LEBANON PLANNING BOARD
FEBRUARY 12, 2026 - 1:00 PM
COUNCIL CHAMBERS, CITY HALL OR REMOTE VIA VIRTUAL PLATFORM
LEBANONNH.GOV/LIVE

To participate in this meeting, please join live via Microsoft Teams or call 929-229-9356 (Access Code: 798 258 635#). If you have trouble accessing this meeting, please email Tim Corwin.

---

1. Call to Order

A. The February 12, 2026, Minor Site Plan Review Committee meeting is hereby called to order.

2. Notice of Regional Impact

3. Public Hearing Items

A. **Lebanon Housing Authority, 31 Romano Circle (Tax Map 101, Lot 20), Zoned RO:** The property is improved with a mixed use development of residential and office. The applicant Minor Site Plan Review to construct an addition with a building footprint between 500 sq. ft. and 1,000 sq. ft. to an existing office building. **PB2026-10-MSP**

4. Other Business

5. Approval of Minutes

A. September 11, 2025

B. November 13, 2025

6. Adjournment

The order of agenda items is subject to change.

Meetings are open for in-person and remote attendance. Members of the public who 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 disrupt virtual or phone connection(s), the meeting will continue without remote access capabilities.
Any person with a disability who wishes to attend this public meeting and needs additional accommodation, please contact the ADA coordinator at City Hall by calling 603-448-4220 at least 72 hours in advance so that the City can make any necessary arrangements.

CITY OF LEBANON ~ PLANNING & DEVELOPMENT

MEMORANDUM

TO: **Lebanon Minor Site Plan Review Committee**

FROM: **Planning and Development Department Staff**

RE: **31 Romano Circle, Tax Map 101 Lot 20**

DATE: **January 27, 2026**

APPLICATION: **PB2026-10-MSP**

History:

Use: 31 Romano Circle is home to Lebanon Housing Authority. In 1973 public housing, named Romano Circle, was constructed on the almost 8 acre site. Around 2010 additional affordable housing units, named Romano Place, were constructed. On the site you will find public housing, affordable housing, and offices for the Lebanon Housing Authority. This past year, the parcel was rezoned from R2 (Residential Two) to RO (Residential Office) for the purpose of making it easier for the Lebanon Housing Authority to have their offices on site without additional regulations that comes from being in a strictly residential zoning district.

Site Characteristics: The parcel is adjacent to the Connecticut River. The parcel is located in the Riverbank Protection District and the Floodplain District. The proposed project area is located on the opposite end of the parcel from the river. The shoreland protection setbacks are shown on sheet 1 of 10 in the submitted plans. The applicant needs to be complete a floodplain development permit with Department of Public Works. Also, on the parcel there are 3 types of City easements. Along the west side of the parcel and down the northside is a 30’ wide sewer line easement; along the entry road, Romano Circle, and behind Building 1 there is a 30’ wide waterline easement; and between the 2 waterline easements there is a 20’ wide drainage line easement. There are very minor changes within the waterline easement area at the entry to the project area and there a no changes within the sewer line easement nor drainage line easement.

Project

The proposed project includes the construction of a one-story office building that has a footprint of 725sq ft to the rear of the existing Lebanon Housing Authority offices. The new space requires 3 additional parking spaces while will be provided on site. The project will also be adding 4 bicycle parking spaces to the parcel. The project calls for the removal of one exterior light and the installation of 6 new exterior lights that meet site plan regulations. The plans show locations of snow storage areas, but it’s unclear if there will be removal. A landscaping plan is provided. The construction of the new building will require the removal of part of the existing tree

buffer between 31 Romano Circle and 4 Waterman Avenue, a residential property. Staff asks the committee to verify the lighting plan and landscape plan will work together to not create a nuisance for the residents of 4 Waterman Ave.

Recommendation

Verify with Department of Public Works the Floodplain Development Permit is in order. If so, Staff considers the application complete and recommends approval.

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

January 22, 2026

City of Lebanon
Department of Planning and Development
51 N Park Street
Lebanon, New Hampshire 03766

RE: **Minor Site Plan Application – Romano Circle**
Tax Map 101 Lot 20
31 Romano Circle
West Lebanon, New Hampshire
GE Project No. 2305081

Dear Mr. Corwin,

On behalf of the applicant, Lebanon Housing Authority, we are pleased to submit the enclosed site plan application and associated material for the site improvements on the property located at 31 Romano Circle. The subject parcel is identified on Tax Map 101 as Lot 20. The proposed site improvements for the project include the construction of a 778 square foot office addition for the Lebanon Housing Authority's Romano Circle Residences. Additional improvements include 2 new parking spaces, stormwater management, landscaping, and lighting. The proposed addition will tie into the City of Lebanon's water and wastewater system. The site will continue to be accessed via Romano Circle, off South Main Street.

This project is located entirely within the Residential Office (RO) Zoning District. On August 21, 2024, the City Council granted approval to discontinue the Romano Circle Right of Way.

Attached, please find the following material in support of the referenced project:

- One (1) copy of the executed Site Plan application;
- One (1) copy the completed and signed Technical Checklist;
- One (1) copy of a letter from the project wetland scientist certifying that there are no wetlands on the subject property;
- One (1) copy of a written project description;
- One (1) abutters list;
- Two (2) full size plan sets of the Site Plans including Architectural Plans;
- Two (2) copies of the Stormwater Management Report;
- One (1) copy of the Floodplain Development Permit Application
- One (1) electronic submission in PDF format; and

We trust you will find the application and its attachments complete and ready for the City's consideration at the **February 12th Minor Site Plan Review Meeting**. Should you have any questions or require further information, please do not hesitate to contact me directly.

Best Regards,

Justin Daigneault
Project Manager

Project Narrative

Lebanon Housing Authority: Romano Circle
Tax Map 101 Lot 20
31 Romano Circle 03784
West Lebanon, NH

The Lebanon Housing Authority is the owner of the property located at 31 Romano Circle in Lebanon, NH. This lot is identified as Tax Map 101 Lot 20. The area of this lot is 9.5 acres and is currently developed with the Romano Circle Apartments managed by the Lebanon Housing Authority. The lot is located within the Residential Office (RO) Zoning District and has frontage along South Main Street and the Connecticut River.

The proposed site improvements for the project include the construction of a 778 square foot office addition for the Lebanon Housing Authority's Romano Circle Residences. Additional improvements include 2 new parking spaces, stormwater management, landscaping, and lighting. The proposed addition will tie into the City of Lebanon's water and wastewater system.

Proposed stormwater controls on the site include a bioretention pond which will ultimately discharge to the Connecticut River.

A Right of Way Discontinuance for Romano Circle has been granted by the Lebanon City Council on August 21, 2024.

The proposed project requires the following land use permits from the City of Lebanon:

- City of Lebanon Minor Site Plan Approval
- City of Lebanon Floodplain Permit
- City of Lebanon Building Permit
- City of Lebanon Excavation Permit

CITY OF LEBANON
APPLICATION FOR

SPECIAL EXCEPTION	☐	☒	SITE PLAN REVIEW
VARIANCE	☐	☐	SUBDIVISION
MOTION FOR REHEARING	☐	☐	LOT LINE ADJUSTMENT
APPEAL OF AN ADMIN. DECISION	☐	☐	CONDITIONAL USE PERMIT

☐ OTHER _____

PROPERTY OWNER (APPLICANT):

NAME: Lebanon Housing Authority [redacted]

MAILING ADDRESS: [redacted]

E-MAIL ADDRESS: [redacted]

CO-APPLICANT, AGENT, OR LESSEE:

NAME: Granite Engineering, LLC [redacted]

MAILING ADDRESS: [redacted]

E-MAIL ADDRESS: [redacted]

PROJECT LOCATION:

TAX MAP #: 101 LOT#: 20 PLOT #: ZONE: RO

STREET ADDRESS OF PROJECT:

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

FLOOD PLAIN ☒ YES ☐ NO

SCOPE OF PROJECT:

778 square foot office expansion with two addtional parking spaces

TYPE OF OCCUPANCY:

EXISTING ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☒ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL
PROPOSED ☐ VACANT ☐ ONE FAMILY ☐ TWO FAMILY ☐ MULTI-FAMILY ☐ COMMERCIAL ☐ INDUSTRIAL
IF USE IS **COMMERCIAL** OR **INDUSTRIAL**, PLEASE NOTE **SPECIFIC** USE: _____

SIGNATURE BLOCK:

FOR PLANNING BOARD APPLICATIONS ONLY: I, the undersigned, hereby submit this application on the date noted below with the knowledge and understanding that the Planning Board shall determine if the submitted application is complete according to its regulations at its next regularly scheduled meeting on _____, 20____, unless I personally request, in writing, that the Board delay its determination of completeness to a later date.

PROPERTY OWNER: Dina Alonso DATE: 1/15/2026

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: Dina Alonso DATE: 1/15/2026

DATE RECEIVED	FILE # (MAP/LOT)	APPLICATION #	[redacted]		
2026-01-22	101-20	PB2026-10-MSP			

CITY OF LEBANON, NH SITE PLAN REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	**DATE:** January 22, 2026
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 showing the location of the site in relation to the surrounding public street system (suggested scale: 1" = 500').	☒	*N/A*
5.1.E(2) - Names and mailing addresses of the Applicant; the Owner(s) of record of the site; the Owners of abutting properties; and the Holders of any easements, rights of way, or other restrictions, based on the current records of the City Assessor available at City Hall, not more than 5 days before the date of filing of the application.	☒	*N/A*
5.1.E(3) - Names and business addresses of the 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 New Hampshire, depicting the perimeter boundaries of the lot(s) of the proposed site, including compass bearings, distances, and lot areas, and depicting the location of any existing improvements on the property and the width and location of any rights-of-way and/or easements on the property.	☒	☐

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
5.1.E(6) - Existing and proposed grades, including topographic contours, with spot elevations. Where the grade is less than 20%, the contours shall be at 2-foot intervals; otherwise they shall be at 5-foot intervals. All contours shall be referenced to USGS or FEMA Flood Insurance Rate Map (FIRM) datums, as appropriate. Existing topographic information shall be prepared by a professional engineer registered in New Hampshire or land surveyor licensed in New Hampshire.	☒	❒
5.1.E(7) - Shape, size, height, and location of all existing structures located on site and within 200 feet of site.	☒	❒
5.1.E(7) - Elevation views indicating shape, size, height, and location of all proposed structures, including expansions of or additions to existing buildings. Such elevation views shall provide sufficient detail to allow for review by the Board and City staff of the adequacy of proposed access and egress points, walkways, lighting, and other site-related improvements.	☒	❒
5.1.E(8) - Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures. Indicate those natural and man-made features that are to be removed, retained, or altered.	☒	❒
5.1.E(8) - Wetlands on the property shall be delineated by a NH Certified Wetlands Scientist, whose seal and signature shall appear on the plan. Documentation in the form of U.S. Army Corps of Engineers New England District Wetlands Delineation Data Sheets and/or other field notes and materials concerning the delineation shall be submitted.	☒	❒
5.1.E(9) - Zoning District, Tax Map and Lot number, and use of abutting properties within 200 feet of property.	☒	❒
5.1.E(9) - Location of streets, pedestrian paths/trails, and bicycle routes within 200 feet of the site boundary; and the location of curb cuts and vehicle accesses within 200 feet of the site boundary.	☒	❒
5.1.E(10) - Proposed streets, driveways, emergency vehicle accesses, parking spaces, and sidewalks, with indication of dimensions and direction of travel. Show required sight distances at curb cuts and dimensions for the inside radii of all curves.	☒	❒
5.1.E(10) - Vehicle and bicycle parking spaces shall be numbered.	☒	❒
5.1.E(10) - Loading spaces and facilities used in connection with any structures on the site shall be shown	❒	❒
5.1.E(10) - Total square footage and percentage of the lot covered by impervious cover shall be shown.	☒	❒
5.1.E(11) - Parking area safety measures including raised crosswalks/speed tables, signage, walkway lighting, striping and similar markings such as dedicated pedestrian/bicycle crossings and lanes through parking areas, fire lanes, compact and/or electric vehicle parking/charging, parking wayfinding, ADA signage and access aisles.	☒	❒
5.1.E(12) - Size and location of all existing and proposed public and private utilities. *(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, the portions of any walls or architectural features to be illuminated, illumination levels of walls or architectural features, and aiming points for any remote light fixtures.	☒	❒
5.1.E(14) - Plan for location of free-standing or building-mounted signs, including location, mounting, aiming, and shielding of any remote light fixtures for externally-lit signs.	❒	❒
5.1.E(14) - For internally-lit signs, relevant information concerning the method of illumination and the opacity of the sign background, showing that the proposed installation conforms to the requirements of the Regulations.	❒	❒
5.1.E(15) - The location and boundaries of any Overlay Districts established pursuant to Article IV of the Zoning Ordinance (including but not limited to the Wetlands Conservation District, Riverbank Protection District, Steep Slopes District, and Floodplain District) and, if applicable, protected shorelands pursuant to the Shoreland Water Quality Protection Act (NH RSA 483-B).	☒	❒
5.1.E(15) - For properties located within the Floodplain District, the 100-year flood elevation, floodway, shoreland protection zone, and flood plain limits shall be identified.	☒	❒
5.1.E(16) - Landscaping plan showing proposed new plantings to be installed and existing natural vegetation to be retained. Plan shall show in detail the number, size (height and/or caliper), and species (botanical and common names) of all proposed shrubs and trees.	☒	❒
5.1.E(16) - Existing trees over 12 inches in diameter (measured 4.5 feet above ground surface) within 25 feet of the disturbed area, must be counted and shown on the plan, if included towards fulfilling landscaping requirements.	❒	❒
5.1.E(16) - Calculations for square footage of perimeter landscaping.	❒	❒
5.1.E(16) - Parking lot shading calculations shall be provided by depicting new trees and shrubs at 10-year crown size.	☒	❒
5.1.E(17) - Existing and proposed surface and subsurface storm drainage facilities, including City storm drainage facilities located within 200' of site.	☒	❒
5.1.E(17) - Plans for retention, detention, slow release, and treatment of storm water shall be provided shall be provided in accordance with the requirements of Section 6.6.	☒	❒
5.1.E(18) – Section 6.6. Stormwater Management submission requirements.	See Stormwater Checklist	
5.1.E(19) - Plans for snow removal and storage.	☒	❒

Plan Requirements *(cont.)*	**Info. Provided**	**Waiver Sought**
5.1.E(20) - A plan for the development showing provisions for automobile, transit, bicyclist, and pedestrian access and circulation. Such plan shall show both existing and proposed means of access to the site including connections with, public streets, sidewalks, transit stops, and formal paths/trails. Plans shall include any traffic calming and traffic control devices necessary in conjunction with the site development, as well as the location of all existing transit routes and transit stops located or passing within 1/4 mile (1,320 feet) of the property.	❒	❒
5.1.E(21) - Construction detail drawings including, but not limited to, pavements, walks, steps, curbing, drainage structures, water and/or sewer utilities, ground-mounted signage (e,g,, fire lanes, ADA parking, commercial), surface treatments, transit shelters, energy generation units (e.g., solar), bike rack style, electric vehicle charging, outdoor lighting, outdoor furniture, retaining walls, tree boxes and other site systems or structures. Accompanying specifications and cutsheets may be required.	☒	❒
5.1.E(21) - Where applicable, roadway, drainage, water and sewer utility profile drawings shall be provided at a scale of 1"=40 feet (horizontal) and 1"=4 feet (vertical) and typical cross-section drawings shall be provided at a scale of 1"=5 feet (horizontal and vertical), unless prior approval to use an alternate scale is granted by the Reviewing Engineer. (NOTE: Ordinarily, only two (2) sets of such construction drawings shall be provided to the Planning and Development Department with the application submission.)	☒	❒
5.1.E(22) - Depict any current and proposed easements, rights-of-way, and deed restrictions including those related to sewer, electrical utility, shared access, etc.	☒	❒
5.1.E(23) - For multi-family structures, plans for on-site recreational facilities.	❒	❒
5.1.E(24) - Where a fire, emergency equipment, or similar vehicle turnaround area is provided, it must have an adequate turn radius. Provide CAD Autoturn data or a similar basis of design for the turn radius, if requested by Lebanon Fire or Engineering staff. City staff may also ask for this information at any time.	❒	❒
Supporting Documents and Information, Where Applicable	**Info. Provided**	**Not Applicable**
5.1.G(1) - An estimated timetable, to include phasing schedules, for construction and completion of buildings, parking, facilities, landscaping, and other required improvements.	❒	❒
5.1.G(2) - Any development estimated to generate a net increase of 100 peak hour trips or 1,000 average daily trips (based upon the most current edition of the ITE Trip Generation Manual) shall prepare and submit a Traffic Impact Study in accordance with standard traffic analysis conventions as set forth by the NHDOT. The Board may, at its discretion, require the submission of a Traffic Impact Study for developments estimated to generate less than 100 peak hour trips or 1,000 average daily trips if the Board has reason to believe such development could adversely affect levels of service or have other adverse impacts.	❒	❒
5.1.G(3) – Written requests for waivers from all applicable provisions of these Regulations shall be provided pursuant to Article VII – "Waiver Procedure". *(note: use Application for Waivers form).*	❒	❒
5.1.G(4) – For multi-family dwelling developments and mixed-use developments resulting in a net increase of 50 dwelling units or more, the application shall include the information and impact statements identified in Section 6.9.B.	❒	❒

NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE V OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Granite Engineering, LLC

CITY OF LEBANON, NH STORMWATER REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	**DATE:** January 22, 2026

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	☐	☐

Plan Requirements (*cont.*)	**Info. Provided**	**Waiver Sought**
g. Plan references and notes (including sequence of soil disturbance) (Construction sequence is located on sheet 12 of 13 in the project plan set)	☒	☐
h. Proposed and existing public and private utilities	☒	☐
i. Proposed project components to become property of or the responsibility of the City shall be labeled as such	n/a ☐	☐
j. Existing and proposed impervious cover, with areas used to calculate effective impervious cover (EIC, as defined herein) clearly identified and the square footage of each type identified and labeled. (table with this information is located within stormwater report)	☒	☐
k. Test Pit(s) locations and data where stormwater practices are proposed, as appropriate. (test pit log is located on sheet 13 of the plan set)	☒	☐
l. Details of individual design elements shown on separate plan sheets following the Proposed Conditions SMP. (all stormwater and erosion control details are shown on sheets 9-13 of the plan set) The Existing Conditions SMP & the Proposed Conditions SMP shall be provided on sheets no larger than 24" x 36", at a scale of one (1) inch = 20 feet for urban areas, and one (1) inch = 40 feet for non-urban areas. The City Engineer will make the final determination as to the appropriate scale, ensuring that all important site and hydrologic features are easily recognized. If plan shall encompass more than two (2) sheets, at the required 1:40 or 1:20 scale, a separate large scale representation plan sheet (e.g. 1:100) is required to be provided, so as to show entirety of site, as well as off-site contributing areas.	☒	☐
6.6.C.2 - In addition to the above described SMP plan sheets, the following SMP supplemental information is required: 1. A drainage analysis that includes calculations comparing pre- and post-development stormwater runoff rates (cubic feet per minute) and volumes (cubic feet) based on a 1-inch rainstorm, and the 2-year, 25-year, 50-year, and 100-year, 24-hour frequency storms. Calculations shall include, but not be limited to, the sizing of all structures and BMPs, including sizing of emergency overflow structures based on the 50-year 24-hour frequency storm discharge rate, with 1-foot of free-board. Storm rates shall be based on current design depths from the Northeast Regional Climate Center - http://precip.eas.cornell.edu. *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) (see sheet 6 of the plan set)	☒	❒
4. A comprehensive Operation and Maintenance Plan for long-term maintenance of all proposed stormwater management elements and BMPs including the proposed schedule of inspections and anticipated maintenance (see section H.2 Operations & Maintenance Plan for detailed requirements).	☒	❒
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: Granite Engineering, LLC

(Last Revised 9/20/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

The Lebanon Housing Authority, owners of the property situated at 31 Romano Circle in Lebanon, NH and referenced on Lebanon Tax Assessor's Map 101, 20, hereby authorizes Granite Engineering LLC, to submit local, state, and federal land use applications on our behalf, as they relate to the development of the Lebanon Housing Authority property to accommodate a new office building. Further, I authorize those parties to aid in the representation of said permits, as required, before the City of Lebanon and the State of New Hampshire.

Ditha Alonso

Ditha Alonso

Lebanon Housing Authority
31 Romano Circle
West Lebanon, NH 03784

April 27, 2024

Justin Daigneault
Project Manager
Granite Engineering, LLC
150 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101

Re: Romano Circle, Lebanon , Map 101, Lot 20
Subject: Wetland Delineation

Dear Mr. Daigneault:

Per your request I went out to the above-referenced parcel on April 16, 2024 to survey the entire property for wetlands. The presence for wetlands was based on the following:

1. The Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, January 1987and the NH DES Wetlands Bureau Code of Administrative Rules.
2. Classification of Wetlands and Deepwater Habitats of the United States[1].
3. Field Indicators for Identifying Hydric Soils in New England[2].
4. National List of Plant Species That Occur in Wetlands: Northeast (Region 1)[3].

Based on the above no wetlands were observed on the parcel.

Sincerely,

Luke D. Hurley, CWS, CSS, CESSWI
Principal/Owner
Hurley Environmental and Land Planning, LLC

[1] Cowardin, L. M., 1979. Classification of Wetlands and Deepwater Habitats in the United States. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service.
[2] New England Hydric Soils Technical Committee, Version 4. September 2019. "Field Indicators for Identifying Hydric Soils in New England."
[3] Lichvar, R.W. & Kartesz, J.T. 2009. North American Digital Flora: National Wetland Plant List. 2.2.1.

CERTIFIED NOTIFICATION LIST

Notice shall be sent by certified mail to the Owner; Applicant, if different from Owner; Abutters; Holders of conservation, preservation, or agricultural preservation restrictions (as defined under RSA 477:45) on the subject property; the holders of easements, rights-of-way, and other restrictions; and every engineer, architect, land surveyor, or soil or wetlands scientist whose seal appears on any plan submitted to the Board; and any other persons required by RSA 676:4, I(d). The names and mailing addresses shall be furnished by the Applicant.

672:3 Abutter. – "Abutter" means any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the local land use board. For purposes of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a condominium or other collective form of ownership, the term abutter means the officers of the collective or association, as defined in RSA 356-B:3, XXIII. For purposes of receipt of notification by a municipality of a local land use board hearing, in the case of an abutting property being under a manufactured housing park form of ownership as defined in RSA 205-A:1, II, the term "abutter" includes the manufactured housing park owner and the tenants who own manufactured housing which adjoins or is directly across the street or stream from the land under consideration by the local land use board.
Source. 1983, 447:1. 1986, 33:2. 2002, 216:1, eff. July 15, 2002.

PLEASE PROVIDE NAMES & MAILING ADDRESSES FOR ALL PERSONS LISTED ABOVE.

Map & Lot Number: Map 101 Lot 20	**Map & Lot Number:**
Property Owner: Romano Place LLC 31 Romano Circle West Lebanon, NH 03784	Applicant, Co-Applicant, Agent, or Lessee: Lebanon Housing Authority 31 Romano Circle West Lebanon, NH 03784
Map & Lot Number: Map 86 Lot 1	**Map & Lot Number:** Map 101 Lot 2
70-72-78 South Main St LLC 32 Lebanon Street, Suite A Hanover, NH 03755	City of Lebanon 51 North Park Street Lebanon, NH 03766
Map & Lot Number: Map 101 Lot 14	**Map & Lot Number:** Map 101 Lot 17
Christopher Morse 10 Waterman Ave West Lebanon, NH 03784	Mark W. & Susan L. Rose 4 Waterman Ave West Lebanon, NH 03784

Map & Lot Number: Map 101 Lot 18	**Map & Lot Number:** Map 101 Lot 21
Martin Jeffries 6 Waterman Ave West Lebanon, NH 03784	Kyoto LLC 288 Plainfield Road West Lebanon, NH 03784
Map & Lot Number: Map 101 Lot 22	**Map & Lot Number:** Map 101 Lot 23
Michael S Devers 84 South Main Street West Lebanon, NH 03784	Bhavnesh Kaushik 82 South Main Street West Lebanon, NH 03784
Map & Lot Number: Map 101 Lot 27	**Map & Lot Number:** Map 101 Lot 28
Maple & Mesquite 1 Oak Ridge West Lebanon, NH 03784	Soodsma Holdings LLC PO Box 111 Hanover, NH 03755
Map & Lot Number: Map 101 Lot 29	**Map & Lot Number:**
Amir F Papa 95 South Main Street West Lebanon, NH 03784	
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**

(Revised 2/8/2024)

Map & Lot Number: Civil Engineer	**Map & Lot Number:** Architect
Granite Engineering, LLC 150 Dow Street Tower 2, Suite 421 Manchester, NH 03101	Right-Trak Design Inc 14 B Tatro Drive Goffstown, NH 03045
Map & Lot Number: Surveyor	**Map & Lot Number:** Landscape Architect
Rockwood Land Services, LLC PO Box 347 Hartland, Vermont 05048	Design Works Landscaping 125 Watson Road Hudson, NH 03051
Map & Lot Number: Wetland Scientist	**Map & Lot Number:**
Hurley Environmental and Land Planning, LLC PO Box 356 Epsom, NH 03234	
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**
Map & Lot Number:	**Map & Lot Number:**

(Revised 2/8/2024)

FEE SCHEDULE
LEBANON PLANNING BOARD
Adopted January 24, 2022

LOT LINE ADJUSTMENT (Boundary Line Adjustment)

		TOTALS
FILING FEE	$25.00	$25.00
ADVERTISING FEE	$100	$100
NOTIFICATION FEE **(see note on page 2)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____abutter certifieds)
TOTAL DUE		$202.02

MINOR SUBDIVISION

		TOTALS
FILING FEE	$150.00	$150.00
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note on page 2)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____(abutter certifieds)
TOTAL DUE AT TIME OF FILING		$

****Engineering Review fees may also be required. See note on page 2.**

PRELIMINARY REVIEW OF A MAJOR SUBDIVISION

		TOTALS
FILING FEE	$200.00	$200.00
NUMBER OF LOTS* _____	$30.00 per lot*	
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note on page 2)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____(abutter certifieds)
TOTAL DUE AT TIME OF FILING		$

Or units when the subdivision does not create individual lots.

****Engineering Review fees will also be required. See note on page 2.**

FINAL REVIEW OF A MAJOR SUBDIVISION

		TOTALS
FILING FEE	$500.00	$500.00
FIRST FIVE (5) LOTS*	$75.00 per lot*	
NUMBER OF LOTS 6+*	$150.00 per lot*	
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note on page 2)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____(abutter certifieds)
TOTAL DUE TIME OF FILING		$

Or units when the subdivision does not create individual lots.

****Engineering Review fees will also be required. See note on page 2.**

SITE PLAN REVIEW

		TOTALS
FILING FEE	$250.00	$250.00
SQUARE FOOTAGE	$75.00 per 1,000 sq. ft. (gross floor area)	75
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note on page 2)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $___abutter certifieds)

SITE PLAN REVIEW

TOTAL DUE AT TIME OF FILING		
****Engineering Review fees will also be required. See note on page 2.**		

SITE PLAN REVIEW AMENDMENT (WITH STRUCTURAL CHANGES)

		TOTALS
FILING FEE	$250.00	$250.00
SQUARE FOOTAGE	$75.00 per 1,000 sq. ft. (gross floor area)	
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note below)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____(abutter certifieds)
TOTAL DUE AT TIME OF FILING		$
****Engineering Review fees may also be required. See note below.**		

OTHER

-SITE PLAN REVIEW AMENDMENT (WITH NO STRUCTURAL CHANGES)
-EXTENSION REQUESTS
-CONDITIONAL USE PERMITS &
-CONCEPTUAL SITE PLAN REVIEW (if required per section 4.3.B of Site Plan Regs)

		TOTALS
FILING FEE	$250.00	$250.00
ADVERTISING FEE	$100.00	$100.00
NOTIFICATION FEE **(see note below)**	$5.00 + Current USPS rate per certified notice (see below) X_____notices	$5.00 $_____(abutter certifieds)
TOTAL DUE AT TIME OF FILING		
****Engineering Review fees may also be required. See note below.**		

MINOR SITE PLAN REVIEW

		TOTALS
FILING FEE	$150.00	$150.00
NOTIFICATION FEE **(see note below)**	Current USPS rate per certified notice (see below) X 17 notices	$ 102.68 (abutter certifieds)
TOTAL DUE		$ 252.68

ENGINEERING REVIEW FEES:

After an application to the Planning Board is submitted and the filing fees identified above have been paid, the Planning & Development Department will determine the scope of required engineering review and will obtain an estimated cost from the reviewing engineer. A cost estimate of the review fees will usually be generated within two (2) – three (3) business days. Once conveyed to the applicant, the estimated review fees shall be paid by the applicant within five (5) business days, and an escrow account shall be established by the Planning & Development Department. No plans will be reviewed unless and until the review fee estimate is paid, if required.

Please note that escrow fees are only an estimate of what services will cost and actual costs of review may be less or more than the amount initially estimated. Any unused portion of the escrow will be returned to the applicant at the end of the approval process if such a surplus remains. Additionally, in the event the escrow amount does not cover the full cost of services the Applicant shall pay any remaining costs as a condition of approval. See also Section 4.7 of the Site Plan Review Regulations and Section 7.7 of the Subdivision Regulations.

NOTIFICTION FEE: CURRENT FEE as of July 2024 is $6.04 per certified notice

THE CERTIFIED NOTIFICATION FEE IN ALL SECTIONS ABOVE INCLUDES THE FOLLOWING: ALL ABUTTERS, THE APPLICANT, PROPERTY OWNER, HOLDER OF CONSERVATION, PRESERVATION, OR AGRICULTURAL PRESERVATION RESTRICTION(S); AND EVERY ENGINEER, ARCHITECT, LAND SURVEYOR OR SOIL SCIENTIST WHOSE PROFESSIONAL SEAL APPEARS ON ANY PLAT SUBMITTED TO THE BOARD AND ANY OTHER PERSONS REQUIRED BY RSA 676:4, I(d).

CITY OF LEBANON - APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

The undersigned hereby makes application for a permit to develop in a Local Regulatory Floodplain or in a Local Regulatory Conveyance Zone. The work to be performed is as described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of all local, state, and federal regulations.

Lebanon Housing Authority Project Name	01/12/2026 Date
Ditha Alonso Contact Name	603-298-5753 Contact Telephone

Lebanon Housing Authority Owner or Developer	To be determined Builder/Contractor
31 Romano Circle, West Lebanon, NH 03784 Address	 Address
603-298-5753 Telephone	 Telephone
Jeffrey D. Merritt 11778 Engineer License Number	 Architect License Number
Granite Engineering, LLC Address 150 Dow Street, Tower 2, Suite 421 Manchester, New Hampshire 03101	Megan L. Murphy 06300 Address Right-Trak Design Inc., 14B Tatro Drive Goffstown, NH 03045
Telephone 603-518-8030	Telephone 603-384-2830

SITE DATA

1. Property Location (Physical Address) 31 Romano Circle, West Lebanon, NH 03784
2. City of Lebanon Tax Map 101 Lot 20
3. FEMA Flood Map Panel Number 33009C0889E Effective Map Date FEB. 20, 2008
4. Type of Development (Check All That Apply):
   X New Construction ___Alteration or Repair of Existing Structure X Site Grading
   X Filling X Excavation ___Other–Please describe:
5. Type of Facility (Check All That Apply):
   X Residential ___Functionally Dependent Facility ___Critical Facility
   ___Manufactured Home ___Other–Please describe:
6. Description of Development 778 Square foot Office addition off the existing building and 2 parking spaces.
7. Structure:
   New Structure sq ft 778 + Existing Structure sq ft _____ + Improvement sq ft _____ = Total sq ft _____
   Principal Use Residential Housing Accessory Uses Office
8. Value of Improvement (Fair Market) $ 250,000 Pre-improvement Value of Structure $ 900,105
9. Is the development located within the Local Regulatory Conveyance Zone? _____Yes X No
10. Other Permits Required (Check All That Apply):
    ___NHDES Shoreland Permit ___NHDES Wetland Permit ___NHDES Alteration of Terrain
    X Other–Please describe: Local Site Plan approval

CITY OF LEBANON - APPLICATION FOR FLOODPLAIN DEVELOPMENT PERMIT

ELEVATIONS

1. Elevation of 100-Year Base Flood Elevation (BFE) at development site: 352.1 feet
2. Elevation of lowest floor of structure (at or above BFE): 353.10 feet
3. Elevation of all attendant utilities, including all heating and electrical equipment, servicing the structure for floodproofing (minimum one foot above BFE): 353.10 feet
4. Type of flood protection method? _____Flood Proofing __X__Elevating the development
5. Elevation Datum used for determination of BFE: _____NGVD 1929 __X__NAVD 1988

I certify that the information on this form is true and correct. I understand that false or inaccurate information submitted to the City of Lebanon on which a permit for proceeding with construction work is issued by the City of Lebanon may be the basis for revocation of the permit or assessment of a civil fine or other penalties. I also understand that construction plans submitted to and approved by the City of Lebanon in the form of a permit issued must be followed and adhered to and any deviance there from not approved by the City of Lebanon may also be the basis for a notice of violation, notice of citation and revocation of the of the permit or assessment of a penalty by the City of Lebanon.

