2 Lincoln Street
Essex Junction, VT 05452-3154
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E: mgiguere@essexjunction.org

Staff Report

To: Development Review Board
From: Michael Giguere, City Planner
Meeting Date: April 17th, 2025
Subject: Final plat review for a three-lot subdivision for one residential lot and two lots for future development; road connection of Taft Street to Meadow Terrace in the R1 District by Center for Technology Essex, owners.
File: SP# 7.2024.1 and SP# 7.2024.2

PROJECT DESCRIPTION:

Three-lot subdivision and boundary line adjustment of the 6.11-acre lot located at the end of Taft Street and road connection of Taft Street to Meadow Terrace for the continuation of the Residential Building Trades program at the Center for Technology, Essex (CTE). The new road connection is proposed to be named "Meadow Terrace" to meet Vermont state addressing standards. Proposed new lot 6A will be the location of the next home, and lots 7A and 8A will remain undeveloped until plans for future subdivision are finalized.

EXISTING CONDITIONS AND GENERAL INFORMATION

Project Location: 11 Meadow Terrace, Essex Junction, VT 05452

Project Area Size: 6.11 acres

Lot Frontage:

- Existing: 87.5 feet
- Proposed: Lot 6A: 125.7 feet, Lot 7A: 256.6 feet, Lot 8A: 631.8 feet

Existing Land Use: Undeveloped

Surrounding Land Use: Residential

Zoning District: Residential 1 (R1)

Minimum Lot Size: 15,000 square feet

Lot Coverage:

- Existing: 2.4%
- Proposed: Lot 6A: 18.76, Lot 7A: 0, Lot 8A: 0%
- Permitted: 30% (buildings), 40% (total)

SECTION 503: SUBDIVISIONS

B. Classification
1. Lot Consolidation or Boundary Adjustment

The proposed new public road connects to Meadow Terrace, an existing public road that is located within Essex High School's parcel, not within the separate parcel designated for the CTE. Staff noted that the new road bisects the Essex High School parcel. The applicant is pursuing a boundary line adjustment as a part of this approval to account for the portion of land west of the existing CTE parcel and south of the proposed new road.

2. Minor Subdivision

"A minor subdivision includes the platting of five (5) or fewer lots or minor adjustments to the lot lines of three (3) or more lots. A minor subdivision shall require Sketch Plan and Final Plat approval."

E. General Standards of Review

"The Development Review Board shall generally review all applications for neighborhood compatibility, effect on adjoining undeveloped land, public infrastructure impact and the general public health, safety, and welfare."

This planned subdivision has already been considered and approved through previous phases, demonstrating cohesion and economic viability. The new street connection will improve neighborhood connectivity by removing the dead-end portion of Taft Street. The extension of the sidewalk will also improve pedestrian connections to Essex High School and Main Street.

The DRB should determine if the application meets the general subdivision standards of review of Section 503.E.

H. Application Submittal Requirements

The applicant has submitted a final plat that meets the requirements of Section 503.H. Staff have added recording this plat with the City Clerk as a condition of approval.

SECTION 704: LIGHTING

Staff have noted that the submitted lighting plan displays several areas in the proposed roadway with illumination values below LDC minimum lighting standards. Additionally, the lighting plan does not include illumination values for the proposed sidewalk. Staff have added revising this lighting plan to the satisfaction of City staff as a condition of approval.

SECTION 719: LANDSCAPE AND TREE PLANTING REQUIREMENTS

Staff find that the proposed hardwood trees appear to comply with the requirements of Section 719 and are spaced appropriately to avoid conflict with proposed utilities.

SECTION 720: LOT FRONTAGE

A. Lot Frontage

"Within any District, a minimum frontage of sixty (60) feet is required at the street, unless specifically stated otherwise."

B. Required Frontage

"In accordance with Section 4406 of Vermont Municipal Planning and Development Act (24 VSA, Chapter 117), no development shall be permitted on any lot which does not have either frontage on a public road or public waters or, without approval of the Development Review Board, access to such road or waters by a permanent easement or right-of-way at least twenty (20) feet in width."

The proposed lots meet the minimum frontage requirements of Section 720.

CHAPTER 9: SUBDIVISIONS - SECTION 905: GENERAL STANDARDS

A. Conformity with Other Regulations

"No land shall be subdivided except in conformity with the requirements of this Code."

The proposed subdivision appears to conform with all relevant sections of the LDC.

B. Site Suitability

"No subdivision shall be approved on any land, which is unsuitable for development due to flood hazard, poor drainage, unstable soils, rock formations, slopes, or other conditions, which may be a hazard to the public health, safety or welfare unless sufficient measures are proposed to mitigate the identified risks."

Staff are not aware of any reason for this lot to be unsuitable for the proposed development.

C. Public Facilities

"All subdivision proposals shall demonstrate the adequacy of all public facilities and services including streets, drainage, stormwater treatment, water supply, sanitation facilities, lighting, emergency access, recreation facilities and similar services or facilities. All proposals shall include an analysis of any potential adverse impact of these services or facilities on adjacent land uses."

The proposed lot for housing development will be served by existing municipal water and sewer, which the City has sufficient capacity for. The applicant will be subject to all applicable sewer connection and sewer capacity allocation fees, as well as all applicable water service fees.

F. Lot requirements

The proposed lots meet all LDC requirements for arrangement, shape, and public road access.

G. Boundary Adjustments

The proposed boundary adjustment meets the LDC requirements for parcel conformity.

SECTION 906: STREETS

B. Arrangement

"1. All streets shall be integrated with the existing system of streets.

2. All streets shall be extended to the boundary of the proposed subdivision if the

Development Review Board determines a future need for street extensions to serve adjoining property.
3. Street design shall include measures to discourage through traffic in Residential Districts.
4. Street design shall include measures to encourage improved connectivity in the Village Center District and strike an appropriate balance between all modes of transit.
5. Access for emergency vehicles shall be considered in the layout of any street."

Staff find that the proposed street meets the arrangement requirements of Section 906.B.

C. Design

Staff have noted that the proposed street width is twenty-six (26) feet, rather than the LDC-specified twenty-eight (28) feet. However, the proposed width has been deemed acceptable as it matches the existing width of Taft Street.

The applicant has revised the proposed road connection Meadow Terrace based on feedback from sketch plan approval. Staff find that the revised design meets the standards of Section 906.C.2.

E. Dedications

"Unless specifically approved otherwise all right-of-ways, utility connections, stormwater infrastructure, and streets shall be dedicated to the City in accordance with the deed and acceptance provisions of this LDC. No private streets or drives utilities or stormwater infrastructure shall be accepted by the City until the right-of-way, pavement and construction standards of the City are met in their entirety and deeded to the City with City Council approval. All proposed subdivisions to be served by private infrastructure shall include a proposed homeowners association agreement with the final application. The association agreements shall be reviewed and approved by the City Attorney and City Engineer, Public Works Superintendent and Water Quality Superintendent prior to final plan approval by the Development Review Board."

Staff have requested that the applicant dedicate wet pond #2 to the City once it has been converted into a gravel wetland.

SECTION 108: CEMENT CONCRETE SIDEWALK

The applicant has submitted plans to extend the proposed sidewalk to align with the existing sidewalk on the south side of Upland Road. A painted crosswalk will be striped by public works upon completion of construction.

