at 25°C

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

IP Rating:

Ingress protection rating of IP66 for dust and water

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Housing:

Precision die-cast aluminum

IES Classification:

Type VS distributes light in a square symmetrical pattern and is meant for large, commercial parking lot lighting as well as areas where sufficient, evenly distributed light is necessary

Mounting:

Universal pole adapter

IVAT5S-45LPA730KU/WS2

Technical Specifications (continued)

Construction

Lens:

Diffused Polymethyl Methacrylate (PMMA)

Effective Projected Area:

EPA = 0.61

Finish:

Formulated for high durability and long-lasting color

Green Technology:

Mercury and UV free. RoHS-compliant components.

Sensor Specifications

Multi Level Motion Sensor:

*40 ft. diameter coverage from 20 ft. height.

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

B2 U0 G1

Electrical

Driver:

Class 2, 50/60Hz, 120-277V, 4kV standard, 10kV optional

THD:

9.13% at 120V, 19.84% at 277V

Power Factor:

98.8% at 120V, 90.2% at 277V

Dimensions

Features

0-10V Dimming, standard

100,000-Hour LED lifespan

IVAT5S-45LPA730KU/WS2

Ordering Matrix

Family	Distribution		Lumen Output	Mounting	CRI/Color Temp	Finish	Voltage/Driver	Sensor Options	Lightcloud Option
IVA	T5S	–	45L	PA	730	K	U	/WS2	
	T2 = Type II * T3 = Type III * T4 = Type IV * T5S = Type V Square ^ FT = Forward Throw ^		45L = 4,500 lumens (38W) 75L = 7,500 lumens (67W) 100L = 10,000 lumens (94W) 130L = 13,000 lumens (117W) 1	PA = Universal Pole Mount WM = Wall mount SF = Slipfitter	750 = 70CRI 5000K 740 = 70CRI 4000K 730 = 70CRI 3000K	Z = Bronze W = White G = Roadway Gray K = Black	U = 120-277V 0-10V Dimming H = 347-480V, 0-10V Dimming	Blank = No Options /WS = 8ft lens Wattstopper /WS2 = 20ft lens Wattstopper /WS4 = 40ft lens Wattstopper /7PR = 7-Pin receptacle	Blank = No Lightcloud® /LC = Lightcloud® Controller 2

[1] Applies to Type IV, V Square
[2] Applies 120-277V
[3] All values are nominal with +/- 10% tolerance. See spec sheet for more details.

W17-30LY/PCU



Ultra-economy wall pack with a sleek, contemporary look.

Color: Bronze Weight: 4.7 lbs

Project:	Type:
PERSHING ST	B
Prepared By:	Date:
T.BOUCHER	1.6.22

Driver Info

Type	Constant Current
120V	0.25A
208V	0.15A
240V	0.13A
277V	0.11A
Input Watts	28.6W

LED Info

Watts	30W
Color Temp	3000K (Warm)
Color Accuracy	82 CRI
L70 Lifespan	50,000 Hours
Lumens	2,679
Efficacy	93.7 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations. Suitable for mounting within 4 feet of the ground.

Electrical

Driver:

Constant Current, Class 2, 120-277V, 50/60Hz, 120V: 0.25A, 208V: 0.15A, 240V: 0.13A, 277V: 0.11A

THD:

3.64% at 120V, 7.15% at 277V

Power Factor:

99.6% at 120V, 95.2% at 277V

Surge Protection:

2.5kV

Note:

All values are typical (tolerance +/- 10%)

Photocell:

120-277V Button photocell included. Photocell is compatible with 120V-277V.

Performance

Lifespan:

50,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

LED Characteristics

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Construction

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Maximum Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Mounting:

Housing contains two (2) conduit entry points, one on each side, and knockout pattern for junction box or direct wall mounting.

Lens:

Glass

W17-30LY/PCU

Technical Specifications (continued)

Construction

Gaskets:

High-temperature silicone

Green Technology:

Mercury and UV free. RoHS-compliant components.

Finish:

Formulated for high durability and long-lasting color

Other

Replacement:

Replaces up to 100W Metal Halide

5 Yr Limited Warranty:

The RAB 5-year, limited warranty covers light output, driver performance and paint finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Trade Agreements Act Compliant:

This product is a product of Cambodia and a "designated country" end product that complies with the Trade Agreements Act

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Dimensions

Features

Ultra-economy wall pack with a sleek, contemporary look

Covers footprint of small HID wall packs

Available in various lumen packages

Ordering Matrix

Family	Lumen Package	Color Temp	Options
W17	30L	Y	/PCU
	30L = Small (2900lm, 30W) 36L = Small (3600lm, 33W) 55L = Medium (5500lm, 50W) 75L = Medium (7500lm, 69W) 90L = Medium (9000lm, 86W) 150L = Large (15000lm, 139W)	Blank = 5000K (Cool) Y = 3000K (Warm)	Blank = No Option /PCU = 120-277V Button Photocell

1 FIXTURE DETAILS - TYPE "A3"

SCALE: N.T.S.

2 FIXTURE DETAILS - TYPE "A5"

SCALE: N.T.S.

3 FIXTURE DETAILS - TYPE "B"

SCALE: N.T.S.

DEFIANCE ELECTRIC LLC
SINCE 1978

86 CHOSEN VALE LANE SUITE 202
ENFIELD, NH 03748
P: (603).632.4982

www.DefianceElectric.com

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
1	FOR PERMIT	01/06/22

CLIENT

ADVANCED GEOMATICS & DESIGN
LEBANON, NH

PROJECT

PERSHING STREET

LIGHTING PLANS

DWG TITLE

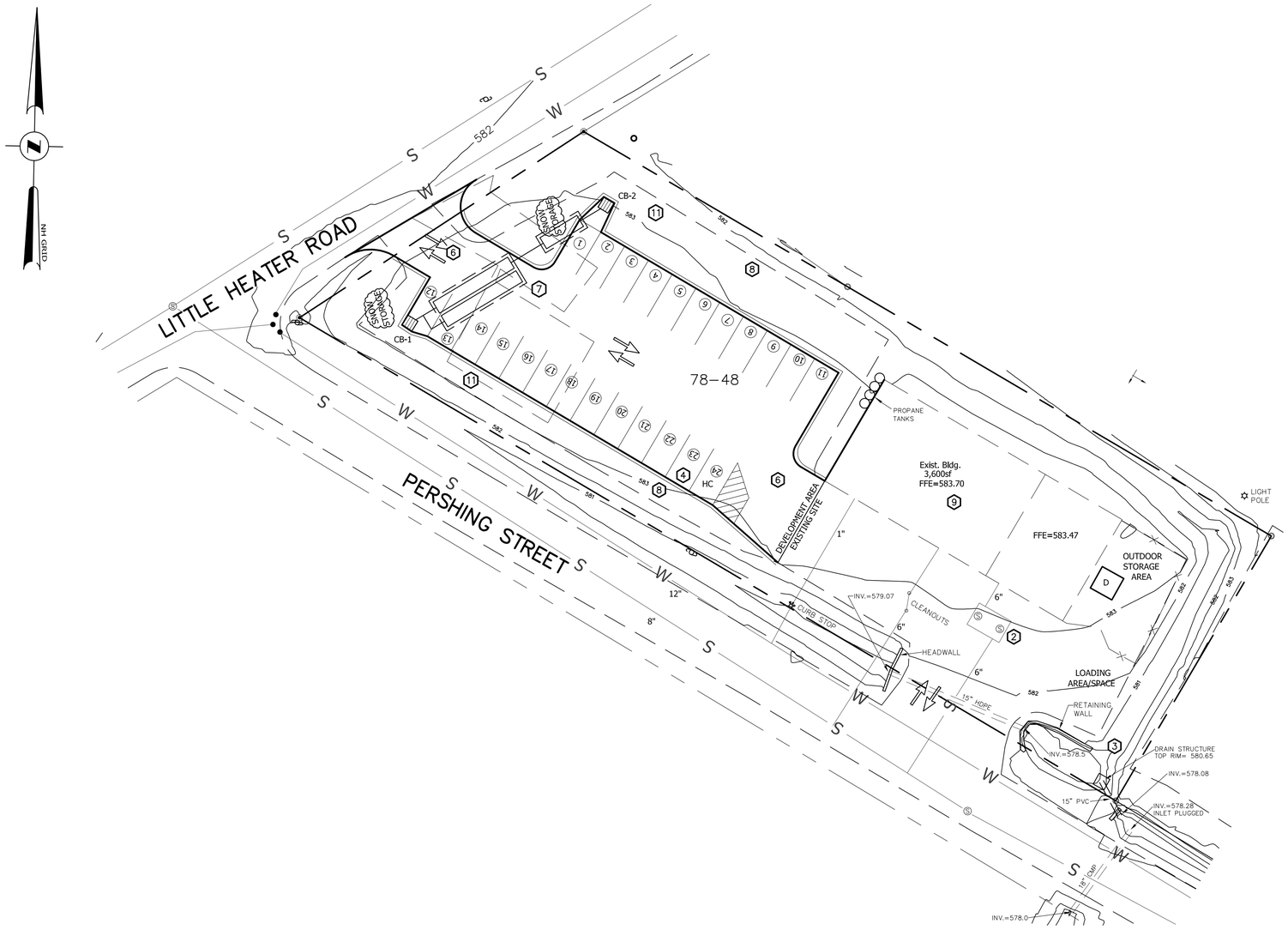
CALCULATED LIGHTING LEVELS IN FOOTCANDLES (FC)

PROJECT NUMBER	N/A
DATE	01/06/22
DRAWN BY	T.BOUCHER

L-3

SCALE AS NOTED

SHEET 7 OF 14



SITE PLAN

20 0 20 40 60 80

NOTES:

1. ENTIRE SITE IS MAPPED AS FLOOD PLAIN.
   BASE FLOOD ELEVATION=580.28 (BASED ON HYPERTHERM STUDY).
   SITE CONTOURS AND SPOT SHOTS BASED ON NAVD88. FLOOD
   STUDY IS BASED ON NGVD29, WHICH IS 0.35' HIGHER.
2. GRIT/OIL SEPARATOR.
3. EXISTING SITE DETENTION/TREATMENT FACILITY.
4. VEHICLE PARKING SPACES 9X16 TYPICAL.
5. AREA OF PAVEMENT PLACED IN SEP'21=11,305sf+/-. PAVEMENT TO BE REMOVED=3,880sf+/-. NET NEW PAVEMENT=7,425sf+/-.
6. 20' AISLE
7. DETENTION/RECHARGE SYSTEM..
8. LANDSCAPE AREA. PAVEMENT TO BE REMOVED.
9. 5 BAY BUILDING.
10. NOT USED.
11. CURBING SHALL BE SLOPED GRANITE.

SHEET 8 OF 14

#	REVISIONS	DATE
1	UPDATE	01/24/2022

SITE PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL J. NASH
No. 9937
LICENSED PROFESSIONAL ENGINEER

SURVEYED:	PATON
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

PERSHING ST CAR WASH

SITE PLAN

C-1

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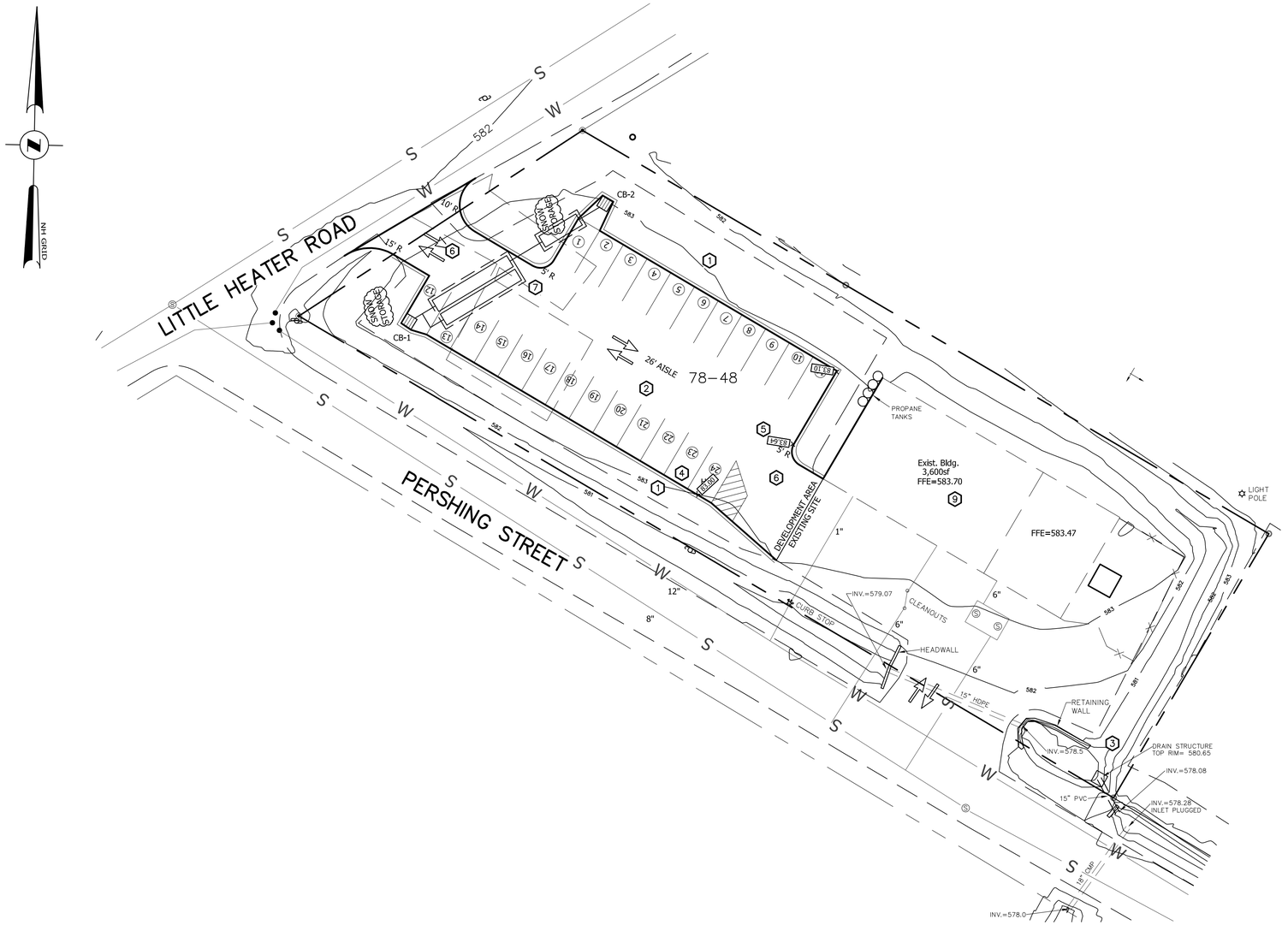
DWG: M:\21017-PL.DWG



DETAILED GRADING PLAN

20 0 20 40 60 80

NOTES:

1. PARKING HAS BEEN SHIFTED SLIGHTLY NORTH TO GIVE MORE LANDSCAPE SPACE ALONG PERSHING STREET AND MORE ON THE NORTH SIDE OF THE SITE.
2. 16' DEEP PARKING SPACES; 26' AISLE.
3. EXISTING SITE DETENTION/TREATMENT FACILITY.
4. VEHICLE PARKING SPACES 9X16 TYPICAL. (ALLOWED CURB OVERHANG)
5. SPOT SHOTS PROVIDED FOR CLARITY. INTENT FOR GRADES TO MATCH EXISTING PAVING.
6. 20' AISLE
7. DETENTION/RECHARGE SYSTEM..
8. NOT USED.
9. 5 BAY BUILDING.