Ditha Alonso
Signature of Owner or Developer

1/15/2026
Date

Ditha Alonso
Printed Name of Owner or Developer

OFFICIAL USE ONLY

PERMIT APPLICATION IS HEREBY:

_____APPROVED _____DENIED

Comments: _____

_____
Signature of Authorizing City Official

_____
Date

_____
Printed Name of Authorizing City Official

_____
Title of Authorizing City Official

FLOODPLAIN PERMIT CHECKLIST

Lebanon Housing Authority — Project Name

1/15/2026 — Date

- [x] 1. A Completed and Signed Permit Form.
- [x] 2. The Permit Fee ($250.00)
- [x] 3. Current survey certified by a land surveyor licensed in NH that shows the following information:
  - [x] A. North Arrow
  - [x] B. Scale of the plan
  - [x] C. Date of the plan and any revisions
  - [x] D. Perimeter boundaries of the lot(s), including compass bearings, distances, and lot areas
  - [x] E. Location of existing improvements on the property
  - [x] F. Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures.
  - [x] G. Width and location of rights-of-way and/or easements on property
  - [x] H. Existing grades, including topographic contours with spot elevations, prepared by a professional engineer or land surveyor licensed in NH. (Contours shall be at 2 ft. intervals)
- [x] 4. Proposed development plans showing the following information:
  - [x] A. Vicinity Sketch (suggested scale: 1"=500')
  - [x] B. Names and mailing addresses of Owner of record of site, holders of any easements, rights-of-way, or other restrictions
  - [x] C. Names and business addresses of preparer(s) of the plan, and every surveyor, engineer, architect, soil scientist, or wetlands scientist whose professional seal appears on any plan or document submitted.
  - [x] D. North Arrow
  - [x] E. Scale of the plan
  - [x] F. Date of the plan and any revisions
  - [x] G. Zoning designation
  - [x] H. Tax Map and Lot number(s) for the subject property
  - [x] I. Area of the lot
  - [x] J. Gross floor area of existing and proposed buildings/additions
  - [x] K. A legend that clearly indicates all symbols, line types, and shading
  - [x] L. Perimeter boundaries of the lot(s), including compass bearings, distances, and lot areas
  - [x] M. Location of existing and proposed improvements on the property
  - [x] N. Location of existing natural features such as streams, marshes, lakes, ponds, wetlands, rock outcrops, or wooded areas, and existing man-made features such as roads and structures. Indicate those natural and man-made features that are to be removed, retained, or altered
  - [x] O. Width and location of rights-of-way and/or easements on property
  - [x] P. Existing and proposed grades, including topographic contours with spot elevations, prepared by a professional engineer or land surveyor licensed in NH. (Contours shall be at 2 ft. intervals)
  - [x] Q. Wetlands on the property, if any, shall be delineated by a NH Certified Wetlands Scientist, whose seal and signature shall appear on the plan
  - [x] R. The 100-year flood elevation, floodway, and floodplain limits
  - [x] S. The NHDES Shoreland setback lines, if applicable
  - [x] T. Size and location of all existing and proposed public and private utilities
- [x] 5. Completed Floodplain Permit Checklist

RESIDENTIAL SITE PLAN

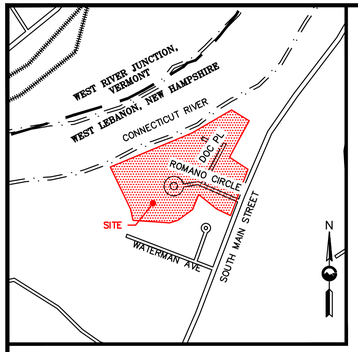
LEBANON HOUSING AUTHORITY

TAX MAP 101 LOT 20

31 ROMANO CIRCLE

WEST LEBANON, NEW HAMPSHIRE

GRAFTON COUNTY

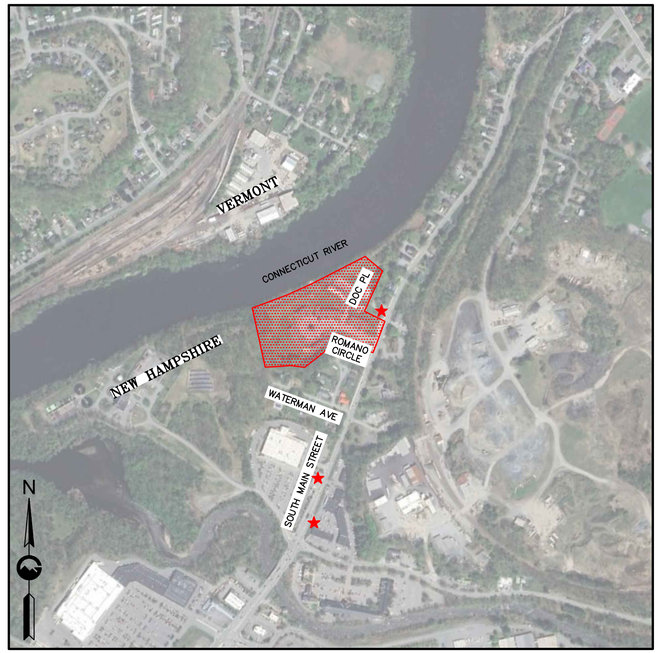


LOCUS MAP
SCALE: ±1"=500'

TABLE OF RO ZONING REQUIREMENTS			
DESCRIPTION	ALLOWED	EXISTING MAP 101 LOT 20	PROPOSED MAP 101 LOT 20
MINIMUM LOT AREA	148,000 SF*	413,750 SF	413,750 SF
MINIMUM LOT FRONTAGE	100 FT	328.46 FT	328.46 FT
MINIMUM LOT WIDTH	75 FT	328.46 FT	328.46 FT
FRONT YARD SETBACK	20 FT	47.3 FT	47.3 FT
SIDE YARD SETBACK	15 FT	15.1 FT	15.1 FT
REAR YARD SETBACK	20 FT	40.7 FT	40.7 FT
MAXIMUM LOT COVERAGE	65%	25.3%	25.4%
MAXIMUM BUILDING HEIGHT	45 FT	25 FT	25 FT
ALLOWED STORIES	2.5	2	2
BUILDING COVERAGE REMOVED	N/A	N/A	N/A
BUILDING COVERAGE ADDED	N/A	N/A	725 SF
BUILDING COVERAGE TOTALS	25%	7.41%	7.58%
IMPERVIOUS COVER REMOVED	N/A	N/A	1,088 SF
IMPERVIOUS COVER ADDED	N/A	N/A	1,436 SF
IMPERVIOUS COVER TOTAL	N/A	104,828 SF	105,176 SF
LOADING SPACES	0	0	0
USE	N/A	46-UNIT MULTI-FAMILY DEVELOPMENT	RESIDENTIAL /ACCESSORY OFFICE
BICYCLE STORAGE SPACES	2	0	4
PARKING REQUIRED (RESIDENTIAL)	1.5 SPACES/UNIT	1.5 X 46 = 69	1.5 X 46 = 69
PARKING REQUIRED (OFFICE)	1/250 SF OF GFA	1,624 SF/250 = 6	1,624 SF/250 = 6 725 SF/250 = 3
TOTAL PARKING REQUIRED	N/A	75	78
TOTAL PARKING PROVIDED	N/A	89	91
TOTAL MAX PARKING PERMITTED	120% OF MIN.	90	94
OVERLAY DISTRICT	RIVERBANK PROTECTION DISTRICT AND FLOODPLAIN DISTRICT		

*10,000 SF FOR FIRST 2 UNITS + 3,000 X NUMBER OF UNITS

TABLE OF BUILDING AREAS				
BUILDING	STORIES	HEIGHT	GROSS FLOOR AREA	
EXISTING GARAGE	1	22 FT	STORY 1	2,160 SF
			STORY 2	N/A
EXISTING BUILDING #1	2	25 FT	BASEMENT	1,998 SF
			STORY 1	3,680 SF
			STORY 2	2,146 SF
EXISTING BUILDING #2	2	25 FT	BASEMENT	3,888 SF
			STORY 1	3,888 SF
			STORY 2	4,176 SF
EXISTING BUILDING #3	2	25 FT	STORY 1	2,376 SF
			STORY 2	2,552 SF
EXISTING BUILDING #4	2	25 FT	BASEMENT	3,402 SF
			STORY 1	4,838 SF
			STORY 2	3,654 SF
EXISTING BUILDING #5	2	25 FT	STORY 1	3,564 SF
			STORY 2	3,828 SF
EXISTING BUILDING #6	2	25 FT	STORY 1	3,564 SF
			STORY 2	3,828 SF
EXISTING BUILDING #7	2	25 FT	STORY 1	2,516 SF
			STORY 2	2,226 SF
EXISTING BUILDING #8	2	25 FT	STORY 1	4,373 SF
			STORY 2	3,937 SF
PROPOSED OFFICE ADDITION	1	16.33 FT	STORY 1	778 SF



LOCATION PLAN
SCALE: 1"=500'

★ DENOTES TRANSIT STOP WITHIN ¼ MILE OF SITE

OWNER & APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784
(603) 298-5753

CIVIL ENGINEER:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, STE 421
MANCHESTER, NH 03101
(603) 518-8030

LANDSCAPE ARCHITECT:
DESIGN WORKS LANDSCAPING
125 WATSON RD
HUDSON, NH 03051
(603) 864-8646

WETLAND / SOIL SCIENTIST:
HURLEY ENVIRONMENTAL AND
LAND PLANNING, LLC
PO BOX 356
EPSOM, NH 03234
(603) 583-1745

ARCHITECT:
RIGHT TRAK DESIGN
14 B TATRO DR
GOFFSTOWN, NH 03045
(603) 384-2830

SURVEYOR:
ROCKWOOD LAND SERVICES, LLC
24 COBB HILL RD
HARTLAND, VT 05048
(802) 436-1039

SHEET NO.	TABLE OF CONTENTS
1	OVERVIEW PLAN
2 – 3	BOUNDARY SURVEY
4	REMOVALS PLAN
5	SITE PLAN
6	GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN
7	LIGHTING PLAN
8 – 10	DETAILS
L1 – L2	LANDSCAPE PLANS
A1.0, A2.0, A2.1	ARCHITECTURAL PLANS

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

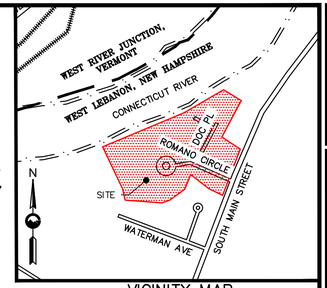
STAMP:
STATE OF NEW HAMPSHIRE
JOSEPH C. McGRATH
No. 11778
LICENSED PROFESSIONAL ENGINEER
1/22/2026

REVISIONS			
No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

N

REFERENCE PLANS:

1. "BOUNDARY SURVEY" PLAN FOR LEBANON HOUSING AUTHORITY TAX MAP 101 LOT 20, 31 ROMANO CIRCLE, LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE, DATED OCTOBER 9 2024, PREPARED BY ROCKWOOD LAND SERVICES, LLC.
2. "CITY OF LEBANON COMBINED SEWER SEPARATION" PLAN, CONTRACT NO. 13, ROMANO CIRCLE AREA, PREPARED BY WRIGHT–PIERCE, DATED AUGUST 2023



VICINITY MAP
SCALE: 1"=500'

CONNECTICUT RIVER
VERMONT
NEW HAMPSHIRE
REFERENCE LINE
50' PRIMARY BUILDING SETBACK AND LIMIT OF RIVERBANK PROTECTION AREA
150' NATURAL WOODLAND BUFFER
250' SHORELAND PROTECTION ZONE
MINIMUM BUILDING SETBACK LINE (TYP.)
N59° 26'40"E 300.74'
N69°59'00"E 585.59'
N24° 35'40"W 58.53'
N24° 35'40"W 253.46'
N40°25'10"W 75.11'
N85° 01'40"W 257.00'
S71° 24'20"W 54.91'
S54° 30'00"W 121.35'
S22° 35'20"W 89.31'
S22°35'20"W 209.86'
N44°26'19"W 148.95'
N65° 32'40"W 8.00'
S20° 49'20"W 16.56'
N67° 47'40"W 100.37'
S20° 49'20"W 311.90'
S27° 58'40"W 271.14'
S57° 30'40"E 143.08'
S59° 26'40"E 136.53'
15' (TYP.)
9.50 AC
413,750 SF
DOC PLACE (PRIVATE)
ROMANO CIRCLE (PRIVATE)
SOUTH MAIN STREET (CLASS II)
PROJECT AREA
PROP. 1–STORY OFFICE BUILDING
725–SF (FOOTPRINT)
725–SF (GROSS FLOOR AREA)
100 YEAR FLOOD ZONE ELEV.: 352.1
EX. SEWER EASEMENT
EX. STORMWATER POND
EX. DRAINAGE EASEMENT
EX. WATER EASEMENT
EX. ACCESS EASEMENT
EX. DRIVEWAY
EX. DRAIN LINE (TYP.)
EX. CATCH BASIN (TYP.)
EX. SIDEWALK (TYP.)
EX. DMH (TYP.)
EX. BUS STOP
EX. EDGE OF PAVEMENT (TYP.)
EX. TRANSFORMER
EXISTING 8 UNIT RESIDENTIAL BUILDING
EXISTING 4 UNIT RESIDENTIAL BUILDING
EXISTING 7 UNIT RESIDENTIAL BUILDING
EXISTING 6 UNIT RESIDENTIAL BUILDING
EXISTING 5 UNIT RESIDENTIAL BUILDING
EXISTING 4 UNIT RESIDENTIAL BUILDING
EXISTING 4 UNIT RESIDENTIAL BUILDING
EXISTING OFFICE
EXISTING GARAGE
BUILDING #1
BUILDING #2
BUILDING #3
BUILDING #4
BUILDING #5
BUILDING #6
BUILDING #7
BUILDING #8

TAX MAP 86 LOT 1
70–72–78 SOUTH MAIN ST LLC
32 LEBANON ST
HANOVER, NH 03755
USE: COMMERCIAL/RESIDENTIAL
ZONE: R2
HEIGHT: ± 24 FT

TAX MAP 101 LOT 23
KAUSHIK, BHAVNESH
82 S MAIN ST
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 22 FT

TAX MAP 101 LOT 22
DEVERS, MICHAEL S
84 S MAIN ST
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 20 FT

TAX MAP 101 LOT 21
KYOTO LLC
288 PLAINFIELD RD
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 20 FT

TAX MAP 101 LOT 27
DEJSS, LLC
89 SOUTH MAIN STREET
WEST LEBANON, NH 03784
USE: COMMERCIAL
ZONE: RO
HEIGHT: ± 20 FT

TAX MAP 101 LOT 28
SOODSMA HOLDINGS LLC
PO BOX 111
HANOVER, NH 03755
USE: COMMERCIAL
ZONE: RO
HEIGHT: ± 24 FT

TAX MAP 101 LOT 29
AMIR F PAPA
95 SOUTH MAIN STREET WEST
LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: RO
HEIGHT: ± 20 FT

TAX MAP 101 LOT 2
CITY OF LEBANON
51 NORTH PARK STREET
LEBANON, NH 03766
USE: MUNICIPAL
ZONE: GC
HEIGHT: ± 40 FT

TAX MAP 101 LOT 17
MARK W AND SUSAN L ROSE
4 WATERMAN AVE
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 16 FT

TAX MAP 101 LOT 18–100
JEFFRIES, MARTIN (LF EST)
6 WATERMAN AVE
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 20 FT

TAX MAP 101 LOT 17
MORSE, CHRISTOPHER
10 WATERMAN AVE
WEST LEBANON, NH 03784
USE: RESIDENTIAL
ZONE: R2
HEIGHT: ± 16 FT

R2 ZONING DISTRICT
GC ZONING DISTRICT
RO ZONING DISTRICT

DIG SAFE
811
NH–888–DIG–SAFE
CALL TOLL FREE
UTILITIES UNDERGROUND
DAMAGE PREVENTION SYSTEM

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE A PROPOSED EXPANSION OF THE EXISTING OFFICE TO SUPPORT THE OPERATION OF THE EXISTING HOUSING DEVELOPMENT. ALL PROPOSED IMPROVEMENTS ARE LOCATED ON THE PROPERTY AT 31 ROMANO CIRCLE, IN LEBANON, NEW HAMPSHIRE.
2. OWNERS OF RECORD:
   LEBANON HOUSING AUTHORITY
   31 ROMANO CIR
   WEST LEBANON, NH 03784
3. THE SUBJECT PROPERTY IS LOCATED ENTIRELY WITHIN THE RESIDENTIAL OFFICE DISTRICT (RO). DIMENSIONAL REQUIREMENTS CAN BE FOUND ON THE SITE PLAN OF THIS PLAN SET.
4. SUBJECT PARCEL IS SERVICED BY CITY OF LEBANON WATERWORKS AND SEWER DEPARTMENT.
5. EXISTING CONDITIONS INFORMATION TAKEN FROM PLAN REFERENCE NO. 1 AND AVAILABLE RECORD UTILITY PLANS AND GIS INFORMATION.
6. EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAPS (FIRM) FOR THE CITY OF LEBANON NEW HAMPSHIRE, GRAFTON COUNTY, MAP NUMBER 33009C0889E, EFFECTIVE DATE FEBRUARY 20, 2008 INDICATES THAT THE SUBJECT PARCEL IS LOCATED IN ZONE AE, "AREAS OF 1% ANNUAL CHANCE OF FLOOD".
7. LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
8. THE PROPRIETY WAS EVALUATED FOR THE PRESENCE OF WETLANDS ON APRIL 16, 2024, BY LUKE HURLEY, CWS 232, AND NONE WERE FOUND.
9. THE FOLLOWING LOCAL, STATE, AND FEDERAL PERMITS ARE REQUIRED FOR THIS PROJECT

	STATUS	PERMIT No.
LOCAL MINOR SITE PLAN APPROVAL	PENDING	
LOCAL FLOODPLAIN PERMIT	PENDING	
LOCAL BUILDING PERMIT	PENDING	
LOCAL EXCAVATION PERMIT	PENDING	

10. THE PROJECT WAS GRANTED A SPECIAL EXCEPTION FROM THE LEBANON ZONING BOARD FOR THE EXPANSION OF AN EXISTING USE ALLOWED BY SPECIAL EXCEPTION, ZBA2025–24–SE, ON 11/3/2025.
11. PLOWED SNOW SHALL BE STORED ONSITE IN DESIGNATED AREAS. SHOULD THE VOLUME OF SNOW EXCEED THE AVAILABLE ONSITE STORAGE CAPACITY, THE EXCESS SNOW SHALL BE HAULED OFFSITE.
12. THIS PROJECT WILL NOT BE PHASED AND IS ANTICIPATED THAT IT CAN BE COMPLETED WITHIN ONE CONSTRUCTION SEASON. CONSTRUCTION IS ANTICIPATED TO BEGIN IN MARCH 2026 WITH A CERTIFICATE OF OCCUPANCY RECEIVED IN FEBRUARY 2027.
13. BIKE PARKING REQUIRED:
    PROPOSED BUILDING – NON–RESIDENTIAL USE
    SHORT–TERM PARKING BASIS: 10% OF PARKING STALLS
    REQUIRED: 2 SPACES
    PROVIDED: 4 SPACES
    LONG TERM PARKING BASIS: 25% OF SHORT TERM PARKING IF > 200 STALLS
    SHORT TERM REQUIRED =2, THEREFORE NO LONG–TERM REQUIRED

LEGEND

- ABUTTER LINE
- PROPERTY LINE
- EX. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- EXIST. RETAINING WALL
- PROP. CURB
- EX. EASEMENT
- EX. TREELINE
- 50' PRIMARY BUILDING SETBACK
- 150' NATURAL WOODLAND BUFFER
- 250' PROTECTED SHORELAND JURISDICTION
- EX. DRAINAGE PIPE
- EXIST. BUILDING
- PROP. BUILDING
- ZONE LINE
- EX. CONCRETE
- PROP. CONCRETE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services

STAMP:
STATE OF NEW HAMPSHIRE
JEFFREY S. MERRITT
No. 11778
LICENSED PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
OVERVIEW PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=50'
SHEET:	1 OF 10	

Corner Monument Descriptions

all dimension are outside diameter

No. 1 FOUND, in 2018, a Capped Rebar stamped by Hathorn No. 560 with 4" of reveal, firm, straight and in good condition, iN 2024 found a 5/8" rebar with no cap flush and 0.07 difference in poistion. Yeld the 2018 position. Recent construction of retainng will likely altered this rebar.

No. 2 FOUND a Capped Rebar stamped by Hathorn No. 560 with 3" of reveal, firm, straight and in good condition,

No. 3 FOUND a 2" Iron Pipe rusted off on top with 4" of reveal ,straight, firm and flush to the ground and placed a wooden witness stake

No. 4 FOUND in 2018 a Capped Rebar by CMLS LLS 848 with 3" of reveal , firm, straight and in good conditions, not found in 2024 and Set a 5/8"x36" blue rebar with an orange plastic cap

No. 5 FOUND a Capped Rebar stamped by Bruno NH 575 with 7" of reveal, firm, straight and in good condition midway up the steep slope

No. 7 FOUND a 1" Iron Pipe buried 12" on the southwesterly side of a very large Silver Maple of reveal, firm, straight and in good condition

No. 8 FOUND a 3/4" yellow Iron Pipe with 5" of reveal firm, straight and in good condition at the base of a large Ash Tree

No. 9 FOUND a 1–1/4" yellow Iron Pipe with 12" of reveal bent southerly, located at the ground, firm, and in fair condition, on top of the steep slope

No. 10 FOUND a 2" yellow Iron Pipe with 7" of reveal firm, straight and in good condition on rthe eastely side of large Oak Tree on the top of the steep sope

No. 11 FOUND a 4"x6" granite bound with 16" of reveal firm, straight and in good condition 3" from Top of the bank and 20" to the corner on 6' chain link fence

No. 12 FOUND a 6"x8" granite bound broken off with 8" of reveal, located in the center, firm, straight and in good condition, 33" from to the corner on 4' chain link fence

No. 13 FOUND a Capped Rebar stamped by Bruno NH 575 with 8" of reveal, firm, straight and in good condition midway up the steep slope

No. 14 FOUND a Capped Rebar stamped by Bruno NH 575 flush, firm, straight and in good condition at the edge of the sewer line clearing and at the top of the river slope

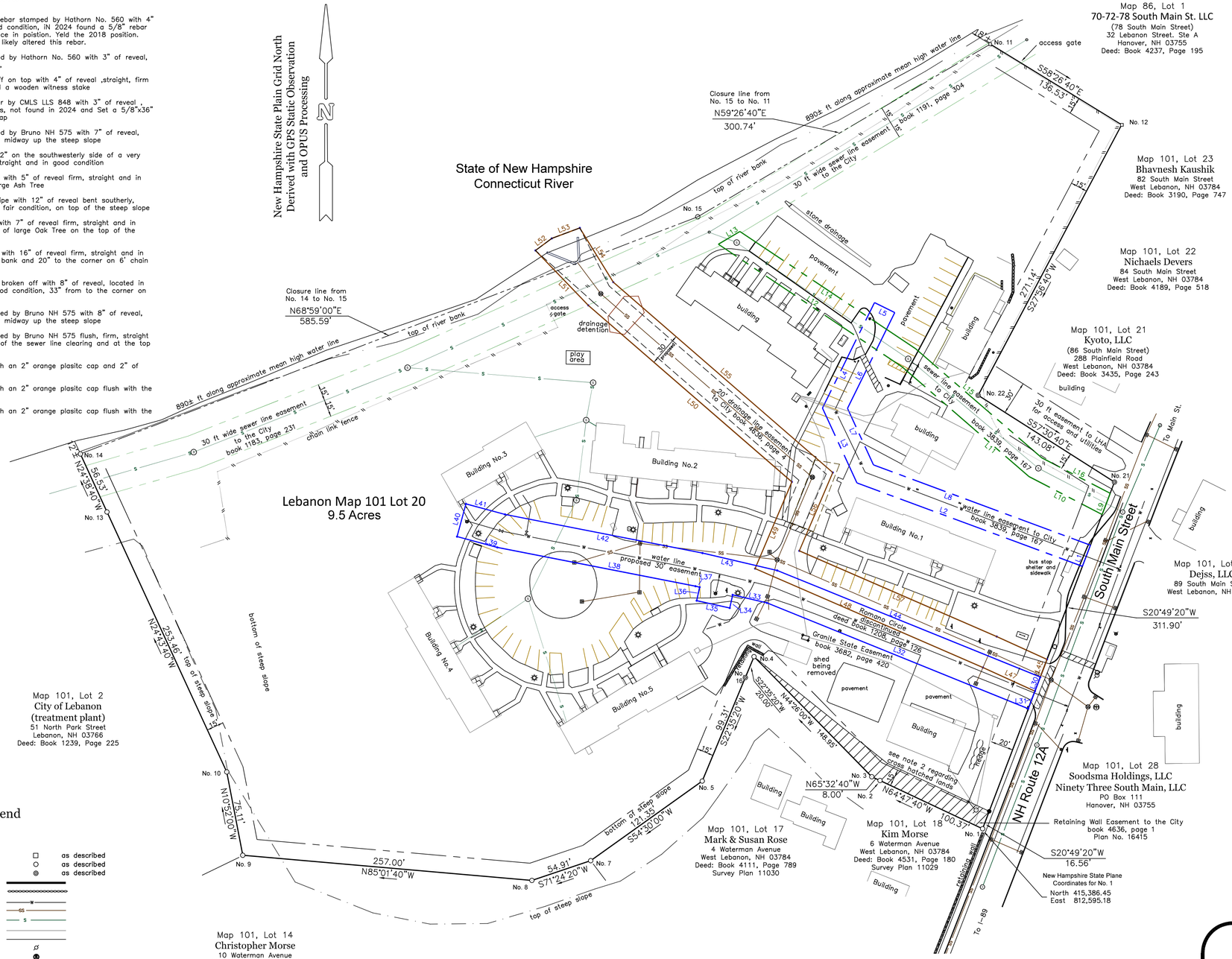
No. 16 SET a 5/8"x42" blue rebar with an 2" orange plasitc cap and 2" of reveal

No. 21 SET a 5/8"x12" blue rebar with an 2" orange plasitc cap flush with the pavement

No. 22 SET a 5/8"x36" blue rebar with an 2" orange plasitc cap flush with the ground

New Hampshire State Plain Grid North
Derived with GPS Static Observation
and OPUS Processing

N



Map 86, Lot 1
70-72-78 South Main St. LLC
(78 South Main Street)
32 Lebanon Street, Ste A
Hanover, NH 03755
Deed: Book 4237, Page 195

Map 101, Lot 23
Bhavnesh Kaushik
82 South Main Street
West Lebanon, NH 03784
Deed: Book 3190, Page 747

Map 101, Lot 22
Nichaels Devers
84 South Main Street
West Lebanon, NH 03784
Deed: Book 4189, Page 518

Map 101, Lot 21
Kyoto, LLC
(86 South Main Street)
288 Plainfield Road
West Lebanon, NH 03784
Deed: Book 3435, Page 243

Map 101, Lot 27
Dejss, LLC
89 South Main Street
West Lebanon, NH 03784

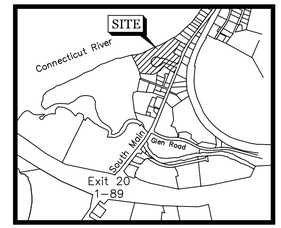
Map 101, Lot 28
Soodsma Holdings, LLC
Ninety Three South Main, LLC
PO Box 111
Hanover, NH 03755

Map 101, Lot 2
City of Lebanon
(treatment plant)
51 North Park Street
Lebanon, NH 03766
Deed: Book 1239, Page 225

Map 101, Lot 14
Christopher Morse
10 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4624, Page 676

Map 101, Lot 17
Mark & Susan Rose
4 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4111, Page 789
Survey Plan 11030

Map 101, Lot 18
Kim Morse
6 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4531, Page 180
Survey Plan 11029



LOCUS

Legend

Found Granite Bound	□ as described
Found Iron Pipe or Rebar	○ as described
Set Capped Rebar	◎ as described
Boundary Line	
Stone Retaining	
Water Main	W
Drainage Line	DS
Sewer Line	S
Electric line buried	
Edge of Pavement	
Utility Pole	
Sewer Manhole	S
Communication Manhole	
Telephone Manhole	
Catch Basin	
Water Gate Valve	
Light	
Hydrant	
Sign	
GCRD Deed Reference	(Book, Page)
GCRD Plan Reference	Plan No.

BOUNDARY SURVEY NOTES

1. The purpose of this Survey Plat is to identify and monument the Boundary Lines for Lebanon Parcel Map 101, Lot 20, the Subject Parcel.

2. Surveyor's Report: The deed description for the Subject Parcel is generally consistent within the deed chain and also the abutting deeds. The subject parcel's deed describes two Parcels. The deed in book 1208, page 145 included 8.1 acres. The deed in book 3402, page 283 added 1.4 acres on the northerly side. The Subject Lands include the recently approved annexation from Rose's Lot 101–17.
Boundary lines are consistent with abutting deeds and plans excepting for the cross hatched lands between the Subject Parcel and Lots 101/18 and 101/17. The Subject Parcel's deed chain does not specifically describe this boundary line. The abutting deeds describe the line along the base of a bank. Lot 101/18's survey recorded as Plan No. 11029 identifies this boundary line as a straight line between monuments No. 1 and No. 3 generally following the meandering base of the bank. The Subject Parcel's 1971 survey recorded in Plan file 3, Folder 2 as No. 44 identifies this boundary line on the northerly side of the cross hatched area. The 2009 survey recorded as Plan 13513 identifies this cross hatched area. No correlative action was found. This cross hatched area should be included as lands of the Subject Parcel. The intent of this plan is to include these lands with the Subject Parcel. I recommend a corrective deed be recorded. Several easements burden the Subject Parcel. These easement are shown on sheet 2 of this plan set.

3. The Limits of South Main Street or Route 12A are computed based on previous surveys as 25 ft from centerline.

4. The subject lands are Class One and currently located in Lebanon's R2, Residential Two, Zoning District. The setback limits are Front 20', Side 15' and Rear 20'.

5. The field survey commenced on April 2, 2024 was completed on April 16, 2024. Corner monuments were placed on October 18, 2024. All monument dimensions are outside diameters.

6. The subsurface utility connections shown are from Lebanon's Combined Sewer Separation Contract 13 for Romano Circle Area. Visible structures were located. Underground utilities were not verified.

7. Romano Circle is to be discontinued and is shown as a part ot the Subject Lands. The deed to Romano Circle is found in book 1208, page 126.

8. See Sheet 2 of 2 for Easement data.

9. The Property has been checked for areas of wetlands by Luke Hurley, CWS 232, on April 16, 2024. No wetlands are present on the property.

Record Owner
Lebanon Parcel Map 101, Lot 20
Lebanon Housing Authority
Deed References : Book 1208, Page 145
Book 3402,Page283
Plan References: GCRD Plan Pck 3, Fld 2, No. 44
GCRD Plan No. 13513

Revised November 6, 2025, removed annexation
Revised February 10, 2025, set corner monuments and note 5. Sheet 1 of 2

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO N.H.R.S.A. TITLE LXIV AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN RSA 676:18, III

DATE: _____

LICENSED LAND SURVEYOR NO 618: _____

I hereby certify to the best of my belief and knowledge this boundary survey for Lebanon Parcel Map 101, Lot 20 meets the New Hampshire Urban Survey Standard. The boundary lines and corner monuments shown are consistent with the referenced deeds and plan unless otherwise noted and are the basis for this Surveyor's opinion of the boundary lines locations.