Final Plat Recommendations:

Staff recommend the Development Review Board approve the boundary line adjustment and final plat application for a three-lot subdivision and road connection of Taft Street to Meadow Terrace pending a determination of the following item:

- The DRB should determine if the subdivision application complies with the general subdivision standards of Sections 503.E.

Recommended Motions:

- I move that the DRB approve the boundary line adjustment for the proposed three-lot subdivision and road connection of Taft Street to Meadow Terrace at 11 Meadow Terrace in the R1 District with conditions.
- I move that the DRB approve the final plat for the proposed three-lot subdivision and road connection of Taft Street to Meadow Terrace at 11 Meadow Terrace in the R1 District with conditions.

Proposed Conditions:

1. All staff comments shall be addressed to the satisfaction of City staff.
2. Applicant shall submit record drawings for site utilities to the City of Essex Junction upon completion of construction, in both AutoCAD, PDF, and shapefile format in Vermont State Plane US Survey Feet, NAD83(2011).
3. The applicant shall adhere to the applicable construction inspection requirements detailed in Public Works Specifications Section 119 of the Land Development Code.
    a. Connections to the existing municipal water main and existing municipal sewer main shall be performed in the presence of an authorized representative of the City of Essex Junction, after a minimum of 48 hours advance notification.
    b. All sewer, water, and storm drainage utilities installed on the project site shall be observed by an authorized representative of the City of Essex Junction prior to backfilling of said utility.
    c. Applicant shall notify the City a minimum of 48 hours in advance of work to be performed inside the City right-of-way or on utilities owned or to be owned by the City.
4. All new utilities shall be installed underground, per the LDC requirements of Section 913.
5. Applicant shall record final plat mylar with City Clerk.
6. Applicant shall record updated mylar boundary surveys with the City Clerk for all lots impacted by the existing cul-de-sac's reversion to private property.
7. Applicant shall revise submitted lighting plan to the satisfaction of City staff.
8. Applicant shall dedicate the wet pond, labeled "Wet Pond #2" to the City upon conversion into a gravel wetland.

City of Essex Junction, VT
Development Application

For Office Use:

Permit #

Planned Unit Development:	**Scale:**	**_____ Minor** **_____ Major**	**Stage:**	**_____ Conceptual** **_____ Preliminary (optional)** **_____ Final**
Site Plan:	**Scale:**	**_____ Minor** **_____ Major**	**Stage:**	**_____ Conceptual** **_____ Preliminary (optional)** **_____ Final**
Subdivision:	**Type:**	**_____ Sketch** **_X_ Preliminary**	**Other:**	**_____ Variance** **_____ Conditional Use**

Property description (address) for application

_____

General Information

Applicant CTE Corporation Day Phone# 802-857-7532

Address 3 Educational Drive, Essex Junction, VT 05452

Email Address btravers@ewsd.org

Owner of Record (attach affidavit if not applicant)

Name _____ Day Phone# _____

Address _____

Applicant's agents

Name Scott Homsted, Krebs & Lansing Consulting Engineers Day Phone# 802-355-4339

Address 164 Main Street, Colchester, VT 05446

scott.homsted@krebsandlansing.com

Property information

Zoning District R1 Current Use Undeveloped Tax Map # 1043001000

Lot # Remaining Lands Lot size sf 266,142

Other Information

Street frontage (public or private) 100 ft. Proposed height NA

Proposed number of stories NA Estimated completion date September 2027

Proposed Parking Spaces 4 Required spaces 4

Landscape cost NA

Lot coverage (include all structures and impervious surface)

Existing (sq ft.) 6468 plus proposed (sq .ft.) 18396 equals 24864 total sq .ft.

Divided by 279227 lot sq.ft. equals 8.90 percent of lot coverage.

Submit one (1) full size copies, a PDF copy, GIS and supporting documentation required by the Code and the appropriate completed checklist for initial review by Staff. After Staff determines the application is complete, attach one (1) full size copies and six (6) 18" x 24" copies of your proposal, forty-five (45) days prior to a scheduled meeting. Applications that are not complete cannot be accepted for review.

Briefly describe your proposal (attach separate sheet if necessary)

See Attached Project description

Describe all waiver requests (if applicable)

The applicant requests a waiver to reduce the street width to 26' from 28'. This is in accordance with previous phases of the project and will allow a consistent road section for the entirety of the street.

I certify that the information on this application is true and correct. I agree to abide by all the rules and regulations as specified in the land development code and any conditions placed upon approval of this application. In accordance with the *Essex Junction City Council Policy for Funding Engineer Plan Review and Inspections*, the applicant, by signing this form agrees to pay for the actual cost of engineering plan review and construction inspections by the City Engineer.

D.W. Fe

Applicant

February 24, 2025

Date

Land Owner (if different)

Date

Staff Action

Date received: _____

Meeting date: _____

Board Action Approved _____ Denied _____

Date: _____

Other approvals/conditions: _____

****Fee based on sq.ft. of improved area per current Fee Schedule**

Staff Signature

Date

Fee Amount: **	Fee Verified:

City of Essex Junction, VT
Boundary Line Adjustment

For Office Use:
SP 7.2024.1
Permit #

Property description (address) for application Taft Street/Meadow Terrace

General information

Applicant CTE Corporation Day Phone 802-857-7532
Address 3 Educational Drive, Essex Junction, Vermont
Email Address btravers@ewsd.org

Owner of Record (attach affidavit if not applicant)

Applicant Same Day Phone
Address
Email Address

Applicant's agent(s)

Applicant Krebs & Lansing Consulting Engineers, Inc. Day Phone 802-878-0375
Address 164 Main Street, Colchester, VT 05446; scott.homsted@krebsandlansing.com

Property information

Zoning District R1 Current Land Use Undeveloped
Surrounding zoning: North R1 South R1 East R1 West R1
Surrounding use: North Resid. South Resid East Resid West Educal
Tax Map page # Lot # Remaining Lands Lot size/sq ft. 266,142

Lot coverage (include all structures and impervious surface)

Existing (sq ft.) 6468 plus proposed (sq .ft.) 18396 equals 24864 total sq .ft.
Divided by 279227 lot sq.f. equals 8.90 percent lot coverage

Briefly describe your proposal:

See Attached Project description Essex Community Educational Center to CTE Corp for Lot 8A = 0.28 Ac
Essex Community Educational Center to CTE Corp for Meadow Terrace ROW = 0.28 Ac
Existing Taft Street ROW (cul-de-sac) to Lot 2A = 1,201 s.f.; Existing Taft Street ROW (cul-de-sac) to Lot 3A = 1,444 s.f.
Existing Taft Street ROW (cul-de-sac) to Lot 4A = 93 s.f.; Existing Taft Street ROW (cul-de-sac) to Lot 8A = 335 s.f.

I certify that the information on this application is true and correct. I agree to abide by all the regulations and rules as specified in the Land Development Code and any conditions placed upon approval of this application.