#	REVISIONS	DATE
1		

DETAILED GRADING PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 9937
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	PATON
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

PERSHING ST
CAR WASH

DETAILED
GRADING PLAN

C-2

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ADVANCED GEOMATICS & DESIGN

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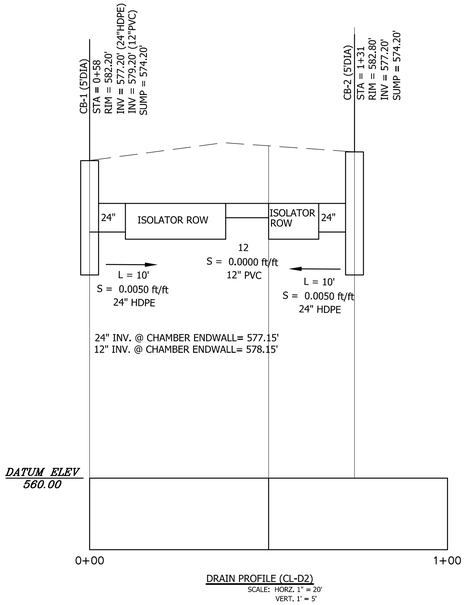
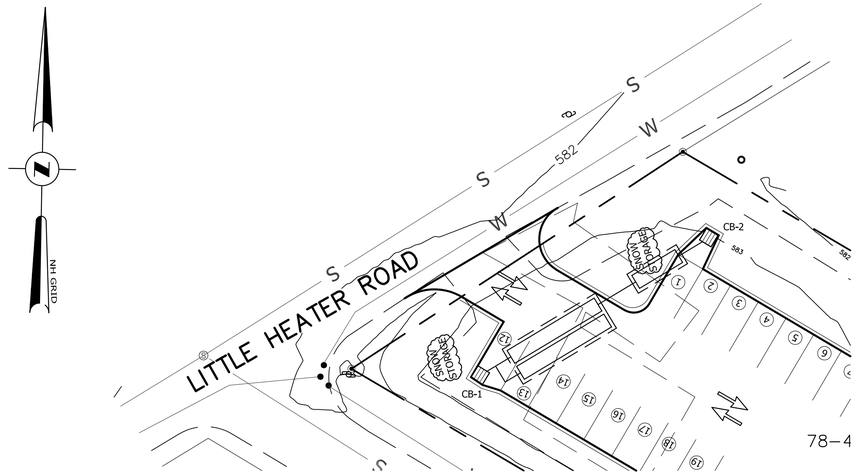


DRAIN PROFILE (CL-D2)
SCALE: HORZ. 1" = 20'
VERT. 1' = 5'



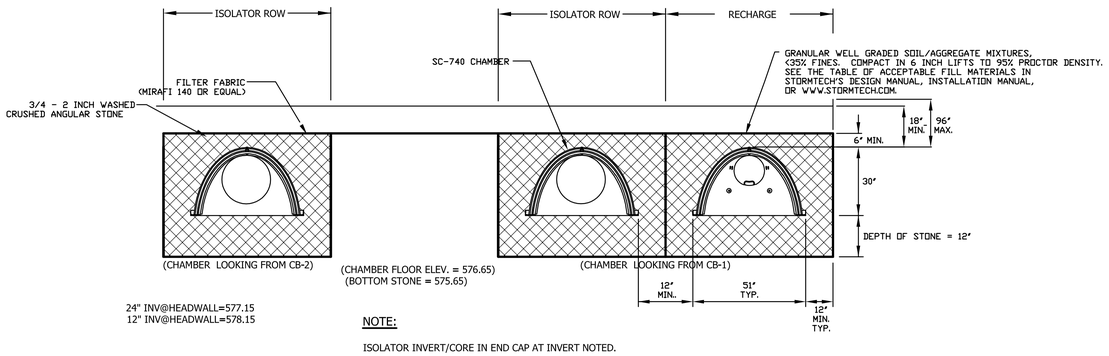
RECHARGE CHAMBER DETAIL
SCALE: 1" = 20'

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
CB-1 SEGMENT	1W x 4L	ISOLATOR ROW
	1W x 4L	TREATMENT/RECHARGE ROWS

SYSTEM ID	CHAMBER LAYOUT	CHAMBER FLOOR
CB-2 SEGMENT	1W x 2L	ISOLATOR ROW

NOTES:

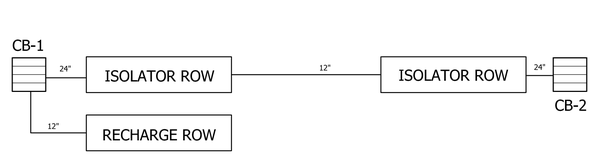
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE INFILTRATION SYSTEM.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
3. AFTER THE AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.



NOTE:

ISOLATOR INVERT/CORE IN END CAP AT INVERT NOTED.

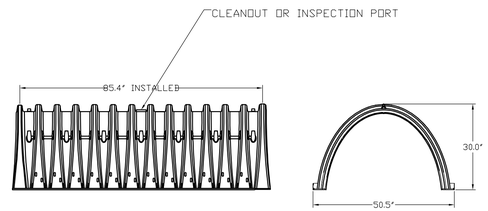
STORMTECH SC-740 CHAMBER SYSTEM
TYPICAL CROSS SECTION DETAIL
NOT TO SCALE



SYSTEM SCHEMATIC
NOT TO SCALE

NOTES:

1) SYSTEM COMPOSED OF STORMTECH SC-740 INFILTRATOR CHAMBERS. TYPICAL CHAMBER DIMENSIONS: 50.5"W x 85.4"L (INSTALLED) x 30" H. CHAMBER WEIGHT 75# EACH.
2) ALL DRAIN PIPE SHALL BE PVC, SDR-35, EXCEPT MAINFOLD AND PIPE TO CHAMBERS.
3) REFER TO DRAIN PROFILE (CL-D2) ON THIS SHEET.



STORMTECH SC-740 CHAMBER

NOMINAL CHAMBER SPECIFICATIONS	
SIZE (W x H x INSTALLED LENGTH)	50.5" x 30.0" x 85.4"
CHAMBER STORAGE	45.9 CUBIC FEET
MINIMUM INSTALLED STORAGE	74.0 CUBIC FEET
WEIGHT	75 LBS.

SINGLE LAYER SYSTEM DETAIL

NOTES: (SEE STORMTECH INSTALLATION INSTRUCTION MANUAL)

1) REMOVE TOPSOIL AND DELETERIOUS MATERIAL.
2) EXCAVATE TO BOTTOM OF STONE LEVEL.
3) PLACE STONE.
4) STONE BED SHALL BE A MINIMUM OF 12" THICK. ADDITIONAL STONE SHALL BE PLACED TO ACHIEVE CHAMBER FLOOR LEVELS.
5) STONE SIZE MUST BE AS FOLLOWS: 1-1/2" - 2" OVERALL DIA. CLEAN, WASHED, CRUSHED STONE. (WASHED ROUNDED STONE NOT ACCEPTABLE).
6) USE CATERPILLAR D3 OR EQUIVALENT MACHINE.
7) VIBRATORY ROLLER OR PLATE COMPACTOR MUST BE USED AT EACH LEVEL BASED UPON MANUFACTURERS REQUIREMENTS, AS OUTLINED IN THE STORMWATER INSTALLATION INSTRUCTION MANUAL.
8) IN SANDY SOILS, GEOGRID MUST BE USED BETWEEN THE TOP OF THE STONE AND THE PAVEMENT.
9) A MINIMUM OF 6" OF STONE MUST BE PLACED ON TOP ROW OF INFILTRATOR ® CHAMBERS.
10) A MINIMUM OF 18" OF BACKFILL, (INCLUSIVE OF SPECIFIED STONE), MUST BE PLACED ON THE TOP ROW OF INFILTRATOR ® CHAMBERS.
11) DO NOT USE WHEELED VEHICLES ON THE BED DURING CONSTRUCTION.
12) MATERIAL LIFTS SHALL BE COMPACTED TO 95-98% DENSITY (STANDARD PROCTOR METHOD).
13) PROPER SEDIMENTATION CONTROL STRUCTURES MUST BE USED TO LIMIT SILT INTRUSION.

#	DATE	REVISIONS
1	01/24/2022	UPDATE

DRAINAGE PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL A. WASH No. 9757 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SURVEYED:	PATON
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

PERSHING ST CAR WASH

RECHARGE PLAN

C-3

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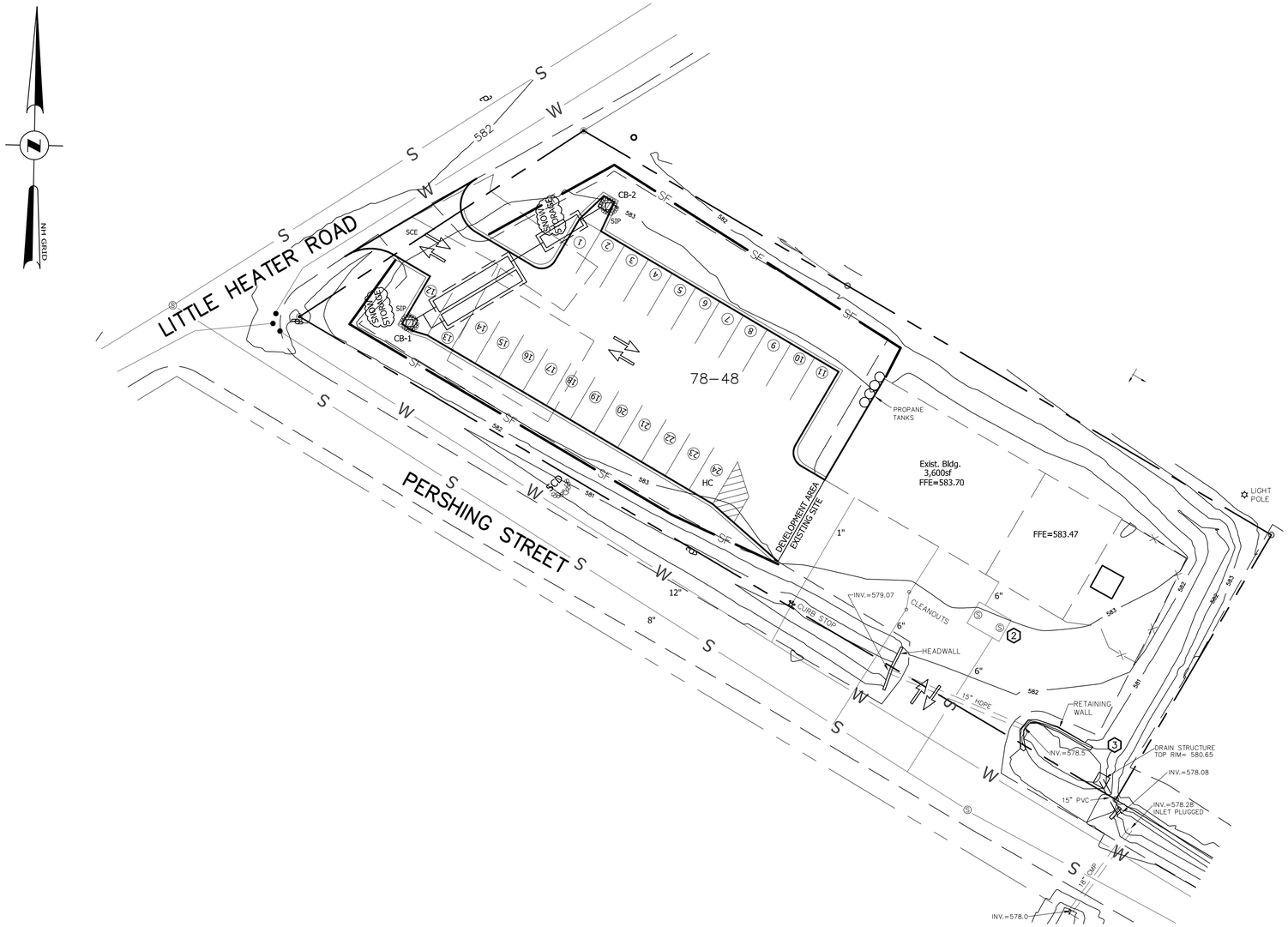
ADVANCED GEOMATICS & DESIGN

DWG: M:\21017-PL.DWG



EROSION CONTROL LEGEND

- SIP — CB/W STONE INLET PROTECTION (SEE DETAIL ON SHEET D-5)
- SF — SILT FENCE (SEE DETAIL ON SHEET D-5)
- SCE — STABILIZED CONSTRUCTION ENTRANCE (TO BE PAVED UPON COMPLETION, SEE DETAIL ON SHEET D-5)
- SCD — STONE CHECK DAM (SEE DETAIL SHEET D-5)

EROSION CONTROL PLAN

20 0 20 40 60 80

#	REVISIONS	DATE
1	UPDATE	01/24/2022

EROSION CONTROL PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL N. STARK No. 7937 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SURVEYED:	PATON
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

PERSHING ST CAR WASH

EROSION CONTROL PLAN

C-4

© 2022 ADVANCED GEOMATICS & DESIGN

DWG: M:\21017-PL.DWG

GENERAL NOTES:

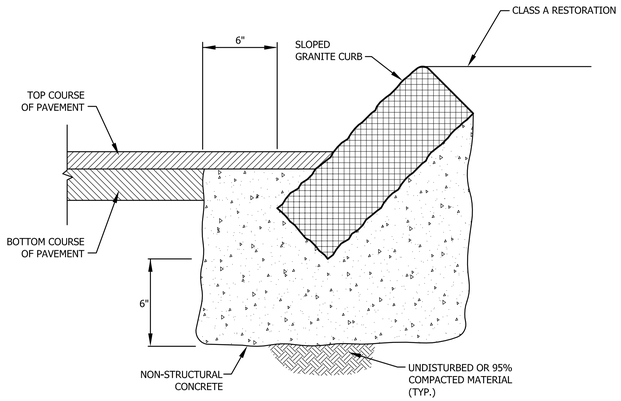
1) ROADWAY CONSTRUCTION SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2016 AND CITY OF LEBANON SUBDIVISION REGULATIONS.

2) GUARD RAIL SHALL BE USED WHERE SIDESLOPES EXCEED 3' HORIZONTAL AND 1' VERTICAL.

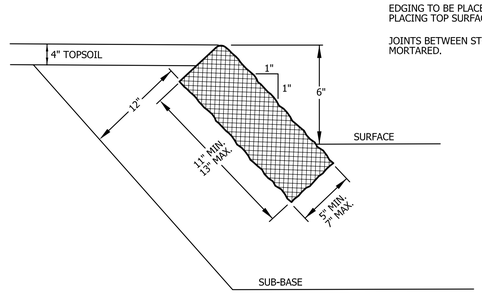
3) DESIGN SPEED = 15 M.P.H.

4) UNDERDRAIN REQUIRED WHERE GROUNDWATER WILL BE LESS THAN 4 FEET BELOW FINISHED GRADE. LOCATIONS TO BE DETERMINED IN THE FIELD.

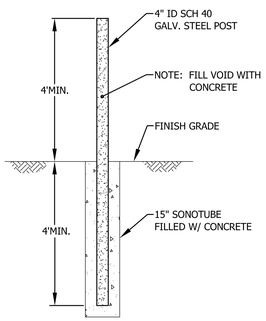
5) THE DESIGN INTENT IS FOR CATCH BASIN RIMS TO BE SET 0.1 FOOT BELOW THE FINISH GRADE OF ADJACENT PAVEMENT.



CURB SETTING DETAIL
N.T.S.



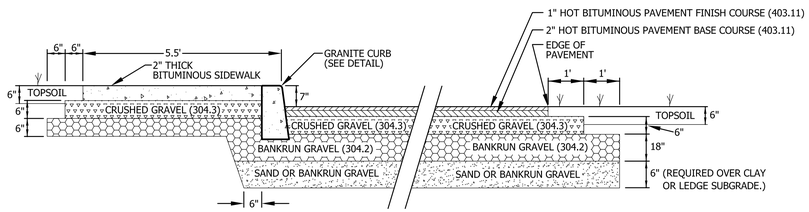
SLOPED GRANITE CURB
N.T.S.