For Review
11/06/2025 2:17:22 PM

Timothy W. Rockwood
LLS No. 618

Boundary Survey
Map 101, Lot 20
Lebanon Housing Authority
31 Romano Circle, City of Lebanon, Grafton County, New Hampshire

Project No. 1424 Date: October 9, 2024

0 50 100 150 200 250
Scale: 1" = 50'

Rockwood Land Services, LLC
24 Cobb Hill Road, Hartland, Vt 05048
802.299.0042 rockls@vermontel.net

New Hampshire State Plain Grid North
Derived with GPS Static Observation
and OPUS Processing

N

State of New Hampshire
Connecticut River

Closure line from
No. 14 to No. 15
N68°59'00"E
585.59'

Closure line from
No. 15 to No. 11
N59°26'40"E
300.74'

approximate mean high water line

30 ft wide sewer line easement
book 1183, page 231

6 ft chain link fence

30 ft wide sewer line easement
book 1191, page 304

proposed 30 ft drainage line easement to City

proposed 30' water line easement to City

Easement to City for access and utilities book 3839, page 943

City's water line easement book 3839, page 167

City's sewer line easement book 3839, page 167

Granite State Easement book 3682, page 420

shed being removed

pavement

building

play area

Building No.2

Building No.3

Building No.4

Building No.5

hydrant

gate

see note 2

bottom of steep slope

top of steep slope

Map 86, Lot 1
70-72-78 South Main St. LLC
(78 South Main Street)
32 Lebanon Street. Ste A
Hanover, NH 03755
Deed: Book 4237, Page 195
Plan No. 1347

Map 101, Lot 23
Bhavnesh Kaushik
82 South Main Street
West Lebanon, NH 03784
Deed: Book 3190, Page 747

Map 101, Lot 22
Nichaels Devers
84 South Main Street
West Lebanon, NH 03784
Deed: Book 4189, Page 518

Map 101, Lot 21
Kyoto, LLC
(86 South Main Street)
288 Plainfield Road
West Lebanon, NH 03784
Deed: Book 3435, Page 243
Plan NO 3578

Map 101, Lot 2
City of Lebanon
(treatment plant)
51 North Park Street
Lebanon, NH 03766
Deed: Book 1239, Page 225

Map 101, Lot 14
Christopher Morse
10 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4624, Page 676

Map 101, Lot 17
Mark & Susan Rose
4 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4111, Page 789
Survey Plan 11030

Map 101, Lot 18
Kim Morse
6 Waterman Avenue
West Lebanon, NH 03784
Deed: Book 4531, Page 180
Survey Plan 11029

South Main Street (Rte 12A)

NH Route 12A

Retaining Wall Easement
Book 4636, Page 1,
Plan No. 16415

S58°26'40"E 136.53'

S27°56'40"W 271.14'

S5°7'30"E 143.08'

S20°49'20"W 311.90'

S20°49'20"W 16.56'

N24°36'40"W 253.46'

N10°52'00"W 75.17'

N85°01'40"W 257.00'

S71°24'20"W 54.91'

S54°30'00"W 121.35'

S22°35'20"W 99.31'

S22°35'20"W 20.00'

N64°28'00"W 148.95'

N65°32'40"W 8.00'

N64°47'40"W 100.37'

N24°36'40"W 56.53'

Legend

Found Granite Bound	□ as described
Found Iron Pipe or Rebar	○ as described
Set Capped Rebar	◎ as described
Boundary Line	
Stone Retaining	
Water Main	—W—
Drainage Line	—SS—
Sewer Line	— S —
Electric line buried	
Edge of Pavement	
Utility Pole	
Sewer Manhole	
Communication Manhole	
Telephone Manhole	
Catch Basin	
Water Gate Valve	
Light	
Hydrant	
Sign	
GCRD Deed Reference	(Book, Page)
GCRD Plan Reference	Plan No.

Water Line Easement
Book 3839, Page 167
(shown in blue)

LINE	BEARING	DISTANCE
L1	S20°49'00"W	20.00'
L2	N69°41'40"W	212.90'
L3	N24°41'40"W	72.92'
L4	N26°15'00"E	104.13'
L5	S63°45'00"E	20.00'
L6	S26°15'00"W	94.60'
L7	S24°41'40"E	55.11'
L8	S69°41'40"E	204.79'

Sewer Line Easement
Book 3839, Page 167
(shown in green)

LINE	BEARING	DISTANCE
L9	S20°42'40"W	20.14'
L10	N62°34'20"W	73.02'
L11	N49°09'40"W	149.04'
L12	N56°17'40"W	195.09'
L13	N59°22'20"E	22.16'
L14	S56°17'40"E	186.77'
L15	S49°09'20"E	147.87'
L16	S62°34'20"E	68.33'

Drainage Line Easement
Book 4636, Page 4
Plan 16416
This 20 ft wide easement is to be replaced with a 30 ft wide easement.
(shown in black)

LINE	BEARING	DISTANCE
L17	N23°19'40"E	37.87'
L18	N49°03'40"W	241.72'
L19	N48°09'40"W	67.74'
L20	N53°31'20"E	17.90'
L21	N69°30'20"E	26.50'
L22	S26°48'40"E	57.60'
L23	S49°03'40"E	254.21'
L24	S23°19'40"W	51.63'
L25	N69°11'20"W	20.02'

Retaining Wall Easement
Book 4636, Page 1
Plan No. 16415

LINE	BEARING	DISTANCE
L26	N64°49'00"W	8.59'
L27	N21°16'40"E	12.91'
L28	S68°43'20"E	8.46'
L29	S20°49'20"W	13.50'

Proposed Easements over Romano Circle

Water Easement
30 ft wide
(shown in blue)

LINE	BEARING	DISTANCE
L30	N20°49'20"E	13.37'
L31	S20°49'20"W	16.63'
L32	N67°57'00"W	249.61'
L33	N76°52'00"W	31.20'
L34	S12°30'40"W	11.89'
L35	N77°29'20"W	30.00'
L36	N12°30'40"E	12.22'
L37	N76°52'00"W	3.85'
L38	N78°55'40"W	178.74'
L39	N74°55'40"W	36.88'
L40	N15°04'20"E	30.00'
L41	S74°55'40"E	35.83'
L42	S78°55'40"E	178.23'
L43	S76°52'00"E	67.93'
L44	S67°57'00"E	251.30'

Drainage Drain Easement
30 ft wide
(shown in brown)

LINE	BEARING	DISTANCE
L45	S20°49'20"W	16.69'
L30	S20°49'20"W	13.37'
L47	N65°32'20"W	50.60'
L48	N66°31'40"W	219.91'
L49	N22°59'40"E	83.38'
L50	N49°03'40"W	238.61'
L51	N43°54'00"W	67.42'
L52	N53°31'20"E	17.90'
L53	N69°30'20"E	26.50'
L54	S31°42'40"E	56.37'
L55	S49°03'40"E	257.30'
L56	S23°08'40"W	75.41'
L57	S66°31'40"E	190.52'
L58	S65°32'20"E	48.95'

Record Owner
Lebanon Parcel Map 101, Lot 20
Lebanon Housing Authority
Deed References : Book 1208, Page 145
Book 3402,Page283
Plan References: GCRD Plan Pck 3, Fld 2, No. 44
GCRD Plan No. 13513

EASEMENTS

Revised: February 10, 2025, color easements, charts

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO N.H.R.S.A. TITLE LXIV AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN RSA 676:18, III

DATE: _____

LICENSED LAND SURVEYOR NO 618: _____

I hereby certify to the best of my belief and knowledge this boundary survey for Lebanon Parcel Map 101, Lot 20 meets the New Hampshire Urban Survey Standard. The boundary lines and corner monuments shown are consistent with the referenced deeds and plan unless otherwise noted and are the basis for this Surveyor's opinion of the boundary lines locations.

For Review
11/06/2025 2:17:22 PM

Timothy W. Rockwood
LLS No. 618

Boundary Survey
Map 101, Lot 20
Lebanon Housing Authority
31 Romano Circle, City of Lebanon, Grafton County, New Hampshire

Project No. 1424 Date October 9, 2024

0 50 100 150 200 250
Scale: 1" = 50'

Rockwood Land Services, LLC
24 Cobb Hill Road, Hartland, Vt 05048
802.299.0042 rockls@vermontel.net

N

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

LEGEND

- EX. LANDSCAPING
- EX. HYDRANT
- EX. LIGHT POLE
- EX. UTILITY POLE
- EX. WATER VALVE
- EX. SIGN
- EX. LIGHT
- EX. SEWER MANHOLE
- EX. TELEPHONE MANHOLE
- EX. CATCH BASIN
- ABUTTER LINE
- PROPERTY LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. DRAIN LINE
- EX. UNDERGROUND UTILITIES
- EX. EDGE OF PAVEMENT
- EX. GRAVEL
- ITEM TO BE REMOVED
- EX. TREELINE
- EXIST. RETAINING WALL
- EX. EASEMENT
- EXIST. BUILDING
- EX. PAVEMENT TO BE REMOVED

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING FEATURES ON SITE TO BE REMOVED, SALVAGED, OR REPLACED.
2. THE CONTRACTOR SHALL CONTROL ALL DUST GENERATED DURING THE REMOVAL PHASE AND CONSTRUCTION PHASE SO THAT NO DUST LEAVES THE SITE.
3. ANY MONUMENTS DISTURBED DURING CONSTRUCTION, WHICH AREN'T CALLED OUT FOR REMOVAL, SHALL BE RESET BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR AT THE SITE CONTRACTORS EXPENSE.
4. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GRANITE ENGINEERING, LLC MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ONSITE THE CONTRACTOR SHALL CONTACT DIGSAFE AT 811.
5. ALL STUMPS, ROOTS, BRANCHES, BRUSH, WOODS, AND OTHER PERISHABLE MATERIAL RESULTING FROM THE CLEARING AND GRUBBING OPERATIONS SHALL BE DISPOSED OF BY AN APPROVED METHOD.
6. STRIP, STOCKPILE, AND REUSE ONSITE GRAVEL AND FILL AREAS WHERE APPROPRIATE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE DESIGN ENGINEER.
7. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
8. ALL WORK ON THE SUBJECT PROPERTY AND WITHIN THE CITY OF LEBANON RIGHT-OF-WAY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF LEBANON CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
9. SITE CONTRACTOR SHALL ESTABLISH TEMPORARY PERIMETER CONTROLS PRIOR TO THE START OF SITE EXCAVATION.
10. CONTRACTOR SHALL WORK WITH LOCAL UTILITY PROVIDERS DURING SHUT DOWN AND REMOVAL EFFORTS.
11. PRIOR TO ANY WORK WITHIN THE RIGHT-OF-WAY, DEVELOPER OR DESIGNEE SHALL OBTAIN ALL REQUIRED APPROVALS FROM THE CITY OF LEBANON INCLUDING WITHOUT LIMITATIONS ANY SUCH APPROVALS AS MAY BE REQUIRED THROUGH THE PLANNING & DEVELOPMENT DEPARTMENT, DEPARTMENT OF PUBLIC WORKS, POLICE DEPARTMENTS, AND FIRE DEPARTMENT.
12. EXISTING ASPHALT REMOVED FROM THE SITE AS PART OF THIS SITE PLAN SHALL BE GROUND AND REUSED AS FILL OR TRUCKED OFFSITE AND DISPOSED OF BY AN APPROVED METHOD.
13. DEBRIS REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

EX. DRAINAGE EASEMENT
EXISTING 7 UNIT RESIDENTIAL BUILDING
EX. DRAIN MANHOLE RIM= 351.44
8" PVC
DOC PLACE (PRIVATE)
EX. ACCESS EASEMENT
EXISTING 6 UNIT RESIDENTIAL BUILDING
EX. CATCH BASIN RIM= 354.51
EX. LIGHT (TYP.)
EX. CATCH BASIN RIM= 350.14
EX. UNDERGROUND UTILITIES (TYP.)
EX. CAUTION AHEAD, AND 10 MPH SPEED LIMIT SIGN
EXISTING EDGE OF PAVEMENT (TYP.)
EX. DRAIN MANHOLE RIM= 350.42
8" PVC
EX. CATCH BASIN RIM= 350.2
15" ADS INV. IN= 345.1
8" PVC INV. IN= 345
8" PVC INV. OUT= 345
ROMANO CIRCLE (PRIVATE)
EX. "SLOW DOWN CHILDREN PLAYING" SIGN
EX. CATCH BASIN RIM= 353.16
EX. DRAIN MANHOLE RIM= 355.55
EX. LIGHT TO BE REMOVED
EX. CATCH BASIN RIM= 349.19
EX. STOP SIGN
EX. CATCH BASIN RIM= 352.63
EX. CROSSWALK SIGN
8" PVC ACTUAL PIPE LOCATION UNKNOWN
EX. 8" D.I. WATER MAIN
EX. CATCH BASIN RIM= 349.9
15" ADS INV. OUT= 345.2
EX. TRANSFORMER
EX. CATCH BASIN RIM= 356.58
EX. BUILDING TO BE RAZED
TAX MAP 101 LOT 20
EX. CATCH BASIN RIM= 349.04
EX. SEWER MANHOLE RIM= 357.19 INV. IN=349.9 INV. OUT=348.8
EX. PAVEMENT TO BE REMOVED (TYP.)
EXISTING RETAINING WALL
EXISTING GARAGE
EXISTING TREELINE (TYP.)
TEMP. SNOW PROTECTION FOR PROPANE TANKS
EXISTING OFFICE FF ELEV =352.7
EXISTING RESIDENTIAL BUILDING (5 UNITS)
TAX MAP 101 LOT 17
MARK W AND SUSAN L ROSE
4 WATERMAN AVE
WEST LEBANON, NH 03784
TAX MAP 101 LOT 18-100
JEFFERIES, MARTIN (LF EST)
6 WATERMAN AVE
WEST LEBANON, NH 03784
PROP LIMIT OF CLEARING
EX. TREELINE TO BE REMOVED
SOUTH MAIN STREET (CLASS II)
S20 49'20"W 311.90'
S22°35'26"W 20.00'
S22 35'20"W 99.31'
N44°26'09"W 148.95'
S20 49'20"W 16.56'
N67 47'40"W 100.37'
N65 32'40"W 8.00'
S54 30'00"W 121.35'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
JOSEPH C. DERREY
BERRITT
No. 11778
LICENSED
PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
REMOVALS PLAN

PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 4 OF 10		

N

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

SEE SHEET 1 FOR REFERENCE PLANS AND NOTES

LEGEND

- EX. LANDSCAPING
- EX. HYDRANT
- EX./PROP. LIGHT POLE
- PROP. WALL MOUNTED LIGHT
- EX. UTILITY POLE
- EX. WATER VALVE
- EX./PROP. SIGN
- EX. LIGHT
- EX./PROP. SEWER MANHOLE
- PROP. WATER SHUT OFF
- EX. CATCH BASIN
- ABUTTER LINE
- PROPERTY LINE
- EX. EDGE OF PAVEMENT
- EX. GRAVEL
- EX. TREELINE
- PROP. TREELINE
- PROP. EDGE OF PAVEMENT
- EX. MINIMUM BUILDING SETBACK
- EXIST. RETAINING WALL
- EX. EASEMENT
- EXIST. BUILDING
- PROP. BUILDING
- PROP. STORMWATER AREA
- 100-YEAR FLOOD ZONE
- EX. CONCRETE
- PROP. CONCRETE

ROMANO CIRCLE
(PRIVATE)

SOUTH MAIN STREET
(CLASS II)

EX. LIGHT (TYP.)
EX. CATCH BASIN (TYP.)
EX. WATER VALVE (TYP.)
EX. CROSSWALK SIGN
EX. CAUTION AHEAD, AND 10 MPH SPEED LIMIT SIGN
EXISTING EDGE OF PAVEMENT (TYP.)
EX. "SLOW DOWN CHILDREN PLAYING" SIGN
311.90'
S20° 49'20"W
EX. STOP SIGN
EX. SEWER MANHOLE (TYP.)
20' (TYP.)

TAX MAP 101 LOT 20

SNOW STORAGE (TYP.)
PROPOSED R1-1 STOP SIGN AND 18" STOP BAR
PROPOSED "INVERTED U" TYPE BICYCLE STORAGE (4)
PROPOSED BICYCLE PARKING SIGN
PROPOSED EDGE OF PAVEMENT (TYP.)
18' (TYP.)
9' (TYP.)
SNOW STORAGE
EX. TRANSFORMER
PROP. R7-8 "RESERVED PARKING" & R7-8P "VAN ACCESSIBLE" SIGN MOUNTED IN BOLLARDS
PROP. BALLARD (TYP.)
EXISTING RETAINING WALL
EXISTING GARAGE
TEMP. SNOW PROTECTION FOR PROPANE TANKS
20.00'
S22°35'26"W
15' (TYP.)
MINIMUM BUILDING SETBACK LINE (TYP.)
EXISTING TREELINE (TYP.)
PROP. CONCRETE WALK
EXISTING OFFICE FF ELEV =352.7
SNOW STORAGE
DOOR
PROP. FF ELEV = 353.10
EXISTING RESIDENTIAL BUILDING (5 UNITS)
PROP. WALL MOUNTED LIGHT (TYP.)
PROP. SWING GATE
99.31'
S22° 35'20"W
PROPOSED OFFICE BUILDING 778-SF (FOOTPRINT) 778-SF (GROSS FLOOR AREA)
PROP. BIORETENTION POND
PROPOSED LIMIT OF CLEARING
121.35'
S54° 30'00"W
148.95'
N44°28'08"W
S20° 49'20"W
16.56'
100.37'
N67° 47'40"W
N65° 32'40"W
8.00'

TAX MAP 101 LOT 17
MARK W AND SUSAN L ROSE
4 WATERMAN AVE
WEST LEBANON, NH 03784

TAX MAP 101 LOT 18-100
JEFFERIES, MARTIN (LF EST)
6 WATERMAN AVE
WEST LEBANON, NH 03784

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
JEFFREY D. MERRITT
No. 11778
LICENSED PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
SITE PLAN

PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 5 OF 10		

GRADING AND DRAINAGE CONSTRUCTION NOTES:

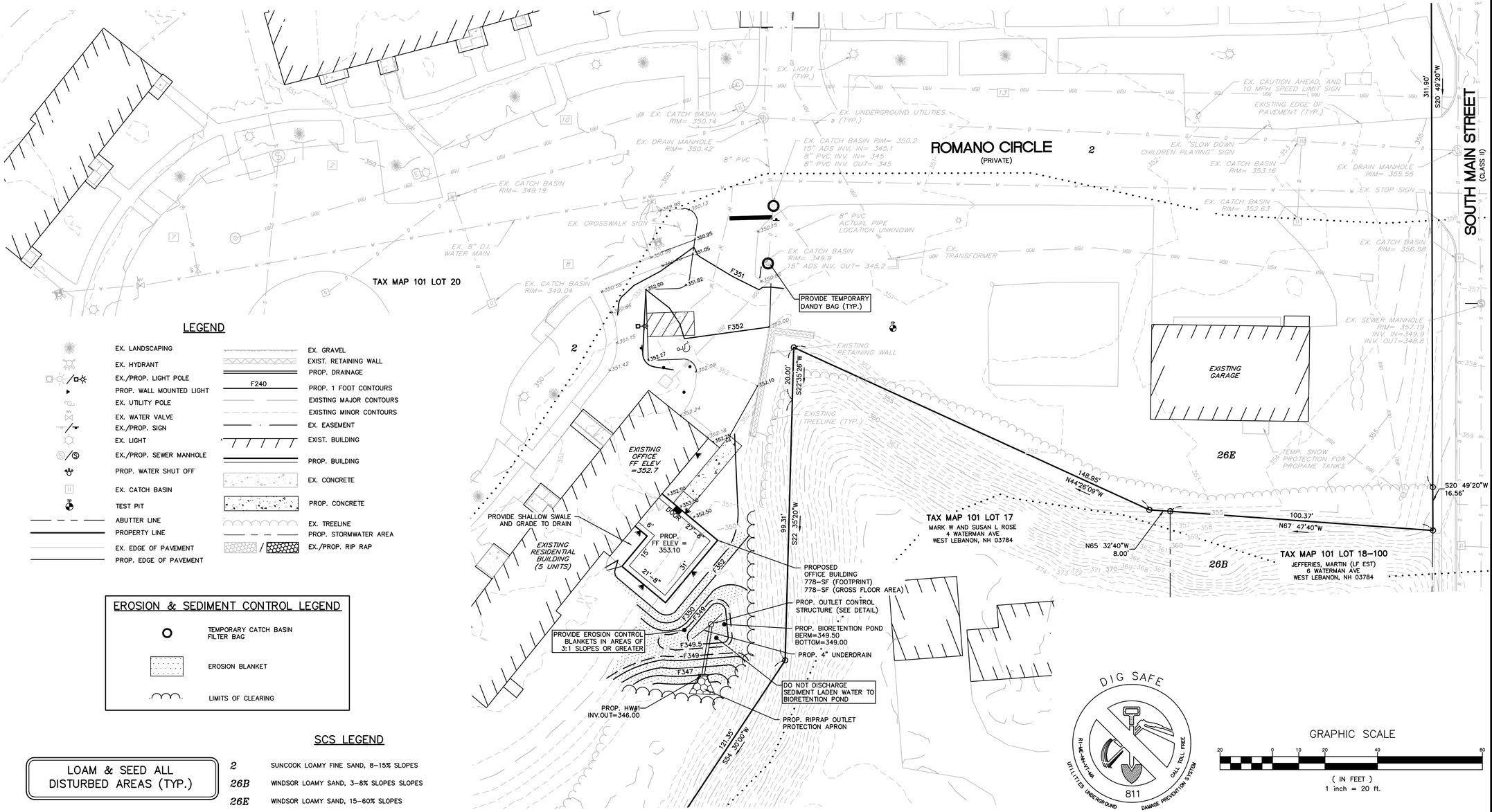
1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE SYSTEMS FOR THIS PROJECT.
2. ALL WORK ON THE SUBJECT PROPERTY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRAFTON COUNTY'S CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC COUNTY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEEDED.
6. SEE THE EROSION CONTROL PLAN FOR THE LOCATION OF THE TEMPORARY EROSION CONTROL DEVICES.
7. SEE DETAILS FOR DRAINAGE SPECIFICATIONS.
8. MATERIAL STOCKPILES SHALL BE ON LEVEL SITES WITH SILT FENCE INSTALLED AROUND THE PILE. STOCKPILES MUST BE SEEDED AND MULCHED IF STORED MORE THAN 14 DAYS.
9. THIS PROJECT DISTURBS MORE THAN 1–ACRE OF LAND, THEREFORE, IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

UTILITY CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITIES FOR THIS PROJECT.
2. ALL WORK SHALL CONFORM TO THE CITY OF LEBANON DESIGN AND CONSTRUCTION STANDARDS. IN THE ABSENCE OF A SPECIFIC CITY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2020.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE WATER LINES SHALL CONFORM TO ALL THE LOCAL PRECINCT'S STANDARDS, SPECIFICATIONS, RULES, AND REGULATIONS.
5. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE ELECTRIC AND TELEPHONE LINES SHALL CONFORM WITH THE STANDARDS OF THE LOCAL PROVIDER.
6. CONTRACTOR SHALL COORDINATE WITH LOCAL PROVIDER RELATIVE TO FINAL LAYOUT OF UNDERGROUND UTILITIES.
7. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. CONTRACTOR TO VERIFY SIZE OF WATER SERVICE LINES WITH ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
9. FINAL LAYOUT OF UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO VERIFY GAS REQUIREMENTS FOR THE PROPOSED BUILDING PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE WITH LOCAL GAS PROVIDER FOR SERVICE DETAILS.
11. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS.

EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE TOWN OF LEBANON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV–A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
17. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED ON SLOPES WITH A RATION GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.
18. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL ALL AREAS ARE STABILIZED.
19. PONDS SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING OF THE SITE).
20. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
21. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF–INCH OF RAINFALL.
22. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF NEW HAMPSHIRE RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES CONTROL.
23. SEE DETAILS FOR CONSTRUCTION SEQUENCE.



LEGEND

- EX. LANDSCAPING
- EX. HYDRANT
- EX./PROP. LIGHT POLE
- PROP. WALL MOUNTED LIGHT
- EX. UTILITY POLE
- EX. WATER VALVE
- EX./PROP. SIGN
- EX. LIGHT
- EX./PROP. SEWER MANHOLE
- PROP. WATER SHUT OFF
- EX. CATCH BASIN
- TEST PIT
- ABUTTER LINE
- PROPERTY LINE
- EX. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- EX. GRAVEL
- EXIST. RETAINING WALL
- PROP. DRAINAGE
- F240 — PROP. 1 FOOT CONTOURS
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EX. EASEMENT
- EXIST. BUILDING
- PROP. BUILDING
- EX. CONCRETE
- PROP. CONCRETE
- EX. TREELINE
- PROP. STORMWATER AREA
- EX./PROP. RIP RAP

EROSION & SEDIMENT CONTROL LEGEND

- TEMPORARY CATCH BASIN FILTER BAG
- EROSION BLANKET
- LIMITS OF CLEARING

SCS LEGEND

LOAM & SEED ALL DISTURBED AREAS (TYP.)

- 2 — SUNCOOK LOAMY FINE SAND, 8–15% SLOPES
- 26B — WINDSOR LOAMY SAND, 3–8% SLOPES SLOPES
- 26E — WINDSOR LOAMY SAND, 15–60% SLOPES

DIG SAFE — CALL 811 TOLL FREE — UTILITIES UNDERGROUND — DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

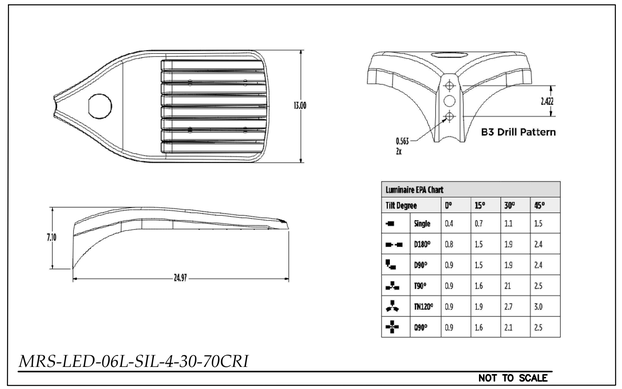
STAMP:
I HEREBY CERTIFY THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NEW HAMPSHIRE
JOSEPH C. MERRITT No. 11778 LICENSED PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
GRADING, DRAINAGE, UTILITY & EROSION CONTROL PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 6 OF 10		

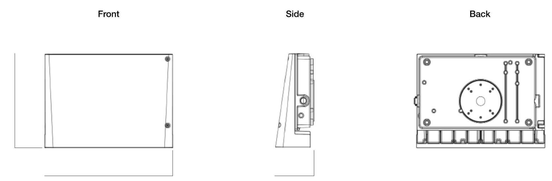


Luminaire EPA Chart					
Tilt Degree		0°	15°	30°	45°
	Single	0.4	0.7	1.1	1.5
	D180°	0.8	1.5	1.9	2.4
	D90°	0.9	1.5	1.9	2.4
	T90°	0.9	1.6	2.1	2.5
	TN120°	0.9	1.9	2.7	3.0
	D90°	0.9	1.6	2.1	2.5

MRS-LED-06L-SIL-4-30-70CRI

NOT TO SCALE

Model	L	W	H
WFA-3 / 6 WFA-26 / 38 WFA-65 / 100 / 135	13.1" (333mm)	3.8" (98mm)	9.6" (243mm)
WFA-10	13.2" (335mm)	5.0" (126mm)	9.6" (243mm)



WFA-3 SC 3000K-17W

NOT TO SCALE

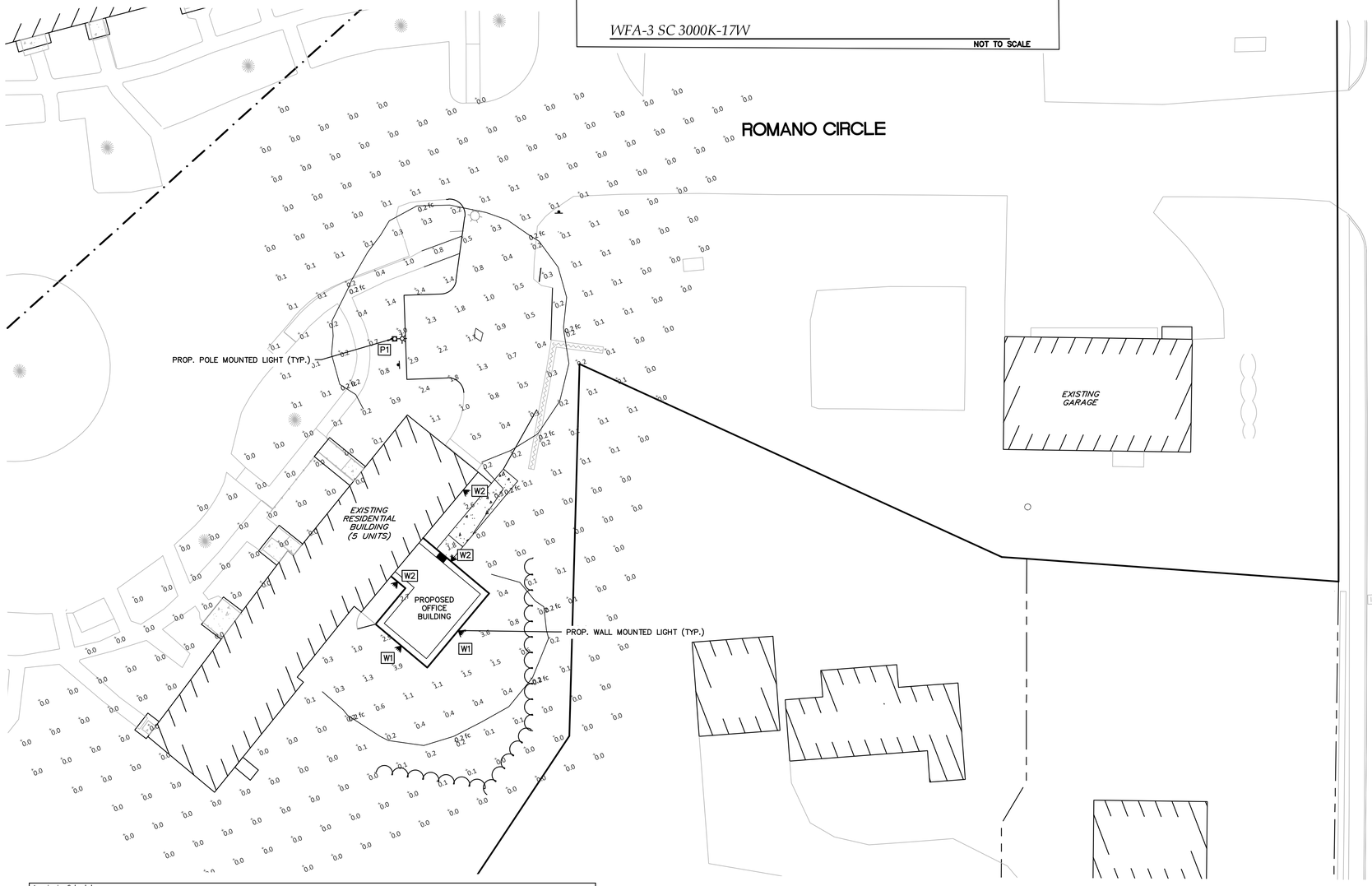
P550101-031-30

Dimensions:

Length: 5 in
Depth: 3-15/16 in
Height: 7-1/4 in

P550101-031-30

NOT TO SCALE



Luminaire Schedule								
Tag	Qty	LLF	Lumens	Watts	CCT	MANUFAC	Description	Mounting Height
P1	1	0.900	5967	39	3000	LSI INDUSTRIES, INC.	MRS-LED-06L-SIL-4-30-70CRI	15
W1	2	0.900	2683	16.9		ADVANTAGE LIGHTING SOLUTIONS	WFA-3-SC 3000K-17W	12
W2	3	0.900	511	18.6		PROGRESS	P550101-031-30	8

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
Site	0.3	3.9	0.0	N.A.	N.A.
New Parking	1.5	2.9	0.4	3.7	7.3

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE PROPOSED LIGHTING FOR THE PROJECT.
2. ALL FIXTURES SHALL BE AS SPECIFIED BY SWANEY LIGHTING ASSOCIATES, INC.
3. ALL PROPOSED FIXTURES ARE FULL CUTOFF FIXTURES.
4. ALL LIGHTING INSTALLATIONS SHALL INCLUDE TIMERS, DIMMERS, SENSORS, AND/OR OTHER ENERGY-SAVING TECHNOLOGIES TO REDUCE THE OVERALL ENERGY CONSUMPTION. NON-ESSENTIAL LIGHTING SHALL BE TURNED OFF OR REDUCED AFTER NORMAL BUSINESS HOURS, LEAVING ONLY NECESSARY LIGHTING FOR SECURITY PURPOSES.
5. LIGHTING FIXTURES COLOR CORRELATED TEMPERATURE IS 3000K CCT.