Applicant — Date: February 24, 2025

Land Owner (if different) — Date

Form Revision 20230929

RECEIVED

FEB 26 2025

City of Essex Junction

Staff Action

Date received _____ Approved _____ Denied _____

Other approvals/conditions:

_____

_____

_____

_____ _____

Staff Signature Date

Fee Amount: **	Fee Verified
$215.00	PAID FEB 26 2025 City of Essex Junction

Form Revision 20230929

City of Essex Junction

KREBS & LANSING
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, VT 05446

P: (802) 878-0375 | email@krebsandlansing.com

February 24, 2025

Chris Yuen
Community Development Director
City of Essex Junction
2 Lincoln Street
Essex Junction, VT 05452

Re: Center for Technology Essex (CTE) Subdivision

Dear Chris,

On behalf of our client, CTE Corporation, and the Essex Westford School District, we are submitting Final Plan and Boundary Line Adjustment applications for the proposed use of a 6.11 acre parcel of land adjacent to the Taft Street development that has been used for the CTE building trades program. The applicant proposes to extend Taft Street from the existing cul-de-sac to Meadow Terrace and create one new building lot. A future application will contemplate additional building lots. Areas of the cul-de-sac will revert to the adjoining lots. The road will be extended along the alignment of the existing gravel path and 50' wide utility and access easement. Utility extensions will be installed along with the new roadway. Lot 6A will be a proposed building lot. Lots 7A and 8A are created by the extension of the new road and may be further subdivided in the future.

We have attached plans and supporting documents to help illustrate the proposed project including:

- Final Development Application and Checklist
- Boundary Line Adjustment Application
- Civil Plan Set with Details
- Stormwater Narrative, Modeling, and Calculations

We offer the following description of how the application complies with the Development Checklist:

Site plan, drawn to scale including a north arrow, certified by licensed Vermont professional.

We've provided a complete set of stamped civil/site design plans and details.

Vicinity map. Specify adjoining land use/zoning.

A vicinity map has been included showing the project location and zoning districts.

Name, address, phone # of developer and all professionals working on the project.

Contact information is provided on the applications.

Survey prepared by certified land surveyor showing existing or proposed rights of way and easements.

A survey prepared by a licensed surveyor showing the proposed right way and easements is included.

Total land area and location. Size, height, and number of stories of existing and proposed structures and distance to property lines.

The total land area is included on the survey and Site Plans. A schematic residence is shown on the proposed building lot (Lot 6A). Setbacks are shown on the plans. The house will comply with all regulatory setbacks and height requirements. The house will be a typical one- or two-story building, with details and exact heights to be determined at the time of a Zoning Permit application.

Location and dimensions of existing and proposed easements, streets, driveways and infrastructure.

The location of easements, streets, driveways and infrastructure are shown on the site plans. A cross section of the new road and right of way is included in the details.

Description of proposed use and floor areas of all structures, and parking and loading calculations. All parking spaces shall be clearly indicated on the plan (See section 703).

Only one single family residence is proposed at this time. Floor plans will be provided at the time of Zoning Permit Application. Only one parking space is technically required per Section 703. A minimum of 4 spaces will be provided via the garage and driveway.

Location and specifications for a bike path.

No bike path is proposed for the project. A 5' wide sidewalk is included for pedestrians and is consistent with the surrounding neighborhood.

Topographic map with final ground contours at 2' intervals as if staff determined that such information is necessary.

An Existing Conditions Plan, including contours, is included with the plan set.

Existing natural features including wetlands, rock outcroppings, excessive slope and tree groupings. Professional landscape plan including the type, size, quantify, and location of plant materials, existing and proposed (see Sections 719 and 708).

There are no wetlands, rock outcroppings, or excessive slopes on the property. The proposed landscape plan includes new hardwood trees planted at the appropriate intervals. The planting plan is a continuation of the previously approved landscape plan for the Taft Street extension approved in 2015 and subsequently constructed.

Lighting plan with specifications (See section 704).

Street lights are shown on the Landscape & Lighting Plan in accordance with the spacing outlined in Section 704. A pole base detail has been provided, along with cut-sheets for the proposed light poles. These are the same poles that were previously approved for Taft Street.

Impact analysis including traffic generation and impact on public and/or private infrastructure.

A single- family home generates the following traffic impacts based on the current ITE Manual:

- 10 daily trips
- 1 a.m. peak trip
- 1 p.m. peak trip

Wastewater impacts are 210 gallons/day, which can be accommodated easily be existing sewer infrastructure.
Potable water supply impacts are 360 gallons/day, which can be accommodated by existing water infrastructure. A hydrant has been added to improve fire protection in the area.

Engineering design standards for all improvements. Include a description of the methodology proposed to control drainage, and construction plans as applicable.

A complete stormwater management plan has been prepared for the site. Please see the attached Stormwater Narrative, Modeling, Workbooks, and Worksheets. The project will require a State of Vermont Stormwater Discharge Permit and will comply with the Vermont Stormwater Management Manual.

Traffic study as deemed necessary by the Development Review Board (or staff).

The proposed project adds only one residential unit while connecting two dead end residential streets. Therefore, traffic circulation in the area will actually be improved by the project.

Written request for waivers of any requirements of the Land Development Code.

The applicant requests a waiver to reduce the street width to 26' from 28'. This is in accordance with previous phases of the project and will allow a consistent road section for the entirety of the street.

Location of proposed water/sewer service connections.

The location of water and sewer connections are shown on the site plans. There is an existing water main running through the site. A new sewer line will connect to an existing manhole on Meadow Terrace. Service locations to the new single-family residence are shown. In addition, connections for future development are shown to avoid having to excavate recently installed infrastructure at the time of development.

Proposed development schedule and phasing request.

The applicant proposes to construct the common infrastructure in a single phase, hopefully during Summer 2025. The proposed single-family residence will be constructed over a two year period beginning in September 2025.

Location and type of proposed screening or buffering.

No screening or buffering is required or proposed.

Elevation of existing/proposed structures and proposed change to height of existing structures.
Floor plans of proposed structures.

This application is for common infrastructure and to create a building lot. Building floor plans and elevations will be provided when a Zoning Permit application is submitted.

Location of fire lanes.

No fire lanes are proposed.

Percent of lot coverage of all structures and impervious surfaces.

There is 6,468 sq.ft. of existing impervious surface from the recreation path.
There is a net increase of 18,396 sq.ft. of impervious surface for the road, sidewalk, and proposed building and driveway on Lot 6A.
The total lot area affected, including the proposed right of way, Lots 6A, Lot 7A, and Lot 8A, is 279,227 sq.ft.
Therefore, proposed lot coverage is 24,864/279,227 = 8.90%

Thank you for your time reviewing the project. We look forward to your review and input. Please reach out if there are any additional comments, questions, or concerns.

Best regards,

Scott Homsted

Scott Homsted, P.E.

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Essex Junction, VT 05452-3154
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F: 802.878.6946
E: mgiguere@essexjunction.org

March 11, 2025

Scott Homsted, P.E.
Krebs & Lansing Consulting Engineers, Inc.
164 Main Street
Colchester, VT 05446

Re: Center for Technology Essex (CTE) Subdivision
Final Plat and Road Connection Application

Dear Ryan,

After reviewing the submitted plans for the CTE subdivision and Taft Street road connection, City staff offer the following comments:

General

- All references to the "Village of Essex Junction" should be replaced with "City of Essex Junction" unless specifically referring to a resolution made by the Village prior to 2022.
    - For example, the 2015 resolution by the Planning Commission for the original subdivision can remain referencing the Village.