BOLLARD DETAIL
N.T.S.

NOTES:

1. BOLLARDS SHALL BE MINIMUM 4" DIAMETER, CONCRETE FILLED.
2. SPACING SHALL NOT EXCEED 4' ON CENTER.
3. BOLLARDS SHALL BE SET IN BASES OF AT LEAST 15" DIAMETER, AND AT LEAST 4' DEEP.
4. BOLLARDS SHALL EXTEND A MINIMUM 4' ABOVE FINISHED GRADE.
5. BOLLARDS SHALL BE PLACED A MINIMUM OF 3' FROM THE PROTECTED ITEM (DOMES).



NOTES:

1.) ALL GRAVEL AND SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR.

2.) ALL MATERIAL USED SHALL COMPLY WITH NHDOT STANDARDS FOR HIGHWAY CONSTRUCTION.

3.) UNDERDRAIN SHALL BE REQUIRED WHEREVER GROUNDWATER SURFACE IS WITHIN 4' OF FINISH GRADE.

TYPICAL PAVEMENT/SIDEWALK/CURB SECTION
N.T.S.

#	REVISIONS	DATE
1	UPDATE	01/24/2022

SITE DETAILS
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL
A
NASH
No. 7927
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	1/10/2022

PERSHING ST
CAR WASH

SITE
DETAILS

D-1

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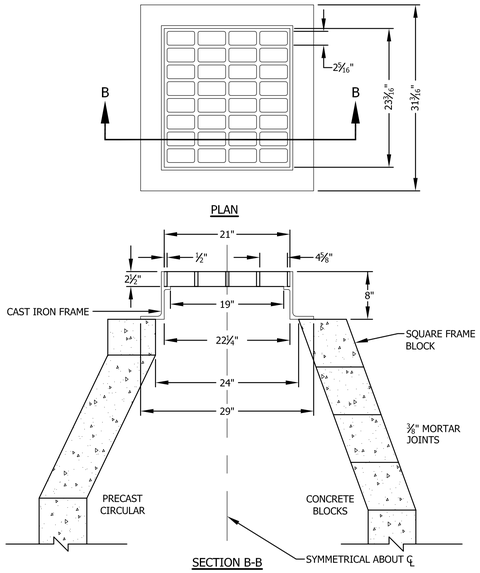
ADVANCED GEOMATICS & DESIGN
DWG: 20001\20001-DET

SHEET 12 OF 14

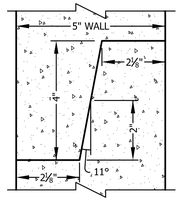


INLET GRATE

N.T.S

NOTE:

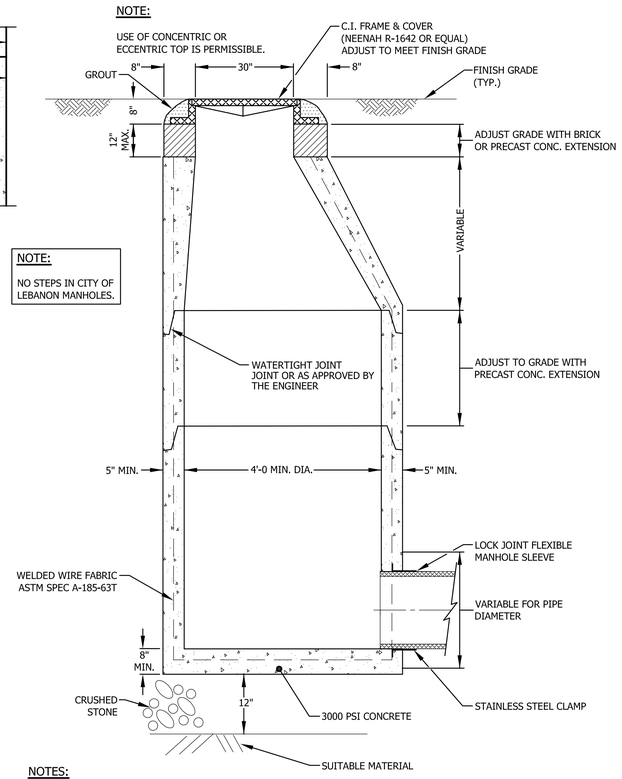
FRAME AND GRATE SHALL BE NEENAH R3570 OR EQUAL APPROVED BY ENGINEER.



DETAIL OF TONGUE & GROOVE JOINT

NOTE:

USE OF CONCENTRIC OR ECCENTRIC TOP IS PERMISSIBLE.



NOTE:

NO STEPS IN CITY OF LEBANON MANHOLES.

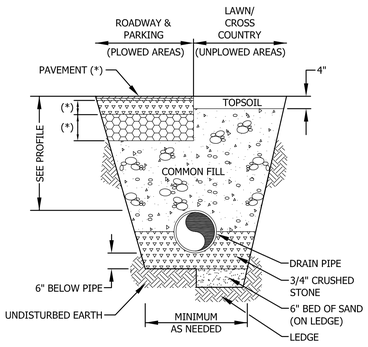
NOTES:

1) A 3 INCH (MINIMUM) LETTER "S" FOR SEWER OR "D" FOR STORM DRAINAGE SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.

2) FRAME AND COVER SEATS TO BE MACHINED.

TYPICAL DRAIN MANHOLE SECTION

N.T.S.



(*) SEE ROADWAY TYPICAL CROSS SECTION

COMMON FILL- SHALL CONTAIN NO STONES, ROCKS, CONCRETE, OR OTHER RUBBLE LARGER THAN 10 INCHES IN DIAMETER. FILL TO BE PLACED IN 12" LIFTS & COMPACTED TO 95% STANDARD PROCTOR.

BR GRAVEL - SHALL BE 12" BANK RUN GRAVEL PLACED IN 6" LIFTS, COMPACTED TO 95% STANDARD PROCTOR.

CRUSHED GRAVEL - SHALL BE 6" CRUSHED GRAVEL SURFACE COURSE COMPACTED TO 95% STANDARD PROCTOR.

CRUSHED STONE - SHALL BE DURABLE, WASHED CRUSHED STONE AND SHALL BE APPROVED BY PROJECT ENGINEER PRIOR TO USE. (SMOOTH WASHED STONE IS NOT ACCEPTABLE)

SAND - SHALL BE OF CLEAN MINERAL AGGREGATE AND SHALL BE APPROVED BY THE PROJECT ENGINEER PRIOR TO USE. SAND TO BE PLACED IN 6" LIFTS & COMPACTED TO 95% STANDARD PROCTOR.

NOTE: CONSTRUCTION MATERIALS SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS.

DRAIN PIPE TRENCH DETAIL

N.T.S.

NOTE:

USE OF CONCENTRIC OR ECCENTRIC TOP IS PERMISSIBLE.

NOTE:

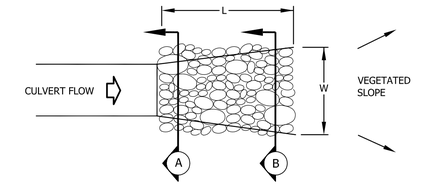
NO STEPS IN CITY OF LEBANON CATCH BASINS.

NOTE:

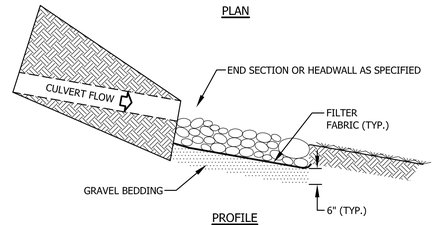
ALL CB'S SHALL INCLUDE 10' STUB OF UNDERDRAIN. INVERT SHALL BE 0.2' ABOVE PIPE INVERT OUT.

PRECAST REINFORCED CATCH BASIN AND DROP INLET

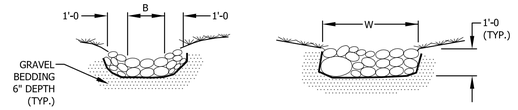
N.T.S.



PLAN



PROFILE

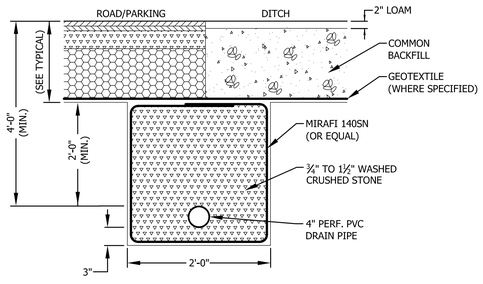


CROSS SECTION (A) CROSS SECTION (B)

PIPE (W)	B (Ft.)	W (Ft.)	L (Ft.)	STONE TYPE
15"	2'	4'	8'	I
18"	2'	4'	8'	I
24"	4'	6'	12'	II
30"	4'	6'	14'	II
36"	4'	6'	16'	II
42"	6'	8'	18'	II
48"	6'	8'	20'	II

STONE DISCHARGE APRON

N.T.S.



UNDERDRAIN DETAIL

N.T.S.

NOTES:

1) MINIMUM 10' STUB REQUIRED AT ALL DRAIN CB/MH.

2) REQUIRED WHERE GROUNDWATER WILL BE LESS THAN 4 FEET BELOW FINISHED GRADE.

REVISIONS	DATE

DRAINAGE DETAILS
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL N. GOSS No. 7827 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	1/10/2022

PERSHING ST CAR WASH

DRAINAGE DETAILS

D-4

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DWG: 21017\21017-DET

EROSION CONTROL PLAN

ROAD, PARKING, BUILDING AND UTILITY CONSTRUCTION

DESIGN BASIS

THE MAJORITY OF THE SOIL TO BE DISTURBED DURING THE PROGRESS OF CONSTRUCTION ON THIS SITE WILL RESULT DURING THE ROAD, PARKING, BUILDING AND UTILITY CONSTRUCTION. CERTAIN CONSIDERATIONS HAVE BEEN MADE AND INCORPORATED IN THE CONSTRUCTION PLAN TO INSURE THAT A RETURN TO THE NATURAL STATE WILL BE EXPEDITIOUS AND RESULT IN PERMANENT CONTROL AGAINST SOIL EROSION AFTER THE PROJECT IS COMPLETE.

SITE PREPARATION

THE ENTIRE CONSTRUCTION SITE MAY BE CLEARED (TREES CUT) ALL AT ONCE BUT STUMPING AND/OR GRUBBING SHALL BE UNDERTAKEN IN A PHASED MANNER ALLOWING FOR COMPLETION WITHIN A REASONABLE TIME PERIOD, USUALLY NOT MORE THAN TWO WEEKS.

1) ALL NECESSARY AND REQUIRED EROSION CONTROL WILL NEED TO BE INSTALLED AND IN PLACE PRIOR TO ANY CLEARING AND GRUBBING.

2) ONCE THE TEMPORARY EROSION CONTROL MEASURES, AS DESCRIBED ON THE PLAN AND AS REQUIRED IN THE FIELD, ARE IN PLACE; GRUBBING, GRADING AND EARTHWORK MAY BEGIN IN PHASES. EACH PHASE, FROM THE BEGINNING OF CLEARING TO FINAL STABILIZATION OF SEEDING AND MULCHING, SHOULD BE ACCOMPLISHED WITHIN A REASONABLE PERIOD OF TIME, USUALLY TWO WEEKS. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF DISTURBANCE THROUGH THE APPLICATION OF TEMPORARY OR PERMANENT EROSION CONTROL MEASURES DESCRIBED HEREIN. IN NO CASE SHALL A DISTURBED AREA REMAIN UNSTABILIZED FOR ANY MORE THAN 45 DAYS.

3) ALL BLASTING WILL BE COMPLETED UNDER BLAST MATS OR EARTH OVERBURDEN IN ORDER TO PREVENT UNCONTROLLED EJECTION OF ROCK FRAGMENTS. BLASTING SHALL ALSO CONFORM TO ALL STATE AND FEDERAL STANDARDS.

4) SLOPES WILL BE BROUGHT TO FINAL GRADE AS RAPIDLY AS POSSIBLE. AT THE END OF EACH DAY'S OPERATION, THE SEGMENT OF THE SLOPE UNDER CONSTRUCTION WILL EITHER BE SEEDED AND MULCHED UPON COMPLETION OF FINAL GRADE, OR ALL EROSION CONTROL MEASURES INSPECTED TO INSURE THAT THEY WOULD FUNCTION PROPERLY IN THE EVENT OF A RAIN DURING THE NON-WORKING PERIODS.

5) AREAS GRUBBED AND NOT GRADED SHALL BE MULCHED AND TRACKED IN WITH A BULLDOZER OR ROLLER WITHIN 7 DAYS. ANY GRADED AREAS NOT BEING WORKED (ROADWAYS, BUILDING PADS) SHALL BE MULCHED AND TRACKED IN WITHIN 7 DAYS OF DISTURBANCE.

6) THE DISTURBED AREA SHALL BE KEPT TO THE SMALLEST AREA PRACTICABLE. IN NO CASE SHALL UNSTABILIZED DISTURBED AREA EXCEED 5 ACRES.

THE BASIS OF DESIGN TO INSURE A MINIMUM OF SOIL EROSION DURING CONSTRUCTION IS AS FOLLOWS:

1) TEMPORARY EROSION CONTROL

ALL FINISH GRADED AREAS SHALL BE MULCHED AND SEEDED EXPEDITIOUSLY AS SOON AS THEY ARE SO GRADED. IT SHOULD BE POSSIBLE TO PLACE SEED AND MULCH WITHIN ONE WEEK OF FINISH GRADING. ALL DITCHES, SWALES, AND THE TREATMENT SWALE SHALL BE STABILIZED PRIOR TO DIRECTING FLOW INTO THEM.

PROBLEM AREAS SUCH AS WET SITE AND INTERMITTENT WATER COURSES WILL BE GIVEN PRELIMINARY SEED AND MULCH COATS PRIOR TO FINAL PLANTING AS AN EXTRA PRECAUTION.

TOP SOIL STOCKPILED FOR FUTURE USE IS TO BE PROTECTED FROM EROSION. IF TOPSOIL IS TO BE STOCKPILED, IT SHALL ONLY BE DONE OUTSIDE ANY DRAINAGE WAYS OR WATER COURSES. A SWALE NOT LESS THAN TWELVE INCHES DEEP SHALL BE CONSTRUCTED AROUND THE PERIMETER OF THE STOCKPILE AND A SILT FENCE SHALL BE CONSTRUCTED AROUND THE SWALE, ON THE DOWNSTREAM HALF OF THE PILE. IF THE STOCKPILE IS TO REMAIN IN POSITION FOR MORE THAN ONE MONTH IT WILL BE SEEDED AND MULCHED. (SEE STOCKPILE TREATMENT DETAIL)

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

- BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
- A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE RIPRAP HAS BEEN INSTALLED; OR
- EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

2) TEMPORARY SEEDING AND MULCHING

ALL ESSENTIAL GRADING AND ALL TEMPORARY STRUCTURES, SUCH AS DIVERSIONS, DAMS, DITCHES, AND DRAINS NEEDED TO PREVENT GULLYING AND REDUCE SILTATION SHOULD BE COMPLETED PRIOR TO SEEDING. REMOVE STONES AND TRASH THAT WILL INTERFERE WITH SEEDING THE AREA. WHERE FEASIBLE, TILL THE SOIL TO A DEPTH OF ABOUT 3 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER INTO SOIL. THE SEEDBED SHOULD BE LEFT IN A FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER POSSIBLE. FERTILIZER SHOULD BE UNIFORMLY SPREAD OVER THE AREA PRIOR TO BEING INCORPORATED INTO THE SOIL. A MINIMUM OF 300 POUNDS PER ACRE (7 POUNDS PER 1,000 SQUARE FEET) OF 10-10-10 FERTILIZER, OR ITS EQUIVALENT, SHOULD BE APPLIED. SEED AND SEEDING RATES MAY BE SELECTED FROM THE TABLE BELOW. THE SELECTION WILL BE BASED ON THE TIME OF YEAR THE SEEDING IS TO BE MADE AND THE LENGTH OF TIME THE VEGETATION IS TO AFFORD THE PROTECTION. THE SEED SHOULD BE SPREAD UNIFORMLY OVER THE AREA. AFTER SEEDING, THE SOIL SHOULD BE FIRMED BY ROLLING OR PACKING. WHERE ROLLING OR PACKING IS NOT FEASIBLE, THE SEED SHOULD BE COVERED LIGHTLY BY RAKING, DISKING, OR DRAGGING. WHERE IT IS IMPRACTICABLE TO INCORPORATE FERTILIZER AND SEED INTO MOIST SOIL, THE SEEDED AREA SHOULD BE MULCHED TO FACILITATE GERMINATION.