LEGEND

- PROP. BUILDING LIGHT
- PROP. POLE LIGHT
- ABUTTER LINE
- PROPERTY LINE
- EX. EDGE OF PAVEMENT
- PROP. EDGE OF PAVEMENT
- EXIST. RETAINING WALL
- EXIST. BUILDING
- PROP. BUILDING
- EX. CONCRETE

THIS PLAN WAS PREPARED IN ASSOCIATION WITH:

SLA
SWANEY LIGHTING ASSOCIATES, INC.

DIG SAFE
811
CALL TOLL FREE
DAMAGE PREVENTION SYSTEM
UTILITIES UNDERGROUND

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

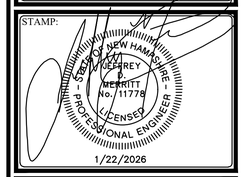
REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering ● land planning ● municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:



LOCATION:

TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

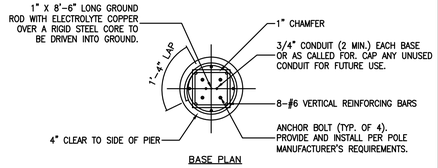
PROJECT:

LEBANON HOUSING AUTHORITY

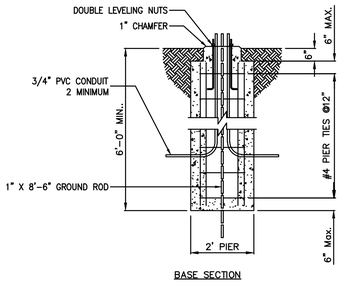
TITLE:

LIGHTING PLAN

PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 7 OF 10		



BASE PLAN

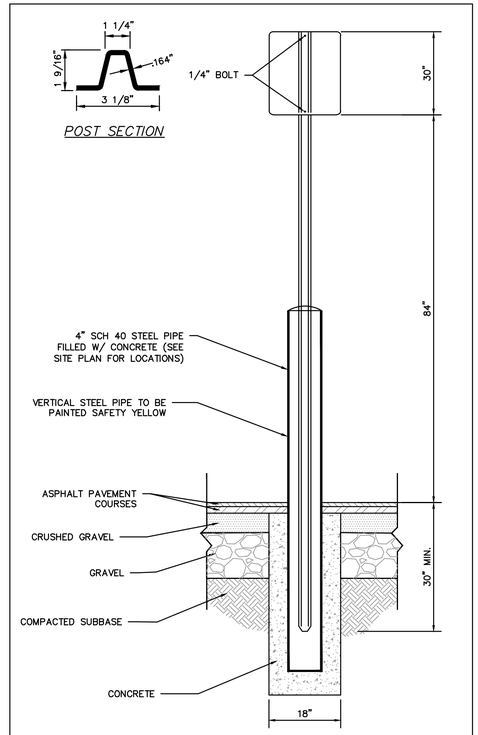


BASE SECTION

NOTES:
1. LIGHT POLE BASES. THE EXPOSED HEIGHT OF CONCRETE BASES USED TO ANCHOR POLE MOUNTED FIXTURES SHALL CONFORM TO THE FOLLOWING:
   (1) A MAXIMUM OF 2'-6" WHEN THE POLE IS WITHIN A PARKING FIELD
   (2) A MAXIMUM OF 0'-6" WHEN THE POLE IS IN LANDSCAPED OR LAWN AREAS
   (3) A MAXIMUM OF 0'-4" WHEN THE POLE IS WITHIN THE LIMITS OF HARD-SURFACED SIDEWALKS AND PEDESTRIAN WALKWAYS.
   (4) THE USE OF ORNAMENTAL BASES SHALL BE ENCOURAGED WITH ALL NEW LIGHT-POLE INSTALLATIONS.

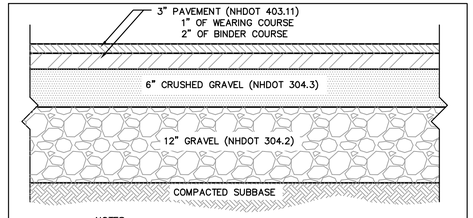
LIGHT POLE BASE DETAIL

NOT TO SCALE



BOLLARD MOUNTED SIGN DETAIL

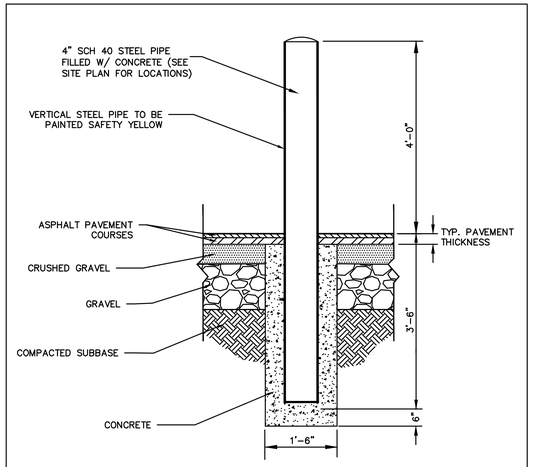
NOT TO SCALE



NOTES:
1. ALL GRAVELS AND SUBBASE TO BE COMPACTED TO 95%.

PARKING LOT AND DRIVEWAY PAVEMENT SECTION

NOT TO SCALE

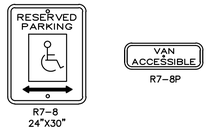


BOLLARD DETAIL

NOT TO SCALE

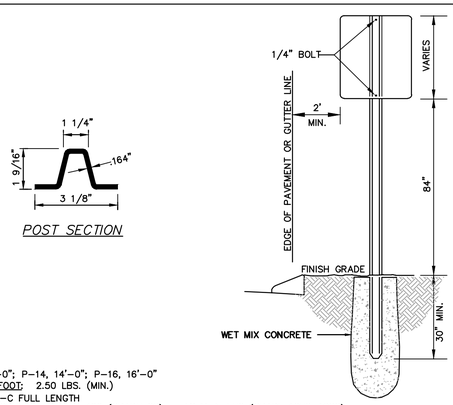
BICYCLE PARKING SIGN DETAIL

NOT TO SCALE



HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

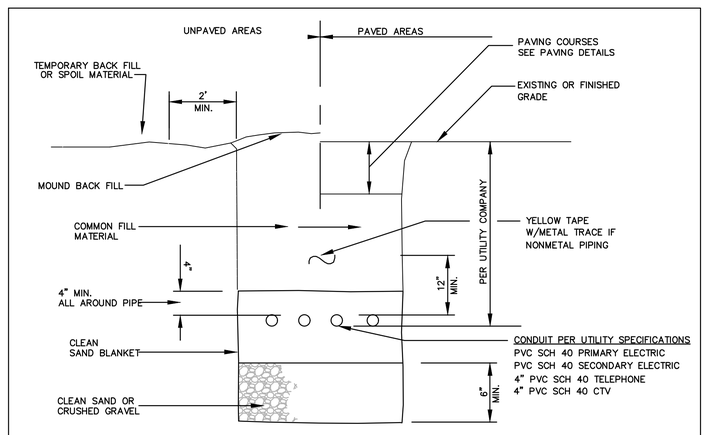


NOTES:
LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0"
WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)
HOLES: 3/4" DIA. 1' C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) or ASTM A-576 (GRADE 1070-1080)
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN, BAKED ON OR AIR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTES:
1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED. POSTS MAY BE SET OF DRIVEN.
2. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH AFTER INSERTING POSTS, THE HOLES SHALL BE BACK FILLED WITH SUITABLE MATERIAL IN LAYERS NO TO EXCEED 6" DEEP THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
3. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.
7. DIMENSIONS SHOWN ARE NOMINAL
8. ALTERNATE SECTIONS MUST BE APPROVED PRIOR TO USE.

SIGN POST DETAIL

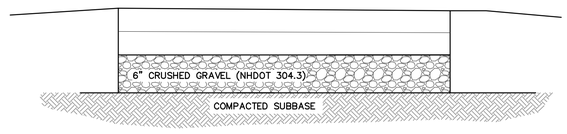
NOT TO SCALE



NOTES:
1. ALL UTILITY SHAPE, GRADE, ALIGNMENT, AND LOCATION FINAL DESIGN TO BE DETERMINED BY UTILITY PROVIDER.
2. ALL ELECTRICAL, PHONE, AND DATA CONDUIT MATERIALS AND METHODS OF CONSTRUCTION TO COMPLY WITH APPLICABLE UTILITY CONSTRUCTION REGULATIONS.
3. THE ABOVE TYPICAL UTILITY TRENCH DETAIL SERVES AS A GUIDE ONLY.

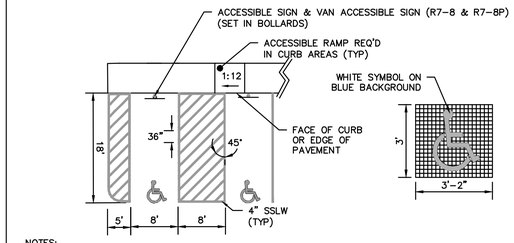
UTILITY TRENCH DETAIL

NOT TO SCALE



CONCRETE WALKWAY DETAIL

NOT TO SCALE



NOTES:
1. VAN ACCESS AISLE SHALL BE A MINIMUM 8' WIDE. AN R7-8P "VAN ACCESSIBLE" SIGN WILL BE ADDED TO ACCESSIBLE SIGN R7-8.
2. (T) = THERMOPLASTIC PAVEMENT MARKING.

PERPENDICULAR ACCESSIBLE PARKING AND STRIPING DETAIL

NOT TO SCALE

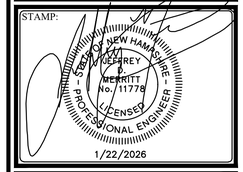
GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

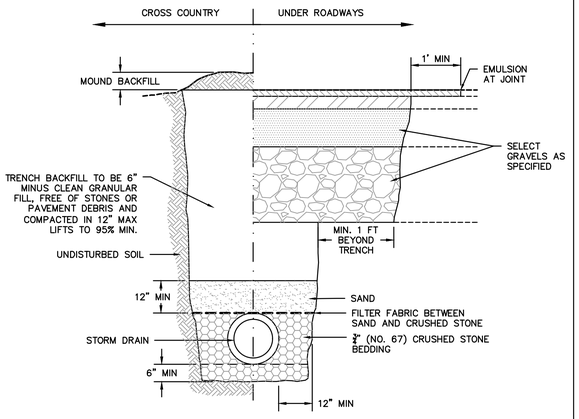
STAMP:


LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
DETAILS

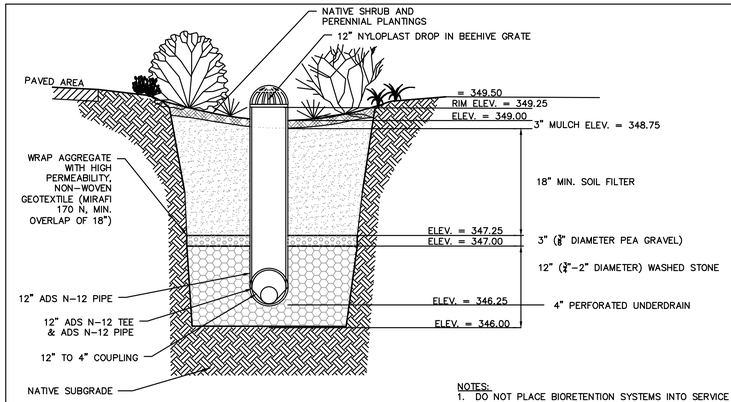
PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	AS SHOWN
SHEET:	8 OF 10	



NOTES:
1. LEDGE TO BE A MINIMUM 12" BELOW BOTTOM OF PIPE.

STORM DRAIN TRENCH DETAIL

NOT TO SCALE



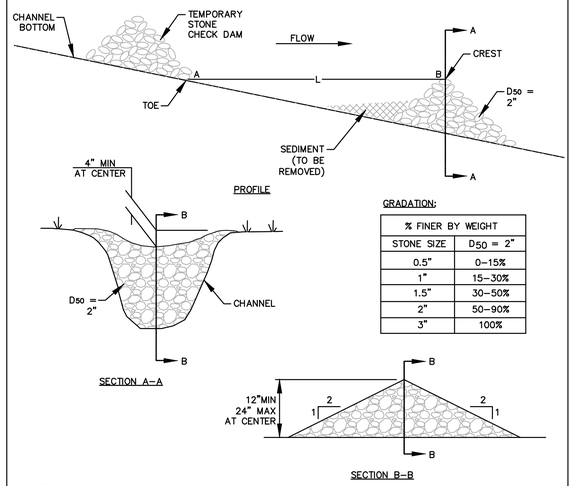
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL	
		SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
FILTER MEDIA OPTION A			
ASTM C-33 CONCRETE SAND	50 TO 55		
LOAMY SAND TOPSOIL, WITH FINES AS INDICATED	20 TO 30	200	15 TO 25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	<5
FILTER MEDIA OPTION B			
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH, WITH FINES AS INDICATED	20 TO 30	200	<5
LOAMY COARSE SAND	70 TO 80	10	85 TO 100
		20	70 TO 100
		60	15 TO 40
		200	8 TO 15

TYPICAL BIORETENTION POND DETAIL

NOT TO SCALE

NOTES:
1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. WHERE ULTIMATE DISCHARGE FROM THE BIORETENTION AREA IS BY INFILTRATION INTO THE SUBSOIL, THE PRESERVATION OF INFILTRATION FUNCTION OF UNDERLYING SOILS REQUIRES CAREFUL CONSIDERATION DURING CONSTRUCTION. TO PREVENT DEGRADATION OF INFILTRATION FUNCTION:
   - 2.1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
   - 2.2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
3. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

MAINTENANCE NOTES:
1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWCE ANNUALLY, AND FOLLOWNG ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
5. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.



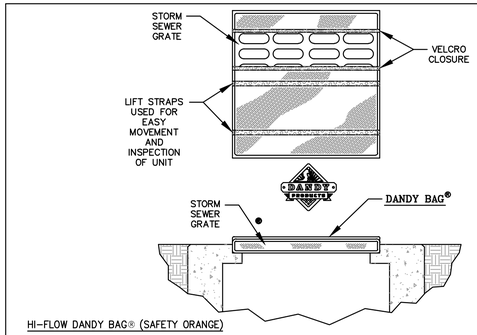
GRADATION:

% FINER BY WEIGHT	
STONE SIZE	D_{50} = 2"
0.5"	0-15%
1"	15-30%
1.5"	30-50%
2"	50-90%
3"	100%

NOTES:
1. PLACE TEMPORARY STONE CHECK DAM (D_{50} = 2" MIN) TO THE LINES, GRADES AND LOCATIONS AS SHOWN ON THE APPROVED PLAN OR AS FIELD DIRECTED BY THE ENGINEER.
2. STONE SIZE TO BE INCREASED TO D_{50} = 4" WHEN GRADES EXCEED 8% OR VELOCITIES EXCEED 6.0 FPS.
3. SET SPACING OF STONE CHECK DAMS SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH EROSION STONE (D_{50} = 4" MIN) OR LINER (NAG DS-150) AS NEEDED OR DIRECTED BY THE ENGINEER.
5. REMOVE STONE CHECK DAM WHEN NO LONGER NEEDED. AFTER BARRIER IS REMOVED, STABILIZE WITH VEGETATION.
6. REMOVE ALL SEDIMENT, REGRADE/VEGETATE AS NECESSARY OR AS FIELD DIRECTED BY THE ENGINEER.

STONE CHECK DAM DETAIL

NOT TO SCALE



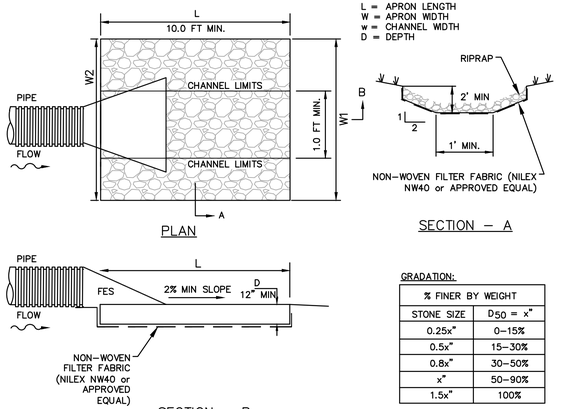
HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4833	kN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3097 (450)
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
Flow Rate	ASTM D 4491	1/min/m² (gal/min/ft²)	5907 (145)
Permittivity	ASTM D 4491	Sec⁻¹	2.1

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

DANDY BAG DETAIL

NOT TO SCALE



GRADATION:

% FINER BY WEIGHT	
STONE SIZE	D_{50} = x"
0.25x"	0-15%
0.5x"	15-30%
0.8x"	30-50%
x"	50-90%
1.5x"	100%

NOTES:
1. THE APRON SUBGRADE TO BE PREPARED TO THE GRADES SHOWN ON THE APPROVED PLANS.
2. THE FRACTURED ROCK (RIP-RAP) SHALL CONFORM TO THE SPECIFIED GRADATION (D_{50}=4" MIN.).
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE RIP-RAP PLACEMENT. DAMAGED FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS SHALL BE A MINIMUM OF 12.0 INCHES.
4. RIP-RAP PLACEMENT SHALL BE IN ONE CONTINUOUS LIFT TO THE DEPTH SPECIFIED, AVOIDING MATERIAL SEGREGATION.

MAINTENANCE

THE APRON SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT (≥ 3"). IF THE RIPRAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE VEGETATED CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE PERIODICALLY INSPECTED FOR DEGRADATION. IF DEGRADATION HAS OCCURRED, REPAIR IMMEDIATELY. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS AND SEDIMENT THAT COULD IMPAIR UPSTREAM CHANNEL CHARACTERISTICS. ALL DEBRIS OR SEDIMENT SHOULD BE REMOVED OFF SITE and DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LAWS.

STRUCTURE	LENGTH	W1	W2	D50	DEPTH
HW#1	7'	10'	3'	4"	10"

OUTLET PROTECTION DETAIL

NOT TO SCALE

1. ALL PROPOSED POST-DEVELOPMENT 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 PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT BE DONE 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% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL (NHDOT 304.3).

WINTER CONSTRUCTION NOTES

1. CONTACT DIG SAFE AT LEAST 72 HOURS BEFORE ANY EXCAVATION WORK.
2. CUT AND CLEAR TREES AND BRUSH WITHIN LIMITS OF CLEARING SHOWN ON PLAN.
3. INSTALL ALL APPLICABLE TEMPORARY EROSION CONTROL MEASURES PRIOR PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OPERATIONS. THE STABILIZED CONSTRUCTION EXIT SHALL BE IN PLACE AS SHOWN ON THE PROJECT PLANS.
4. REMOVE STUMPS FROM THE SITE FOR SITE GRADING TO COMMENCE. ALL STUMPS AND SIMILAR ORGANIC DEBRIS SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR UNLESS A STUMP DUMP IS NOTED ON THE PLAN. NATIVE ORGANIC SOIL MATERIALS SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED WITHIN AREAS OUT OF THE WAY OF OTHER CONSTRUCTIONS ACTIVITIES AND DRAINAGE FLOW. STOCKPILES SHALL BE TEMPORARILY SEEDED WITH WINTER RYE AND BE SURROUNDED BY PERIMETER CONTROLS TO PREVENT EROSION.
5. COMMENCE EARTHWORK OPERATIONS. ALL PERMANENT EROSION CONTROL MEASURES AND DETENTION FACILITIES SHOULD BE INSTALLED PRIOR TO GRADING FOR PROJECT.
6. ALL DRAINAGE SYSTEMS AND OTHER UTILITIES SHOULD BE CONSTRUCTED FROM LOW GRADE TO HIGH GRADE. INCMPLETE WORK SHALL BE PROTECTED FROM SILTATION BY THE USE OF PERIMETER CONTROLS UNTIL THE SITE HAS BECOME FULLY STABILIZED.
7. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   - B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   - C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
8. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
9. ALL STORMWATER FLOWS SHALL NOT BE DIRECTED TO THE STORMWATER MEASURES UNTIL ALL CONTRIBUTING AREA HAVE BEEN DEEMED STABLE.
10. BEGIN THE CONSTRUCTION OF GRAVEL AND CRUSHED GRAVEL COURSES OVER PROPOSED DRIVEWAY, WALKS, AND PARKING AREAS AND COMPACT IN SPECIFIED LIFT THICKNESS AND COMPACTION RATES.
11. COMPLETE GRADING ACTIVITIES AND WHEN COMPLETE, BEGIN TOPSOILING PROPOSED TURF AREAS USING STOCKPILED LOAM SUPPLEMENTED WITH BORROW LOAM, IF NECESSARY, TO LEAVE THE SPECIFIED THICKNESS.
12. FINE GRADE ALL TURF AREAS AND COMPLETE PERMANENT SEEDING AND LANDSCAPING BY HYDROSEEDING WITH THE SPECIFIED SEED MIXTURE IMMEDIATELY AFTER FINE GRADING IS COMPLETED. ALL AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
13. INSTALL THE FINAL BINDER COURSE OF PAVEMENT.
14. INSTALL THE FINAL WEARING COURSE OF PAVEMENT OVER THE BINDER COURSE.
15. COMPLETE INSTALLATION OF LANDSCAPING, SIGNAGE, AND OTHER SITE AMENITIES.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE ESTABLISHED THEMSELVES.

CONSTRUCTION SEQUENCE

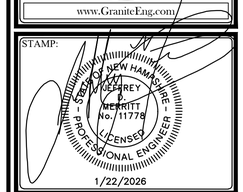
GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
130 Dow Street, Tower 2, Suite 421
Manchester, New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:


LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	AS SHOWN
SHEET:	9 OF 10	

1. EARTHWORK SHALL BE LIMITED TO THE AREAS WITHIN THE LIMITS OF CLEARING AS SHOWN ON THE PLAN. NO GIVEN AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING THIRTY (30) CALENDAR DAYS.
2. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION.
3. PERIMETER CONTROLS MUST BE INSTALLED PRIOR TO EARTHWORK.
4. EROSION CONTROL MEASURES USED SHALL BE INSPECTED AT LEAST WEEKLY AND WITHIN 24 HOURS AFTER 0.25" OF RAINFALL OR MORE. ALL DEFICIENCIES SHALL BE FIXED IN ORDER TO KEEP OPERATION EFFECTIVE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.
5. ALL STORMWATER PRACTICES AND DRAINAGE SWALES ARE TO BE INSTALLED PRIOR TO ROUGH GRADING OF THE SITE. THEY SHOULD BE FULLY STABILIZED PRIOR TO RECEIVING STORMWATER. PERIODIC INSPECTION AND MAINTENANCE TO MAINTAIN DESIGN INTENT IS REQUIRED.
6. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE THE REQUIRED AMOUNT OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
7. IF DURING CONSTRUCTION A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
8. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
8. ALL DUST SHALL BE CONTROLLED BY THE USE OF WATER IN ACCORDANCE WITH ENV-A 1000.
9. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE REQUIRED, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY DEVICES OR CONSULT WITH THE ENGINEER.
10. JUTE MATTING INSTALLED TO CONFORM WITH THE RECOMMENDED BEST MANAGEMENT PRACTICE OUTLINED IN "NEW HAMPSHIRE EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" ON ALL 3:1 SLOPES OR GREATER.
11. ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS.
12. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS.

EROSION CONTROL NOTES

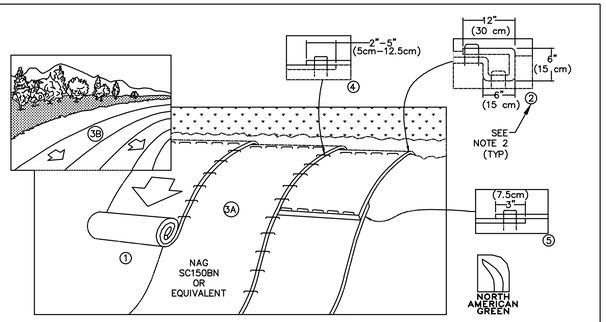
1. ALL AREAS TO BE SEEDED SHALL BE PREPARED TO PROVIDE A REASONABLY FIRM BUT FRIABLE SEED BED.
2. SLOPED AREAS SHALL NOT BE LEFT TOO SMOOTH; THE SURFACE SHALL BE LEFT IN A RUFFLED CONDITION SUCH AS MAY BE PRODUCED BY THE USE OF TRACKED VEHICLES RUN UP AND DOWN THE SLOPES. SMOOTH, COMPACTED SLOPES, SUCH AS FROM BLADING, WHICH MIGHT ALLOW THE FREE FLOW OF WATER DOWN THEM SHALL BE DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO GIVE THE EFFECT OF MINIATURE TERRACES, PARTICULARLY IN SILTY OR CLAYEY SOILS. THE SLOPES SHALL BE LEFT SMOOTH ENOUGH TO ENABLE MOWING.
3. LAWN AREAS, SUCH AS WHERE LOAM HAS BEEN SPREAD, SHALL BE PREPARED FOR SEEDING. THE LOAM SHALL BE SPREAD UPON THE PREVIOUSLY PREPARED SUBGRADE SURFACE TO THE DEPTH OF 4" ± 1/2" UNLESS OTHERWISE SPECIFIED AND SHALL BE RAKED CAREFULLY TO REMOVE ALL OBJECTIONABLE MATERIALS. LOAM SHALL BE SPREAD IN SUCH A MANNER AS TO ESTABLISH A LOOSE, FRIABLE SEEDBED. IN ORDER TO MAINTAIN A CONSISTENT GRADE, LOAM PLACED ADJACENT TO LAWNS OR WHERE DIRECTED SHALL BE COMPACTED WITH A ROLLER WEIGHING APPROXIMATELY 100 POUNDS PER FOOT OF ROLLER WIDTH. ALL DEPRESSIONS EXPOSED DURING THE ROLLING PROCEDURE SHALL BE FILLED WITH ADDITIONAL LOAM, AND ROLLED.
4. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE OF VIABLE PARTS OF PROHIBITED INVASIVE PLANTS LISTED IN TABLE 3800.1 OF PART AGR 3800. LOAM SHALL BE GENERALLY FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN 2"IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.6. LOAM SHALL CONTAIN A MINIMUM OF 3 PERCENT AND A MAXIMUM OF 10 PERCENT OF ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. NOT MORE THAN 65 PERCENT SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D 1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE NO. 4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
5. ALL AREAS TO BE SEEDED SHALL MEET THE SPECIFIED GRADES AND SHALL BE FREE OF GROWTH AND DEBRIS.
6. CARE SHALL BE TAKEN TO PREVENT THE FORMATION OF LOW PLACES AND POCKETS WHERE WATER WILL STAND.
7. WHERE RYEGRASS HAS BEEN PLANTED FOR TEMPORARY EROSION CONTROL AND HAS NOT BEEN ELIMINATED PRIOR TO THE COMPLETION OF THE WORK, SUCH AREAS SHALL BE DISC-HARROWED AT LEAST 3"DEEP AND SEEDED WITH PERMANENT GRASSES TO PREVENT THE RYEGRASS FROM RESEEDING AND BECOMING COMPETITIVE WITH AND RETARDING DEVELOPMENT OF THE PERMANENT COVER.
8. SEEDING AND INITIAL FERTILIZING SHALL BE DONE BETWEEN APRIL 1 AND JUNE 1, BETWEEN AUGUST 15 AND OCTOBER 14, OR AS PERMITTED. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER OR WHEN THE GROUND IS FROZEN, EXCESSIVELY WET, OR OTHERWISE UNTILLABLE. IF SEEDING IS DONE DURING JULY OR AUGUST, ADDITIONAL MULCH MATERIAL MAY BE REQUIRED BY THE ENGINEER.
9. FERTILIZER SHALL BE UNIFORMLY APPLIED. THE RATE OF APPLICATION SHALL BE A RATE OF 2.0 POUNDS OF NITROGEN PER 1,000 SQUARE FEET. NOT LESS THAN THREE MONTHS SHALL ELAPSE BETWEEN THE INITIAL FERTILIZATION AND THE REFERTILIZATION. NO REFERTILIZATION WILL BE ALLOWED BETWEEN NOVEMBER 1, OR WHEN THE GROUND HAS FROZEN, AND THE FOLLOWING APRIL 1, OR BETWEEN JUNE 1 AND THE FOLLOWING SEPTEMBER 1. REFERTILIZATION WILL BE ALLOWED BETWEEN AUGUST 15 AND 31 ONLY WHEN IT IS DETERMINED THAT THE PERMANENT GRASSES HAVE DEVELOPED WELL AND FEW WEEDS HAVE APPEARED, AND SUCH REFERTILIZATION WILL NOT TEND TO PROMOTE THE GROWTH OF NOXIOUS WEEDS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND CARING FOR SEEDED AREAS UNTIL ACCEPTANCE OF THE WORK. CONTRACTOR SHALL REPAIR AT HIS OWN EXPENSE ANY DAMAGE TO SEEDED AREAS CAUSED BY PEDESTRIAN OR VEHICULAR TRAFFIC OR OTHER CAUSES.
11. THE SEEDED AREAS SHALL BE CAREFULLY AND SUITABLY WATERED AS NECESSARY TO PRODUCE A SATISFACTORY GROWTH.
12. AREAS SEEDED WITH PARK SEED SHALL BE MOWED WHENEVER NECESSARY TO KEEP THE GROWTH BETWEEN 3 AND 6" IN ORDER TO ALLOW LIGHT TO PENETRATE TO THE SHORTER, SLOWER GROWING SPECIES IN THE MIXTURE.
13. AREAS SEEDED WITH SLOPE SEED MAY BE ORDERED MOWED WHENEVER THE CONTRACT EXTENDS INTO A SECOND GROWING SEASON. WEEDS GROWING IN AREAS SEEDED WITH THE SLOPE SEED SHALL BE CUT BACK TO PREVENT THEM FROM DOMINATING THE DESIRED GRASS PLANTS
14. ACCEPTABLE SEED MIXTURES ARE AS FOLLOWS:

TYPICAL LAWN MIX			
KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMINATION (%)	POUNDS/ACRE (TOTAL 120 LBS)
CREEPING RED FESCUE	96	85	40
PERENNIAL RYEGRASS	98	90	50
KENTUCKY BLUEGRASS	97	85	25
REDTOP	95	80	5

WILDFLOWER SLOPE SEED (3:1 OR GREATER)			
KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMINATION (%)	POUNDS/ACRE (TOTAL 95 LBS)
CREEPING RED FESCUE	96	85	35
PERENNIAL RYEGRASS	98	90	30
REDTOP	95	80	5
ALSIKE CLOVER	97	90	5
BIRDSFOOT TREFOIL	98	80	5
LANCE-LEAVED COREOPSIS	95	80	4
OXEYE DAISY	95	80	3
BLACKEYED SUSAN	95	80	4
WILD LUPINE	95	80	4

TYPICAL SLOPE SEED (3:1 OR GREATER)			
KIND OF SEED	MINIMUM PURITY (%)	MINIMUM GERMINATION (%)	POUNDS/ACRE (TOTAL 80 LBS)
CREEPING RED FESCUE	96	85	35
PERENNIAL RYEGRASS	98	90	30
REDTOP	95	80	5
ALSIKE CLOVER	97	90	5
BIRDSFOOT TREFOIL	98	80	5

TURF ESTABLISHMENT SPECIFICATIONS

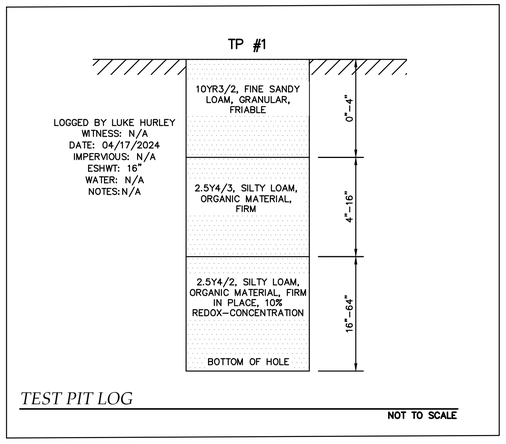


NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN or (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/ STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM,STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.
NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET DETAIL

NOT TO SCALE

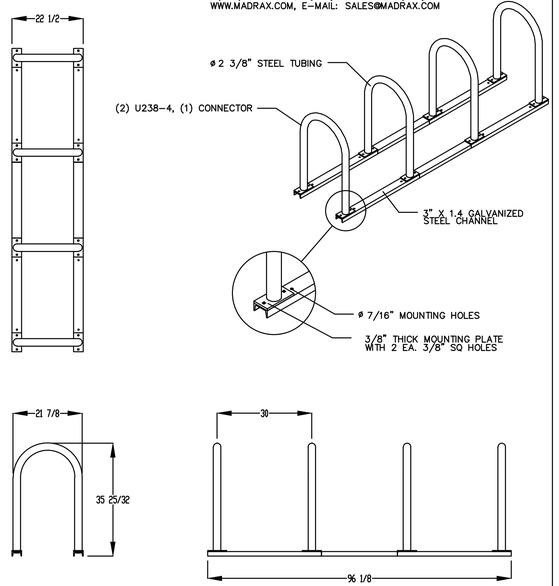


TEST PIT LOG

NOT TO SCALE

MADRAX

MADRAX DIVISION
GRABER MANUFACTURING, INC.
1080 UNIEK DRIVE
WAUNAKEE, WI 53597
P(800) 448-7931, P(608) 849-1080, F(608) 849-1081
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM



PRODUCT: U238-8
DESCRIPTION: U238 'U' ON RAIL BIKE RACK
8 BIKE, 4 LOOP, SURFACE
DATE: 7-17-15
ENG: SMC

NOTES:
1. INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. CONSULTANT TO SELECT COLOR(FINISH) SEE MANUFACTURER'S SPECIFICATIONS.
3. SEE SITE PLAN FOR LOCATION OR CONSULT OWNER.