Application Materials

- The area of land to be donated/adjusted should be listed on the Boundary Line Adjustment application form, replacing "See Attached Project description".
    - This includes the land to be transferred from Essex Community Educational Center as well as the land to be donated to Lots 2A and 3A.
    - This can be listed in square feet, acres, or both.

Boundary Line Adjustment and Subdivision Plat

- Clerk's recording block
    - The title should be updated to address "City Clerk's Office"
    - The location "Town of Essex, VT" should be replaced with "City of Essex Junction, VT"
    - "Town Clerk" should be replaced with "City Clerk"
- Approval block
    - Reference to "Development Director" should read "Community Development Director"

Dimensions

- The frontage and area of each parcel should be displayed on the boundary line adjustment and site plans.

Engineering

- See attached letter for the City Engineer's comments.

Water

- Phosphorus loading and removal calculations for the project site should be provided to the City for review.
- An easement draft should be submitted to the City for review. A template to be used as a starting point has been included with this letter.

Sewer

- The property owner at 5 Meadow Terrace is currently tied into the sewer system at 3 Meadow Terrace. Given that this subdivision will be installing new utility lines, City staff would ask the applicant's willingness to include a capped "T" or "Y" connection off of the planned sewer line in front of 5 Meadow Terrace, allowing for future independent connection by the property owner.

Street

- City staff propose that the new road connection be named "Meadow Terrace" as demonstrated in Appendix A.
    - This will meet State E911 standards, avoid having intersecting streets named "Taft Street", minimize impacts to existing homeowners, and maintain consistency with the existing length of Meadow Terrace.
- Any deeds or other legal agreements dedicating the former cul-de-sac right-of-ways to lots 2A and 3A should be submitted to the City for review.

Please let me know if you have any questions.

Sincerely,

Michael Giguere
City Planner

CC: Chris Yuen, Community Development Director
Terry Hass, Assistant Zoning Administrator
Chris Welch, Essex-Westford School District
Bob Travers, Essex-Westford School District

Appendix A

Proposed Street Names

3/11/2025, 9:45:41 AM

1:3,009

0 100 200 400 ft

0 30 60 120 m

VCGI, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

DONALD L. HAMLIN
CONSULTING ENGINEERS, INC.
ENGINEERS AND LAND SURVEYORS

Please reply to:
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Essex Junction
Vermont 05453

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Essex Junction, Vermont

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Fax (802) 878-2679
www.dlhce.com

March 11, 2025

Mr. Michael Giguere
City of Essex Junction
2 Lincoln Street
Essex Junction, Vermont 05452

Re: CTE Essex – Taft Street
Final Submittal #1

Dear Mr. Giguere:

We have reviewed the submittal of plans and supporting information that we received electronically for the above referenced project. The plans reviewed as part of this submittal are presented below:

CTE Essex – Taft Street – Final Submittal #1			
Sheet #	Sheet Name	Dated	Last Revised
Prepared By: Krebs & Lansing Consulting Engineers			
C-1	Overall Site Plan Phase 3	10/29/2024	12/04/24
C-1.1	Site Plan Phase 3	01/10/2025	
C-1.2	Site Plan Phase 3	01/10/2025	
C-2.0	Existing Conditions Plan	10/29/2024	
C-3.0	Roadway and Utility Profile	01/10/2025	
C-4.0	Erosion and Sediment Control Plan	01/30/2025	
C-5.0	Landscape & Lighting Plan	01/30/2025	
C-6.0	Watershed Plan	01/30/2025	
C-6.1	Post Construction Soil Depth & Quality Plan	01/30/2025	
C-6.2	Stormwater Maintenance Plan	01/30/2025	
CD-1	Civil Details	01/23/2025	
CD-2	Civil Details	01/23/2025	
CD-3	Civil Details	01/23/2025	
CD-4	Civil Details	01/23/2025	
CD-5	Civil Details	01/23/2025	
CD-6	Civil Details	01/23/2025	
CD-7	Civil Details	01/23/2025	
CD-8	Civil Details	01/23/2025	
---	Boundary Line Adjustment & Subdivision Plat	01/24/2025	

For our review, we utilized the most recent edition of the City of Essex Junction Land Development Code, dated June 14, 2023, hereinafter referred to as the "LDC". Based on our review of the plans and supporting information, we offer the following comments presented below, which represent a compilation of comments from our office and the City of Essex Junction Public Works Department.

General

1) We recommend a condition of approval of this project requiring the submission of record drawings for site utilities to the City of Essex Junction upon completion of construction, in both AutoCAD and PDF format. The City would also like to request this information be provided in shapefile format in Vermont State Plane US Survey Feet, NAD83(2011).

2) The Boundary Line Adjustment and Subdivision Plat should be revised to include an easement area(s) wherever a 20' wide easement centered along the existing waterline falls outside of the new City right-of-way.

3) On Sheet C-1.1, a note should be added requiring an authorized representative of the City of Essex Junction to inspect all pipelines (water, sewer, and storm drainage) prior to backfill. This note should require a minimum of 48 hours advance notification of the need for inspection.

4) On Sheets CD-1, CD-3, CD-4, and CD-5, there is a note stating "*All sewer, water, and storm drainage utilities installed on the project SIDE* ***[emphasis added]*** *to be observed by an authorized representative of the City of Essex Junction prior to backfilling the utility being installed.*" This note should be revised to state "…*on the project site*…".

5) At all utility crossings, a minimum of 18" of vertical separation should be provided. Based on our computations, it appears that there will be less than 18" of vertical separation at the sewer/storm crossings at approximately station 1+12 RT, at approximately station 3+25 RT, and at approximately station 5+95.

Site Layout – Roadways, Drives, Parking, and Walkways

1) Between approximately station 0+60 and 1+10 RT, the new curbing 'bumps out' from the extension of the existing curb line along Meadow Terrace. This new curb should be revised to provide a smooth transition along the curb line from Meadow Terrace to the new roadway curvature.

2) The project is constructing a new 5 foot wide cement concrete sidewalk along the new roadway, starting at approximately station 0+70 and terminating at the existing sidewalk at approximate station 8+10. This leaves a gap along Meadow Terrace between Upland Road and the start of the new roadway with no sidewalk. The project should be required to construct the approximately 90 l.f. of new sidewalk to make this connection between Upland Road and the new roadway.

3) On Sheet C-1.2, the new sidewalk jogs at approximately station 8+10 to avoid an existing light pole where it ties into the existing sidewalk. In doing so, the new sidewalk extends partially outside of the City right-of-way. The plans should be revised such that the new sidewalk remains entirely inside the City right-of-way.

4) The plans should be revised to provide a longitudinal transition detail from the existing Meadow Terrace roadway cross section to the new roadway cross section. This is an important detail to help minimize differential movement between the insulated/non-insulated roadway cross sections.

5) The revised access drive serving the existing CTE buildings is shown with a fairly steep grade leading to/from the new roadway. The plans should be revised to provide a maximum 3% grade for the first 20 feet from the new roadway.

6) On Sheet CD-2, the Typical "Local Residential Street" Cross Section detail sidewalk cross section does not meet the LDC requirements. This detail should be revised to reflect the requirements shown on Page D-4 of the LDC.

7) On Sheet CD-3, the Cross Section details for the "New Thickened Concrete Walk Detail" and the "New Concrete Walk Detail" do not meet the LDC requirements. These details should be revised to reflect the requirements shown on Page D-4 of the LDC.