SPECIES	PER ACRE	PER 1000 SQ.FT.	REMARKS
WINTER RYE	2 BU. OR 112 LBS.	2.5 LBS.	BEST FOR ALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 5 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	2.5 BU. OR 80 LBS.	2 LBS.	BEST FOR SPRING SEEDINGS. SEED NO LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40 LBS.	1 LB.	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. COVER THE SEED WITH NO MORE THAN 0.25 INCHES OF SOIL.
PERENNIAL RYEGRASS	30 LBS.	0.7 LBS.	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1 AND JUNE 1 AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

3) ROADWAY

THE ROADWAY IS A TYPICAL CUT/FILL OPERATION. IN AREAS WHERE SOILS MAY BE SATURATED BY SEASONAL OR PERMANENT WATER TABLES, IT MAY BE NECESSARY TO PROVIDE ARTIFICIAL SLOPE STABILIZATION BY UNDERDRAIN MEASURES TAKEN AS THEY ARE UNCOVERED DURING CONSTRUCTION. WHERE SATURATED SOILS ARE OBVIOUS WITHOUT EXPLORATION, CUT SECTIONS HAVE BEEN AVOIDED IN AS MUCH AS IS PRACTICAL.

4) CLEARING AND GRUBBING STUMPS ARE TO BE CHIPPED IN PLACE AND ALLOWED TO DECOMPOSE, PLACED IN NON STRUCTURAL FILL SECTIONS OR SHALL BE REMOVED TO AN APPROVED STUMP DUMP.

5) SEEDING AND MULCHING

ALL AREAS WHERE THE NATURAL GROUND SURFACE HAS BEEN DISTURBED AND NATURAL VEGETATION REMOVED OR DESTROYED ARE TO BE SEEDED, FERTILIZED AND MULCHED WITHIN THE WORK PERIOD SPECIFIED TO AVOID SOIL DISPLACEMENT BY EROSION BOTH DURING AND AFTER CONSTRUCTION. STANDARD SOIL CONSERVATION SEED MIX IS TO BE APPLIED AT A RATE OF 60 LBS. PER ACRE (TALL FESCUE - 24 LBS., RED FESCUE - 20 LBS., RED TOP - 2 LBS., AND BIRDSFOOT TREFOIL- 4 LBS.). 10-10-10 FERTILIZER IS TO BE WORKED INTO THE TOP 3 OR 4 INCHES OF SOIL (HYDRAULIC APPLICATION PREFERRED) AT A RATE OF 1,000 LBS. PER ACRE. MULCH CONSISTING OF RIPE SEED CARRYING HAY SHALL BE APPLIED OVER SEEDED AND FERTILIZED AREAS AT A RATE OF 2 TONS PER ACRE.

6) EROSION CONTROL DURING BUILDING CONSTRUCTION

ALL PLACES WHERE NATURAL VEGETATION IS REMOVED OR DESTROYED DURING CONSTRUCTION WILL BE SEEDED AND MULCHED SO AS TO PREVENT DISPLACEMENT OF SOIL BY EROSION. WORK TO BE PERFORMED IN THESE PHASES OF CONSTRUCTION WILL BE SCHEDULED IN SUCH A WAY TO INSURE EROSION WILL BE EFFECTIVELY CONTROLLED.

IN CASES OF PROLONGED INCLEMENT WEATHER LEADING TO RUNOFF, EXPOSURE OF NEW SOIL WILL BE TEMPORARILY HALTED; AND ANY AREAS WHERE SOIL DISPLACEMENT BY EROSION IS OCCURRING WILL BE PROTECTED BY METHODS SUCH AS MULCHING, HAY BALES, DIVERSION DITCHES, ETC.

7) COMMENCEMENT AND COMPLETION

ALL WORK INVOLVING EARTHWORK, LANDSCAPING OR ANY OTHER DISTURBANCES OF THE GROUND SURFACE RESULTING IN THE REMOVAL OR DESTRUCTION OF NATURAL GROUND COVER SHALL NOT BE COMMENCED UNTIL APRIL 1 AND ALL AREAS SO DISTURBED SHALL BE FINISH GRADED, SEEDED AND MULCHED OR TEMPORARILY SEEDED AND MULCHED PRIOR TO NOVEMBER 15. SHOULD THERE BE A NEED TO EXTEND BEYOND THIS DATE, EXTRAORDINARY EROSION CONTROL MEASURES WILL BE INSTITUTED, SUBJECT TO THE REVIEW AND APPROVAL FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES AND OTHER APPLICABLE PERMITTING AGENCIES. PROCESSES SUCH AS THE PLACEMENT OF GRAVEL, PAVING, PLACEMENT OF STONE FILL, CONSTRUCTION OF HEADWALLS, ETC., MAY BE ACCOMPLISHED OUTSIDE OF THESE INCLUSIVE DATES.

8) DUST CONTROL

THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL WITHIN THE PROJECT LIMITS.

CALCIUM CHLORIDE OR WATER WILL BE USED AS NEEDED TO CONTROL DUST.

AT THE END OF EACH DAY OR PRIOR TO CONSTRUCTION SHUTDOWNS FOR WEEKENDS OR FOR LONG PERIODS, ALL EROSION CONTROL MEASURES WILL BE INSPECTED AND WHATEVER MAINTENANCE THAT WOULD BE REQUIRED, BE PERFORMED IN ORDER TO INSURE THAT THE ENTIRE EROSION CONTROL SYSTEM WOULD FUNCTION PROPERLY DURING A RAINFALL EVENT.

IN THE EVENT THAT AN UNUSUAL RAINFALL EVENT OCCURS DURING NON-WORKING HOURS, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSPECT THE EROSION CONTROL MEASURES (WHILE IT IS RAINING) AND TAKE WHATEVER MEASURES THAT ARE NECESSARY WHERE EROSION CONTROL MEASURES ARE NOT FUNCTIONING PROPERLY.

WINTER CONSTRUCTION NOTES:

- ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
- ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS; AND
- AFTER NOVEMBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

EROSION CONTROL CHART

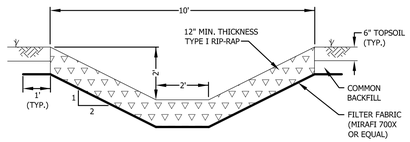
ACTIVITY:	TYPE OF CONTROL:	MAINTENANCE (*):
1) CLEARING AND GRUBBING	SILT FENCE	B
2) ACCESS ROADS AND PARKING	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
	SILT FENCE	B
3) DRAINAGE STRUCTURES	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
4) HOUSE SITES	SILT FENCE	B
	STACKED HAY BALES	B
	GRASS SEED AND MULCH	A
5) UTILITIES	GRASS SEED AND MULCH	A

MAINTENANCE INDEX

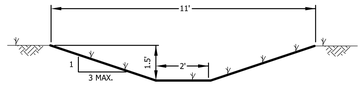
*) DAMAGED EROSION CONTROL MEASURES WILL BE REPAIRED AND/OR REPLACED AS SOON AS POSSIBLE. DAMAGE TO ANY EROSION CONTROL MEASURE AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IMMEDIATELY. EROSION CONTROL MEASURES THAT TRAP SEDIMENT WILL BE EMPTIED WHEN HALF FULL. SEE EROSION CONTROL TEXT FOR IMPLEMENTATION OF THESE EROSION CONTROL MEASURES.

A) TO BE INSPECTED DAILY.

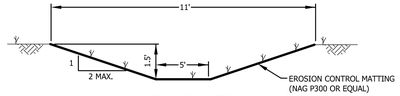
B) TO BE INSPECTED ONCE A WEEK AND AFTER RUNOFF OF 0.5" OR GREATER. REPAIRS SHALL BE MADE WITHIN 24 HOURS OF INSPECTION.



STONE LINED DITCH
(AS NOTED AND ON ROAD DITCHES > 5%)



GRASS LINED DITCH



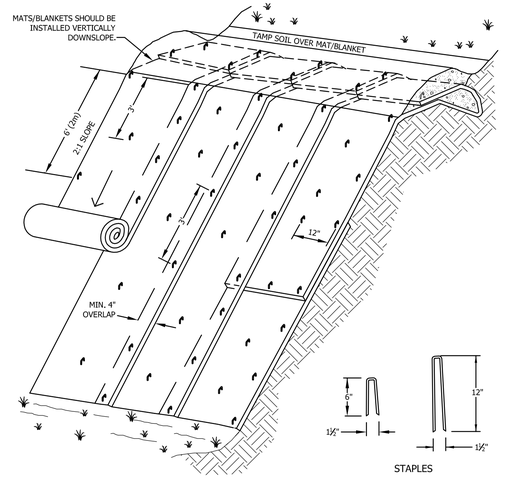
GRASS LINED DITCH

STONE FOR RIP-RAP

STONE FOR RIP-RAP SHALL BE APPROVED, HARD, BLASTED ANGULAR ROCK OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS). THE LEAST DIMENSION OF THE STONE SHALL BE GREATER THAN 1/3 OF THE LONGEST DIMENSION. THE STONE FILL SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE MAXIMUM SIZE STONE SPECIFIED SO AS TO FORM A COMPACT MASS WHEN IN PLACE.

(A) TYPE I. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME SHALL HAVE A LEAST DIMENSION OF 4 INCHES.
(B) TYPE II. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 2 INCHES TO 36 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME SHALL HAVE A LEAST DIMENSION OF 12 INCHES.

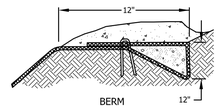
TYPICAL DRAINAGE DITCH SECTIONS
N.T.S.



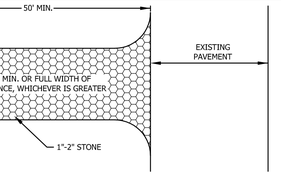
STAPLES

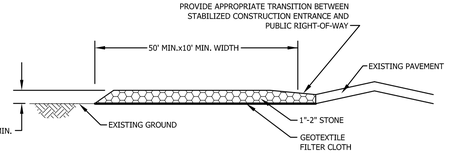
NOTES:

1) SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2) APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3) LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.



EROSION CONTROL MATTING
N.T.S.

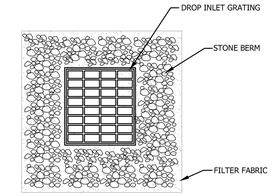




STABILIZED CONSTRUCTION ENTRANCE (BMP-SCE)
N.T.S.

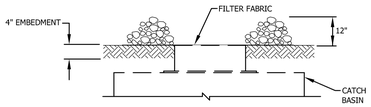
NOTES:

1) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING, WASHING, OR FLOWING OF SEDIMENT INTO PUBLIC RIGHT-OF-WAY.
2) ALL SEDIMENT SPILLED, DROPPED, TRACKED OR WASHED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.



PLAN VIEW

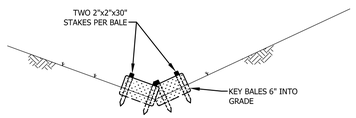
NOTE: PLACE STONE BERM AROUND GRATING AS SHOWN ON EROSION CONTROL PLAN

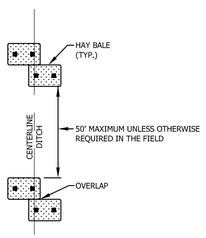


SECTION

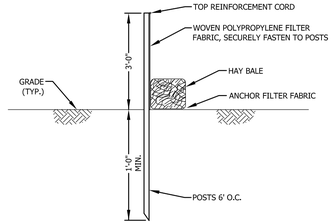
TEMPORARY STONE INLET PROTECTION (BMP-SIP)
N.T.S.

*NOTE: TO BE USED AT ALL CATCH BASINS

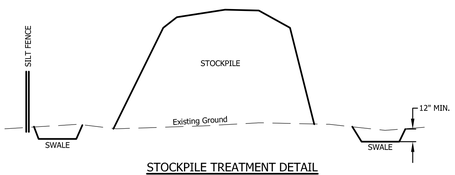




STAKED HAY BALES (BMP-SHB)
N.T.S.



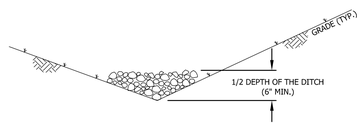
SILT FENCE DETAIL (BMP-SF)
N.T.S.

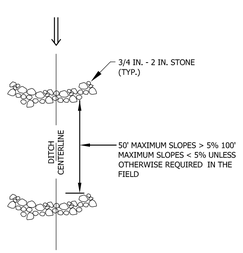


STOCKPILE TREATMENT DETAIL
N.T.S.

NOTES:

1) SWALE AROUND ENTIRE STOCKPILE, MINIMUM 12" DEEP.
2) SILT FENCE AROUND SWALE ON DOWNSTREAM HALF OF PILE.
3) STOCKPILE LEFT OVER 30 DAYS SHALL BE SEEDED AND MULCHED.





STONE CHECK DAMS (BMP - SCD)
N.T.S.

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

DANIEL A. NASH No. 7827 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

PERSHING ST CAR WASH
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

SURVEYED:	N/A
DESIGNED:	DAN
DRAWN:	KH
CHECKED:	DAN
DATE:	12/13/2021

PERSHING ST CAR WASH

EROSION CONTROL DETAILS

D-5

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DWG: 21017\21017-DET

SHEET 14 OF 14



SOUTH ELEVATION
(FROM ADJACENT PARCEL)



WEST ELEVATION
(LT SIDE, FROM PERSHING ST)



EAST ELEVATION
(RT SIDE, FROM PERSHING ST)



NORTH ELEVATION
(FROM PERSHING ST)

BUILDING ELEVATIONS

#	REVISIONS	DATE

BUILDING ELEVATIONS
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NEW HAMPSHIRE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 5737
LICENSED
PROFESSIONAL ENGINEER

SURVEYED:	
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

EDWARDS PROPERTIES

BUILDING ELEVATIONS

A-1

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ADVANCED GEOMATICS & DESIGN

DWG: 20010-BA

AGD
Advanced Geomatics & Design

Brian Vincent, PE, City Engineer
City of Lebanon
51 North Park Street
Lebanon, NH 03766

10 January 2022

Re: Drainage Report
Pershing St Car Wash
Pershing Street

Dear Mr. Vincent:

Attached are our drainage calculations for the Pershing St Car Wash on Pershing Street.

The site has two discharge point. The Discharge point, DP#1 is at the mid-section of Lot 78-48, the former lot line with 78-47before the lots were merged. DP#2 is at the SE corner of the parcel. This discharge point is from the existing site that was approved in the 2018 time frame. The detention and treatment facility that was installed for the former contractors yard appears to be performing well. Therefore, this report does not address that portion of the site. These calculations address the new paved area.