INVERTED "U" BIKE RACK DETAIL

NOT TO SCALE

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
130 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
JEFFREY D. MERRITT No. 11778 LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
DETAILS

PROJECT No.	DATE:	SCALE:
23-0508-1	JANUARY 22, 2025	AS SHOWN
SHEET:	10 OF 10	

LANDSCAPE REQUIREMENTS – SECTION 6.2.D.1
SEE LANDSCAPE PLAN AROUND PERIMETER OF BUILDING

LANDSCAPE REQUIREMENTS – SECTION 6.2.E.1
PARKING LOT CALCULATION:
TOTAL PARKING LOT AREA: 1,470SF
REQUIRED: 30% OF TOTAL PARKING LOT
= 1,470 X .30 = 441 SF

PROPOSED = 441 SF (30%)

PROPOSED PLANTINGS:

TREES				
QTY.	SYMBOL	LATIN NAME	COMMON NAME	SIZE
1	AMEL	AMELANCHIER CANADENSIS	SERVICEBERRY	5–6'BB
1	BET	BETULA NIGRA HERITAGE	HERITAGE RIVER BIRCH	8–10'BB
1	FAG	FAGUS S. RED OBELISK	RED OBELISK BEECH	8–10'BB
2	SYR	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2.5–3"CAL

SHRUBS AND PERENNIALS				
2	BUX	BUXUS MICROPHYLLA WINTER GEM	WINTER GEM BOXWOOD	#5 GAL
4	CLE	CLETHRA ALNIFOLIA	SUMMERSWEET	#5 GAL
4	EUP	EUPATORIUM RUGOSUM 'CHOCOLATE'	CHOCOLATE JOE PYE WEED	#2 GAL
5	HEM	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	#2 GAL
7	IRIS	IRIS VERSICOLOR 'PURPLE FLAME'	PURPLE FLAME IRIS	#2 GAL
4	NEP	NEPETA WALKER'S LOW	WALKER'S LOW CATMINT	#3 GAL
6	PEN	PENNISETUM A. HAMELN	DWARF FOUNTAIN GRASS	#2 GAL

A FULL MATERIALS COST ESTIMATE AND INSTALLATION QUOTE HAS BEEN PREPARED FOR THIS PROJECT BY DESIGN WORKS. PLEASE CONTACT JENNIFER DINOVO AT JENNIFER@4DESIGNWORKS.COM TO OBTAIN A COPY OF THE QUOTE.

LICENSED LANDSCAPE ARCHITECT • JENNIFER L. DINOVO 085 • STATE OF NEW HAMPSHIRE

PEN
TIL
HEM
PEN
TIL
NEP
BUX
BUX
FAG
NEP
RIVERSTONE
IRIS
BET
CLE
EMEL
EUP

LOAM & SEED ALL DISTURBED AREAS (TYP.)

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
DESIGN WORKS
LANDSCAPE ARCHITECTURE
AND CONSTRUCTION
125 WASON ROAD, HUDSON, NH 03051

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
LANDSCAPE PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: L1		

GENERAL PLANTING NOTES:

1) ALL PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES OF THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE FOUNDATION. PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH GENERALLY ACCEPTED HORTICULTURAL STANDARDS AND BE REGULARLY MAINTAINED AFTER INSTALLATION.

2) THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS.

3) ALL PLANTS SHALL CONFORM TO THE SPECIFICATIONS IN THE LANDSCAPE LEGEND EXCEPT THAT PLANTS LARGER THAN THOSE SPECIFIED MAY BE USED IF APPROVED BY THE LANDSCAPE ARCHITECT.

4) ALL PROPOSED SUBSTITUTIONS OF PLANT MATERIAL SHALL BE MADE WITH MATERIAL EQUIVALENT TO THE SPECIFIED MATERIAL IN OVERALL HEIGHT, BRANCHING HEIGHT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE. SUBSTITUTIONS MAY BE USED IF APPROVED BY THE LANDSCAPE ARCHITECT.

5) ALL PLANTS SHALL BE GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES AND SHALL BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE PROJECT LOCALITY FOR AT LEAST TWO YEARS.

6) ALL PLANTS TO BE TAGGED AT AN APPROVED NURSERY BY THE LANDSCAPE ARCHITECT PRIOR TO DELIVERY TO THE SITE.

7) BALLED AND BURLAPPED PLANTS (BB) SHALL BE MOVED WITH THE ROOT SYSTEM AS SOLID UNITS; ROOT BALLS SHALL BE FIRMLY WRAPPED WITH BURLAP; CONTAINER GROWN PLANTS SHALL NOT BE REMOVED FROM THE CONTAINER PRIOR TO THE TIME OF INSTALLATION; ROOT SYSTEMS SHALL BE SET FIRMLY IN THE CONTAINER.

8) PLANTING SOIL MIX TO CONSIST OF SEVEN (7) PARTS LOAM AND ONE (1) PART PEAT MOSS BY VOLUME, WITH A pH VALUE OF 5.0 TO 6.0 TO A MIN. DEPTH OF 12".

9) ALL TREES AND SHRUBS TO RECEIVE "ROOTS HEALTHY START" FERTILIZER AS DIRECTED BY THE MANUFACTURER, OR APPROVED EQUAL.

10) ALL PLANTING BEDS TO BE FILLED WITH SOIL AND CROWNED ABOVE ADJACENT LAWN OR IMPROVED AREAS. ALL PLANTING BEDS TO BE MULCHED WITH A MINIUMUM OF 3" AND A MAXIMUM OF 4" OF BARK MULCH.

11) PROVIDE FIVE (5) FOOT DIAMETER MULCH CIRCLE AROUND INDIVIDUAL TREE PLANTINGS AND CONTINUOUS MULCH BED AROUND SHRUB PLANTINGS.

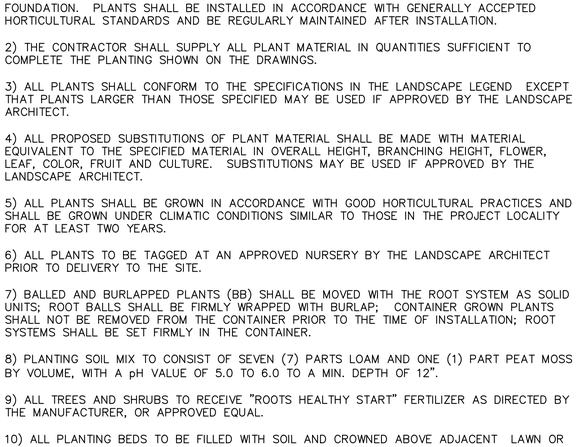
12) CAUTION SHALL BE USED NOT TO EXTEND MULCH LAYER ABOVE SOIL LAYER AT TRUNKS/STEMS OF INSTALLED PLANT MATERIAL.

13) WATER THOROUGHLY AND IMMEDIATELY AFTER COMPLETION OF PLANTING AND MULCHING. CONTRACTOR SHALL INSTRUCT OWNER'S REPRESENTATIVE ON APPROPRIATE WATERING PROCEDURES DURING INITIAL PLANT ESTABLISHMENT.

14) ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE FULL GROWING YEAR (ONE YEAR) FOLLOWING THE DATE OF SUBSTANTIAL COMPLETION.

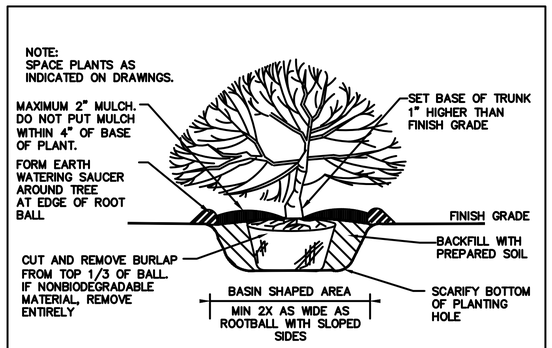
15) ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE COVERED WITH A MINIMUM THICKNESS OF 4–INCHES OF FRIABLE TOPSOIL AND BE SEEDED WITH GRASS SEED,COVERED WITH SOD OR PLANTED WITH GROUND COVER. IN GENERAL, ESTABLISHMENT OF TURF SHALL BE LIMITED TO THOSE AREAS THAT MAY BE REGULARLY MAINTAINED AS LAWN. GROUND COVERS, MULCH AND OTHER SUITABLE MATERIALS SHALL BE APPLIED TO AREAS WHICH ARE NOT INTENDED TO BE REGULARLY MAINTAINED AS LAWN. THE LOCATION AND THE EXTENT OF MULCHED LANDSCAPED BEDS SHALL BE PROPOSED AS TO MINIMIZE THE OCCURRENCE OF BARK MULCH WASHING INTO NEARBY STREET CATCH BASINS FROM AS THE RESULT OF HEAVY RAINS. WHEN POSSIBLE, LAWN AREAS SHALL SEPARATE THE MULCHED AREAS FROM ADJOINING PAVEMENT.

A FULL MATERIALS COST ESTIMATE AND INSTALLATION QUOTE HAS BEEN PREPARED FOR THIS PROJECT BY DESIGN WORKS. PLEASE CONTACT JENNIFER DINOVO AT JENNIFER@4DESIGNWORKS.COM TO OBTAIN A COPY OF THE QUOTE.



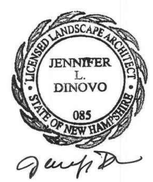
NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. THOROUGHLY SOAK TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING FIRST MONTH AFTER INSTALL AND REGULARLY FOR FIRST 2 YEARS.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.
4. FOR CONTAINER GROWN TREES, PULL THE ROOTS OUT OF THE OUTER LAYER AND CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.

TREE PLANTING
NOT TO SCALE



NOTES:
1. FOR CONTAINER GROWN SHRUBS, PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING FIRST MONTH AFTER INSTALL AND REGULARLY THROUGHOUT THE FOLLOWING 2 SUMMERS.

SHRUB PLANTING
NOT TO SCALE



I, JENNIFER DINOVO, HEREBY CERTIFY THAT I AM THE DESIGNER OF THIS LANDSCAPE PLAN AND THAT I AM A PROFESSIONAL LANDSCAPE ARCHITECT LICENSED BY THE STATE OF NEW HAMPSHIRE.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering ● land planning ● municipal services
150 Dow Street, Tower 2, Suite 421
Manchester
New Hampshire 03101
603.518.8030
www.GraniteEng.com

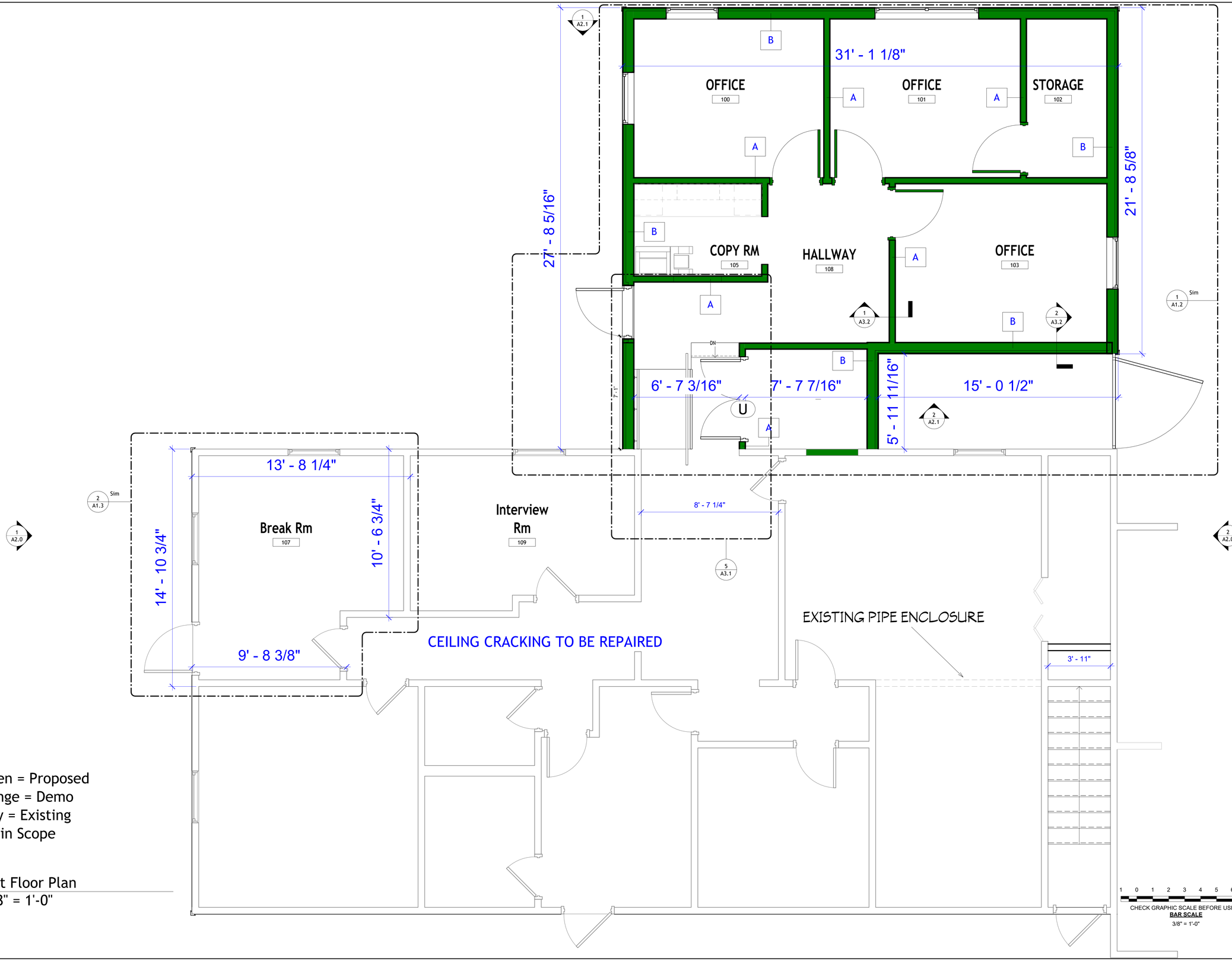
STAMP:
DESIGN WORKS
LANDSCAPE ARCHITECTURE AND CONSTRUCTION
125 WASON ROAD, HUDSON, NH 03051

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
LANDSCAPE PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: L2		



Key

- Green = Proposed
- Orange = Demo
- Gray = Existing
- Not in Scope

1 First Floor Plan
3/8" = 1'-0"

1 0 1 2 3 4 5 6 7
CHECK GRAPHIC SCALE BEFORE USING
BAR SCALE
3/8" = 1'-0"

R:\00 200 - RTD - Right-Trak Design\01 - PROJECTS\Lebanon HA\1-25-130 Lebanon HA - Office Extension\03_CAD\Lebanon HA Office Extension.rvt

RIGHT-TRAK DESIGN

RIGHT-TRAK DESIGN
148 Tatro Drive,
Goffstown, NH 03045
(603) 384-2830 | www.rightrakdesign.com

SEAL:

1/19/2026

CLIENT INFO:
Lebanon Housing Authority
Romano Circle
Lebanon, NH 03784

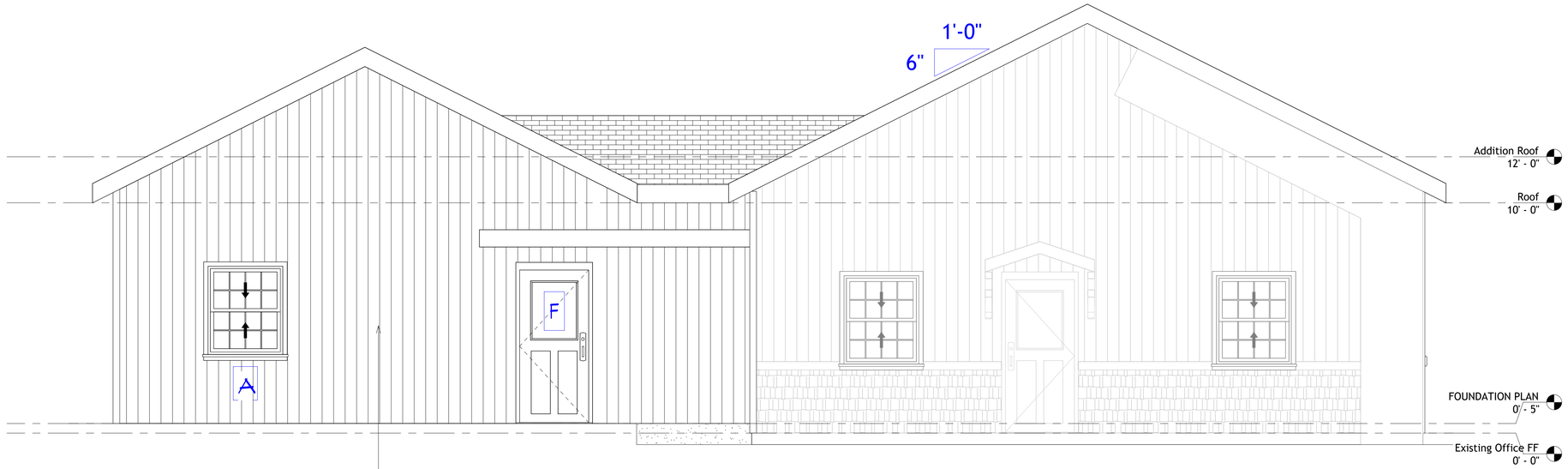
Office Addition / Renovation

REV	DATE	DESCRIPTION

JOB NO:	1-25-130
DATE:	1/19/2026
SCALE:	AS NOTED
DESIGNED BY:	MLM
DRAWN BY:	AJW
CHECKED BY:	MLM

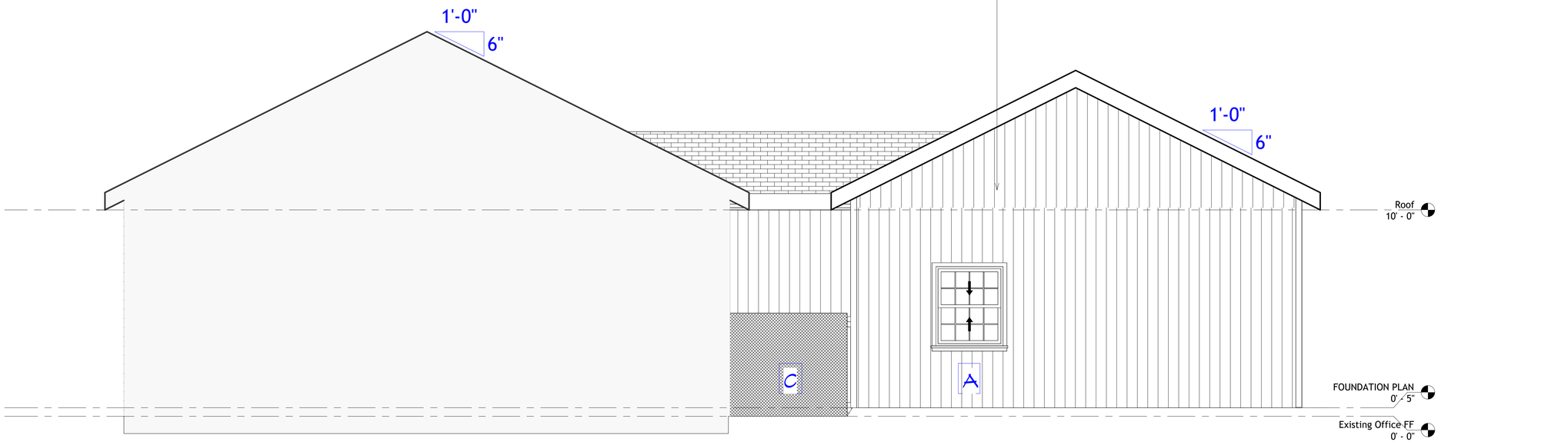
DRAWING TITLE:
Overall Building Floorplan

DRAWING NO:
A1.0



1 Right
3/8" = 1'-0"

7" CERTAINTEED VERTICAL BOARD AND BATTEN SIDING
(COLOR TO MATCH EXISTING, CONTRACTOR TO VERIFY IN FIELD)



2 Left
3/8" = 1'-0"

1 0 1 2 3 4 5 6 7
CHECK GRAPHIC SCALE BEFORE USING
BAR SCALE
3/8" = 1'-0"

RIGHT-TRAK DESIGN
148 Tatro Drive,
Goffstown, NH 03045
(603) 384-2830 | www.righttrakdesign.com

SEAL:

1/19/2026

CLIENT INFO:
Lebanon Housing Authority
Romano Circle
Lebanon, NH 03784

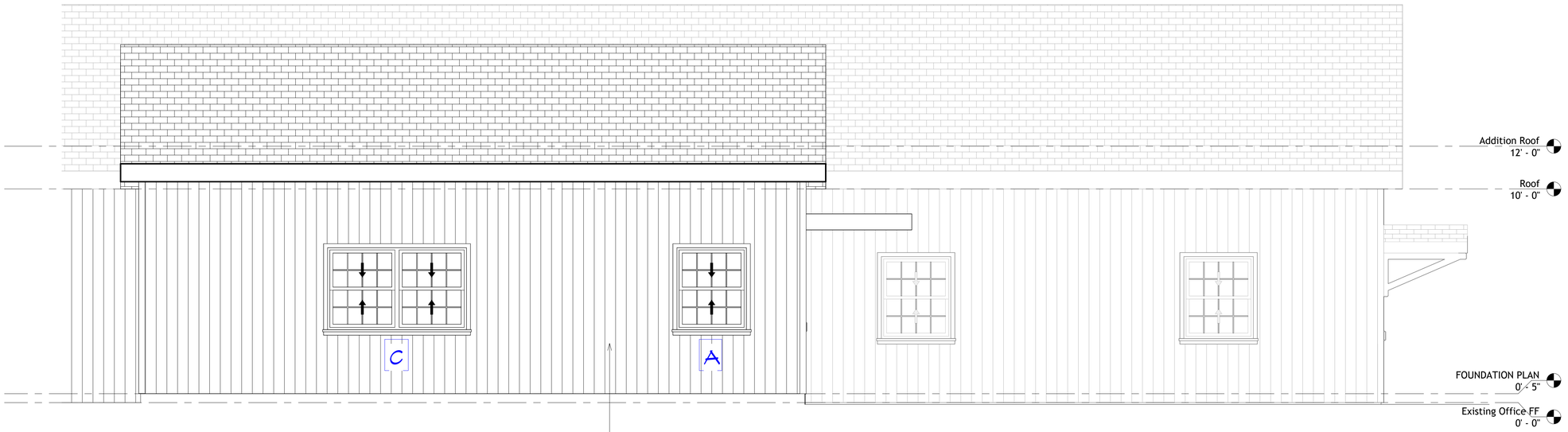
Office Addition / Renovation

REV	DATE	DESCRIPTION

JOB NO:	1-25-130
DATE:	1/19/2026
SCALE:	AS NOTED
DESIGNED BY:	MLM
DRAWN BY:	AJW
CHECKED BY:	MLM

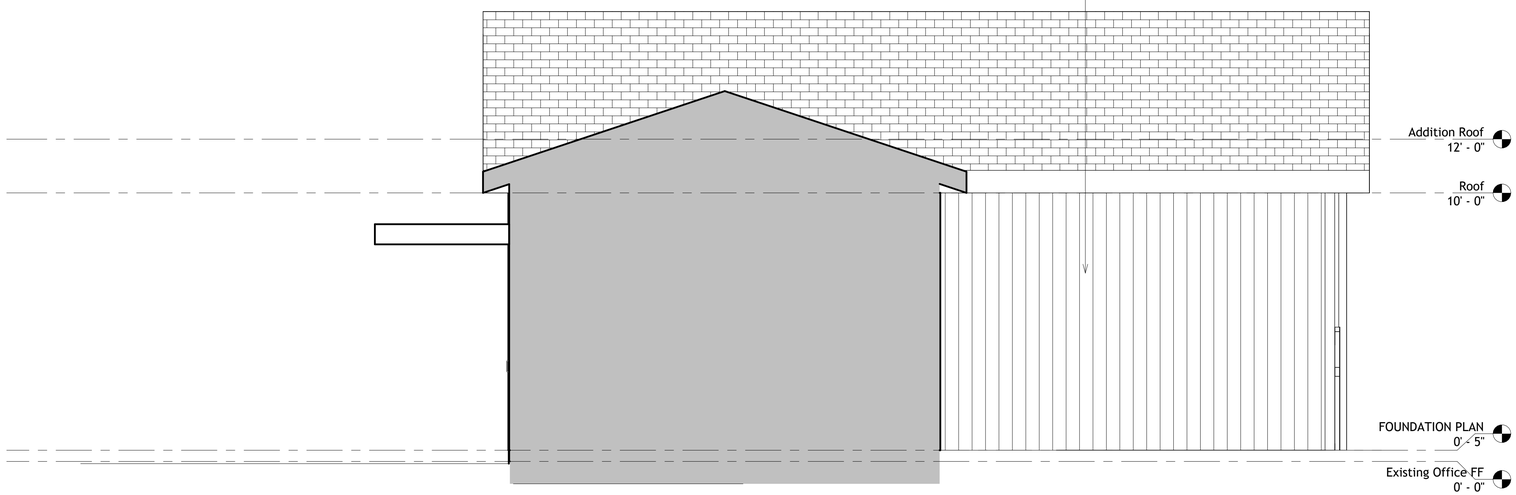
DRAWING TITLE:
Left + Right Elevations

DRAWING NO:
A2.0



1 Back
3/8" = 1'-0"

7" CERTAINTEED VERTICAL BOARD AND BATTEN SIDING
(COLOR TO MATCH EXISTING, CONTRACTOR TO VERIFY IN FIELD)



2 Utility Corner
3/8" = 1'-0"

1 0 1 2 3 4 5 6 7
CHECK GRAPHIC SCALE BEFORE USING
BAR SCALE
3/8" = 1'-0"

RIGHT-TRAK DESIGN
148 Tatro Drive,
Goffstown, NH 03045
(603) 384-2830 | www.righttrakdesign.com

SEAL:

1/19/2026

CLIENT INFO:
Lebanon Housing Authority
Romano Circle
Lebanon, NH 03784

Office Addition / Renovation

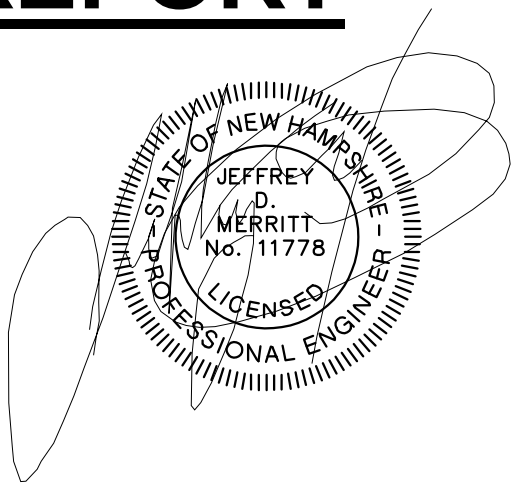
REV	DATE	DESCRIPTION

JOB NO:	1-25-130
DATE:	1/19/2026
SCALE:	AS NOTED
DESIGNED BY:	MLM
DRAWN BY:	AJW
CHECKED BY:	MLM

DRAWING TITLE:
Back Elevations

DRAWING NO:
A2.1

STORMWATER MANAGEMENT REPORT



GRANITE ENGINEERING

civil engineering ● land planning ● municipal services

LEBANON HOUSING AUTHORITY

Map 101; Lot 20
31 Romano Circle
West Lebanon, New Hampshire
January 7, 2026

PREPARED FOR:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

PREPARED BY:
GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030

GE Project No. 23-0508-1

TABLE OF CONTENTS

1. LEBANON NH STORMWATER CHECKLIST

CITY OF LEBANON, NH STORMWATER REVIEW REGULATIONS TECHNICAL CHECKLIST	
PROJECT NAME: 31 Romano Circle	
APPLICANT: Lebanon Housing Authority	**DATE:** January 8, 2026

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	☐	☐

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.	❒	❒

NOTE: THE APPLICANT IS RESPONSIBLE FOR PROVIDING THE REQUIRED INFORMATION PURSUANT TO ARTICLE VI OF THE SITE PLAN REVIEW REGULATIONS. PLEASE BE AWARE THAT THIS CHECKLIST IS FOR INFORMATION AND GUIDANCE ONLY AND DOES NOT REPRESENT THE LAW DICTATING SUBMITTAL REQUIREMENTS NOR IS IT COMPLETE AND INCLUSIVE THEREOF.

Completed By: Granite Engineering, LLC

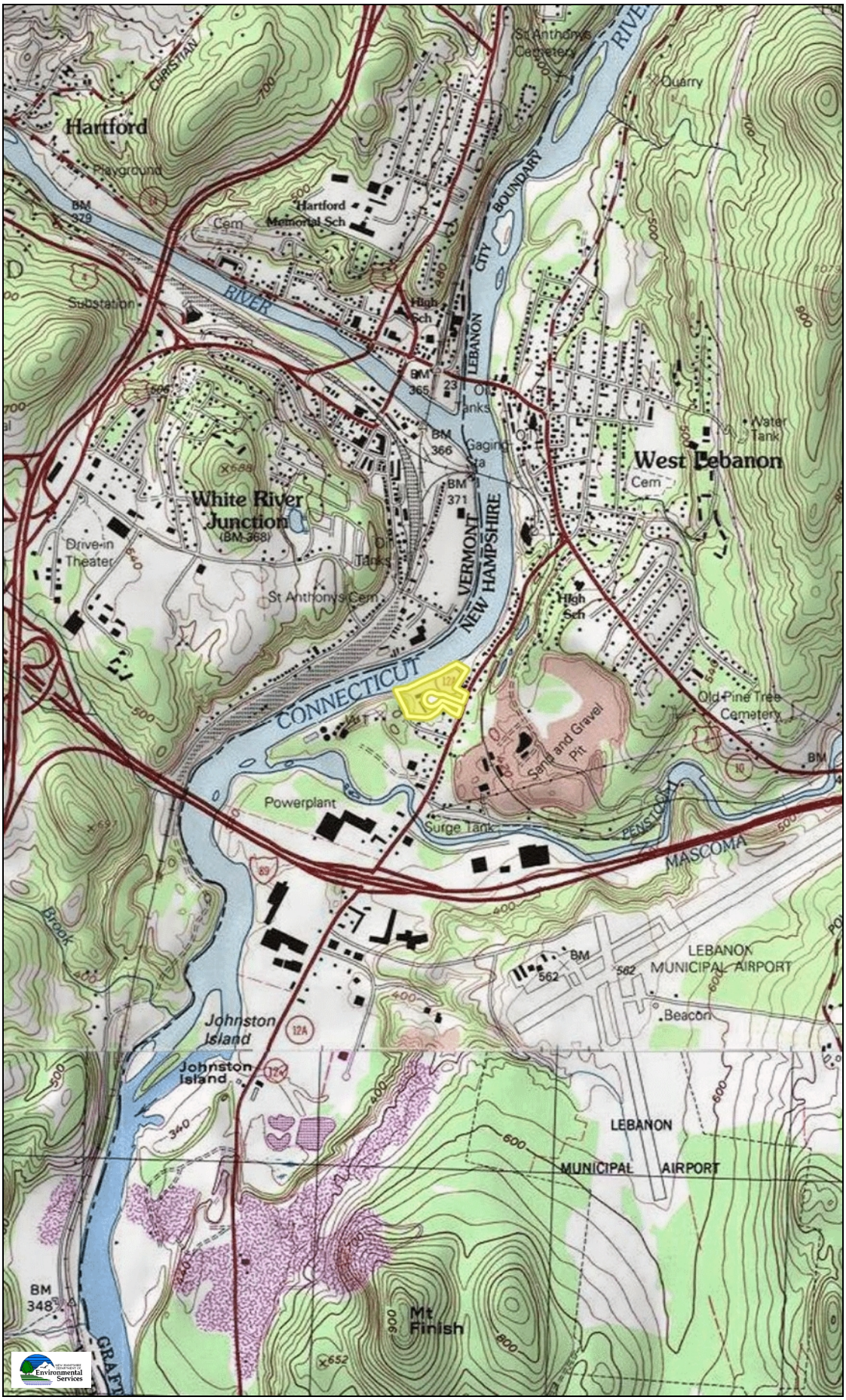
(Last Revised 9/20/2021)

Planning office Use Only:

Date Received___/___/___ Checklist Complete YES or NO Checked by:_____

2. USGS MAP

USGS Topographic Map



Legend

Map Scale

1: 24,000

Map Generated: 9/25/2024

Notes

3. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

This project proposes the construction of an office expansion for the Lebanon Housing Authority's Romano Circle Residences. The project is located at 31 Romano Circle in Lebanon, New Hampshire. The proposed office addition is 778 square feet with 2 additional parking spaces. Access to the property will remain unchanged via Romano Circle. The additional impervious area as a result of this project will be treated by a bio-filtration pond, that will ultimately discharge clean stormwater to the Connecticut River.