8) On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "*Match existing pavement thickness (7" max)*". This note should be revised to state "*Match existing pavement thickness (3-1/2" minimum)*".

9) On Sheet CD-3, the notes for the Replacement of Existing Road Subbase and Bituminous Pavement detail appear to apply to the repair of potholes. The applicant should provide clarification and make revisions as needed.

10) On Sheet CD-3, note #6 of the Replacement of Existing Road Subbase and Bituminous Pavement detail should be revised to state "*Fill top of hole with Type IV bituminous concrete and compact in lifts no more than 2" thick.*", not 2' thick as currently written.

11) On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "*If concrete road base is present, it must be replaced with 3,500 psi concrete to match existing conditions. Dowel existing concrete and new concrete with #4 rebar 18" o.c. embed rebar in existing and new concrete 9" deep.*" This note should be revised to state "*If concrete road base is present, it must be completely removed within the limits of the excavation and replaced with new compacted gravel subbase.*"

12) On Sheet CD-3, the Curb Taper – 6' or 3' detail does not meet the LDC requirements. Depending on the curb height, the taper will need to be longer than 6' or 3' in order to comply with accessibility requirements.

<u>Grading & Drainage</u>

1) On Sheet C-1.1, note #8 states that "*All new storm pipes shall be PVC SDR 35 unless otherwise noted.*" On Sheet C-3.0, the profile labels all of the new stormwater pipes as being "*new 15" HDPE*". In addition, On Sheet CD-1, General Construction Note #20 states "*All sewer and storm pipes shall be PVC SDR 35 unless otherwise noted.*" The plans should be revised to resolve this conflicting information and specify the size and material for new stormwater piping.

2) On Sheet CD-6, the Storm Trench Detail should be revised to depict the pipe bedding material extending 6" above the top of the pipe, per the LDC requirements.

3) On Sheet CD-6, the Storm Trench Detail should be revised to require compaction to be 95% of the maximum dry density using the standard proctor test, regardless of paved or unpaved installations.

4) On Sheet CD-7, the Stormwater Disconnection Detail presents a note stating "*Stone diaphragm for parking lot runoff. See detail.*" The plans should be revised to include a detail for a stone diaphragm.

5) On Sheet CD-5, the Gravel Wetlands Outlet Structure Detail shows a 1" horizontal orifice at elevation 370.67, a 1" vertical orifice at elevation 371.90, and a 12" x 6" opening at elevation 373.30. The HydroCAD modeling shows a 1.6" vertical orifice at elevation 370.67, a 1.2" vertical orifice at elevation 371.90, and a 24" x 6" opening at elevation 373.30. Either the plans or the modeling should be revised to resolve the conflicting information, as appropriate.

6) In the HydroCAD modeling, based on the outlet structure configuration shown on the plans, it appears that the opening at elevation 373.30 should be routed to the culvert outlet, not as a primary outlet. We wanted to bring this to the applicant's attention for their consideration.

<u>Water</u>

1) On Sheet C-1.2, the location of the new curb stop for new Lot 6A should be relocated to be approximately one foot inside the City right-of-way.

2) The two new water services at approximately station 3+45 for New Lot 8A are within 10 feet of New SMh B. The plans should be revised to provide a minimum of 10' of horizontal clearance between these utilities.

3) The existing curb stops for the existing houses where the cul-de-sac is being removed will be located outside of the City right-of-way once the cul-de-sac is removed and the area absorbed into the adjacent lots. The plans should be revised to provide new curb stops located inside the new City right-of-way (preferred) or to provide an easement to the City for access to the existing curb stops.

4) The new hydrant at approximately station 3+45 LT conflicts with a proposed tree. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed waterlines and water services and existing/proposed trees.

5) On Sheet CD-4, the Water Service Detail has a label stating "*3/4" min. water service type k copper or CTS polyethylene.*" This detail should be revised to remove the reference to CTS polyethylene. All water services 2" and smaller shall be Type K copper per the LDC requirements.

6) On Sheet CD-4, the Typical Hydrant Detail should be revised to require a 5" Storz connection, not 4" as currently shown.

7) On Sheet CD-4, the Typical Hydrant Detail should be revised to refer to the LDC requirements instead of the CWD specifications as currently shown.

8) On Sheet CD-4, the Typical Hydrant Detail should be revised to add a requirement for a "mud plug" for the valve box.

<u>Sanitary Sewer</u>

1) The proposed trees located at approximately stations 1+90 RT and 2+60 RT are too close to the new sewer. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed sewer mains and sewer services and existing/proposed trees.

2) On Sheet CD-6, the Sanitary Trench Detail should be revised to require 5' minimum cover, per the LDC requirements, not 4' as currently shown.

<u>Erosion Prevention and Sediment Control</u>

1) The plans should be revised to depict the location of Construction Limit Barrier tape at the limits of disturbance. Silt fence shall not be used to demarcate the limits of disturbance.

2) Sheet C-6.1 depicts areas that are to be seeded with VT Native Wildflower and Grass Seed Mix. This plan should be revised to require areas within the City right-of-way and easement areas to the City to be planted with Urban mix. This excludes the areas within the proposed gravel wetland, which should be seeded as currently shown on the plans.

3) The plans should be revised to include a note requiring the contractor to remove any erosion control blanket/matting installed in the City right-of-way or within City easement areas upon vegetation establishment.

4) The plans should be revised to require copies of any and all erosion inspection reports to be submitted to the City of Essex Junction Water Quality Superintendent.

5) On Sheet C-4.0, Erosion Prevention and Sediment Control Note #6 specifies S150BN erosion control matting. On Sheet CD-8, the Erosion Control Blanket detail specifies S75BN erosion control matting. The plans should be revised to resolve this conflicting information.

Lighting

1) The new light fixture depicted at approximately station 3+40 RT conflicts with two proposed water services and also the new stormwater pipe between New CB A3 and New CB A5. The plans should be revised to resolve these utility conflicts.

2) The plans/application materials should be revised to specify the correlated color temperature of the proposed light fixtures, as well as the proposed mounting heights.

3) The Lighting Plan should be revised to present a numerical grid of lighting levels for the roadway and sidewalk areas, per the LDC requirements.

Traffic

1) On Sheet CD-8, Flaggers and Uniformed Traffic Officers note #2 should be revised to require the contractor to provide the City of Essex Junction with copies of the flagger certifications, not the State of Vermont as currently written.

We have no further comments at this time. Please feel free to contact me if you have any questions or if we may be of further service.

Respectfully,

Jeffrey P. Kershner

Jeffrey P. Kershner, P.E.
President

Cc: Rick Jones
Chelsea Mandigo
Jim Kellogg

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March 21, 2025

Chris Yuen
Community Development Director
City of Essex Junction
2 Lincoln Street
Essex Junction, VT 05452

Re: Center for Technology Essex (CTE) Subdivision – Final Plat and Road Connection Application Response to Comments

Dear Chris,

Below are detailed responses to each request from City Staff and the City's Engineer. Please let us know if there is anything more you need.

Staff Comments:

General

- *All references to the "Village of Essex Junction" should be replaced with "City of Essex Junction" unless specifically referring to a resolution made by the Village prior to 2022. For example, the 2015 resolution by the Planning Commission for the original subdivision can remain referencing the Village.*

We have replaced all references to "Village of Essex Junction" to "City of Essex Junction" on the plans and supporting documents.