This summary is followed by a comparison sheet. The Sheet compares the 2, 10, 25, 50, and 100 year storms. The project provides a modest overall decrease. The new pavement apron drainage will be routed to a recharge system; the recharge systems capture and keep runoff levels below pre-development levels.

Please let us know if you need any additional materials or information to support this report.

Sincerely,

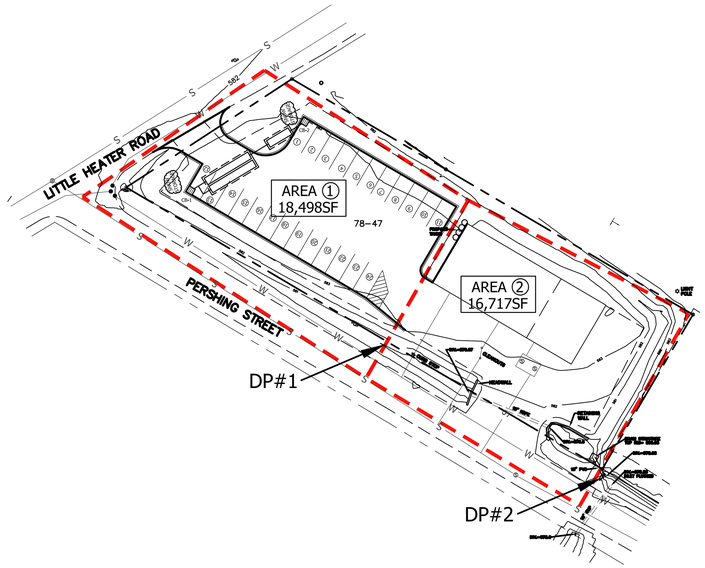
Daniel A. Nash, PE
Principal

CC: Bobby Oakes

M:\2021_projects\21-017\drainage\pershing_drain_10jan2022.doc

STATE OF NEW HAMPSHIRE
DANIEL A. NASH
No. 8737
LICENSED PROFESSIONAL ENGINEER

PERSHING ST CAR WASH					
PERSHING STREET					
LEBANON, NH					
PRE/POST COMPARISONS					
2 YEAR STORM COMPARISON					
AREA	PRE Q-2		POST Q-2		POST Q-2
			(without detention)		(with detention)
DP#1	0.6		0.8		0.3
10 YEAR STORM COMPARISON					
AREA	PRE Q-10		POST Q-10		POST Q-10
			(without detention)		(with detention)
DP#1	1.0		1.4		0.6
25 YEAR STORM COMPARISON					
AREA	PRE Q-25		POST Q-25		POST Q-25
			(without detention)		(with detention)
DP#1	1.1		1.6		0.7
50 YEAR STORM COMPARISON					
AREA	PRE Q-50		POST Q-50		POST Q-50
			(without detention)		(with detention)
DP#1	1.3		1.8		0.8
100 YEAR STORM COMPARISON					
AREA	PRE Q-100		POST Q-100		POST Q-100
			(without detention)		(with detention)
DP#1	1.4		1.9		0.8



DRAINAGE AREA NUMBER	DRAINAGE AREA SIZE (ACRES)
①	0.42
②	0.38

KEY

FLOW ARROW

0 20 40 60 Meters
0 40 80 120 160 200 Feet

PRE DRAINAGE PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NEW HAMPSHIRE

#	REVISIONS	DATE

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

SURVEYED:	PATON SURVEYS
DESIGNED:	DAN
DRAWN:	J
CHECKED:	DAN
DATE:	1/10/2022

PERSHING ST
CAR WASH

PRE
DRAINAGE PLAN

DR-1

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ADVANCED GEOMATICS & DESIGN

DWG: 21017\21017-DR

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

DRAIN CALCULATIONS

EXISTING RUNOFF

AREA DESIGNATION	AREA c=.9	AREA c=.6	AREA c=.3	AREA TOTAL	weighted "C"
-TO DISCHARGE POINT #1					
Area 1	0.15		0.27	0.42	0.51
sub-totals by type=	0.15	0.00	0.27		
		Sub-total=		0.42	Ac
			Weighted "c"=		0.51

Q-2

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-2	
2 year discharge	0.42	2.7	0.51	**0.58**	**cfs**

Note: Tc=10 minutes (minimum).

Q-10

-TO DISCHARGE POINT #1	Area (Ac)	i-10	"c"	Q-10	
10 year discharge	0.42	4.5	0.51	**0.97**	**cfs**

Note: Tc=10 minutes (minimum).

Q-25

-TO DISCHARGE POINT #1	Area (Ac)	i-25	"c"	Q-25	
25 year discharge	0.42	5.2	0.51	**1.12**	**cfs**

Q-50

-TO DISCHARGE POINT #1	Area (Ac)	i-50	"c"	Q-50	
50 year discharge	0.42	6.0	0.51	**1.30**	**cfs**

Q-100

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-100	
100 year discharge	0.42	6.3	0.51	**1.36**	**cfs**

Note: Tc=10 minutes (minimum).

From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour

PERSHING ST CAR WASH								
PERSHING STREET								
LEBANON, NH								
DRAIN CALCULATIONS								
POST-DEVELOPMENT RUNOFF								
AREA	AREA	AREA	AREA	AREA	AREA	weighted		
DESIGNATION	c=.9	c=.6	c=.3	c=.1	TOTAL	"C"		
-TO DISCHARGE POINT #1 (COURT PARKING CB)								
Area 1	0.09				0.09	0.90		
Area 2	0.10				0.10	0.90		
Area 3	0.10		0.13		0.23	0.56		
sub-totals by type=	0.29	0.00	0.13	0.00				
		Sub-total=			0.42	Ac		
		Weighted "c"=				0.71		
Q-2							With	
-TO DISCHARGE POINT #1							Recharge	
	Area (Ac)	i-2	"c"		Q-2			
2 year discharge	0.42	2.7	0.71		**0.81**	**cfs**		
Note: Tc=10 minutes (minimum).								
Q-10								
-TO DISCHARGE POINT #1								
	Area (Ac)	i-10	"c"		Q-10			
10 year discharge	0.42	4.5	0.71		**1.35**	**cfs**		
Note: Tc=10 minutes (minimum).								
Q-25								
-TO DISCHARGE POINT #1								
	Area (Ac)	i-25	"c"		Q-25			
25 year discharge	0.42	5.2	0.71		**1.56**	**cfs**		
Q-50								
-TO DISCHARGE POINT #1								
	Area (Ac)	i-25	"c"		Q-50			
50 year discharge	0.42	6.0	0.71		**1.80**	**cfs**		
Q-100								
-TO DISCHARGE POINT #1								
	Area (Ac)	i-2	"c"		Q-100			
100 year discharge	0.42	6.3	0.71		**1.89**	**cfs**		
Note: Tc=10 minutes (minimum).								
From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour								

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

DRAIN CALCULATIONS

POST-DEVELOPMENT RUNOFF

AREA DESIGNATION	AREA c=.9	AREA c=.6	AREA c=.3	AREA c=.1	AREA TOTAL	weighted "C"
-TO DISCHARGE POINT #1 (COURT PARKING CB)						
Area 1			*THESE AREAS GO TO RECHARGE			
Area 2			*THESE AREAS GO TO RECHARGE			
Area 3	0.10		0.13		0.23	0.56
sub-totals by type=	0.10	0.00	0.13	0.00		
		Sub-total=			0.23	Ac
		Weighted "c"=				0.56

Q-2 (With Recharge)

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-2	
2 year discharge	0.23	2.7	0.56	**0.35**	**cfs**

Note: Tc=10 minutes (minimum).

Q-10

-TO DISCHARGE POINT #1	Area (Ac)	i-10	"c"	Q-10	
10 year discharge	0.23	4.5	0.56	**0.58**	**cfs**

Note: Tc=10 minutes (minimum).

Q-25

-TO DISCHARGE POINT #1	Area (Ac)	i-25	"c"	Q-25	
25 year discharge	0.23	5.2	0.56	**0.67**	**cfs**

Q-50

-TO DISCHARGE POINT #1	Area (Ac)	i-25	"c"	Q-50	
50 year discharge	0.23	6.0	0.56	**0.77**	**cfs**

Q-100

-TO DISCHARGE POINT #1	Area (Ac)	i-2	"c"	Q-100	
100 year discharge	0.23	6.3	0.56	**0.81**	**cfs**

Note: Tc=10 minutes (minimum).

From Cornell, i-100, for Tc=10 minutes, i-100=0.105inch/minute; 6.3in/hour

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

DRAIN CALCULATIONS

DETENTION/RECHARGE CHAMBERS - SOUTH SYSTEM

AREA PER CHAMBER

			FT	SQ FT		
L=	85.44	/12	7.12	ft		
W=	50.5	(chamber)				
	6	(3" stone each side)				
total=	56.5	/12	4.71	ft		
		Area=		33.52	sf	

RECHARGE RATE

WITH ?? Chambers		LEACHING				
CHAMBERS	AREA/CHAM	BED AREA				
(EA)	(sf)	(sf)				
8	33.52	268				
10	33.52	335				
16	33.52	536				
20	33.52	670				
24	33.52	805				
32	33.52	1,073				
40	33.52	1,341				

PERCOLATION		10 CHAMBER	(RECHARGE			
RATE		DISCHARGE	RATE - cfs)			
(IN/HR)						
4		0.031				

RECHARGE VOLUME

WITH 10 Chambers		LEACHING				
CHAMBERS	VOLUME/CHAM	BED VOLUME				
(EA)	(cf)	(cf)				
10	81.70	817				

NOTES:
1) ASSUMES USE OF STORMTECH SC-740 CHAMBERS.
2) VOLUME PER CHAMBER = 81.7cf (12" STONE BED)
3) INFILTRATION RATE OF 4 IN/HR USED.
4) RECHARGE RATE=(LEACH AREA-sf)*(INFILTRATION RATE-in/hr)/(12" per foot)/(60 min per hr)/(60 sec per minute).

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

DETENTION PERFORMANCE (10 CHAMBERS)

	Area (Ac)	"c"	cA		SYSTEM	VOL (cf)	RATE (cfs)
Area 1	0.09	0.9	0.08				
Area 2	0.10	0.9	0.09				
					TOTAL	817	0.031
cA=			0.17	=sum cA			

2 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	2.7	2.0	1.6	1.3	1.2	1.1	0.7	0.50	0.44	0.38	0.32	0.29
Q-in (cfs)	0.46	0.34	0.27	0.22	0.21	0.19	0.12	0.09	0.08	0.06	0.05	0.05
Q-out (cfs)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Delta (cfs)	0.43	0.31	0.24	0.19	0.17	0.16	0.09	0.05	0.04	0.03	0.02	0.02
Volume to Store (cf)	129	187	146	115	105	94	307	196	159	122	85	67
Volume Available (cf)	817	688	501	356	241	136	42	-265	-461	-620	-743	-828
Balance (cf)	688	501	356	241	136	42	-265	-461	-620	-743	-828	-895
Volume used (cf)	129	316	461	576	681	775	1,082	1,278	1,437	1,560	1,645	1,712

10 year storm

TIME (minutes)	15	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	3.7	4.2	2.6	2.2	1.8	1.7	1.1	0.8	0.65	0.55	0.49	0.45
Q-in (cfs)	0.63	0.72	0.44	0.38	0.31	0.29	0.19	0.14	0.11	0.09	0.08	0.08
Q-out (cfs)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Delta (cfs)	0.60	0.69	0.41	0.35	0.28	0.26	0.16	0.10	0.08	0.06	0.05	0.05
Volume to Store (cf)	271	206	248	207	166	156	566	375	289	227	190	165
Volume Available (cf)	817	546	340	92	-115	-281	-437	-1,003	-1,377	-1,666	-1,893	-2,083
Balance (cf)	546	340	92	-115	-281	-437	-1,003	-1,377	-1,666	-1,893	-2,083	-2,248
Volume used (cf)	271	477	725	932	1,098	1,254	1,820	2,194	2,483	2,710	2,900	3,065

25 year storm

TIME (minutes)	15	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	4.3	3.8	3.0	2.5	2.2	1.8	1.2	0.9	0.75	0.64	0.55	0.51
Q-in (cfs)	0.74	0.65	0.51	0.43	0.38	0.31	0.21	0.15	0.13	0.11	0.09	0.09
Q-out (cfs)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Delta (cfs)	0.70	0.62	0.48	0.40	0.35	0.28	0.17	0.12	0.10	0.08	0.06	0.06
Volume to Store (cf)	317	186	289	238	207	166	627	442	350	282	227	202
Volume Available (cf)	817	500	314	25	-213	-420	-586	-1,213	-1,655	-2,006	-2,288	-2,515
Balance (cf)	500	314	25	-213	-420	-586	-1,213	-1,655	-2,006	-2,288	-2,515	-2,717
Volume used (cf)	317	503	792	1,030	1,237	1,403	2,030	2,472	2,823	3,105	3,332	3,534

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	6.0	3.6	3.0	2.5	2.4	2.4	1.2	0.9	0.74	0.62	0.55	0.49
Q-in (cfs)	1.03	0.62	0.51	0.43	0.41	0.41	0.21	0.16	0.13	0.11	0.09	0.08
Q-out (cfs)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Delta (cfs)	1.00	0.58	0.48	0.40	0.38	0.38	0.17	0.13	0.10	0.08	0.06	0.05
Volume to Store (cf)	448	175	289	238	228	228	627	455	344	270	227	190
Volume Available (cf)	817	369	194	-95	-333	-561	-789	-1,416	-1,870	-2,214	-2,484	-2,711
Balance (cf)	369	194	-95	-333	-561	-789	-1,416	-1,870	-2,214	-2,484	-2,711	-2,901
Volume used (cf)	0	0	0	0	0	0	0	0	0	0	0	0

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	420
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.57
Q-in (cfs)	1.08	0.77	0.65	0.55	0.48	0.44	0.26	0.19	0.15	0.12	0.11	0.10
Q-out (cfs)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Delta (cfs)	1.05	0.74	0.62	0.52	0.45	0.41	0.23	0.16	0.12	0.09	0.08	0.07
Volume to Store (cf)	471	222	371	310	269	248	812	566	418	338	282	239
Volume Available (cf)	817	346	125	-247	-556	-825	-1,073	-1,885	-2,451	-2,868	-3,206	-3,489
Balance (cf)	346	125	-247	-556	-825	-1,073	-1,885	-2,451	-2,868	-3,206	-3,489	-3,728
Volume used (cf)	0	0	0	0	0	0	0	0	0	0	0	0

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

RUNOFF VOLUME COMPARISONS

	Vol(cf) PRE		Vol(cf) DP#1	Vol(cf) DP#1(Rech)	Vol(cf) POST	
2 year storm	4,976		2,992		2,992	
10 year storm	7,668		4,611		4,611	
25 year storm	9,072		5,444		5,444	
50 year storm	10,273		5,702		5,702	
100 year storm	10,587		6,366		6,366	

OAKES STORAGE
FELLOWS HILL ROAD
LEBANON, NH

RUNOFF VOLUMES (DP-2)

DP#1 Overall land area total= 0.42 Ac
DP#1 Overall weighted "c"= 0.51
DP#1 cA= 0.214

2 year storm

						1hr		3hr			6hr	12hr	18hr	24hr
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	2.7	2.0	1.6	1.3	1.2	1.1	0.7	0.50	0.44	0.38	0.32	0.20	0.15	0.12
DP#1 cA=	0.214													
Q	0.29	0.43	0.34	0.28	0.26	0.24	0.15	0.11	0.09	0.08	0.07	0.04	0.03	0.03
Volume (cf)	87	257	206	167	154	141	524	386	339	293	247	925	694	555
Cumulative Volume (cf)	87	344	549	716	871	1,012	1,536	1,922	2,261	2,554	2,801	3,726	4,420	4,976
												total=		4,976