B. Existing Site Conditions

Tax Map 101 Lot 20 is approximately 9.5 acres in area. The property is developed with multiple residential buildings for the Lebanon Housing Authority and a few accessory buildings, such as a shed and a garage. The property is adjacent to the Connecticut River, where stormwater from the site is discharged. Stormwater controls on the site include a closed drainage system with catch basins and drainage manholes, a stone drainage area, and porous pavement used in some of the parking areas.

According to the NRCS Site Web Soil Survey, the predominant onsite soil types are Suncook loamy fine sand and Windsor loamy sand.

Please refer to section five (5) of this stormwater report for project specific NRCS soils.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the City of Lebanon Stormwater Regulations and generally accepted engineering practice, the 1-inch, 2-year, 25-year, 50-year, and 100-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site. Stormwater–treatment provisions and all drainage facilities have been designed to be fully functional during a 100-year return frequency storm.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were

estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the “best management practice”, in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning’s “n” value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the “Pre/Post Development Drainage Area Plans” graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In order to evaluate the impact of the proposed development, two (2) Point of Analysis (POA) were analyzed to demonstrate that the peak rates of runoff would not increase from the site improvements.

The primary POA, Link A, is located at the catch basin that conveys the stormwater from the existing building and driveway to the closed drainage system.

Stormwater from these impervious areas enters the closed drainage system and is ultimately discharged to the Connecticut River. Other than sumps within the catch basins, this water is not treated before entering the river.

The primary POA, Link B, is located behind the existing office building, and represents an area where the office addition will discharge to.

Pre-development peak rates of discharge are identified in Table 2. Further explanation of the post-condition hydrology will show a net decrease to the points of analysis.

For a more visual description of the information presented in this section, please refer to the attached “Pre-Development Drainage Areas Plan” attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA from the Pre-Development scenario were used in the Post-Development analysis.

Runoff generated from the entire project ultimately flows to the Connecticut River. Stormwater from the existing office and office addition roofs will flow into a proposed bio-filtration pond based on the proposed site grading. A bioretention pond provides effective stormwater management by reducing runoff volume, improving water quality, and mimicking natural hydrology. It filters pollutants such as sediment, nutrients, metals, and hydrocarbons through engineered soils and vegetation while promoting infiltration and groundwater recharge where site conditions allow. Compared to traditional detention systems, bioretention ponds offer enhanced pollutant removal, reduced downstream peak flows, and a smaller, more environmentally integrated footprint that aligns well with NHDES water quality objectives.. This bio-filtration pond is represented in the HydroCAD model as BP1.

The proposed changes to the site will include a net decrease in impervious area to POA Link A and the addition of 580-sf of impervious area to POA Link B. The proposed bio-filtration pond will treat 2,360-sf of impervious area, which will mitigate the effects of adding impervious area to the site (Table 3).

This pond will provide adequate storage to offset the peak rates of runoff for the design storms. Overall, the design complies with the requirements to provide treatment of developed areas and control of the peak rate of stormwater runoff and volume. According to the NHDES Stormwater Handbook Volume 2, “Pollutant Removal Efficiencies for Best Management Practices for Use in Pollutant Loading Analysis”, a bioretention system removes 90% of Total Suspended Solids (TSS), 65% of Total Nitrogen (TN), and 65% of Total Phosphorus (TP).

The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate and total storm volume for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report, for the points of analysis (Table 1 & 2).

D. Summary:

The subject site complies with the City of Lebanon Stormwater Management Regulations in regards to stormwater treatment and groundwater recharge volume. Proposed stormwater best management practices (BMP) are designed in accordance with the New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design and BMP worksheets provided by the New Hampshire Department of Environmental Services. In addition, stormwater discharges, in terms of peak rate of runoff and total volume, are consistent with the City of Lebanon Stormwater Regulations. The results are reported below in Table 1 and 2.

TABLE 1: CHANNEL PROTECTION REQUIREMENTS

Site Pre-Development vs. Post-Development (Storm Volume in Acre-Feet)											
Analysis Point	**1-In**		**2-Year**		**25-Year**		**50-Year**		**100-Year**		24-hr Rainfall
	Pre	**Post**	Pre	**Post**	Pre	**Post**	Pre	**Post**	Pre	**Post**	
A	**.028**	.027	**.079**	.078	**.149**	.148	**.181**	.179	**.223**	.220	
B	.004	**.005**	.013	**.015**	.024	**.029**	.030	**.035**	.038	**.045**	Post did not increase by more than 0.1, therefore OK

Channel Protection Requirements based on NHDES Alteration of Terrain Standards have been met (Env-Wq 1507.05). This includes the 2-year 24-hour post development peak flow rate generated from the proposed disturbance shall be equal to or less than the 2-year, 24-hour pre-development peak flow rate and:

a. The 2-year, 24-hour post-development storm volume, directed to a channel, downstream receiving water, or wetland has not includes over the pre-development volume by more than 0.1 acre-feet; and
b. The 2-year 24-hour post-development peak flow rate directed to a channel, downstream receiving water, or wetland is less than 2 cfs; and
c. The area directly discharges into a fourth order or greater river, a pond or lake greater than 10 acres, or tidal water

TABLE 2: PEAK RUNOFF

Site Pre Development vs. Post Development (Peak Discharge Rate in cfs)										
Description	**1-inch**		**2-Year**		**25-Year**		**50-Year**		**100-Year**	
24-hr Rainfall	1.00”		2.49”		4.37”		5.11”		5.97”	
	Pre	Post	**Pre**	Post	**Pre**	Post	**Pre**	Post	**Pre**	Post
A	**0.53**	0.52	**1.42**	1.40	**2.52**	2.50	**2.96**	2.93	**3.56**	3.52
B	**0.09**	0.07	**0.24**	0.17	**0.42**	0.26	**0.49**	0.32	0.59	0.59

TABLE 3: IMPERVIOUS AREA TREATMENT

Site Pre Development vs. Post Development (Treated Area)	
Pre-Development Impervious Area (HydroCAD)	**21,301-sf**
Post-Development Impervious Area (HydroCAD)	**21,649-sf**
Increase in Impervious Area	**+348-sf**
Post-Development Impervious Area Being Treated	**2,360-sf**
Effective Impervious Area (EIC)	**19,289-sf**
Site Post-Development Treated Impervious Area > Increase In Impervious Area, ∴ OK	

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

Temporary erosion and sediment control measures are indicated on the design plans, construction details, general notes and within the drainage report. Although not integral with this stormwater report, due to the size of the proposed development both temporary and permanent erosion control measures will also be specified within the project’s Stormwater Pollution Prevention Plan (SWPPP). All erosion control measures specified are designed to reduce or eliminate potential soil migration and water quality degradation, both during and after the construction period.

The following temporary erosion control measures will be implemented;

- Silt Fence and/or Silt Logs
- Erosion Control Blankets on slopes 3:1 and steeper
- Riprap Aprons & Spillway Stabilization
- Turf Establishment - Hydroseeding with mulch and tackifiers

These temporary erosion control measures are also discussed in the projects. Operation and Maintenance plan contained in the appendices of this report.

In addition to the above-listed erosion control measures, references are made throughout the project documents to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction for additional measures, as necessary.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

Similar to temporary erosion control measures, all permanent erosion control measures are indicated on the design plans, construction details, general notes, drainage report, SWPPP and O & M project documents.

The following permanent erosion control measures will be implemented;

- Bituminous Paved Roadway and parking lots
- Inlet & Outlet Protection - Riprap Stabilization
- Stormwater Basins with multi-stage outlets
- Turf Establishment - Hydroseeding with mulch and tackifiers

Each of the above-mentioned permanent erosion control measures are designed in a project-specific manner within both state and local regulatory compliance standards.

4. WEB SOIL SURVEY

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,410 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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 27, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Suncook loamy fine sand	8.1	57.2%
26B	Windsor loamy sand, 3 to 8 percent slopes	1.3	9.0%
26C	Windsor loamy sand, 8 to 15 percent slopes	1.0	7.2%
26E	Windsor loamy sand, 15 to 60 percent slopes	3.2	22.5%
298	Pits, gravel	0.2	1.7%
W	Water	0.4	2.5%
Totals for Area of Interest		**14.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:2,410 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grafton County, New Hampshire
Survey Area Data: Version 27, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 27, 2020—Sep 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
2	Suncook loamy fine sand	A	8.1	57.2%
26B	Windsor loamy sand, 3 to 8 percent slopes	A	1.3	9.0%
26C	Windsor loamy sand, 8 to 15 percent slopes	A	1.0	7.2%
26E	Windsor loamy sand, 15 to 60 percent slopes	A	3.2	22.5%
298	Pits, gravel		0.2	1.7%
W	Water		0.4	2.5%
Totals for Area of Interest			**14.2**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

5. BMP WORKSHEETS

FILTRATION PRACTICE DESIGN CRITERIA
(Env-Wq 1508.07)

Type/Node Name: **BIO RETENTION POND BP1**

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

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.22	ac	A = Area draining to the practice	
0.05	ac	A_I = Impervious area draining to the practice	
0.25	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.28	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.06	ac-in	WQV= 1" x Rv x A	
215	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
54	cf	25% x WQV (check calc for sediment forebay volume)	
162	cf	75% x WQV (check calc for surface sand filter volume)	
ROOF		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
	Yes/No	If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided? (Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
349.06	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.12	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
1.00	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
349.29	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
349.50	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
238	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet 8		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet L1		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Stage-Area-Storage for Pond BP1: PROP. BIO POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
346.00	170	0	346.52	170	36
346.01	170	1	346.53	170	37
346.02	170	1	346.54	170	38
346.03	170	2	346.55	170	39
346.04	170	3	346.56	170	39
346.05	170	3	346.57	170	40
346.06	170	4	346.58	170	41
346.07	170	5	346.59	170	41
346.08	170	5	346.60	170	42
346.09	170	6	346.61	170	43
346.10	170	7	346.62	170	43
346.11	170	7	346.63	170	44
346.12	170	8	346.64	170	45
346.13	170	9	346.65	170	46
346.14	170	10	346.66	170	46
346.15	170	10	346.67	170	47
346.16	170	11	346.68	170	48
346.17	170	12	346.69	170	48
346.18	170	12	346.70	170	49
346.19	170	13	346.71	170	50
346.20	170	14	346.72	170	50
346.21	170	14	346.73	170	51
346.22	170	15	346.74	170	52
346.23	170	16	346.75	170	52
346.24	170	16	346.76	170	53
346.25	170	17	346.77	170	54
346.26	170	18	346.78	170	54
346.27	170	18	346.79	170	55
346.28	170	19	346.80	170	56
346.29	170	20	346.81	170	56
346.30	170	21	346.82	170	57
346.31	170	21	346.83	170	58
346.32	170	22	346.84	170	58
346.33	170	23	346.85	170	59
346.34	170	23	346.86	170	60
346.35	170	24	346.87	170	60
346.36	170	25	346.88	170	61
346.37	170	26	346.89	170	62
346.38	170	26	346.90	170	63
346.39	170	27	346.91	170	63
346.40	170	28	346.92	170	64
346.41	170	29	346.93	170	65
346.42	170	29	346.94	170	65
346.43	170	30	346.95	170	66
346.44	170	31	346.96	170	67
346.45	170	31	346.97	170	67
346.46	170	32	346.98	170	68
346.47	170	33	346.99	170	69
346.48	170	34	347.00	170	69
346.49	170	34	347.01	170	70
346.50	170	35	347.02	170	71
346.51	170	36	347.03	170	71

Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
347.04	170	72	347.56	340	107
347.05	170	73	347.57	340	108
347.06	170	73	347.58	340	109
347.07	170	74	347.59	340	109
347.08	170	75	347.60	340	110
347.09	170	75	347.61	340	111
347.10	170	76	347.62	340	111
347.11	170	77	347.63	340	112
347.12	170	77	347.64	340	113
347.13	170	78	347.65	340	114
347.14	170	79	347.66	340	114
347.15	170	80	347.67	340	115
347.16	170	80	347.68	340	116
347.17	170	81	347.69	340	116
347.18	170	82	347.70	340	117
347.19	170	82	347.71	340	118
347.20	170	83	347.72	340	118
347.21	170	84	347.73	340	119
347.22	170	84	347.74	340	120
347.23	170	85	347.75	340	120
347.24	170	86	347.76	340	121
347.25	340	86	347.77	340	122
347.26	340	87	347.78	340	122
347.27	340	88	347.79	340	123
347.28	340	88	347.80	340	124
347.29	340	89	347.81	340	124
347.30	340	90	347.82	340	125
347.31	340	90	347.83	340	126
347.32	340	91	347.84	340	126
347.33	340	92	347.85	340	127
347.34	340	92	347.86	340	128
347.35	340	93	347.87	340	128
347.36	340	94	347.88	340	129
347.37	340	94	347.89	340	130
347.38	340	95	347.90	340	131
347.39	340	96	347.91	340	131
347.40	340	97	347.92	340	132
347.41	340	97	347.93	340	133
347.42	340	98	347.94	340	133
347.43	340	99	347.95	340	134
347.44	340	99	347.96	340	135
347.45	340	100	347.97	340	135
347.46	340	101	347.98	340	136
347.47	340	101	347.99	340	137
347.48	340	102	348.00	340	137
347.49	340	103	348.01	340	138
347.50	340	103	348.02	340	139
347.51	340	104	348.03	340	139
347.52	340	105	348.04	340	140
347.53	340	105	348.05	340	141
347.54	340	106	348.06	340	141
347.55	340	107	348.07	340	142

Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
348.08	340	143	348.60	340	178
348.09	340	143	348.61	340	179
348.10	340	144	348.62	340	179
348.11	340	145	348.63	340	180
348.12	340	145	348.64	340	181
348.13	340	146	348.65	340	182
348.14	340	147	348.66	340	182
348.15	340	148	348.67	340	183
348.16	340	148	348.68	340	184
348.17	340	149	348.69	340	184
348.18	340	150	348.70	340	185
348.19	340	150	348.71	340	186
348.20	340	151	348.72	340	186
348.21	340	152	348.73	340	187
348.22	340	152	348.74	340	188
348.23	340	153	348.75	340	188
348.24	340	154	348.76	340	189
348.25	340	154	348.77	340	190
348.26	340	155	348.78	340	190
348.27	340	156	348.79	340	191
348.28	340	156	348.80	340	192
348.29	340	157	348.81	340	192
348.30	340	158	348.82	340	193
348.31	340	158	348.83	340	194
348.32	340	159	348.84	340	194
348.33	340	160	348.85	340	195
348.34	340	160	348.86	340	196
348.35	340	161	348.87	340	196
348.36	340	162	348.88	340	197
348.37	340	162	348.89	340	198
348.38	340	163	348.90	340	199
348.39	340	164	348.91	340	199
348.40	340	165	348.92	340	200
348.41	340	165	348.93	340	201
348.42	340	166	348.94	340	201
348.43	340	167	348.95	340	202
348.44	340	167	348.96	340	203
348.45	340	168	348.97	340	203
348.46	340	169	348.98	340	204
348.47	340	169	348.99	340	205
348.48	340	170	349.00	510	205
348.49	340	171	349.01	512	207
348.50	340	171	349.02	515	209
348.51	340	172	349.03	517	211
348.52	340	173	349.04	520	212
348.53	340	173	349.05	523	214
348.54	340	174	349.06	525	216
348.55	340	175	349.07	528	218
348.56	340	175	349.08	530	220
348.57	340	176	349.09	533	222
348.58	340	177	349.10	535	224
348.59	340	177	349.11	538	226

Stage-Area-Storage for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
349.12	541	228
349.13	543	230
349.14	546	232
349.15	549	234
349.16	552	236
349.17	554	238
349.18	557	240
349.19	560	242
349.20	563	244
349.21	565	247
349.22	568	249
349.23	571	251
349.24	574	254
349.25	577	256
349.26	580	258
349.27	583	261
349.28	586	263
349.29	589	266
349.30	592	268
349.31	595	271
349.32	598	273
349.33	601	276
349.34	604	278
349.35	607	281
349.36	610	284
349.37	613	287
349.38	616	289
349.39	619	292
349.40	622	295
349.41	626	298
349.42	629	301
349.43	632	303
349.44	635	306
349.45	639	309
349.46	642	312
349.47	645	315
349.48	648	318
349.49	652	322
349.50	**655**	**325**

Stage-Discharge for Pond BP1: PROP. BIO POND

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
346.00	0.00	346.52	0.04	347.04	0.04	347.56	0.08
346.01	0.00	346.53	0.04	347.05	0.04	347.57	0.08
346.02	0.00	346.54	0.04	347.06	0.04	347.58	0.08
346.03	0.00	346.55	0.04	347.07	0.04	347.59	0.08
346.04	0.00	346.56	0.04	347.08	0.04	347.60	0.08
346.05	0.00	346.57	0.04	347.09	0.04	347.61	0.08
346.06	0.00	346.58	0.04	347.10	0.04	347.62	0.08
346.07	0.00	346.59	0.04	347.11	0.04	347.63	0.08
346.08	0.00	346.60	0.04	347.12	0.04	347.64	0.08
346.09	0.00	346.61	0.04	347.13	0.04	347.65	0.08
346.10	0.00	346.62	0.04	347.14	0.04	347.66	0.08
346.11	0.00	346.63	0.04	347.15	0.04	347.67	0.08
346.12	0.00	346.64	0.04	347.16	0.04	347.68	0.08
346.13	0.00	346.65	0.04	347.17	0.04	347.69	0.08
346.14	0.00	346.66	0.04	347.18	0.04	347.70	0.08
346.15	0.00	346.67	0.04	347.19	0.04	347.71	0.08
346.16	0.00	346.68	0.04	347.20	0.04	347.72	0.08
346.17	0.00	346.69	0.04	347.21	0.04	347.73	0.08
346.18	0.00	346.70	0.04	347.22	0.04	347.74	0.08
346.19	0.00	346.71	0.04	347.23	0.04	347.75	0.08
346.20	0.00	346.72	0.04	347.24	0.04	347.76	0.08
346.21	0.00	346.73	0.04	347.25	0.08	347.77	0.08
346.22	0.00	346.74	0.04	347.26	0.08	347.78	0.08
346.23	0.00	346.75	0.04	347.27	0.08	347.79	0.08
346.24	0.00	346.76	0.04	347.28	0.08	347.80	0.08
346.25	0.00	346.77	0.04	347.29	0.08	347.81	0.08
346.26	0.00	346.78	0.04	347.30	0.08	347.82	0.08
346.27	0.00	346.79	0.04	347.31	0.08	347.83	0.08
346.28	0.00	346.80	0.04	347.32	0.08	347.84	0.08
346.29	0.00	346.81	0.04	347.33	0.08	347.85	0.08
346.30	0.00	346.82	0.04	347.34	0.08	347.86	0.08
346.31	0.00	346.83	0.04	347.35	0.08	347.87	0.08
346.32	0.00	346.84	0.04	347.36	0.08	347.88	0.08
346.33	0.00	346.85	0.04	347.37	0.08	347.89	0.08
346.34	0.00	346.86	0.04	347.38	0.08	347.90	0.08
346.35	0.01	346.87	0.04	347.39	0.08	347.91	0.08
346.36	0.01	346.88	0.04	347.40	0.08	347.92	0.08
346.37	0.01	346.89	0.04	347.41	0.08	347.93	0.08
346.38	0.01	346.90	0.04	347.42	0.08	347.94	0.08
346.39	0.01	346.91	0.04	347.43	0.08	347.95	0.08
346.40	0.02	346.92	0.04	347.44	0.08	347.96	0.08
346.41	0.02	346.93	0.04	347.45	0.08	347.97	0.08
346.42	0.02	346.94	0.04	347.46	0.08	347.98	0.08
346.43	0.02	346.95	0.04	347.47	0.08	347.99	0.08
346.44	0.03	346.96	0.04	347.48	0.08	348.00	0.08
346.45	0.03	346.97	0.04	347.49	0.08	348.01	0.08
346.46	0.03	346.98	0.04	347.50	0.08	348.02	0.08
346.47	0.04	346.99	0.04	347.51	0.08	348.03	0.08
346.48	0.04	347.00	0.04	347.52	0.08	348.04	0.08
346.49	0.04	347.01	0.04	347.53	0.08	348.05	0.08
346.50	0.04	347.02	0.04	347.54	0.08	348.06	0.08
346.51	0.04	347.03	0.04	347.55	0.08	348.07	0.08

Stage-Discharge for Pond BP1: PROP. BIO POND (continued)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
348.08	0.08	348.60	0.08	349.12	0.12
348.09	0.08	348.61	0.08	349.13	0.12
348.10	0.08	348.62	0.08	349.14	0.12
348.11	0.08	348.63	0.08	349.15	0.12
348.12	0.08	348.64	0.08	349.16	0.12
348.13	0.08	348.65	0.08	349.17	0.12
348.14	0.08	348.66	0.08	349.18	0.12
348.15	0.08	348.67	0.08	349.19	0.12
348.16	0.08	348.68	0.08	349.20	0.12
348.17	0.08	348.69	0.08	349.21	0.12
348.18	0.08	348.70	0.08	349.22	0.12
348.19	0.08	348.71	0.08	349.23	0.12
348.20	0.08	348.72	0.08	349.24	0.12
348.21	0.08	348.73	0.08	349.25	0.12
348.22	0.08	348.74	0.08	349.26	0.13
348.23	0.08	348.75	0.08	349.27	0.15
348.24	0.08	348.76	0.08	349.28	0.17
348.25	0.08	348.77	0.08	349.29	0.20
348.26	0.08	348.78	0.08	349.30	0.23
348.27	0.08	348.79	0.08	349.31	0.27
348.28	0.08	348.80	0.08	349.32	0.31
348.29	0.08	348.81	0.08	349.33	0.35
348.30	0.08	348.82	0.08	349.34	0.40
348.31	0.08	348.83	0.08	349.35	0.44
348.32	0.08	348.84	0.08	349.36	0.49
348.33	0.08	348.85	0.08	349.37	0.55
348.34	0.08	348.86	0.08	349.38	0.60
348.35	0.08	348.87	0.08	349.39	0.66
348.36	0.08	348.88	0.08	349.40	0.72
348.37	0.08	348.89	0.08	349.41	0.78
348.38	0.08	348.90	0.08	349.42	0.84
348.39	0.08	348.91	0.08	349.43	0.90
348.40	0.08	348.92	0.08	349.44	0.97
348.41	0.08	348.93	0.08	349.45	1.04
348.42	0.08	348.94	0.08	349.46	1.11
348.43	0.08	348.95	0.08	349.47	1.18
348.44	0.08	348.96	0.08	349.48	1.25
348.45	0.08	348.97	0.08	349.49	1.33
348.46	0.08	348.98	0.08	349.50	**1.40**
348.47	0.08	348.99	0.08		
348.48	0.08	349.00	0.12		
348.49	0.08	349.01	0.12		
348.50	0.08	349.02	0.12		
348.51	0.08	349.03	0.12		
348.52	0.08	349.04	0.12		
348.53	0.08	349.05	0.12		
348.54	0.08	349.06	0.12		
348.55	0.08	349.07	0.12		
348.56	0.08	349.08	0.12		
348.57	0.08	349.09	0.12		
348.58	0.08	349.10	0.12		
348.59	0.08	349.11	0.12		

6. EXTREME PRECIPITATION TABLES

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point

Smoothing	Yes
State	
Location	
Latitude	43.639 degrees North
Longitude	72.316 degrees West
Elevation	100 feet
Date/Time	Wed Sep 04 2024 14:53:24 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.01	**1yr**	0.70	0.93	1.16	1.43	1.75	2.15	2.41	**1yr**	1.90	2.32	2.68	3.28	3.77	**1yr**
2yr	0.31	0.47	0.59	0.77	0.97	1.21	**2yr**	0.84	1.10	1.39	1.69	2.06	2.49	2.79	**2yr**	2.20	2.69	3.13	3.74	4.28	**2yr**
5yr	0.36	0.56	0.71	0.95	1.21	1.52	**5yr**	1.05	1.39	1.74	2.12	2.55	3.05	3.45	**5yr**	2.70	3.32	3.84	4.51	5.13	**5yr**
10yr	0.41	0.64	0.81	1.10	1.43	1.81	**10yr**	1.24	1.65	2.07	2.52	3.01	3.56	4.05	**10yr**	3.15	3.90	4.49	5.20	5.89	**10yr**
25yr	0.48	0.77	0.98	1.35	1.79	2.27	**25yr**	1.55	2.08	2.60	3.15	3.74	4.37	5.01	**25yr**	3.87	4.82	5.51	6.28	7.08	**25yr**
50yr	0.55	0.88	1.13	1.58	2.13	2.70	**50yr**	1.84	2.48	3.10	3.73	4.40	5.11	5.88	**50yr**	4.52	5.65	6.45	7.24	8.13	**50yr**
100yr	0.62	1.01	1.30	1.85	2.52	3.22	**100yr**	2.18	2.96	3.69	4.43	5.18	5.97	6.91	**100yr**	5.29	6.64	7.54	8.36	9.35	**100yr**
200yr	0.72	1.17	1.52	2.17	2.99	3.83	**200yr**	2.58	3.53	4.39	5.24	6.11	6.98	8.12	**200yr**	6.18	7.81	8.82	9.65	10.75	**200yr**
500yr	0.86	1.42	1.85	2.68	3.76	4.82	**500yr**	3.24	4.45	5.52	6.56	7.58	8.59	10.06	**500yr**	7.60	9.67	10.86	11.68	12.93	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.37	0.45	0.61	0.75	0.83	**1yr**	0.64	0.81	0.96	1.23	1.54	1.81	2.09	**1yr**	1.60	2.01	2.36	2.86	3.50	**1yr**
2yr	0.29	0.46	0.56	0.76	0.94	1.10	**2yr**	0.81	1.07	1.24	1.61	2.05	2.44	2.71	**2yr**	2.16	2.61	3.07	3.66	4.20	**2yr**
5yr	0.34	0.52	0.64	0.88	1.12	1.31	**5yr**	0.97	1.28	1.48	1.89	2.39	2.84	3.24	**5yr**	2.52	3.11	3.60	4.23	4.84	**5yr**
10yr	0.37	0.58	0.71	1.00	1.29	1.49	**10yr**	1.11	1.46	1.69	2.13	2.67	3.19	3.70	**10yr**	2.83	3.55	4.04	4.71	5.37	**10yr**
25yr	0.43	0.66	0.82	1.17	1.54	1.76	**25yr**	1.33	1.72	2.00	2.48	3.08	3.73	4.38	**25yr**	3.30	4.22	4.71	5.40	6.16	**25yr**
50yr	0.48	0.72	0.90	1.29	1.74	2.01	**50yr**	1.50	1.96	2.27	2.79	3.42	4.18	4.99	**50yr**	3.70	4.80	5.30	5.98	6.83	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.27	**100yr**	1.73	2.22	2.59	3.12	3.81	4.70	5.68	**100yr**	4.16	5.46	5.95	6.64	7.55	**100yr**
200yr	0.60	0.90	1.13	1.64	2.29	2.58	**200yr**	1.98	2.52	2.94	3.51	4.27	5.27	6.49	**200yr**	4.67	6.24	6.70	7.36	8.37	**200yr**
500yr	0.69	1.03	1.33	1.93	2.75	3.04	**500yr**	2.37	2.97	3.49	4.08	4.95	6.13	7.75	**500yr**	5.43	7.45	7.85	8.41	9.59	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.53	0.72	0.88	1.03	**1yr**	0.76	1.00	1.17	1.52	1.89	2.33	2.64	**1yr**	2.06	2.54	2.88	3.50	4.00	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.18	**2yr**	0.87	1.16	1.34	1.72	2.17	2.57	2.88	**2yr**	2.27	2.77	3.25	3.87	4.41	**2yr**
5yr	0.39	0.61	0.75	1.03	1.32	1.54	**5yr**	1.14	1.50	1.72	2.16	2.71	3.26	3.67	**5yr**	2.89	3.53	4.09	4.77	5.45	**5yr**
10yr	0.47	0.72	0.90	1.25	1.62	1.89	**10yr**	1.40	1.85	2.10	2.61	3.22	3.91	4.45	**10yr**	3.46	4.28	4.91	5.63	6.41	**10yr**
25yr	0.60	0.91	1.13	1.62	2.13	2.51	**25yr**	1.84	2.45	2.77	3.34	4.05	5.00	5.76	**25yr**	4.42	5.54	6.25	7.04	7.95	**25yr**
50yr	0.72	1.09	1.36	1.95	2.63	3.10	**50yr**	2.27	3.03	3.41	4.03	4.82	6.01	7.00	**50yr**	5.32	6.73	7.49	8.33	9.39	**50yr**
100yr	0.86	1.31	1.64	2.36	3.24	3.83	**100yr**	2.80	3.75	4.21	4.87	5.75	7.24	8.50	**100yr**	6.41	8.18	9.00	9.87	11.09	**100yr**
200yr	1.04	1.56	1.98	2.86	4.00	4.75	**200yr**	3.45	4.64	5.19	5.89	6.85	8.73	10.33	**200yr**	7.72	9.93	10.81	11.72	13.09	**200yr**
500yr	1.34	1.99	2.56	3.71	5.28	6.31	**500yr**	4.56	6.17	6.86	7.56	8.64	11.19	13.33	**500yr**	9.91	12.82	13.78	14.72	16.33	**500yr**

Powered by ACIS Northeast Regional Climate Center

7. RIP RAP APRON CALCULATIONS

GRANITE ENGINEERING, LLC
civil engineering ● land planning ● municipal services

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	Romano 2.0	Date:	1/8/2026
Location:	HW#1	Job No.:	2305081

INPUTS

Q	**0.12**	cfs	peak flow in the 25-year 24-hr storm event
Tw	**0.12**	ft	tailwater at the end of apron
d_o	**1**	ft	diameter in feet of outlet

OUTPUTS

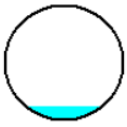
	D_{50}	**0.12**	in	median stone size (in)
Common	D_{50}	**4.00**	in	median stone size (in)
Riprap Depth		**10**	in	(min.10 inches)
	$L_{1\ OR\ 2}$	**7**	ft	L1 and L2 differ depending if TW is > or < D0/2
	W_1	**10**	ft	
	W_2	**3**	ft	

Inflow Area = 0.215 ac, 25.20% Impervious, Inflow Depth = 1.05" for 25-YR event
Inflow = 0.12 cfs @ 12.01 hrs, Volume= 0.019 af
Outflow = 0.12 cfs @ 12.02 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 2.45 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.97 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 0.64'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.39 cfs

12.0" Round Pipe
n= 0.013
Length= 16.5' Slope= 0.0152 '/'
Inlet Invert= 11.00', Outlet Invert= 10.75'