Application Materials

- *The area of land to be donated/adjusted should be listed on the Boundary Line Adjustment application form, replacing "See Attached Project description".*
    - *This includes the land to be transferred from Essex Community Educational Center as well as the land to be donated to Lots 2A and 3A.*
    - *This can be listed in square feet, acres, or both.*

The noted areas have been added to the application form.

Boundary Line Adjustment and Subdivision Plat

- *Clerk's recording block*
    - *The title should be updated to address "City Clerk's Office"*
    - *The location "Town of Essex, VT" should be replaced with "City of Essex Junction, VT"*
    - *"Town Clerk" should be replaced with "City Clerk"*

The recording block adjustments have been made to the Plat.

- *Approval block*
    - *Reference to "Development Director" should read "Community Development Director"*

This reference has been corrected on the Plat.

Dimensions

- *The frontage and area of each parcel should be displayed on the boundary line adjustment and site plans.*

The frontage and areas have been added to both the boundary line adjustment plan and site plans.

Engineering

- *See attached letter for the City Engineer's comments.*

See response to Engineering comments below.

Water

- *Phosphorus loading and removal calculations for the project site should be provided to the City for review.*

We have attached "Stormwater Treatment Calculator" results for phosphorus removal.

- *An easement draft should be submitted to the City for review. A template to be used as a starting point has been included with this letter.*

We have attached a draft easement using the provided template.

Sewer

- *The property owner at 5 Meadow Terrace is currently tied into the sewer system at 3 Meadow Terrace. Given that this subdivision will be installing new utility lines, City staff would ask the applicant's willingness to include a capped "T" or "Y" connection off of the planned sewer line in front of 5 Meadow Terrace, allowing for future independent connection by the property owner.*

The Owner is willing to install the future service for 5 Meadow Terrace. This line has been added to Sheet C1.1.

Street

- *City staff propose that the new road connection be named "Meadow Terrace" as demonstrated in Appendix A.*
    - *This will meet State E911 standards, avoid having intersecting streets named "Taft Street", minimize impacts to existing homeowners, and maintain consistency with the existing length of Meadow Terrace.*

The revised road name has been added to the plans.

- *Any deeds or other legal agreements dedicating the former cul-de-sac rights-of-way to lots 2A and 3A should be submitted to the City for review.*

Draft deeds have been attached for review.

Engineer Comments:

General

1. *We recommend a condition of approval of this project requiring the submission of record drawings for site utilities to the City of Essex Junction upon completion of construction, in both AutoCAD and PDF format. The City would also like to request this information be provided in shapefile format in Vermont State Plane US Survey Feet, NAD83(2011).*

This condition is acceptable. Specifications for the construction Contractor are included on Sheet CD-2 for them to generate this throughout construction.

2. *The Boundary Line Adjustment and Subdivision Plat should be revised to include an easement area(s) wherever a 20' wide easement centered along the existing waterline falls outside of the new City right-of-way.*

The areas where a 20' easement centered on the existing water line are minimal but have been added to the plan.

3. *On Sheet C-1.1, a note should be added requiring an authorized representative of the City of Essex Junction to inspect all pipelines (water, sewer, and storm drainage) prior to backfill. This note should require a minimum of 48 hours advance notification of the need for inspection.*

This has been added as Note #14.

4. *On Sheets CD-1, CD-3, CD-4, and CD-5, there is a note stating "All sewer, water, and storm drainage utilities installed on the project SIDE **[emphasis added]** to be observed by an authorized representative of the City of Essex Junction prior to backfilling the utility being installed." This note should be revised to state "…on the project site…".*

This typographical error has been corrected.

5. *At all utility crossings, a minimum of 18" of vertical separation should be provided. Based on our computations, it appears that there will be less than 18" of vertical separation at the sewer/storm crossings at approximately station 1+12 RT, at approximately station 3+25 RT, and at approximately station 5+95.*

We are unaware of a local or State regulatory requirement for 18" of vertical separation between sanitary sewer and storm pipes. This can be especially difficult to achieve when the systems have "fixed" connection points such as an existing sewer manhole and/or outlet pipe elevation. To address this concern, we have instead called out for rigid insulation to be installed at all sewer/storm crossings where the vertical separation is less than 18". A detail has been provided on Sheet CD-5.

Site Layout – Roadways, Drives, Parking, and Walkways

1. *Between approximately station 0+60 and 1+10 RT, the new curbing 'bumps out' from the extension of the existing curb line along Meadow Terrace. This new curb should be revised to provide a smooth transition along the curb line from Meadow Terrace to the new roadway curvature.*

We have revised the curb to provide a smooth transition from the existing Meadow Terrace alignment to the new road.

2. *The project is constructing a new 5 foot wide cement concrete sidewalk along the new roadway, starting at approximately station 0+70 and terminating at the existing sidewalk at approximate station 8+10. This leaves a gap along Meadow Terrace between Upland Road and the start of the new roadway with no sidewalk. The project should be required to construct the approximately 90 l.f. of new sidewalk to make this connection between Upland Road and the new roadway.*

The plans have been revised to show the additional sidewalk aligning with the sidewalk on Upland Road.

3. *On Sheet C-1.2, the new sidewalk jogs at approximately station 8+10 to avoid an existing light pole where it ties into the existing sidewalk. In doing so, the new sidewalk extends partially outside of the City right-of-way. The plans should be revised such that the new sidewalk remains entirely inside the City right-of-way.*

We have adjusted the jog in the sidewalk to allow the sidewalk to remain completely within the right of way.

4. *The plans should be revised to provide a longitudinal transition detail from the existing Meadow Terrace roadway cross section to the new roadway cross section. This is an important detail to help minimize differential movement between the insulated/non-insulated roadway cross sections.*

We have added the transition detail to Sheet CD-2 of the plan set.

5. *The revised access drive serving the existing CTE buildings is shown with a fairly steep grade leading to/from the new roadway. The plans should be revised to provide a maximum 3% grade for the first 20 feet from the new roadway.*

The plans have been revised to show the first 20' driveway with a maximum of 3% grade.

6. *On Sheet CD-2, the Typical "Local Residential Street" Cross Section detail sidewalk cross section does not meet the LDC requirements. This detail should be revised to reflect the requirements shown on Page D-4 of the LDC.*

The sidewalk cross section has been revised to match the details from Page D-4 of the LDC.

7. *On Sheet CD-3, the Cross Section details for the "New Thickened Concrete Walk Detail" and the "New Concrete Walk Detail" do not meet the LDC requirements. These details should be revised to reflect the requirements shown on Page D-4 of the LDC.*

These details have been removed and replaced with the details shown in the LDC.

8. *On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "Match existing pavement thickness (7" max)". This note should be revised to state "Match existing pavement thickness (3-1/2" minimum)".*

This note has been revised as requested.

9. *On Sheet CD-3, the notes for the Replacement of Existing Road Subbase and Bituminous Pavement detail appear to apply to the repair of potholes. The applicant should provide clarification and make revisions as needed.*

The notes have been clarified to indicate they apply to trench cuts in existing pavement.

10. *On Sheet CD-3, note #6 of the Replacement of Existing Road Subbase and Bituminous Pavement detail should be revised to state "Fill top of hole with Type IV bituminous concrete and compact in lifts no more than 2"thick.", not 2' thick as currently written.*

This typographical error has been corrected.