10 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	4.5	3.2	2.6	2.2	1.8	1.7	1.1	0.8	0.65	0.55	0.49	0.30	0.23	0.18
DP#1 cA=	0.214													
Q	0.48	0.69	0.56	0.47	0.39	0.36	0.24	0.17	0.14	0.12	0.10	0.06	0.05	0.04
Volume (cf)	145	411	334	283	231	218	848	609	501	424	378	1,388	1,064	833
Cumulative Volume (cf)	145	556	890	1,173	1,404	1,623	2,471	3,080	3,581	4,005	4,383	5,771	6,835	7,668
												total=		7,668

25 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.3	3.6	3.0	2.5	2.2	1.8	1.3	0.9	0.75	0.58	0.55	0.38	0.27	0.23
DP#1 cA=	0.214													
Q	0.57	0.77	0.64	0.54	0.47	0.39	0.28	0.19	0.16	0.12	0.12	0.08	0.06	0.05
Volume (cf)	170	463	386	321	283	231	1,002	694	578	447	424	1,758	1,249	1,064
Cumulative Volume (cf)	170	633	1,019	1,340	1,623	1,854	2,856	3,550	4,129	4,576	5,000	6,758	8,007	9,072
												total=		9,072

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.4	3.7	3.5	2.8	2.4	2.4	1.5	1.2	0.90	0.78	0.55	0.40	0.30	0.25
DP#1 cA=	0.214													
Q	0.58	0.79	0.75	0.60	0.51	0.51	0.32	0.26	0.19	0.17	0.12	0.09	0.06	0.05
Volume (cf)	174	476	450	360	308	308	1,157	925	694	601	424	1,851	1,388	1,157
Cumulative Volume (cf)	174	649	1,099	1,459	1,767	2,076	3,232	4,158	4,852	5,453	5,877	7,728	9,116	10,273
												total=		10,273

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.40	0.31	0.26
DP#1 cA=	0.214													
Q	0.67	0.96	0.81	0.69	0.60	0.56	0.32	0.24	0.18	0.16	0.14	0.09	0.07	0.06
Volume (cf)	202	578	488	411	360	334	1,157	848	663	563	494	1,851	1,434	1,203
Cumulative Volume (cf)	202	781	1,269	1,680	2,040	2,374	3,531	4,379	5,042	5,605	6,099	7,950	9,384	10,587
												total=		10,587

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

RUNOFF VOLUMES (DP-1)

Land area = 0.23 Ac (non-recharge)
Overall weighted "c"= 0.56

cA= **0.129** (non-recharge)

2 year storm

						1hr		3hr			6hr	12hr	18hr	
TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	2.7	2.0	1.6	1.3	1.2	1.1	0.7	0.50	0.44	0.38	0.32	0.20	0.15	0.12
Q(cfs)	0.17	0.26	0.21	0.17	0.15	0.14	0.09	0.06	0.06	0.05	0.04	0.03	0.02	0.02
Volume (cf)	52	155	124	100	93	85	315	232	204	176	148	556	417	334
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	52	155	124	100	93	85	315	232	204	176	148	556	417	334
Cumulative Volume (cf)	52	207	330	431	524	609	924	1,156	1,360	1,536	1,684	2,241	2,658	2,992

10 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	4.5	3.2	2.6	2.2	1.8	1.7	1.1	0.8	0.65	0.55	0.49	0.30	0.23	0.18
Q	0.29	0.41	0.33	0.28	0.23	0.22	0.14	0.10	0.08	0.07	0.06	0.04	0.03	0.02
Volume (cf)	87	247	201	170	139	131	510	366	301	255	227	835	640	501
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	87	247	201	170	139	131	510	366	301	255	227	835	640	501
Cumulative Volume (cf)	87	334	535	705	844	976	1,486	1,852	2,153	2,408	2,636	3,470	4,110	4,611

25 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	5.3	3.7	3.0	2.5	2.2	1.8	1.2	0.9	0.75	0.64	0.55	0.38	0.27	0.23
Q	0.34	0.48	0.39	0.32	0.28	0.23	0.15	0.12	0.10	0.08	0.07	0.05	0.03	0.03
Volume (cf)	102	286	232	193	170	139	556	417	348	297	255	1,057	751	640
Overflow Q(cfs)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	102	286	232	193	170	139	556	417	348	297	255	1,057	751	640
Cumulative Volume (cf)	102	388	620	813	983	1,122	1,679	2,096	2,444	2,741	2,996	4,053	4,804	5,444

PERSHING ST CAR WASH
PERSHING STREET
LEBANON, NH

RUNOFF VOLUMES (DP-1)

Land area = 0.23 Ac (non-recharge)
Overall weighted "c"= 0.56

cA= **0.129** (non-recharge)

50 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.0	3.6	3.0	2.5	2.4	2.4	1.2	0.9	0.74	0.62	0.55	0.40	0.30	0.25
Q	0.39	0.46	0.39	0.32	0.31	0.31	0.15	0.12	0.10	0.08	0.07	0.05	0.04	0.03
Volume (cf)	116	278	232	193	185	185	556	427	343	287	255	1,113	835	696
Overflow Q(cfs)	0	0	0	0	0	0	0.00	0.00	0.00	0	0	0	0	0
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	116	278	232	193	185	185	556	427	343	287	255	1,113	835	696
Cumulative Volume (cf)	116	394	626	819	1,005	1,190	1,747	2,173	2,516	2,804	3,059	4,172	5,006	5,702

100 year storm

TIME (minutes)	10	20	30	40	50	60	120	180	240	300	360	720	1080	1440
"i" (in/hr)	6.3	4.5	3.8	3.2	2.8	2.6	1.5	1.1	0.86	0.73	0.64	0.40	0.31	0.26
Q	0.41	0.58	0.49	0.41	0.36	0.33	0.19	0.14	0.11	0.09	0.08	0.05	0.04	0.03
Volume (cf)	122	348	294	247	216	201	696	510	399	338	297	1,113	862	723
Overflow Q(cfs)	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overflow Volume (cf)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Vol(this period)	122	348	294	247	216	201	696	510	399	338	297	1,113	862	723
Cumulative Volume (cf)	122	469	763	1,010	1,227	1,428	2,123	2,633	3,032	3,371	3,667	4,780	5,643	6,366

Pershing Street
Lebanon, NH
Operations and Maintenance Plan (OMP)
10 January 2022

Goal:

This manual was developed by Advanced Geomatics and Design, LLC (A) to assist owners in their regulatory inspections and maintenance (OMP) activities for the stormwater measures implemented at the Pershing St Car Wash.

Site Location and Description:

This project is located on Pershing St in Lebanon, New Hampshire. The site is a compilation of a former contractor's yard and a new paved area.

Owner and Operator:

BMP Owner……...……...…… Edwards Properties, LLC

I&M Responsible Party……. Edwards Properties, LLC
(Reporting, inspection, and maintenance activities)

Introduction:

The scope of this manual encompasses the access and storage building areas and infiltration basins.

First Few Months Post Construction Activity:

Following construction commencement, the site will need to be inspected after every major storm event for the following three months. Once the infil basins have become more established, less frequent inspections are required.

Key Inspection Check Points (first three months following construction)

- Inspect drainage:
  - Runoff should be seen to infiltrate after a rain event. Standing high water for long periods of time could indicate sediment inundation or functionality issues.
- Inspect vegetation:
  - Vegetation should be flourishing. If this is not the case consider watering, removing dead or unhealthy plants, or replanting areas that are poorly established.
- Inspect for erosion or short circuiting:
  - If erosion or short circuiting is occurring in the wetland soils, fill the area with more soil, compact lightly, and re-seed to prevent further erosion.
- Inspect inlets and outlets for proper function:

- Clean out debris or leaf litter when necessary.

See Attachment 2 for further detailed instructions and reference.

Post construction Activity:

As the infil basins become established less frequent inspections are necessary. Inspection of the infil basins should be performed biannually for two years after implementation and checked after any major storm events to maintain a productive system. If the infil basins show signs of healthy establishment after two years, inspection frequency can decrease to annually.

Key Inspection Check Points (post-construction)

- Inspect drainage:
  - Runoff should be seen to infiltrate after a rain event. Standing high water for long periods of time could indicate sediment inundation or functionality issues.
- Inspect vegetation:
  - Vegetation should be forming a dense root mate and becoming will established. If this is not the case consider watering, removing decaying or unhealthy vegetation, or preforming reinforcement panting to develop robust coverage throughout the system.
  - Every three years the vegetation within the rain gardens should be cut back.
- Inspect for erosion or short circuiting:
  - If erosion or short circuiting is occurring in the rain gardens soils, fill the area with more soil, compact lightly, and re-seed to prevent further erosion.
  - Look for animal burrowing that could also short circuit the system, burrowing would also need to be filled and re-seeded.
- Inspect inlets and outlets for proper function:
  - Clean out debris or leaf litter when necessary.
  - If there is any evidence of structural damage or deterioration, parts should be replaced.
- Inspect for sediment buildup:
  - Sediment buildup should be removed properly and when needed from the rain gardens.

Inspections Sheets and Documentation:

Upon the completion of construction activities that direct stormwater to the rain gardens, I&M activities will be initiated. MS may choose to contract with outside parties to perform I&M on site, but will be responsible for long-term effectiveness of the rain gardens.

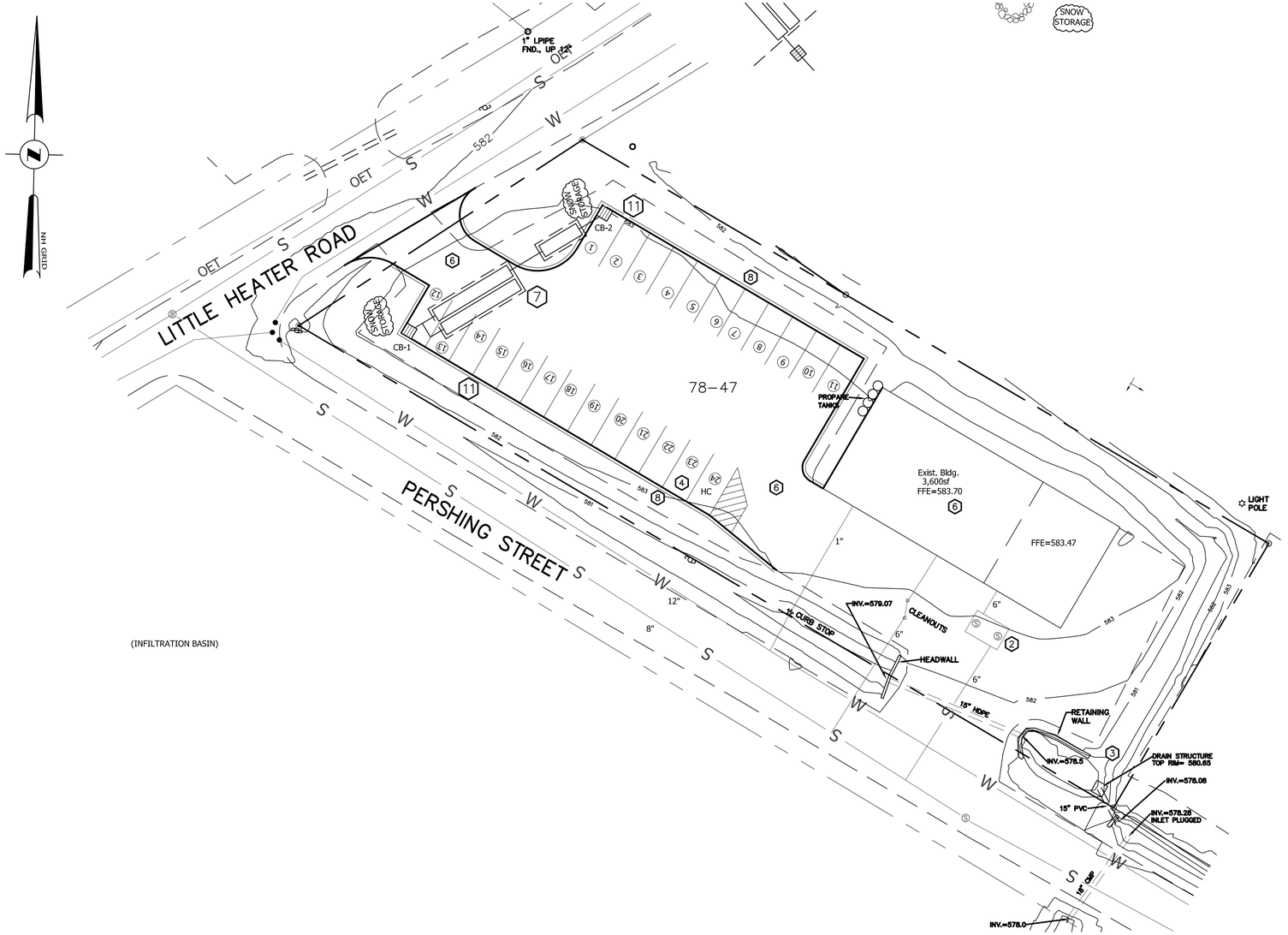
The inspection checklist that is provided as Attachment 3 is made by the University of New Hampshire Stormwater Center, this sheet will be used at to perform each inspection. An I&M Log will also need to be kept up to date and on file to clearly document the dates of each inspection and maintenance required.

All of the record will need to be kept up to date and maintained by the party responsible and be made available to the department upon request.

Appendix:

Attachment 1 Sheet C-1, site plan.

Attachment 2 I&M Log



(INFILTRATION BASIN)

SITE PLAN

20 0 20 40 60 80

NOTES:

1. ENTIRE SITE IS MAPPED AS FLOOD PLAIN. BASE FLOOD ELEVATION=580.28 (BASED ON HYPERTHERM STUDY)
2. GRIT/OIL SEPARATOR.
3. EXISTING SITE DETENTION/TREATMENT FACILITY.
4. VEHICLE PARKING SPACES 9X18 TYPICAL.
5. AREA OF PAVEMENT PLACED IN SEP'21=11,236sf+/-. PAVEMENT TO BE REMOVED=2,753sf+/-. NET NEW PAVEMENT=8,483sf+/-.
6. 20' AISLE
7. DETENTION/RECHARGE SYSTEM..
8. LANDSCAPE AREA. PAVEMENT TO BE REMOVED.
9. NOT USED
10. NOT USED.
11. CURBING SHALL BE SLOPED GRANITE.

SHEET 4 OF 15

#	REVISIONS	DATE
1		

SITE PLAN
FOR
EDWARDS PROPERTIES, LLC
IN
LEBANON, NH

ADVANCED GEOMATICS & DESIGN
105 BANK STREET - PO BOX 512
LEBANON, NEW HAMPSHIRE 03766
PHONE: (603) 448 6295
E-MAIL: advancedgeomatics@comcast.net

SURVEYED:	PATON
DESIGNED:	DAN
DRAWN:	DAN
CHECKED:	DAN
DATE:	01/10/2022

PERSHING ST
CAR WASH

SITE
PLAN

C-1

© 2022
ADVANCED GEOMATICS & DESIGN

DWG: M:\21017-PL.DWG

Edwards Properties, LLC

Lebanon, NH
Inspections and Maintenance (I&M) Log

Facility Name:	Pershing St Car Wash
Address:	9 Pershing St Lebanon, NH 03766
Begin Date:	

Date of Inspection	Inspected By	Comments and Actions Taken	Other Notes

Date of Inspection	Inspected By	Comments and Actions Taken	Other Notes

Agenda
Planning Board
February 14, 2022

Agenda Item #5A
Approval of Minutes

January 10, 2022

DRAFT

LEBANON PLANNING BOARD
Regular Session
Monday, January 10, 2022, 6:30 PM
City Council Chambers, City Hall
or Remote Via Microsoft Teams
LebanonNH.gov/Live

MEMBERS PRESENT: Bruce Garland (Chair), Matthew Hall (Vice-Chair), Gregorio Amaro, Kathie Romano, Jeremy Rutter, Laurel Stavis

MEMBERS ABSENT: Karen Zook (City Council Rep), Kim Chewning

STAFF PRESENT: David Brooks (Planning Director), Tim Corwin (Senior Planner), Brian Vincent (City Engineer)

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1. Call to Order

Chair Garland called the meeting to order at 6:30 PM.