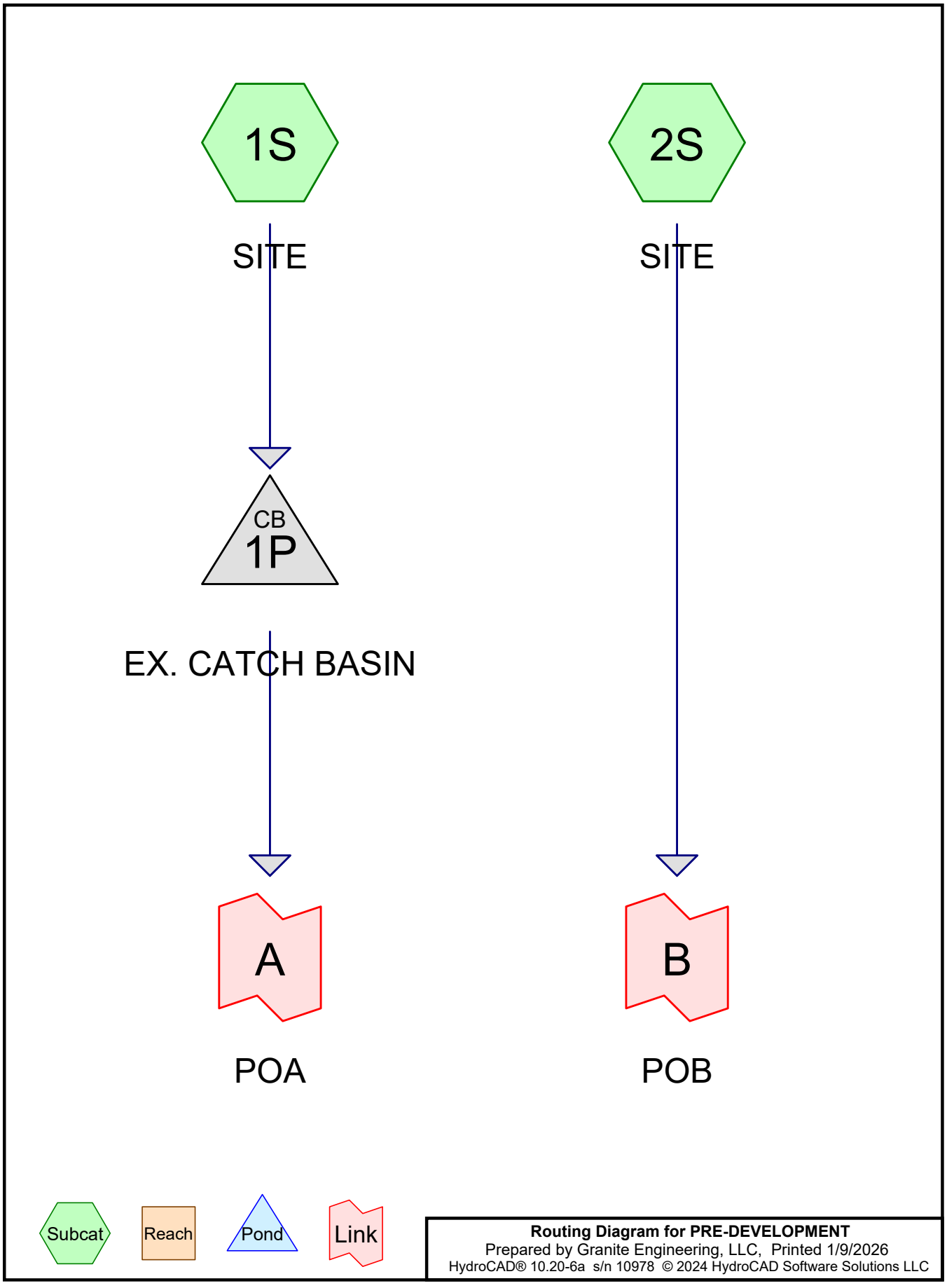


Equations

$$D_{50} = \frac{C}{Tw}\left[\frac{Q}{d_o}\right]^{4/3}$$

D_{50}	median stone size (ft)
Q	design discharge (cfs)
Tw	tailwater depth above the invert of the culvert (ft)
d_o	pipe diameter (ft)

8. HYDROCAD DRAINAGE ANALYSIS


1S
SITE
2S
SITE
CB
1P
EX. CATCH BASIN
A
POA
B
POB
Subcat
Reach
Pond
Link
Routing Diagram for PRE-DEVELOPMENT
Prepared by Granite Engineering, LLC, Printed 1/9/2026
HydroCAD® 10.20-6a s/n 10978 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-IN	Type II 24-hr		Default	24.00	1	1.00	2
2	5-YR	Type II 24-hr		Default	24.00	1	3.56	2
3	25-YR	Type II 24-hr		Default	24.00	1	4.37	2
4	50-YR	Type II 24-hr		Default	24.00	1	5.11	2
5	100-YR	Type II 24-hr		Default	24.00	1	5.97	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.649	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.489	98	Paved parking and roofs (1S, 2S)
0.522	30	Woods, Good, HSG A (1S, 2S)
1.660	**54**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.171	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.489	Other	1S, 2S
1.660		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,493 sf 34.34% Impervious Runoff Depth=0.27"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=0.53 cfs 0.028 af

Subcatchment2S: SITE Runoff Area=18,834 sf 15.65% Impervious Runoff Depth=0.12"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.09 cfs 0.004 af

Pond 1P: EX. CATCH BASIN Peak Elev=345.61' Inflow=0.53 cfs 0.028 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.53 cfs 0.028 af

Link A: POA Inflow=0.53 cfs 0.028 af
Primary=0.53 cfs 0.028 af

Link B: POB Inflow=0.09 cfs 0.004 af
Primary=0.09 cfs 0.004 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.032 af Average Runoff Depth = 0.23"
70.53% Pervious = 1.171 ac 29.47% Impervious = 0.489 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,493 sf 34.34% Impervious Runoff Depth=1.15"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.05 cfs 0.117 af

Subcatchment2S: SITE Runoff Area=18,834 sf 15.65% Impervious Runoff Depth=0.52"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.34 cfs 0.019 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.06' Inflow=2.05 cfs 0.117 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.05 cfs 0.117 af

Link A: POA Inflow=2.05 cfs 0.117 af
Primary=2.05 cfs 0.117 af

Link B: POB Inflow=0.34 cfs 0.019 af
Primary=0.34 cfs 0.019 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.136 af Average Runoff Depth = 0.98"
70.53% Pervious = 1.171 ac 29.47% Impervious = 0.489 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,493 sf 34.34% Impervious Runoff Depth=1.46"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.52 cfs 0.149 af

Subcatchment2S: SITE Runoff Area=18,834 sf 15.65% Impervious Runoff Depth=0.67"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.42 cfs 0.024 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.17' Inflow=2.52 cfs 0.149 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.52 cfs 0.149 af

Link A: POA Inflow=2.52 cfs 0.149 af
Primary=2.52 cfs 0.149 af

Link B: POB Inflow=0.42 cfs 0.024 af
Primary=0.42 cfs 0.024 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.174 af Average Runoff Depth = 1.25"
70.53% Pervious = 1.171 ac 29.47% Impervious = 0.489 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,493 sf 34.34% Impervious Runoff Depth=1.77"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.96 cfs 0.181 af

Subcatchment2S: SITE Runoff Area=18,834 sf 15.65% Impervious Runoff Depth=0.82"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.49 cfs 0.030 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.27' Inflow=2.96 cfs 0.181 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.96 cfs 0.181 af

Link A: POA Inflow=2.96 cfs 0.181 af
Primary=2.96 cfs 0.181 af

Link B: POB Inflow=0.49 cfs 0.030 af
Primary=0.49 cfs 0.030 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.211 af Average Runoff Depth = 1.53"
70.53% Pervious = 1.171 ac 29.47% Impervious = 0.489 ac

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,493 sf 34.34% Impervious Runoff Depth=2.18"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=3.56 cfs 0.223 af

Subcatchment2S: SITE Runoff Area=18,834 sf 15.65% Impervious Runoff Depth=1.05"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.59 cfs 0.038 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.41' Inflow=3.56 cfs 0.223 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=3.56 cfs 0.223 af

Link A: POA Inflow=3.56 cfs 0.223 af
Primary=3.56 cfs 0.223 af

Link B: POB Inflow=0.59 cfs 0.038 af
Primary=0.59 cfs 0.038 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.260 af Average Runoff Depth = 1.88"
70.53% Pervious = 1.171 ac 29.47% Impervious = 0.489 ac

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type II 24-hr		Default	24.00	1	2.49	2

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.171	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.489	Other	1S, 2S

Summary for Subcatchment 1S: SITE

Runoff = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af, Depth= 0.78"
Routed to Pond 1P : EX. CATCH BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-YR Rainfall=2.49"

	Area (sf)	CN	Description
	23,643	39	>75% Grass cover, Good, HSG A
*	18,368	98	Paved parking and roofs
	11,482	30	Woods, Good, HSG A
	53,493		Weighted Average
	35,125		65.66% Pervious Area
	18,368		34.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0400	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.49"
0.3	60	0.3600	3.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	110	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

Summary for Subcatchment 2S: SITE

Runoff = 0.24 cfs @ 11.97 hrs, Volume= 0.013 af, Depth= 0.35"
Routed to Link B : POB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-YR Rainfall=2.49"

	Area (sf)	CN	Description
	4,646	39	>75% Grass cover, Good, HSG A
*	2,948	98	Paved parking and roofs
	11,240	30	Woods, Good, HSG A
	18,834		Weighted Average
	15,886		84.35% Pervious Area
	2,948		15.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0500	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.49"
0.2	50	0.5600	3.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	53	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	123	Total			

Summary for Pond 1P: EX. CATCH BASIN

Inflow Area = 1.228 ac, 34.34% Impervious, Inflow Depth = 0.78" for 2-YR event
Inflow = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af
Outflow = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Primary = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af
Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 345.89' @ 11.98 hrs
Flood Elev= 349.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.20'	**15.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.20' / 345.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.42 cfs @ 11.98 hrs HW=345.89' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.42 cfs @ 2.93 fps)

Summary for Link A: POA

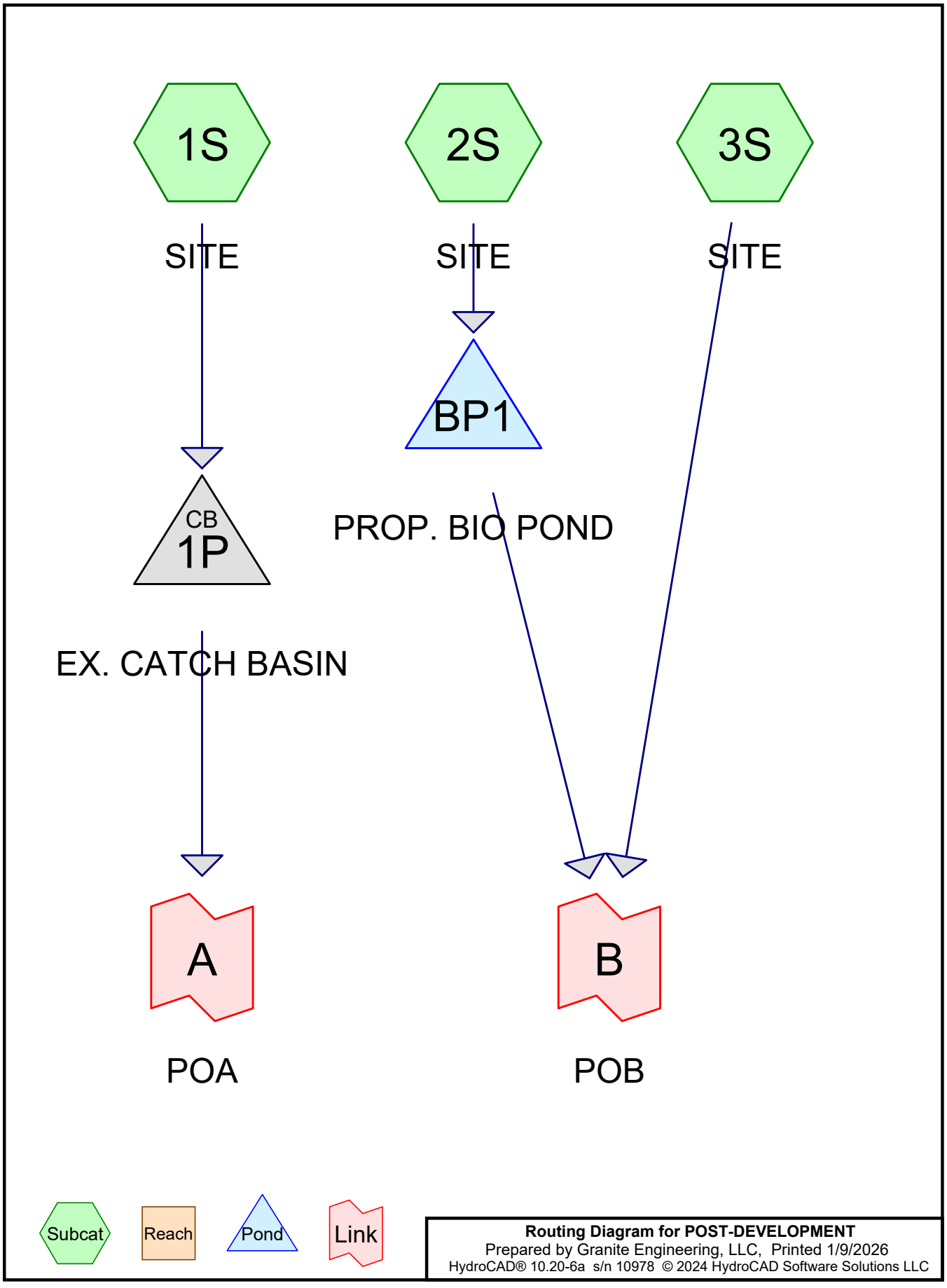
Inflow Area = 1.228 ac, 34.34% Impervious, Inflow Depth = 0.78" for 2-YR event
Inflow = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af
Primary = 1.42 cfs @ 11.98 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

Summary for Link B: POB

Inflow Area = 0.432 ac, 15.65% Impervious, Inflow Depth = 0.35" for 2-YR event
Inflow = 0.24 cfs @ 11.97 hrs, Volume= 0.013 af
Primary = 0.24 cfs @ 11.97 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs



Routing Diagram for POST-DEVELOPMENT
Prepared by Granite Engineering, LLC, Printed 1/9/2026
HydroCAD® 10.20-6a s/n 10978 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-IN	Type II 24-hr		Default	24.00	1	1.00	2
2	5-YR	Type II 24-hr		Default	24.00	1	3.56	2
3	25-YR	Type II 24-hr		Default	24.00	1	4.37	2
4	50-YR	Type II 24-hr		Default	24.00	1	5.11	2
5	100-YR	Type II 24-hr		Default	24.00	1	5.97	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.696	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S)
0.497	98	Paved parking and roofs (1S, 2S, 3S)
0.467	30	Woods, Good, HSG A (1S, 2S, 3S)
1.660	**54**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.163	HSG A	1S, 2S, 3S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.497	Other	1S, 2S, 3S
1.660		**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,563 sf 33.84% Impervious Runoff Depth=0.27"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=0.52 cfs 0.027 af

Subcatchment2S: SITE Runoff Area=9,366 sf 25.20% Impervious Runoff Depth=0.20"
Tc=6.0 min CN=WQ Runoff=0.07 cfs 0.004 af

Subcatchment3S: SITE Runoff Area=9,399 sf 12.43% Impervious Runoff Depth=0.10"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.03 cfs 0.002 af

Pond 1P: EX. CATCH BASIN Peak Elev=345.60' Inflow=0.52 cfs 0.027 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=0.52 cfs 0.027 af

Pond BP1: PROP. BIO POND Peak Elev=346.65' Storage=45 cf Inflow=0.07 cfs 0.004 af
Outflow=0.04 cfs 0.003 af

Link A: POA Inflow=0.52 cfs 0.027 af
Primary=0.52 cfs 0.027 af

Link B: POB Inflow=0.07 cfs 0.005 af
Primary=0.07 cfs 0.005 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.033 af Average Runoff Depth = 0.24"
70.06% Pervious = 1.163 ac 29.94% Impervious = 0.497 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,563 sf 33.84% Impervious Runoff Depth=1.13"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.03 cfs 0.116 af

Subcatchment2S: SITE Runoff Area=9,366 sf 25.20% Impervious Runoff Depth=0.84"
Tc=6.0 min CN=WQ Runoff=0.27 cfs 0.015 af

Subcatchment3S: SITE Runoff Area=9,399 sf 12.43% Impervious Runoff Depth=0.42"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.13 cfs 0.007 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.05' Inflow=2.03 cfs 0.116 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.03 cfs 0.116 af

Pond BP1: PROP. BIO POND Peak Elev=348.72' Storage=186 cf Inflow=0.27 cfs 0.015 af
Outflow=0.08 cfs 0.015 af

Link A: POA Inflow=2.03 cfs 0.116 af
Primary=2.03 cfs 0.116 af

Link B: POB Inflow=0.21 cfs 0.022 af
Primary=0.21 cfs 0.022 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.138 af Average Runoff Depth = 1.00"
70.06% Pervious = 1.163 ac 29.94% Impervious = 0.497 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,563 sf 33.84% Impervious Runoff Depth=1.44"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.50 cfs 0.148 af

Subcatchment2S: SITE Runoff Area=9,366 sf 25.20% Impervious Runoff Depth=1.08"
Tc=6.0 min CN=WQ Runoff=0.34 cfs 0.019 af

Subcatchment3S: SITE Runoff Area=9,399 sf 12.43% Impervious Runoff Depth=0.54"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.17 cfs 0.010 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.17' Inflow=2.50 cfs 0.148 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.50 cfs 0.148 af

Pond BP1: PROP. BIO POND Peak Elev=349.13' Storage=229 cf Inflow=0.34 cfs 0.019 af
Outflow=0.12 cfs 0.019 af

Link A: POA Inflow=2.50 cfs 0.148 af
Primary=2.50 cfs 0.148 af

Link B: POB Inflow=0.26 cfs 0.029 af
Primary=0.26 cfs 0.029 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.177 af Average Runoff Depth = 1.28"
70.06% Pervious = 1.163 ac 29.94% Impervious = 0.497 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,563 sf 33.84% Impervious Runoff Depth=1.75"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=2.93 cfs 0.179 af

Subcatchment2S: SITE Runoff Area=9,366 sf 25.20% Impervious Runoff Depth=1.31"
Tc=6.0 min CN=WQ Runoff=0.39 cfs 0.024 af

Subcatchment3S: SITE Runoff Area=9,399 sf 12.43% Impervious Runoff Depth=0.68"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.19 cfs 0.012 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.27' Inflow=2.93 cfs 0.179 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=2.93 cfs 0.179 af

Pond BP1: PROP. BIO POND Peak Elev=349.29' Storage=265 cf Inflow=0.39 cfs 0.024 af
Outflow=0.19 cfs 0.023 af

Link A: POA Inflow=2.93 cfs 0.179 af
Primary=2.93 cfs 0.179 af

Link B: POB Inflow=0.32 cfs 0.035 af
Primary=0.32 cfs 0.035 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.215 af Average Runoff Depth = 1.55"
70.06% Pervious = 1.163 ac 29.94% Impervious = 0.497 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: SITE Runoff Area=53,563 sf 33.84% Impervious Runoff Depth=2.15"
Flow Length=220' Tc=7.1 min CN=WQ Runoff=3.52 cfs 0.220 af

Subcatchment2S: SITE Runoff Area=9,366 sf 25.20% Impervious Runoff Depth=1.63"
Tc=6.0 min CN=WQ Runoff=0.48 cfs 0.029 af

Subcatchment3S: SITE Runoff Area=9,399 sf 12.43% Impervious Runoff Depth=0.89"
Flow Length=123' Tc=6.1 min CN=WQ Runoff=0.24 cfs 0.016 af

Pond 1P: EX. CATCH BASIN Peak Elev=346.40' Inflow=3.52 cfs 0.220 af
15.0" Round Culvert n=0.013 L=20.0' S=0.0050 '/' Outflow=3.52 cfs 0.220 af

Pond BP1: PROP. BIO POND Peak Elev=349.34' Storage=278 cf Inflow=0.48 cfs 0.029 af
Outflow=0.39 cfs 0.029 af

Link A: POA Inflow=3.52 cfs 0.220 af
Primary=3.52 cfs 0.220 af

Link B: POB Inflow=0.59 cfs 0.045 af
Primary=0.59 cfs 0.045 af

Total Runoff Area = 1.660 ac Runoff Volume = 0.265 af Average Runoff Depth = 1.92"
70.06% Pervious = 1.163 ac 29.94% Impervious = 0.497 ac

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type II 24-hr		Default	24.00	1	2.49	2

Summary for Subcatchment 1S: SITE

Runoff = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af, Depth= 0.76"
Routed to Pond 1P : EX. CATCH BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.49"

	Area (sf)	CN	Description
	23,957	39	>75% Grass cover, Good, HSG A
*	18,124	98	Paved parking and roofs
	11,482	30	Woods, Good, HSG A
	53,563		Weighted Average
	35,439		66.16% Pervious Area
	18,124		33.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0400	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.49"
0.3	60	0.3600	3.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.0	110	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.1	220	Total			

Summary for Subcatchment 2S: SITE

Runoff = 0.19 cfs @ 11.97 hrs, Volume= 0.010 af, Depth= 0.57"
Routed to Pond BP1 : PROP. BIO POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.49"

	Area (sf)	CN	Description
	3,456	39	>75% Grass cover, Good, HSG A
*	2,360	98	Paved parking and roofs
	3,550	30	Woods, Good, HSG A
	9,366		Weighted Average
	7,006		74.80% Pervious Area
	2,360		25.20% Impervious Area

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

Summary for Subcatchment 3S: SITE

Runoff = 0.09 cfs @ 11.97 hrs, Volume= 0.005 af, Depth= 0.28"
Routed to Link B : POB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.49"

	Area (sf)	CN	Description
	2,917	39	>75% Grass cover, Good, HSG A
*	1,168	98	Paved parking and roofs
	5,314	30	Woods, Good, HSG A
	9,399		Weighted Average
	8,231		87.57% Pervious Area
	1,168		12.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	20	0.0500	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.49"
0.2	50	0.5600	3.74		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	53	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.1	123	Total			

Summary for Pond 1P: EX. CATCH BASIN

Inflow Area = 1.230 ac, 33.84% Impervious, Inflow Depth = 0.76" for 2-YR event
Inflow = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af
Outflow = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min
Primary = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af
Routed to Link A : POA

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 345.89' @ 11.98 hrs
Flood Elev= 349.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	345.20'	**15.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 345.20' / 345.10' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.40 cfs @ 11.98 hrs HW=345.89' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.40 cfs @ 2.92 fps)

Summary for Pond BP1: PROP. BIO POND

Inflow Area = 0.215 ac, 25.20% Impervious, Inflow Depth = 0.57" for 2-YR event
Inflow = 0.19 cfs @ 11.97 hrs, Volume= 0.010 af
Outflow = 0.08 cfs @ 11.95 hrs, Volume= 0.010 af, Atten= 58%, Lag= 0.0 min
Primary = 0.08 cfs @ 11.95 hrs, Volume= 0.010 af
Routed to Link B : POB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 347.75' @ 12.07 hrs Surf.Area= 340 sf Storage= 120 cf
Flood Elev= 349.50' Surf.Area= 655 sf Storage= 325 cf

Plug-Flow detention time= 64.5 min calculated for 0.010 af (96% of inflow)
Center-of-Mass det. time= 40.4 min (798.7 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1	346.00'	84 cf	**6" Crushed Stone (Irregular)** Listed below (Recalc) 213 cf Overall - 2 cf Embedded = 210 cf x 40.0% Voids
#2	346.25'	2 cf	**4.0" Round Pipe Storage** Inside #1 L= 25.0'
#3	347.25'	119 cf	**Bioretention Media (Irregular)** Listed below (Recalc) 298 cf Overall x 40.0% Voids
#4	349.00'	119 cf	**Surface Storage (Irregular)** Listed below (Recalc)
		325 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
346.00	170	51.0	0	0	170
347.25	170	51.0	213	213	234

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
347.25	170	51.0	0	0	170
349.00	170	51.0	298	298	259

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
349.00	170	51.0	0	0	170
349.50	315	78.0	119	119	449

Device	Routing	Invert	Outlet Devices
#1	Primary	346.25'	**12.0" Round Outlet Pipe** L= 16.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 346.25' / 346.00' S= 0.0152 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	346.25'	**4.0" Round Underdrain** L= 25.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 346.25' / 346.25' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#3	Device 2	346.00'	**10.000 in/hr Filtration over Surface area below 349.01'** Phase-In= 0.01'

#4 Device 1 349.25' **12.0" Horiz. AD Circular Grate** C= 0.600
Limited to weir flow at low heads

Primary OutFlow Max=0.08 cfs @ 11.95 hrs HW=347.29' TW=0.00' (Dynamic Tailwater)
└─**1=Outlet Pipe** (Passes 0.08 cfs of 2.74 cfs potential flow)
  ├─**2=Underdrain** (Passes 0.08 cfs of 0.26 cfs potential flow)
  │ └─**3=Filtration** (Exfiltration Controls 0.08 cfs)
  └─**4=AD Circular Grate** (Controls 0.00 cfs)

Summary for Link A: POA

Inflow Area = 1.230 ac, 33.84% Impervious, Inflow Depth = 0.76" for 2-YR event
Inflow = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af
Primary = 1.40 cfs @ 11.98 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Link B: POB

Inflow Area = 0.431 ac, 18.80% Impervious, Inflow Depth = 0.41" for 2-YR event
Inflow = 0.17 cfs @ 11.97 hrs, Volume= 0.015 af
Primary = 0.17 cfs @ 11.97 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

9. OPERATION AND MAINTENANCE PLAN WITH CHECKLISTS

Stormwater Management
Operation and Maintenance (O&M) Manual

for:

Lebanon Housing Authority

Located at:

Tax Map 101 Lot 20
31 Romano Circle
West Lebanon, NH 03784

Prepared for:

Lebanon Housing Authority
31 Romano Circle
West Lebanon, NH 03784

Prepared by:

GRANITE ENGINEERING, LLC
150 DOW STREET, TOWER 2, SUITE 421
MANCHESTER, NH 03101
603.518.8030 | www.GraniteEng.com

Stormwater Management
Operation and Maintenance (O&M) Manual

Table of Contents

Stormwater Management
Operation and Maintenance (O&M) Manual

I. Compliance with Stormwater Facility Maintenance Requirements

The owner of the subject property is responsible for ensuring that stormwater facilities installed on the property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

II. Inspection & Maintenance – Annual Reporting

Requirements for the inspection and maintenance of stormwater facilities, as well as reporting requirements, are included in this Stormwater Management Operation and Maintenance (O&M) Manual.

Verification that the Stormwater facilities have been properly inspected and maintained; copies of the annual report should be documented on site for future reporting upon request.

Copies of the Inspection and Maintenance forms for each of the stormwater facilities are located in Appendix B and C. A standard annual reporting form is provided in Appendix A.

III. Preventative Measures to Reduce Maintenance Costs

The most effective way to maintain your water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. A thoughtful maintenance program will include measures to address these potential contaminants and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings
- Ensure the proper disposal of hazardous wastes and chemicals
- Plan lawn care to minimize the use of chemicals and pesticides
- Sweep paved surfaces and put the sweepings back on the lawn
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the upstream components of the storm drainage system, including inlets, storm sewers, and outfalls
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff

IV. Access

All stormwater management facilities located on the site have a designated access location. Refer to the Stormwater Plan located in Appendix E for access locations.

V. Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local authority at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local authority immediately for response. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48” in height, make the appropriate note/comment on the maintenance inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local authority immediately.

VI. Field Inspection Equipment

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all Stormwater Management Facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment
- Communication equipment
- Operation and Maintenance Manual for the site including stormwater management facility location maps
- Clipboard
- Stormwater Facility Maintenance Inspection Forms (See Appendix B)
- Manhole Lid Remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspecting Stormwater Management Facilities

The quality of stormwater relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater management facilities are required to be inspected by a qualified individual. Inspections should follow the inspection guidance found in Appendix B of this manual.

B. Inspection Report

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. Inspection reports are located in Appendix B.

VIII. Maintenance Requirements

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

The Long-Term Inspection and Maintenance Log provides a record of maintenance activities. Maintenance Logs for each facility type are provided in Appendix C.

Bioretention Systems

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
- Trash and debris should be removed at each inspection.
- At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function, including but not limited to removal of accumulated sediments or reconstruction of filter.
- Vegetation should be inspected at least once annually, and maintained in healthy condition, including pruning, removal and

replacement of dead or diseased vegetation, and removal of invasive species.

Catch Basins

- Catch basins may require frequent maintenance. Depending on the location, this may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually, once following snowmelt and once following leafdrop. And cleaned as indicated by inspection.
- Sediment should be removed when it approaches half the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other method, and disposed in conformance with applicable state and federal regulations.
- Cleaning may require vacuum-truck instead of “clam shell” to avoid damage to hood.
- Damaged hoods should be replaced when noted by inspection.

IX. Control of Invasive Species

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described in Appendix D.

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemicals.

Appendix A

Annual Inspection and Maintenance Reporting Form for Stormwater Facilities

Date: _____

Re: Certification of Inspection and Maintenance; Submittal of forms

Property/Subdivision Name: _Romano Circle – Lebanon Housing Authority_

Property Address: Map 101 Lot 20, 31 Romano Circle, West Lebanon, NH03784

Contact Name: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operations and Maintenance Manual associated with the above-referenced property.

The required Stormwater Facility Inspection and Maintenance forms are hereby provided.

Lebanon Housing Authority	Lebanon Housing Authority
_____	_____
Name of Party Responsible for Inspection & Maintenance	Property Owner
_____	_____
Authorized Signature	Signature

Appendix B

Lebanon Housing Authority - Romano Cirlce

Address: Map 101 Lot 20, 31 Romano Circle, West Lebanon, NH 03784

Owner: Lebanon Housing Authority

Date: _____ E-mail:_____Phone: _____

I. GENERAL INSPECTION RESULTS					
Item	Inspection Results				BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Trash	☐	No Trash	Trash and debris has accumulated on/in BMP. Yard waste in BMP.
6	☐	Contaminated	☐	Uncontaminated	Evidence of Oil, gasoline. Contaminants or other pollutants.
7	☐	Smells	☐	Doesn't smell	Unpleasant odors from the BMP.
8	☐	Weeds	☐	No weeds	Invasive, nuisance vegetation or weeds are present.
II. BMP SPECIFIC INSPECTION RESULTS – Bio-Retention Pond #1					
Item	Inspection Results				BMP's in General
1	☐	Sediment Accumulated	☐	No accumulated sediment	Sediment in bottom of infiltration basin?
2	☐	Erosion	☐	No erosion	Eroded damage leading to the system; potential for continued erosion; erosion on a compacted berm embankment; soil from adjacent areas washes into/on BMP; continued erosion is prevalent.
3	☐	Insects	☐	No insects	Wasps, hornets or bees interfere with maintenance activities. Excessive or nuisance levels.
4	☐	Contaminated	☐	Uncontaminated	Prevalent and visible contaminants such as oil.

5	☐	Clogged	☐	Not clogged	Entry point for water is clogged or obstructed with sediment and/or debris.
6	☐	Pipes/structural repairs needed	☐	Pipes/structure are sound	Pipes and structures show signs of corrosion, spalls, leaks, deformation, crushing or other material failure.

III. BMP SPECIFIC INSPECTION RESULTS – Infiltration Trench					
Item		Inspection Results			BMP's in General
1	☐	Apparent problems	☐	No problems	BMP does not appear to be well maintained.
2	☐	Design flaws	☐	No flaws	BMP observed to have significant design flaws which lessen its effectiveness.
3	☐	Unauthorized modifications	☐	No modifications	BMP has unauthorized modifications that reduce its effectiveness.
4	☐	BMP removed	☐	BMP present	BMP has been destroyed or removed from property.
5	☐	Affects trench capacity	☐	Doesn't affect trench capacity	Accumulated sediment significantly affects trench capacity.
6	☐	Degraded	☐	Not degraded	Embankment shows signs of settlement, erosion, seepage, animal burrows, woody vegetation, or other conditions.