11. *On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "If concrete road base is present, it must be replaced with 3,500 psi concrete to match existing conditions. Dowel existing concrete and new concrete with #4 rebar 18" o.c. embed rebar in existing and new concrete 9" deep." This note should be revised to state "If concrete road base is present, it must be completely removed within the limits of the excavation and replaced with new compacted gravel subbase."*

This note has been revised as requested.

12. *On Sheet CD-3, the Curb Taper – 6' or 3' detail does not meet the LDC requirements. Depending on the curb height, the taper will need to be longer than 6' or 3' in order to comply with accessibility requirements.*

This detail has been removed and replaced with the details shown in the LDC.

Grading & Drainage

1. *On Sheet C-1.1, note #8 states that "All new storm pipes shall be PVC SDR 35 unless otherwise noted." On Sheet C-3.0, the profile labels all of the new stormwater pipes as being "new 15" HDPE". In addition, On Sheet CD-1, General Construction Note #20 states "All sewer and storm pipes shall be PVC SDR 35 unless otherwise noted." The plans should be revised to resolve this conflicting information and specify the size and material for new stormwater piping.*

These notes have been clarified to indicate that PVC SDR 35 shall be used for sanitary pipes and that HDPE may be used for stormwater pipes.

2. *On Sheet CD-6, the Storm Trench Detail should be revised to depict the pipe bedding material extending 6" above the top of the pipe, per the LDC requirements.*

The detail has been revised per the request.

3. *On Sheet CD-6, the Storm Trench Detail should be revised to require compaction to be 95% of the maximum dry density using the standard proctor test, regardless of paved or unpaved installations.*

The detail has been revised per the request.

4. *On Sheet CD-7, the Stormwater Disconnection Detail presents a note stating "Stone diaphragm for parking lot runoff. See detail." The plans should be revised to include a detail for a stone diaphragm.*

The reference to the stone diaphragm has been removed. There are no instances of disconnections from parking lots on the project, only rooftops.

5. *On Sheet CD-5, the Gravel Wetlands Outlet Structure Detail shows a 1" horizontal orifice at elevation 370.67, a 1" vertical orifice at elevation 371.90, and a 12" x 6" opening at elevation 373.30. The HydroCAD modeling shows a 1.6" vertical orifice at elevation 370.67, a 1.2" vertical orifice at elevation 371.90, and a 24" x 6" opening at elevation 373.30. Either the plans or the modeling should be revised to resolve the conflicting information, as appropriate.*

The modeling is correct. We have modified the details on CD-5 to be consistent with the modeling.

6. *In the HydroCAD modeling, based on the outlet structure configuration shown on the plans, it appears that the opening at elevation 373.30 should be routed to the culvert outlet, not as a primary outlet. We wanted to bring this to the applicant's attention for their consideration.*

The modeling has been corrected to reflect the opening at 373.3 being routed through the culvert. This did not change the modeling results.

Water

1. *On Sheet C-1.2, the location of the new curb stop for new Lot 6A should be relocated to be approximately one foot inside the City right-of-way.*

The curb stop location has been adjusted as requested.

2. *The two new water services at approximately station 3+45 for New Lot 8A are within 10 feet of New SMh B. The plans should be revised to provide a minimum of 10' of horizontal clearance between these utilities.*

The water service locations have been adjusted to provide 10' of separation to SMh B.

3. *The existing curb stops for the existing houses where the cul-de-sac is being removed will be located outside of the City right-of-way once the cul-de-sac is removed and the area absorbed into the adjacent lots. The plans should be revised to provide new curb stops located inside the new City right-of-way (preferred) or to provide an easement to the City for access to the existing curb stops.*

The plans have been revised to show easements to the City for access to the existing curb stops.

4. *The new hydrant at approximately station 3+45 LT conflicts with a proposed tree. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed waterlines and water services and existing/proposed trees.*

The plans have been revised to ensure 10' of horizontal clearance between water infrastructure and street trees.

5. *On Sheet CD-4, the Water Service Detail has a label stating "3/4" min. water service type k copper or CTS polyethylene." This detail should be revised to remove the reference to CTS polyethylene. All water services 2" and smaller shall be Type K copper per the LDC requirements.*

The reference to CTS polyethylene has been removed. All waters services smaller than 2" will be type K copper.

6. *On Sheet CD-4, the Typical Hydrant Detail should be revised to require a 5" Storz connection, not 4" as currently shown.*

The detail has been modified as requested.

7. *On Sheet CD-4, the Typical Hydrant Detail should be revised to refer to the LDC requirements instead of the CWD specifications as currently shown.*

The detail has been modified as requested.

8. *On Sheet CD-4, the Typical Hydrant Detail should be revised to add a requirement for a "mud plug" for the valve box.*

The requirement for a "mud plug" has been added to the detail.

Sanitary Sewer

1. *The proposed trees located at approximately stations 1+90 RT and 2+60 RT are too close to the new sewer. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed sewer mains and sewer services and existing/proposed trees.*

The plans have been revised to show the trees a minimum of 10' away from sewer infrastructure.

2. *On Sheet CD-6, the Sanitary Trench Detail should be revised to require 5' minimum cover, per the LDC requirements, not 4' as currently shown.*

The detail has been modified as requested.

Erosion Prevention and Sediment Control

1. *The plans should be revised to depict the location of Construction Limit Barrier tape at the limits of disturbance. Silt fence shall not be used to demarcate the limits of disturbance.*

The plans have been revised to show barrier tape along the limits of disturbance.

2. *Sheet C-6.1 depicts areas that are to be seeded with VT Native Wildflower and Grass Seed Mix. This plan should be revised to require areas within the City right-of-way and easement areas to the City to be planted with Urban mix. This excludes the areas within the proposed gravel wetland, which should be seeded as currently shown on the plans.*

The seed specifications have been revised per this comment.

3. *The plans should be revised to include a note requiring the contractor to remove any erosion control blanket/matting installed in the City right-of-way or within City easement areas upon vegetation establishment.*

The EPSC plan (C-4.0) has added note #19 regarding removal of erosion control blanket/matting.

4. *The plans should be revised to require copies of any and all erosion inspection reports to be submitted to the City of Essex Junction Water Quality Superintendent.*

The EPSC plan (C-4.0) has added note #18 regarding submittal of erosion inspection reports as requested.

5. *On Sheet C-4.0, Erosion Prevention and Sediment Control Note #6 specifies S150BN erosion control matting. On Sheet CD-8, the Erosion Control Blanket detail specifies S75BN erosion control matting. The plans should be revised to resolve this conflicting information.*

This discrepancy has been resolved to consistently specify S75BN.

Lighting

1. *The new light fixture depicted at approximately station 3+40 RT conflicts with two proposed water services and also the new stormwater pipe between New CB A3 and New CB A5. The plans should be revised to resolve these utility conflicts.*

The plans have been revised to remove the conflict between utilities and the light fixtures.

2. *The plans/application materials should be revised to specify the correlated color temperature of the proposed light fixtures, as well as the proposed mounting heights.*

A more detailed Lighting Plan has been prepared with the required details in regard to correlated color temperature and mounting heights.

3. *The Lighting Plan should be revised to present a numerical grid of lighting levels for the roadway and sidewalk areas, per the LDC requirements.*

The new Lighting Plan includes a grid of lighting levels.