2. Notice of Regional Impact

The following applications were received by the Planning and Development Department on or before January 10, 2021:

EJB Holdings, LLC (applicant) and Valley Publishing Corp (property owner), 24 Interchange Drive (Tax Map 129, Lot 8), zoned GC: Applicant requests a Conditional Use Permit to convert a portion of the existing building to a warehouse use. PB2022-07-CUP

Unifirst Corporation, 125 Etna Road (Tax Map 26, Lot 6), zoned IND-L: Site Plan approval for the existing industrial laundry facility was granted on March 3, 1987. Applicant requests removal of the Planning Board's condition of approval requiring bi-annual groundwater monitoring. PB2022-08-SPA

Lebanon School District SAU #88, 38 Dana Street (Tax Map 73, Lot 41) and 5 White Avenue (Tax Map 73, Lot 93), zoned R-3: Request for Site Plan Review to construct additions to the Mount Lebanon Elementary School, parking utilities upgrade, landscaping, and lighting. PB2022-09-SPR

Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L: Request for Site Plan Review to construct a parking lot for a proposed car wash use. PB2022-10-SPR

Mr. Brooks stated that Planning Staff has reviewed the above applications and recommends that none has the potential for regional impact.

A MOTION by Jeremy Rutter that none of the above applications has the potential for regional impact. The motion was seconded by Laurel Stavis.

****The MOTION was approved (5-0).*** Gregorio Amaro arrived online after the vote.

3. Public Hearing Items

A. **Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Road (Tax Map 24, Lots 9 & 10), zoned R-1:** Request for Site Plan Review to construct a proposed 4-building multi-family development consisting of 204 dwelling units, together with parking, utilities, landscaping, access, and other related site improvements. PB2021-33-SPR - Continued from December 13, 2021

Ken Braverman of the Braverman Company, Developer Dick Anagnost, Kevin Worden and Nik Fiore with Engineering Ventures appeared on behalf of the application.

Mr. Braverman introduced the project of four 51-unit buildings on Mt. Support Road. Mr. Anagnost described the project as a joint venture for workforce housing. Mr. Worden reviewed the details of the project and invited comments from the Board.

Mr. Brooks noted that Gregorio Amaro arrived. Mr. Amaro noted that he was attending remotely due to caution over COVID exposure. No Board members expressed concern with Mr. Amaro participating. Mr. Brooks noted that all subsequent votes would need to be roll call votes.

Mr. Hall inquired if a traffic light would be required at the entrance to the project with the location opposite the Dartmouth site. Mr. Braverman stated that it had not been a consideration to date. Mr. Brooks confirmed that the project would become part of the special assessment district approved last summer and its traffic oversight.

Ms. Stavis inquired about the affordable aspect of the project. Mr. Braverman stated that the target audience would be those within the State guidelines and HUD regulations for affordable housing. Mr. Anagnost added background details of the filings required for workforce housing. Ms. Romano inquired about the level and percentage of workforce housing. Mr. Anagnost explained the requirements for workforce housing and confirmed that the intent is for 100% of the units to be occupied under workforce housing guidelines. Under that designation, the units cannot be rented to applicants not meeting workforce requirements. Ms. Romano inquired about plans for outdoor social space. Mr. Worden noted that there are several outdoor features, but additional features such as benches and picnic tables could be added.

Chair Garland inquired about parking. Mr. Anagnost explained that the plan is based upon the site location and expected two-income families requiring 1.5 – 2 vehicles per unit. Indoor parking spaces would be assigned as one per unit on a first come, first served basis, with an additional space outside. Special consideration would be made for others needing indoor space. Ms. Stavis inquired about the income levels of the anticipated residents. Mr. Anagnost explained the anticipated income levels. Income averaging is also a factor that makes the housing accessible to those who qualify. Mr. Brooks confirmed the 60% of Area Median Income (AMI) levels for Lebanon and noted that the Planning Board cannot condition approval of the project based upon affordability. Mr. Brooks inquired about the length of time for the affordability designation. Mr. Anagnost stated that 30 years is the current time frame, which can be extended with a new application at the end of the 30-year term.

Ms. Romano inquired if charging stations for electric vehicles were considered. Mr. Anagnost stated that there has been a question regarding providing electric vehicle charging stations potentially requiring the owners to provide gas for other vehicle owners. Ms. Romano also inquired about lighting and the height of the complex. Mr. Braverman explained the lighting levels and added that the project is taking advantage of natural tiers for the two buildings. The terrain allowed for substantial parking under the buildings. Mr. Worden also commented on the visual aspects of the project.

The provisions for the wildlife corridors were discussed. Mr. Brooks gave the details of the wildlife corridor considerations among the other projects on Mt. Support Road and suggested additional plantings would be useful to provide cover for animals in the open areas.

The stormwater impact on wetlands was considered. Mr. Fiore confirmed the considerations and plans for managing the wetlands. Ms. Romano referred to the wetland considerations in the other projects on Mt. Support. Mr. Fiore noted that the soil is less pervious on the site, and the basins planned for the site would provide temporary storage of stormwater.

Mr. Amaro inquired about the number of bicycle parking spaces. Mr. Worden stated that there are 32 spaces for bicycles per building. Mr. Anagnost stated that the spaces are allocated on a first-come, first-served basis.

Chair Garland invited public comment.

Sarah Riley, resident of Ward 2 and member of the Conservation Commission, commented on the wildlife corridor in the Mt. Support area. The goal of providing reasonable protections for the corridor are defined in the 2016 report by Dr. Van de Poll. Ms. Riley stressed the need for a site visit and the benefit of comments from the Conservation Commission.

Mr. Fiore affirmed the importance of the wildlife corridor and the natural features of the property. Mr. Anagnost described the actual measurements of the corridor and the effort taken to protect the corridor, adding that the suggestion for additional vegetation is a good one. Mr. Worden noted the need to protect the sewer line along with the wildlife corridor.

Chair Garland opened discussion on the site visit. Mr. Braverman suggested Wednesday, January 12, 2022, at 2:00 PM for the site visit. There would be stakes marking the project features. Mr. Brooks stated that the visit would be noticed as required.

A MOTION by Matthew Hall that the Planning Board members attend a site visit on Wednesday, January 12, 2022, at 2:00PM.
The motion was seconded by Laurel Stavis.

Roll Call Vote:
Voting in Favor - Bruce Garland, Gregorio Amaro, Jeremy Rutter, Laurel Stavis, Matthew Hall, Kathie Romano.
Voting Against - None

****The MOTION was approved (6-0).***

The waiver requests were discussed. Mr. Worden described the basis for each of the waiver requests.

Mr. Vincent commented on the stormwater management and stated that a third-party engineer reviewed the project. Additional details will be forthcoming.

Ms. Romano noted that visitor bicycle parking was not described.

Mr. Brooks suggested that the Board members continue the discussion to the February 14, 2022, meeting.

A MOTION by Matthew Hall to continue the hearing of Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Road (Tax Map 24, Lots 9 & 10), zoned R-1 to February 14, 2022, at 6:30 PM.
The motion was seconded by Kathie Romano.

Roll Call Vote:
Voting in Favor – Laurel Stavis, Matthew Hall, Bruce Garland, Gregorio Amaro, Jeremy Rutter, Kathie Romano
Voting Against - None

****The MOTION was approved (6-0).***

B. **Trustees of Dartmouth College, 56 Etna Road (Tax Map 50, Lot 28), zoned IND-L**: Request for Site Plan Review to construct a +/-19,672 sq. ft. library storage building and related site improvements. PB2022-03-SPR - ***Completeness review only on 01/10/2022, public hearing to commence on 02/14/2022***

Matthew Hall and Gregorio Amaro recused themselves from the discussion.

Mr. Brooks noted that completeness could not be decided based upon the Board's lack of a quorum following the two recusals and would need to wait until the February 14, 2022 meeting.

Matthew Hall and Gregorio Amaro returned to the Board.

C. **Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax Map 51, Lot 15), zoned IND-L**: Request for approval of a Boundary Line Adjustment between lands located at 25 & 0 Labombard Road. PB2022-04-BLA
Postponed until 02/14/2022

D. **Noah Lynd & Josh Garrison (applicants) and Chaloux, LLC (property owner), 25 & 0 Labombard Road (Tax Map 64, Lot 25 & Tax 51, Lot 15), zoned IND-L**: Request for Site Plan Review to construct a +/-12,250 sq. ft. building for a health club to include a climbing gym, yoga studio and accessory retail space, together with site improvements consisting of a new parking lot, sidewalks, patio, sewer and water utility connections, and stormwater improvements. PB2022-05-SPR
Completeness review only on 01/10/2022, public hearing to commence on 02/14/2022

Mr. Corwin stated that completeness should be postponed until the February 14, 2022 meeting.

A MOTION by Matthew Hall to postpone the completeness determination until the February 14, 2022 meeting.
The motion was seconded by Kathie Romano.
Roll Call Vote:
Voting in Favor – Jeremy Rutter, Kathie Romano, Laurel Stavis, Matthew Hall, Gregorio Amaro, Bruce Garland
Voting Against - None
****The MOTION was approved (6-0).***

E. **Robert & John Oakes, 92 Riverside Drive (Tax Map 111, Lot 16), zoned RL-1**: Request for Site Plan Review to construct a +/-26,176 sq. ft. commercial self-storage unit facility together with related site improvements. PB2022-06-SPR
Completeness review only on 01/10/2022, public hearing to commence on 02/14/2022

Mr. Corwin recommends that completeness be postponed to February 14, 2022 meeting.

A MOTION by Matthew Hall to postpone the completeness determination until the February 14, 2022 meeting.
The motion was seconded by Laurel Stavis.
Roll Call Vote:
Voting in Favor –Matthew Hall, Gregorio Amaro, Bruce Garland, Jeremy Rutter, Kathie Romano, Laurel Stavis,
Voting Against - None
****The MOTION was approved (6-0).***

F. **Cicotte Properties, LLC and Johanna Cicotte, 175 Heater Road (Tax Map 64, Lot 30) and 30 Little Heater Road (Tax Map 78, Lot 61), zoned IND-L:** Request for approval of a Boundary Line Adjustment between lands located at 175 Heater Road and 30 Little Heater Road. PB2022-01-BLA

Keith Higgs, Volvo General Manager; Dan Nash, Advanced Geomatics Design; and Atty. Barry Schuster attended on behalf of the applicant.

Mr. Nash described the boundary line adjustment request.

Mr. Corwin stated that the application is complete enough for the Planning Board to accept jurisdiction and commence review.

A MOTION by Matthew Hall that the Lebanon Planning Board finds the application of Cicotte Properties, LLC and Johanna Cicotte IS complete enough to accept jurisdiction and commence review.
The motion was seconded by Laurel Stavis.
Roll Call Vote:
Voting in Favor – Bruce Garland, Gregorio Amaro, Jeremy Rutter, Kathie Romano, Laurel Stavis, Matthew Hall
Voting Against - None

****The MOTION was approved (6-0).***

Ms. Romano inquired about the new lot being buildable. Atty. Schuster stated that development on the new lot would have to comply with zoning. Ms. Romano asked for clarification about the new lot not being buildable. Mr. Brooks stated that it is not ideal to create a lot that is not buildable, but in this case, the two lots already exist, and the requested boundary line adjustment is not creating a new lot that is more constrained than the existing lot.

Chair Garland invited public comment. There was none.

The public hearing was closed

A MOTION by Matthew Hall that the Lebanon Planning Board **APPROVE** the application of Cicotte Properties, LLC and Johanna Cicotte for a proposed Boundary Line Adjustment between lands located at 175 Heater Road (Tax Map 64, Lot 30) and 30 Little Heater Road (Tax Map 78, Lot 61), PB2022-01-BLA, as shown on a plat titled "Boundary Line Adjustment Plan Prepared for Cicotte Properties, LLC & Johanna Marie Cicotte", prepared by Paton Land Surveying, LLC, dated November 23, 2021, revised December 22, 2021, Project No. 2021-282-60, including any and all supplemental submissions and testimony provided during the public hearing, with the following conditions:

1. The applicants shall provide to the City a draft copy of the deed of the land transfer for review to ensure the transfer will be completed properly for Assessing and recording purposes.

2. The applicants shall provide one (1) full-size copy of the plat and a digital record drawing (Cad .dwg Format using NH State Plane Coordinate system).

The motion was seconded by Laurel Stavis.

Ms. Romano inquired about the conditions. Mr. Corwin stated that an older Staff Memo was inadvertently used for the conditions, but the conditions have been corrected in the motion.

Roll Call Vote:
Voting in Favor – Matthew Hall, Bruce Garland, Gregorio Amaro, Jeremy Rutter, Kathie Romano, Laurel Stavis
Voting Against - None

****The MOTION was approved (6-0).***

A MOTION by Matthew Hall that the Lebanon Planning Board authorizes the Chair to sign the Boundary Line Adjustment plat for Cicotte Properties, LLC and Johanna Cicotte.

The motion was seconded by Laurel Stavis.
Roll Call Vote:
Voting in Favor – Bruce Garland, Gregorio Amaro, Jeremy Rutter, Kathie Romano, Laurel Stavis, Matthew Hall
Voting Against - None

****The MOTION was approved (6-0).***

G. **Edwards Properties, LLC, 9 Pershing Street (Tax Map 78, Lot 48), zoned IND-L**: Request for a Conditional Use Permit to convert a previously approved contractor's yard to a car wash. PB2022-02-CUP

Keith Higgs, Volvo General Manager; Dan Nash, Advanced Geomatics Design; and Atty. Barry Schuster attended on behalf of the applicant.

Mr. Nash explained that Ms. Cicotte bought the Hess Garage on Lot 48 and the former single-family house on Lot 47 and subsequently removed the house and merged the two parcels. Lot 48 has a contractor's building that is proposed to be converted into a car wash, which needed a grit and oil separator to handle sediment and oil. The separator was installed without a review. However, the change of use necessitated a conditional use permit for the existing building to be converted to a car wash.

Mr. Brooks stated that the car wash necessitates a conditional use permit in the Light Industrial District. The car dealership is non-conforming in the Light Industrial District, which complicates the issue since the applicant's agent previously stated that the car wash would be used exclusively for car dealership vehicles. If the car wash is effectively an expansion of the car dealership use, there may need to be a variance or special exception granted by the Zoning Board of Adjustment before the Planning Board can take action. The car wash cannot be an expansion of the dealership without some zoning relief. The conditional use permit would allow use of the car wash. There is also a question of the new application for the creation of a parking lot for the car wash.

Ms. Stavis asked Staff how to proceed given the complexity of the issues involved and the Zoning Board being involved.

Mr. Brooks stated that the Planning Board can issue a Conditional Use Permit. There is a site plan application that will determine how the site would be used. The Zoning Board may or may not be involved depending on further information to be provided by the applicant. Mr. Brooks recommended considering the conditional use permit at the same time as the site plan review. Mr. Hall noted that the car wash is a separate entity that may or may not have a relationship with another entity. Mr. Brooks stated that storing unregistered dealership cars on the car wash site for extended periods could be seen as an expansion of the dealership use. Mr. Schuster gave the details of the contract between the dealership and the car wash, stating that it is a convenience, but that the car wash would not be an accessory use to the dealership. Other entities may contract to use the car wash. The additional parking would be reviewed under the Site Plan Review.