1. Is maintenance needed at this time? ☐ Yes ☐ No

2. Maintenance items needed/completed: _____

_____

Appendix C

Long-Term Inspection & Maintenance Log

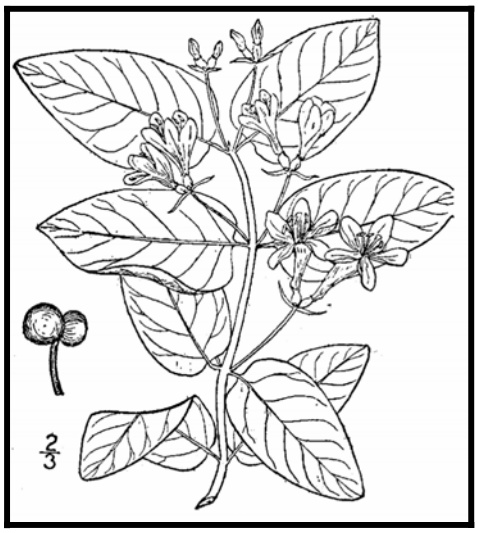
Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

Appendix D

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

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

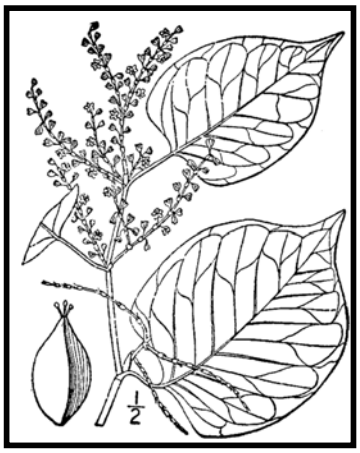
No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

Appendix D

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Appendix D
Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds</td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments</td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Appendix D

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds**	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

GRADING AND DRAINAGE CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED GRADING AND DRAINAGE SYSTEMS FOR THIS PROJECT.
2. ALL WORK ON THE SUBJECT PROPERTY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRAFTON COUNTY'S CONSTRUCTION STANDARDS AND DETAILS, LATEST EDITION. IN THE ABSENCE OF A SPECIFIC COUNTY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2016.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. ALL DISTURBED AREAS ARE TO BE LOAMED AND SEEDED.
6. SEE THE EROSION CONTROL PLAN FOR THE LOCATION OF THE TEMPORARY EROSION CONTROL DEVICES.
7. SEE DETAILS FOR DRAINAGE SPECIFICATIONS.
8. MATERIAL STOCKPILES SHALL BE ON LEVEL SITES WITH SILT FENCE INSTALLED AROUND THE PILE. STOCKPILES MUST BE SEEDED AND MULCHED IF STORED MORE THAN 14 DAYS.
9. THIS PROJECT DISTURBS MORE THAN 1–ACRE OF LAND, THEREFORE, IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA).

UTILITY CONSTRUCTION NOTES:

1. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED UTILITIES FOR THIS PROJECT.
2. ALL WORK SHALL CONFORM TO THE CITY OF LEBANON DESIGN AND CONSTRUCTION STANDARDS. IN THE ABSENCE OF A SPECIFIC CITY SPECIFICATION, CONTRACTOR SHALL FOLLOW THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2020.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
4. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE WATER LINES SHALL CONFORM TO ALL THE LOCAL PRECINCT'S STANDARDS, SPECIFICATIONS, RULES, AND REGULATIONS.
5. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE ELECTRIC AND TELEPHONE LINES SHALL CONFORM WITH THE STANDARDS OF THE LOCAL PROVIDER.
6. CONTRACTOR SHALL COORDINATE WITH LOCAL PROVIDER RELATIVE TO FINAL LAYOUT OF UNDERGROUND UTILITIES.
7. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. CONTRACTOR TO VERIFY SIZE OF WATER SERVICE LINES WITH ARCHITECT PRIOR TO THE START OF CONSTRUCTION.
9. FINAL LAYOUT OF UNDERGROUND UTILITIES TO BE APPROVED BY LOCAL PROVIDER PRIOR TO CONSTRUCTION.
10. CONTRACTOR TO VERIFY GAS REQUIREMENTS FOR THE PROPOSED BUILDING PRIOR TO CONSTRUCTION. CONTRACTOR TO COORDINATE WITH LOCAL GAS PROVIDER FOR SERVICE DETAILS.
11. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS.

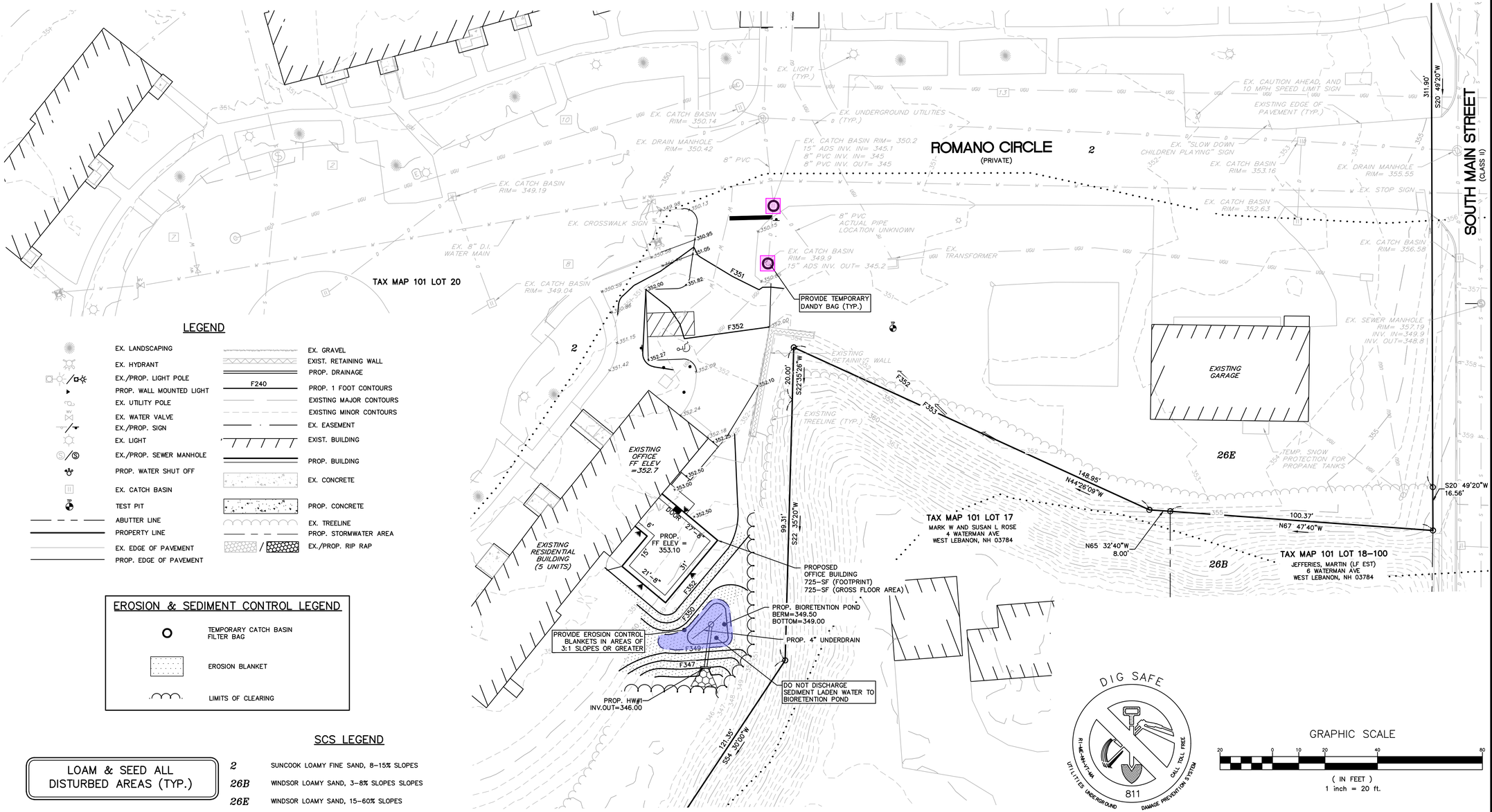
EROSION CONTROL NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE REQUIRED ONSITE TEMPORARY CONSTRUCTION EROSION CONTROL MEASURES.
2. ALL MEASURES IN THE PLAN SHALL MEET AS A MINIMUM THE BEST MANAGEMENT PRACTICES SET FORTH IN VOLUME 3 OF THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" AS PUBLISHED AND AMENDED BY THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED OR SUPPLEMENTED. THE STRIPPING OF VEGETATION SHALL BE DONE IN A MANNER THAT MINIMIZES SOIL EROSION.
4. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE.
5. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
6. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN FUNCTIONING CONDITION UNTIL FINAL SITE STABILIZATION IS ACCOMPLISHED.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. TRAPPED SEDIMENT AND OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS UNLESS CONDITIONS DICTATE OTHERWISE.
9. THE TOWN OF LEBANON SHALL RESERVE THE RIGHT TO REQUIRE FURTHER EROSION CONTROL PRACTICES DURING CONSTRUCTION SHOULD THEY FIND IT NECESSARY.
10. THE RESPONSIBLE PARTY SHALL INSTALL, INSPECT, REPORT, OPERATE, AND MAINTAIN ALL STORMWATER MANAGEMENT AND EROSION CONTROL MEASURES REQUIRED BY THESE PLANS.
11. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PLANS. IN ADDITION, SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR, MAY WARRANT.
12. ALL DISTURBED AREAS DESIGNATED TO BE TURF, SHALL RECEIVE A MINIMUM APPLICATION OF 4 INCHES OF LOAM (COMPACTED THICKNESS), PRIOR TO FINAL SEEDING AND MULCHING.
13. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.
14. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD, IN ACCORDANCE WITH ENV–A 1000.
15. IN NO WAY ARE THOSE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGEMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.
16. GRADED AREAS SHALL BE VEGETATED TO INSURE EROSION CONTROL BY SEEDING, MULCHING, AND FERTILIZING. DISTURBED AREAS SHALL BE PLANTED WITH SUITABLE PLANT MATERIALS.
17. GRADING SHALL NOT EXCEED A RATIO OF 3 HORIZONTAL TO 1 VERTICAL WITHOUT SPECIAL EROSION CONTROL MEASURES. NETTING OR SIMILAR MATERIAL SHALL BE PROVIDED ON SLOPES WITH A RATION GREATER THAN 3:1 WHILE GROUND COVER IS BEING ESTABLISHED.
18. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL ALL AREAS ARE STABILIZED.
19. PONDS SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING OF THE SITE).
20. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
21. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF–INCH OF RAINFALL.
22. THE PROJECT SHALL BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES CONTROL.
23. SEE DETAILS FOR CONSTRUCTION SEQUENCE.

LEGEND

BIO-RETENTION POND

CATCH BASIN



LEGEND

EX. LANDSCAPING	EX. GRAVEL
EX. HYDRANT	EXIST. RETAINING WALL
EX./PROP. LIGHT POLE	PROP. DRAINAGE
PROP. WALL MOUNTED LIGHT	F240 PROP. 1 FOOT CONTOURS
EX. UTILITY POLE	EXISTING MAJOR CONTOURS
EX. WATER VALVE	EXISTING MINOR CONTOURS
EX./PROP. SIGN	EX. EASEMENT
EX. LIGHT	EXIST. BUILDING
EX./PROP. SEWER MANHOLE	PROP. BUILDING
PROP. WATER SHUT OFF	EX. CONCRETE
EX. CATCH BASIN	PROP. CONCRETE
TEST PIT	EX. TREELINE
ABUTTER LINE	PROP. STORMWATER AREA
PROPERTY LINE	EX./PROP. RIP RAP
EX. EDGE OF PAVEMENT	
PROP. EDGE OF PAVEMENT	

EROSION & SEDIMENT CONTROL LEGEND

- TEMPORARY CATCH BASIN FILTER BAG
- EROSION BLANKET
- LIMITS OF CLEARING

SCS LEGEND

LOAM & SEED ALL DISTURBED AREAS (TYP.)

2	SUNCOOK LOAMY FINE SAND, 8–15% SLOPES
26B	WINDSOR LOAMY SAND, 3–8% SLOPES SLOPES
26E	WINDSOR LOAMY SAND, 15–60% SLOPES

DIG SAFE — CALL TOLL FREE 811 — DAMAGE PREVENTION SYSTEM — RI–ME–NH–VT–MA UTILITIES UNDERGROUND

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
JEFFREY D. MERRITT
No. 11778
LICENSED PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
GRADING, DRAINAGE, UTILITY & EROSION PLAN

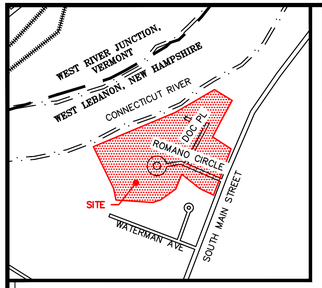
PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 6 OF 10		

10. PLANS

A. SITE PLAN SET (22” X 34”)

B. PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34”)

C. POST-DEVELOPMENT DRAINAGE AREAS PLANS (22” X 34”)



LOCUS MAP
SCALE: ±1"=500'

REFERENCE PLAN:

1. EXISTING CONDITIONS PLAN FOR LEBANON HOUSING AUTHORITY TAX MAP 101 LOT 20, 31 ROMANO CIRCLE, LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE, DATED APRIL 2024, PREPARED BY ROCKWOOD LAND SERVICES, LLC.
2. "CITY OF LEBANON COMBINED SEWER SEPARATION" PLAN, CONTRACT NO. 13, ROMANO CIRCLE AREA, PREPARED BY WRIGHT–PIERCE, DATED AUGUST 2023

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL BEFORE DEVELOPMENT.
2. THE SUBJECT PLAN IS BASED ON THE NH STATE PLANE COORDINATE SYSTEM AND THE NORTH AMERICAN VERTICAL DATUM OF 1988.
3. ON APRIL 16, 2024, LUKE HURLEY, CWS#232 FROM HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC, FIELD VERIFIED THAT NO ONSITE WETLANDS ARE PRESENT ON THE SUBJECT PROPERTY.

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- *140B* — DENOTES SOIL TYPE
- *P* — DENOTES POND
- *S* — DENOTES SUBCATCHMENT AREA
- *R* — DENOTES REACH
- *L* — DENOTES POINT OF INTEREST
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION

SCS LEGEND

2	SUNCOOK LOAMY FINE SAND, 8–15% SLOPES, HSG A
26B	WINDSOR LOAMY SAND, 3–8% SLOPES SLOPES, HSG A
26E	WINDSOR LOAMY SAND, 15–60% SLOPES, HSG A

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:

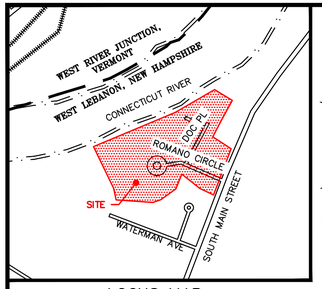
LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
PRE-DEVELOPMENT DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 1 OF 2		

P:\23\23050B1\dwg\Production Plans\23050B1 - DRAINAGE.dwg, 1/7/2026 4:15:59 PM



LOCUS MAP
SCALE: ±1"=500'

REFERENCE PLAN:

1. EXISTING CONDITIONS PLAN FOR LEBANON HOUSING AUTHORITY TAX MAP 101 LOT 20, 31 ROMANO CIRCLE, LEBANON, GRAFTON COUNTY, NEW HAMPSHIRE, DATED APRIL 2024, PREPARED BY ROCKWOOD LAND SERVICES, LLC.
2. "CITY OF LEBANON COMBINED SEWER SEPARATION" PLAN, CONTRACT NO. 13, ROMANO CIRCLE AREA, PREPARED BY WRIGHT–PIERCE, DATED AUGUST 2023

N

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
2. THE TOTAL AREA OF DISTURBANCE IS 20,778 SQFT.
3. THE SUBJECT PLAN IS BASED ON THE NH STATE PLANE COORDINATE SYSTEM AND THE NORTH AMERICAN VERTICAL DATUM OF 1988.
4. ON APRIL 16, 2024, LUKE HURLEY, CWS#232 FROM HURLEY ENVIRONMENTAL AND LAND PLANNING, LLC, FIELD VERIFIED THAT NO ONSITE WETLANDS ARE PRESENT ON THE SUBJECT PROPERTY.
5. PROPOSED AREA OF DISTURBANCE = 9,000 SF.

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SCS SOIL LINES
- 140B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- R — DENOTES REACH
- L — DENOTES POINT OF INTEREST
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION

SCS LEGEND

2	SUNCOOK LOAMY FINE SAND, 8–15% SLOPES, HSG A
26B	WINDSOR LOAMY SAND, 3–8% SLOPES SLOPES, HSG A
26E	WINDSOR LOAMY SAND, 15–60% SLOPES, HSG A

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GRANITE ENGINEERING
civil engineering
land planning
municipal services

REVISIONS

No.	DATE	COMMENTS	BY
1	01.22.26	PROJECT SUBMITTAL	JCD

OWNER/APPLICANT:
LEBANON HOUSING AUTHORITY
31 ROMANO CIRCLE
WEST LEBANON, NH 03784

GRANITE ENGINEERING
civil engineering • land planning • municipal services
150 Dow Street, Tower 2, Suite 421
Manchester,
New Hampshire 03101
603.518.8030
www.GraniteEng.com

STAMP:
STATE OF NEW HAMPSHIRE
JEFFREY C. MERRITT
No. 11778
LICENSED PROFESSIONAL ENGINEER
1/22/2026

LOCATION:
TAX MAP 101 LOT 20
31 ROMANO CIRCLE
WEST LEBANON, NEW HAMPSHIRE
03784
GRAFTON COUNTY

PROJECT:
LEBANON HOUSING AUTHORITY

TITLE:
POST-DEVELOPMENT DRAIN AREAS PLAN

PROJECT No.	DATE:	SCALE:
23–0508–1	JANUARY 22, 2025	HORIZ. 1"=20'
SHEET: 2 OF 2		

DRAFT

LEBANON MINOR SITE PLAN COMMITTEE
CITY COUNCIL CHAMBERS, CITY HALL
OR REMOTE VIA VIRTUAL PLATFORM
LEBANONNH.GOV/LIVE
SEPTEMBER 11, 2025 1:00 PM

MEMBERS PRESENT:	Nate Reichert (Director of Planning & Development), Leigh Hays (Building Official), Brian Vincent (City Engineer)
MEMBERS ABSENT:	Duane Egner (Fire Inspector), Jeff Libbey (Deputy Fire Chief), Captain Adam Leland (Lebanon Police Department)
STAFF PRESENT:	Tim Corwin (Deputy Planning & Development Director), Mark Goodwin (GIS Coordinator), Catheryn Hembree (Associate Planner, Planning Department)

---

1. CALL TO ORDER

Mr. Reichert called the meeting to order at 1:00pm. He said Mr. Goodwin was representing the Fire Department at the request of Fire Chief Jim Wheatley, and Mr. Corwin was representing the Police Department at the request of Police Chief Phil Roberts. He noted that Deputy Fire Chief Jeff Libbey and Captain Adam Leland were in a training session and were not able to attend the meeting. Ms. Hembree reviewed the City's meeting in-person and REMOTE attendance policies and procedures.

2. NOTICE OF REGIONAL IMPACT - none

Mr. Reichert called for the approval of the August 14, 2025 Meeting minutes next, which is out of the order of the agenda for this meeting.

5. APPROVAL OF MINUTES – August 14, 2025

A MOTION was made by Brian Vincent to approve the Minor Site Plan Review Committee Meeting Minutes of August 14, 2025. The MOTION was seconded by Mark Goodwin.

****The MOTION was approved (4-0).***

[At 1:04pm, Mr. Hays arrived at the meeting.]

3. PUBLIC HEARING ITEMS

A. Michael Davidson, 3 Campbell Street (Tax Map 92, Lot 65), zoned LD: The property is improved with a main building utilized as a mixed-use office and multi-family dwelling, and a carriage house utilized as a multi-family dwelling. The Applicant requests Minor Site Plan Review to add additional dwelling units to the property for a total of twelve

(12) dwelling units, and to convert the use of the main house to a multi-family dwelling only. PB2025-35-MSP - Continued from July 10, 2025

Mr. Reichert said the application is complete enough for the Committee to accept jurisdiction and commence review.

A MOTION was made by Tim Corwin that the application of Michael Davidson, 3 Campbell Street (Tax Map 92, Lot 65) PB2025-35-MSP is complete enough for the Minor Site Plan Review Committee to accept jurisdiction and commence review. The MOTION was seconded by Brian Vincent.

****The MOTION was approved (5-0).***

Mr. Tim Sidore was present on behalf of the applicant. He gave an overview of the project, which involves converting office space into residential space. He noted that there will be a total of seven apartments added to the building. He said the existing five apartments in the carriage house will not be affected by this project. He said they have 11 parking spaces planned, which is more than what is required.

The group discussed the plans and location of the proposed community garden. Mr. Sidore said there are no plans for a tool shed. Mr. Sidore discussed the shared driveway with the CCBA Building. He said residents for this project should not have to use parking spaces at the CCBA because there will be enough spaces for the dwelling. He explained that parking and snow plowing and removal have not been an issue in the past between the two buildings. Mr. Reichert suggested that the applicant establish a formal parking contract between the two building owners.

Mr. Sidore also explained the plans for lighting for the exterior of the building. The group discussed regulations for EV spaces, whether parking spaces designated for EV drivers could also be used by cars that are not EVs, and how electrical power is shared between the main building and the carriage house. The group also discussed whether the two dwellings should have separate, individual addresses. Mr. Hays said he would meet with Mr. Egner for his input on whether the dwellings should have individual addresses.

Mr. Reichert opened the public comment portion of the meeting. No one from the public spoke. Mr. Reichert closed the public comment portion of the meeting. He closed the public hearing.

A MOTION was made by Nate Reichert that the Minor Site Plan Committee approves the application of Tim Sdiore (applicant) and Michael Davidson (property owner) regarding 3 Campbell Street (Tax Map 92, Lot 65), zoned LD, PB2025-35-MSP for site plan review to Sections 3.1.C and 3.2 of the Lebanon Site Plan Review regulations to convert the existing mixed-use property into a multi-family dwelling, together with associated site improvements, as set forth in site plan submitted by the applicant and reviewed on the September 11th, 2025, including any and all submissions and testimony provided for and during the public hearing for the following conditions.
General conditions

1. ***This approval shall automatically expire and be deemed void upon failure to meet any of the conditions of approval set forth herein within the timeframe specified. It shall be the applicant's responsibility to be familiar with and aware of the conditions of approval. It shall be the applicant's responsibility to satisfy these conditions of approval and satisfy them within the relevant timeframes outlined below.***
2. ***A Building Permit must be applied for and issued within two years of the day of the approval, pursuant to 4.10.A.***
3. ***All required landscape plantings shall meet minimum size requirements of such plantings as set forth in Section 6.2.B.***
4. ***The site plan review regulations, the time of installation, conditions precedent are to be satisfied prior to the application for building permit prior to the start of any construction activities. The Applicant shall revise the site plan to the satisfaction of the Public Works Department and Planning Department per the following changes – No changes.***
5. ***The applicant shall obtain approval from the City Council and City Manager's office for any of the applicable water and sewer flows, in accordance with applicable Chapter 136 and 182 of the City Code.***
6. ***The development is subject to the City of Lebanon Impact Fees, pursuant to Section 213 of the zoning ordinance. The impact fee shall be calculated at the time of the building permit issued, based upon the impact fee schedule adopted May the 20th 2024, and a complete impact fee, invoice, and acknowledgement form shall be completed by the applicant and submitted with the building permit application.***

Conditions to be satisfied prior to the issuance of the Building Permit:

7. ***All water and sewer fee shall be paid the City, as set forth in Chapter 68.***

Conditions to be satisfied prior to the issuance of a Certificate of Occupancy:

8. ***Impact fees calculated, pursuant to Condition Approval #6, shall be paid. All improvements depicted on the plan shall be completed and shall be constructed as depicted as the approved plan, including any modifications to the plan that may be approved by the Minor Site Plan Committee in accordance with the site plan review regulations.***

Other Conditions of Approval:

9. ***A cross-easement for EV charger access for power to #7 Bank Street shall be consummated and recorded in the land record.***

The MOTION was seconded by Brian Vincent.
****The MOTION was approved (5-0).***

6. ADJOURNMENT

A MOTION was made by Tim Corwin to adjourn the meeting at 1:44pm. The MOTION was seconded by Brian Vincent.

****The MOTION was approved (5-0).***

The meeting was adjourned at 1:44pm.

Respectfully submitted,
Paula Roux
Recording Secretary

DRAFT

LEBANON MINOR SITE PLAN COMMITTEE
CITY COUNCIL CHAMBERS, CITY HALL
OR REMOTE VIA VIRTUAL PLATFORM
LEBANONNH.GOV/LIVE
NOVEMBER 13, 2025 1:00 PM

MEMBERS PRESENT: Nate Reichert (Director of Planning & Development), Captain Adam Leland (Lebanon Police Department), Jeff Libbey (Deputy Fire Chief), Leigh Hays (Building Official), Brian Vincent (City Engineer)

MEMBERS ABSENT: Duane Egner (Fire Inspector)

STAFF PRESENT: Catheryn Hembree (Associate Planner, Planning Department), Rod Finley (City Engineer)

---

1. CALL TO ORDER

Mr. Reichert called the meeting to order at 1:00pm. Mr. Reichert noted that Mr. Finley has replaced City Engineer Brian Vincent as a representative for DPW for this meeting.

2. NOTICE OF REGIONAL IMPACT - none

Ms. Hembree reviewed the City's meeting in-person and REMOTE attendance policies and procedures.

3. PUBLIC HEARING ITEMS

A. City of Lebanon (applicant), Dayspring Pregnancy Care Center, Inc. (property owner), 1 Main Street (Tax Map 86, Lot 21), zoned CBD: Applicant requests Minor Site Plan review of a minor parking lot and driveway reconstruction for the purpose of matching the driveway to NH Rte 12A (S. Main St.). PB2025-49-MSP

A MOTION was made by Nate Reichert that the application of Dayspring Pregnancy Care Center, Inc. (property owner) and City of Lebanon Department of Public Works (applicant), PB2025-49-MSP is complete enough for the Planning Board to accept jurisdiction and commence review. The MOTION was seconded by Jeff Libbey.

****The MOTION was approved (5-0).***

Mr. Brian Vincent, Lebanon City Engineer, explained the replacement of the Dry Bridge involves adjustment in width and elevation. He said the road grade must be elevated to meet the new elevation of the bridge, which he said impacts the driveway for the Dayspring Pregnancy Care Center located on the southeast side of the bridge. He said they have to regrade the parking lot to

match the roadway or close the driveway completely (which he said they do not want to do). He said, while they were evaluating the parking lot, they saw an accessible parking space near the upper right corner of the building that is too steep and is not in compliance. He said they are proposing to move that accessible space to the southeast portion of the parking lot. He discussed the lighting for the lot, which he said will not change. He said the number of parking spaces will not change. He said the existing sidewalk will be replaced an existing accessible ramp will be retained. He discussed how the parking lot would be restriped. He noted that a pedestrian bridge will be built adjacent to the new bridge and an opening in the guardrail near the parking lot will be included. He said the water mains that go under the bridge will be rebuilt.

Chair Reichert opened the public comment portion of the meeting. No one from the public spoke. He closed the public comment portion of the meeting.

A MOTION was made by Nathan Reichert that the Lebanon Minor Site Plan Committee approves the application of the Dayspring Pregnancy Care Center, Incorporated, regarding 1 Main St., Unit 2 (Tax Map, 86 Lot 17) Zone CBD PB2025-49-MSP for site plan review pursuant to Sections 3.1.C and 3.2 of the Lebanon Site Plan Review Regulations to reconfigure the subject property's parking layout and access in order to maintain the current number of on-site parking spaces and to maintain access as set forth on the Site Plan set submitted by the applicant, including any and all submissions and testimony provided during the public hearing, with the following conditions:

General Conditions

1. ***The approval shall automatically expire, be deemed void, on failure to meet any and approved conditions set forth herein, and within timeframe specified. It shall be the applicant's responsibilities to be familiar with and aware of the conditions of approval and shall be the applicant's responsibility to satisfy these conditions of approval and satisfy them within the relevant timeframes as outlined.***
2. ***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 committee in accordance with the Site Plan Review Regulations:***
   a. ***That accessible space shall comply with all requirements of the building code.***

The MOTION was seconded by Jeff Libbey.

****The MOTION was approved (5-0).***

B. Alice Peck Day Memorial Hospital, 10 Alice Peck Day Drive (Tax Map 90, Lot 59), zoned MC-2: Applicant requests Minor Site Plan review of a proposed expansion of the existing maintenance yard consisting of new material storage bins and a =/- 1,800 Sq ft storage shed. PB2025-50-MSP

Mr. Reichert noted that Mr. Vincent would replace Mr. Finley as a voting member for the remainder of the meeting.

A MOTION was made by Nate Reichert that the application of Alice Peck Day Memorial Hospital (property owner) and Engineering Ventures PC Co (applicant), PB2025-50-MSP is

complete enough for the Planning Board to accept jurisdiction and commence review. The MOTION was seconded by Adam Leland.

****The MOTION was approved (5-0).***

Mr. Nik Fiore (Engineering Ventures) and Mr. Jamie Chiasson (APD Hospital) were present on behalf of the applicant. Mr. Fiore said the project involves tearing down two existing sheds and building a prefab metal building that will be used as one large shed. He said two concrete outdoor storage bins will be moved and a third one will be added. He said some grass area that is under where the storage bins will be located will be paved, which will result in 320 square feet of additional impervious area. He said the plan also calls for some repaving in the same area as the existing pavement and some gravel area.

Mr. Fiore said the previous application showed wetlands in the corner in a different configuration than what the current plans show. He said the first wetlands are old and were delineated in 2015, and the wetlands on the current plan were delineated in 2021 and are still within the five-year jurisdiction.

The group discussed whether salt would be stored in the proposed storage containers. They discussed how outdoor storage of salt is required to be 25 feet away from wetlands. Mr. Fiore said the storage containers would be covered. The group discussed how the new building would be for cold storage and how it would not have outdoor lighting (except for the exit sign and to light the pathway for egress) or indoor plumbing or office space inside. Mr. Chiasson noted there will be no propane tanks stored inside. Mr. Reichert said if they decide to add heat or lighting within the space in the future, they will have to have the building and the fire permits.

Mr. Reichert asked the applicant to put up a caution tape to delineate the wetlands during construction, so the construction crew and equipment do not disturb the wetlands. Mr. Fiore explained that stormwater runoff will run away from the wetland areas.

Mr. Chiasson said they hope to begin construction in April 2026.

Chair Reichert opened the public comment portion of the meeting. No one from the public spoke. He closed the public comment portion of the meeting.

A MOTION was made by Nate Reichert that the Minor Site Plan Committee approves the application of Alice Peck Day Memorial Hospital regarding 10 Alice Peck Day Drive, Tax Map 90, Lot 59 Zone MC2, PB2025-50-MSP for site plan review pursuant to Sections 3.1.C and 3.2 of the Lebanon Site Plan Review Regulations to expand the existing maintenance yard by adding new material storage bins and a 30x60 premanufactured building as set forth on the Site Plan set submitted by the applicant and including any and all submissions and testimony provided for and during the public hearing with the following conditions:

1. ***The approval shall automatically expire and be deemed void upon failure to meet any of the conditions in the approval set forth herein within the timeframe specified. It is the applicant's responsibility to be familiar with and aware of these conditions of approval,***

and it shall be the applicant's responsibility to satisfy these conditions of approval and to satisfy them within the relevant timeframe outlined below.

2. All improvements depicted on the plan shall be completed and shall be constructed as depicted on the approved plan set, including any modifications to the plan as may be approved by Minor Site Plan Committee, in accordance with the site plan regulations with one condition to prevent encroachment into the wetlands.

a. The wetlands shall be delineated and marked before construction begins.

The MOTION was seconded by Leigh Hays.

****The MOTION was approved (5-0).***

4. OTHER BUSINESS

A. Review and Adoption of the 2026 Minor Site Plan Review Committee calendar.

The group reviewed the proposed 2026 meeting calendar and application submission deadlines.

A MOTION was made by Nate Reichert to approve the 2026 Minor Site Plan Review Committee calendar as submitted. The MOTION was seconded by Leigh Hays.

****The MOTION was approved (5-0).***

5. APPROVAL OF MINUTES – none

6. ADJOURNMENT

A MOTION was made by Jeff Libbey to adjourn the meeting at 1:32pm. The MOTION was seconded by Leigh Hays.

****The MOTION was approved (5-0).***

The meeting was adjourned at 1:32pm.

Respectfully submitted,
Paula Roux
Recording Secretary