Chair Garland inquired about the nature of Edwards Properties. Mr. Nash stated there are five bays in the building that would be used for washing and detailing of vehicles. There would be no use of the additional parking until the site plan is approved. The people doing the washing would be employees of the dealership or other entities. The features of the site were reviewed.

Mr. Hall expressed difficulty with the division of ownership of the dealership and the car wash. Atty. Schuster stated that the washed vehicles would not be stored on the car wash property. They would be washed and returned to the dealership. Mr. Brooks noted that staff was hearing the details of the proposed use for the first time along with the Board. Ms. Romano stated that it is difficult to hear this request after the work being done without prior approval. She noted that the additional pavement does not appear necessary for the car wash property based on the described use. Atty. Schuster explained that the additional pavement was done without knowledge of the necessity of Planning Board approval. Chair Garland noted the level of egregious avoidance of obtaining the necessary approvals. Mr. Nash stated that he believes there was no violation of State law regarding NHDES regulations. All the lots were non-conforming, and the old foundations and other materials had to be excavated.

Chair Garland invited public comment. There was none. The Public Hearing was closed.

A MOTION by Kathie Romano to continue the hearing to February 14, 2022, at 6:30PM.
The motion was seconded by Jeremy Rutter.
Roll Call Vote:
Voting in Favor – Kathie Romano, Laurel Stavis, Bruce Garland, Gregorio Amaro, Jeremy Rutter
Voting Against – Matthew Hall

****The MOTION was approved (5-1).***

4. Other Business

Mr. Brooks informed the Board that Ms. Monroe did not continue her membership on the Board. There is a resolution being prepared by the City Council to honor her service, which began in November of 2002. Ms. Monroe served 19 years on the Planning Board. The Board members were invited to attend the meeting on January 19, 2022.

Mr. Hall expressed the need to discuss the Minor Site Plan Review Committee.

5. Approval of Minutes

A. December 13, 2021

A MOTION by Matthew Hall to approve the Planning Board Minutes of December 13, 2021, as presented.
The motion was seconded by Laurel Stavis.

Roll Call Vote:
Voting in Favor – Bruce Garland, Gregorio Amaro, Jeremy Rutter, Kathie Romano, Laurel Stavis, Matthew Hall
Voting Against - None

****The MOTION was approved (6-0).***

6. Election of Officers

A. Chair and Vice Chair

Mr. Brooks explained that the limit is three full terms for each position as set forth in the Board's Rules of Procedure. Chair Garland assumed the chair in the middle of 2019. The 2022 term would be the third full term for Chair Garland. The Board agreed with his assessment, and the election proceeded.

Mr. Brooks opened the nominations for Chair. Laurel Stavis nominated Bruce Garland for Chair of the Planning Board. There were no other nominations, and nominations were closed.

Roll Call Vote:
Voting in Favor – Jeremy Rutter, Bruce Garland, Matthew Hall, Laurel Stavis, Kathie Romano, Gregorio Amaro
Voting Against – None
****Bruce Garland was approved as Chair of the Planning Board for 2022.***

Mr. Brooks opened the nominations for Vice Chair. Kathie Romano nominated Matthew Hall. There were no other nominations, and nominations were closed.

Roll Call Vote:
Voting in Favor – Gregorio Amaro, Kathie Romano, Laurel Stavis, Matthew Hall, Bruce Garland, Jeremy Rutter
Voting Against – None
****Matthew Hall was approved as Vice Chair of the Planning Board for 2022.***

7. Adjournment

A MOTION by Matthew Hall to adjourn the meeting.
The motion was seconded by Kathie Romano.

Roll Call Vote:
Voting in Favor –Gregorio Amaro, Kathie Romano, Jeremy Rutter, Laurel Stavis, Matthew Hall, Bruce Garland
Voting Against - None

****The MOTION was approved (6-0).***

The meeting was adjourned at 8:59 PM**.**

Respectfully Submitted,

Holly Howes
Recording Secretary

Agenda
Planning Board
February 14, 2022

Agenda Item #5B
Approval of Minutes

January 12, 2022

DRAFT

LEBANON PLANNING BOARD
SPECIAL MEETING – SITE WALK
WEDNESDAY, JANUARY 12, 2022
402 MOUNT SUPPORT ROAD, LEBANON
2:00 PM

MEMBERS PRESENT:	Bruce Garland (Chair), Matthew Hall (Vice-Chair), Kathie Romano, Kim Chewning, Jeremy Rutter
MEMBERS ABSENT:	Karen Zook (Council Representative), Laurel Stavis, and Gregorio Amaro
STAFF PRESENT:	David Brooks (Planning Director), Tim Corwin (Senior Planner), Mark Goodwin (GIS Coordinator)

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1. CALL TO ORDER: Chair Garland called the meeting to order at 2:00 pm.

2. SITE WALK

A. Mount Support Development, LLC (applicant) and Sylvia D. Lahaye Revocable Trust & Pat Lumber Jack, Inc. (property owners), 402 & 392 Mount Support Road (Tax Map 24, Lots 9 & 10), zoned R-1: Request for Site Plan Review to construct a proposed 4-building multi-family development consisting of 204 dwelling units, together with parking, utilities, landscaping, access, and other related site improvements. PB2021-33-SPR

Nik Fiore of Engineering Ventures and Ken Braverman were present on behalf of the applicants. Individual members of the Conservation Commission were also present. The applicant distributed a two-sided plan of the proposed project layout which included the field location of stakes identifying the project area including the northern edge of the northerly driveway access, the westerly edge of the rear parking lot, and the southern edge of the southerly driveway.

Starting from the parking area of the contractor's yard that is currently located on the property, Mr. Fiore guided the Board southward along the Mount Support Road multi-use path, pointing out the proposed locations of buildings, the southerly driveway, the wetlands, and the southerly property lines of 402 Mount Support Road and 392 Mount Support Road.

Questions were asked regarding the location of the wildlife corridor on the subject properties and across the street at 401 and 343 Mount Support Road. A suggestion was made to post signs identifying the location of the wildlife corridor.

Questions were also asked regarding the adequacy of sight distance at the proposed southerly access drive and potential conflicts between the access drives and the multi-use path. A suggestion was to install signage to help prevent conflicts between vehicles and bicycles at the access drive/multi-use path intersections.

Mr. Fiore led the Board northwards back towards the contractor's yard and into the interior of the northern end of the development site, pointing out the northern boundary of 402 Mount Support Road, the location of the northerly access drive and the planned buildings. Mr. Fiore also discussed the stormwater design for the project and the applicant's request for a waiver from the 15-ft. landscaping requirement along the northern boundary of the property, and described the proposed landscaping along Mount Support Road.

3. ADJOURNMENT:

A MOTION by Mr. Hall to adjourn the meeting.
Seconded by Mr. Rutter.

The Motion was approved (5-0)

The meeting was adjourned at 2:38 pm.

Respectfully submitted,
Tim Corwin
Senior Planner

Agenda
Planning Board
February 14, 2022

Agenda Item #5C
Approval of Minutes

January 24, 2022

DRAFT

LEBANON PLANNING BOARD
Work Session
Monday, January 24, 2022, 6:30 PM
City Council Chambers, City Hall
or Remote Via Microsoft Teams
LebanonNH.gov/Live

MEMBERS PRESENT: Bruce Garland (Chair), Matthew Hall (Vice-Chair), Kim Chewning, Jeremy Rutter, Kathie Romano, Laurel Stavis, Cori Hirai (Alternate)

MEMBERS ABSENT: Karen Zook (Council Representative), Tom Martz, Gregorio Amaro

STAFF PRESENT: David Brooks (Planning Director), Tim Corwin (Senior Planner)

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1. Call to Order

Chair Garland called the meeting to order at 6:30 PM.

2. Committee Reports

Mr. Brooks updated the Board members on the status of current vacancies and the related committees.

A. **City Council Subcommittees:**
--Class VI Roads Advisory Committee (Vacant)
--Lebanon Energy Advisory Committee (Vacant)

B. **Planning Board Subcommittees:**
--Planning Board Capital Improvement Program (B. Garland/L. Stavis/M. Hall/K. Chewning)
--Planning Board Development Regulations Update (M. Hall/K. Romano/J. Rutter/ Vacant)

C. **Other Subcommittees:**
--City Council Representative (D. Whittlesey/K. Zook)
--Heritage Commission (J. Rutter)
The new posting on the kiosks will detail the Lebanon ski jumps with the hope that one of the jumps would receive historic status.
--Pedestrian & Bicyclist Advisory Committee (G. Amaro)
--Upper Valley Lake Sunapee Regional Planning Commission (B. Garland)
--UV SubCommittee of the Connecticut River Joint Commissions (B. Garland)
--Upper Valley Transportation Management Association (VACANT)
--Mascoma River Local Advisory Committee (K. Romano)
The Glen Road dam is up for renewal.
--Steering Committee for the Implementation of the Master Plan (B. Garland/K. Chewning /Vacant/Vacant)
--West Lebanon Revitalization Advisory Committee (L. Stavis)
The last meeting was held in December, and a report was given to the City Council on January 19th. A restructuring of the committee was recommended to continue the progress already made.

--Planning & Development Department – Task Status (D. Brooks/ M. Goodwin/T. Corwin/R. Owens)

Chair Garland reported on the document recognizing Joan Monroe's contributions to the City.

Ms. Romano noted that the Board's recommendation regarding the rezoning of two properties in West Lebanon was not voted on. Mr. Brooks stated that the City Council did review the proposed amendment, but it could not be voted on with the other amendments due to the City's self-imposed procedural requirements and would have required a special hearing. A separate memo was prepared and discussed by the Council on January 5th regarding the rezoning and the Purpose Statement of the West Lebanon CBD. Mr. Brooks encouraged the Board members to listen to the recording of the January 5th City Council meeting. Mr. Brooks reminded the Board that the City Council controls the zoning ordinance, not the Planning Board.

3. Other Business

A. Fee schedule for Minor Site Plan

Mr. Brooks introduced the new fee schedule for the Minor Site Plan process. The proposal is to charge $150 plus the cost of certified notices. Mr. Hall commented that similar fees in other communities are low, and the fee should be lower than the full site plan review. Ms. Romano inquired about the trigger for the need to advertise. Mr. Brooks and Mr. Corwin explained the statutory need for the postings and notices. There are specific criteria for determining the level of review needed. Any decision of the Minor Site Plan Committee is appealable to the Planning Board within 30 days, and the Planning Board will be updated monthly on the applications reviewed.

A MOTION by Matthew Hall that the Lebanon Planning Board approves of and incorporates a fee for Minor Site Plan Review applications within the Lebanon Planning Board Fee Schedule, last adopted November 12, 2019, as proposed and presented in the packet for the Planning Board meeting of January 24, 2022.
The motion was seconded by Kim Chewning.

****The MOTION was approved (6-0).***

B. Minor Site Plan Committee update

Mr. Corwin stated that the first meeting on November 17, 2021, reviewed an application for 7 Slayton Hill Road, the former veterinary office, to be converted to a mixed-use three-unit building. The meeting was recorded.

The second meeting was held on January 13, 2022, to review two applications. One was for 7 Slayton Hill Road to convert a three-unit, mixed-use property to a six-unit property. The second was to add three units to 7 Bank Street behind AVA Gallery. A fourth application is expected soon.

Mr. Hall noted that other communities with minor site plan committees rarely use them. He suggested that it would be good to have feedback from the applicants for making future adjustments. Ms. Stavis stated that the law was intended to separate the minor site plan review process from the Planning Board. Ms. Romano suggested that a review of the new committee after six or twelve months would be useful. Chair Garland noted that a monthly report at the work session meeting would be best.

C. Staff review of site plans

Mr. Corwin explained the process required for reviewing applications based upon the Site Plan Regulations and required information for submissions. The Board will be asked to review the submission requirements to be sure that the information desired by the Planning Board is included. Staff makes suggestions to applicants following the review to ensure compliance with the regulations and to improve the quality of the application for the Board. The presentation aspects of the site plans are not specified in the Regulations. Commonly, the engineers for each project create the presentation. Staff makes suggestions to the applicants regarding their presentation, but there are no requirements to make the presentation readable or clear.

The Board members shared their comments and suggestions on the information provided on hearing items. Mr. Hall noted that the Staff Memos and images in the presentations are most helpful. Conforming to the regulations is the most important aspect of the proposals. Mr. Corwin acknowledged that there is some subjectivity involved in applying the regulations, and he suggested that landscaping regulations could be amended. The plan that is presented to the Board should include some clear, concise information for the Board to consider. Ms. Romano stated that she appreciates the details that are included in the presentations, and anything that would make the presentation clearer and more understandable would streamline the process with the Board. Ms. Stavis inquired about the most similar community to Lebanon. Mr. Brooks suggested that Keene is perhaps the most comparable in terms of their position with their region that includes a college. Ms. Stavis noted that comparing the regulations that Keene or Durham use may offer useful information for Lebanon. Mr. Rutter agreed that the Staff Memo is very useful, and the amount of information in some submissions along with determining the abbreviations used can be very time consuming. Ms. Chewning appreciates the Staff comments in areas unfamiliar to her. Ms. Romano noted that there is an absence of a checklist for the basic items necessary for a submission.

Mr. Brooks stated that Staff does their best to provide necessary, clear information for the Board's consideration. He suggested a gradual, systematic review of the regulations to assure that they are as appropriate and focused as possible. Mr. Rutter inquired if there is any historic review of a property to provide context for the Board in its consideration of the development of an area. Mr. Corwin appreciated that the Board confirmed that information regarding context of a project is helpful.

Tom Jasinski, as a potential new member of the Board, commented that getting information from both the applicant and the Staff has always been very important. Having a checklist of items required and those not meeting requirements would be even more useful.

Mr. Brooks noted that on Wednesday, January 26 at 4:00pm, the Economic Development Commission and Downtown TIF Advisory Board are meeting jointly to discuss the parking areas behind City Hall. They are planning to work together to review the Visioning study, Master Plan, and other studies and resources that could impact potential redevelopment in the downtown area. At 6:00 PM that evening, City Council will be discussing the role of the City in housing development in Lebanon. There will be multiple special meetings going forward. The Planning Board will likely be involved in several ways as this process moves forward, and the Board members are encouraged to attend or review the video recording of the meetings.

Chair Garland commented on the City Council's review of the Zoning amendments. A question was posed by attendees regarding the annual changes to Zoning Regulations. Generally, the changes are around wording. Chair Garland asked if there was a way to make the process more transparent and less cumbersome for the public, adding that it would be helpful to share the actual changes that would affect the residents. Mr. Corwin stated that there is a methodology that breaks the amendments down by topic, and only substantial ones are considered individual amendments. Changes in wording are a separate,

lesser issue. There is a lengthy review process unique to Lebanon that includes several attempts to get public input and feedback. Mr. Corwin noted that the Planning Department hopes to incorporate graphics for clarification whenever possible. Mr. Brooks explained the noticing process and the potential improvements for informing the public.

Ms. Stavis noted that zoning changes in cities are easier than in towns, which require town meeting approvals. There was a series of seminars as part of the Citizens' Academy in the past for the public to learn about the workings of the City. Mr. Brooks stated that Staff is trying to do a better job of making sure people have the opportunity learn about and understand the regulations and proposed amendments. Chair Garland suggested that the Board could issue a readable summary of the substantive zoning changes as opposed to only wordsmithing.

Chris Haidari, Ward 3, expressed concern about the amount of development occurring in the City and how the City is changing.

4. Approval of Minutes

A. None

5. Adjournment

A MOTION by Matthew Hall to adjourn the meeting.
The motion was seconded by Laurel Stavis.

****The MOTION was approved (6-0).***

The meeting was adjourned at 8:08 PM**.**

Respectfully Submitted,

Holly Howes
Recording Secretary