Traffic

1. *On Sheet CD-8, Flaggers and Uniformed Traffic Officers note #2 should be revised to require the contractor to provide the City of Essex Junction with copies of the flagger certifications, not the State of Vermont as currently written.*

This note has been revised as requested.

Please let us know if there is anything more you need to evaluate this project. Thank you for your assistance.

Best regards,

Scott Homsted, P.E.

Enclosures
22351 CTE Taft Street Extension\Final Plan and BLA Applications\Comments\Response to Comments

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April 3, 2025

Scott Homsted, P.E.
Krebs & Lansing Consulting Engineers, Inc.
164 Main Street
Colchester, VT 05446

Re: Center for Technology Essex (CTE) Subdivision
Final Plat and Road Connection Application

Dear Scott,

After reviewing the revised plans for the CTE subdivision and Taft Street road connection, City staff offer the following comments:

General

- The approval block for the Boundary Line Adjustment & Subdivision Plan should read "Development Review Board" rather than "Planning Commission".
- Sheet C-1.1 includes the comment "Extend new sidewalk to MATCH (emphasis added) existing sidewalk on Upland road". The word "match" should be changed to "align" to clarify that the proposed new sidewalk will not match the non-conforming width of Upland Road's sidewalk.

Engineering

- See attached letter for the City Engineer's comments.

Please let me know if you have any questions.

Sincerely,

Michael Giguere
City Planner

CC: Chris Yuen, Community Development Director
Terry Hass, Assistant Zoning Administrator
Chris Welch, Essex-Westford School District
Bob Travers, Essex-Westford School District

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April 3, 2025

Mr. Michael Giguere
City of Essex Junction
2 Lincoln Street
Essex Junction, Vermont 05452

Re: CTE Essex – Taft Street
Final Submittal #1.1

Dear Mr. Giguere:

We have reviewed the second submittal of plans and supporting information that we received electronically for the above referenced project. The plans reviewed as part of this submittal are presented below:

CTE Essex – Taft Street – Final Submittal #1.1			
Sheet #	Sheet Name	Dated	Last Revised
Prepared By: Krebs & Lansing Consulting Engineers			
C-1	Overall Site Plan Phase 3	10/29/2024	03/21/25
C-1.1	Site Plan Phase 3	01/10/2025	03/21/25
C-1.2	Site Plan Phase 3	01/10/2025	03/21/25
C-2.0	Existing Conditions Plan	10/29/2024	03/21/25
C-3.0	Roadway and Utility Profile	01/10/2025	03/21/25
C-4.0	Erosion and Sediment Control Plan	01/30/2025	03/21/25
C-5.0	Landscape & Lighting Plan	01/30/2025	03/21/25
C-6.0	Watershed Plan	01/30/2025	03/21/25
C-6.1	Post Construction Soil Depth & Quality Plan	01/30/2025	03/21/25
C-6.2	Stormwater Maintenance Plan	01/30/2025	03/21/25
CD-1	Civil Details	01/23/2025	03/21/25
CD-2	Civil Details	01/23/2025	03/21/25
CD-3	Civil Details	01/23/2025	03/21/25
CD-4	Civil Details	01/23/2025	03/21/25
CD-5	Civil Details	01/23/2025	03/21/25
CD-6	Civil Details	01/23/2025	03/21/25
CD-7	Civil Details	01/23/2025	03/21/25
CD-8	Civil Details	01/23/2025	03/21/25
---	Boundary Line Adjustment & Subdivision Plat	02/26/2025	03/21/2025

For our review, we utilized the edition of the City of Essex Junction Land Development Code, dated June 14, 2023, hereinafter referred to as the "LDC". For convenience, we have presented the previous review comments from our March 11, 2025 comment letter with the original number and text in plain text, followed by action taken by the applicant or further comments regarding the items from the previous letter in bold text. At the end of this letter are Additional Comments based on the review of the revised plans. The comments in this letter represent a compilation of comments from our office and the City of Essex Junction Public Works Department.

General

1) We recommend a condition of approval of this project requiring the submission of record drawings for site utilities to the City of Essex Junction upon completion of construction, in both AutoCAD and PDF format. The City would also like to request this information be provided in shapefile format in Vermont State Plane US Survey Feet, NAD83(2011).

   ✓ **This comment has been addressed.**

2) The Boundary Line Adjustment and Subdivision Plat should be revised to include an easement area(s) wherever a 20' wide easement centered along the existing waterline falls outside of the new City right-of-way.

   ✓ **This comment has been addressed.**

3) On Sheet C-1.1, a note should be added requiring an authorized representative of the City of Essex Junction to inspect all pipelines (water, sewer, and storm drainage) prior to backfill. This note should require a minimum of 48 hours advance notification of the need for inspection.

   ✓ **This comment has been addressed.**

4) On Sheets CD-1, CD-3, CD-4, and CD-5, there is a note stating "All sewer, water, and storm drainage utilities installed on the project SIDE **[emphasis added]** to be observed by an authorized representative of the City of Essex Junction prior to backfilling the utility being installed." This note should be revised to state "…on the project site…".

   ✓ **This comment has been addressed.**

5) At all utility crossings, a minimum of 18" of vertical separation should be provided. Based on our computations, it appears that there will be less than 18" of vertical separation at the sewer/storm crossings at approximately station 1+12 RT, at approximately station 3+25 RT, and at approximately station 5+95.

   ➢ **The applicant has noted that they are "*unaware of a local or State regulatory requirement for 18" of vertical separation between sanitary sewer and storm pipes.*" We agree that there is no local or State regulatory requirement for this; the minimum 18" of vertical separation requested is a standard which we look to achieve for new infrastructure in the City. We understand that conditions may prohibit obtaining a minimum of 18" of vertical separation between sanitary sewer and storm pipes, and upon review may be accepted by the City. The applicant has revised the plans to require 2" thick rigid insulation to be installed at these crossing where there is less than 18" of vertical separation, which we support.**

   In reviewing the plans for this project, there are three instances of sanitary sewer and storm pipe crossings. Please see below for further comment on each of these crossings:

   - **± Station 1+10 RT: There appears to be approximately 0.08' of clearance between the top of the sewer and outside bottom of the storm pipe. We note that this clearance is less than two inches and will prohibit the installation of the 2" thick rigid insulation proposed by the applicant.**
   - **± Station 3+25 RT: There appears to be approximately 0.58' of clearance between the bottom of the sewer and outside top of the storm pipe. We find this acceptable with the installation of the 2" thick rigid insulation proposed by the applicant.**

- **± Station 5+95: There appears to be a direct conflict between these two pipes at this crossing, with the sanitary sewer passing through the storm pipe. The plans should be revised to resolve this conflict and provide appropriate vertical separation at this crossing.**

Site Layout – Roadways, Drives, Parking, and Walkways

1) Between approximately station 0+60 and 1+10 RT, the new curbing 'bumps out' from the extension of the existing curb line along Meadow Terrace. This new curb should be revised to provide a smooth transition along the curb line from Meadow Terrace to the new roadway curvature.

   ➢ **The plans have been revised in response to this comment to add a tangent with a radius along the new curb in this location. We recommend a larger radius be utilized in this location to further smooth this transition along the curb line.**

2) The project is constructing a new 5 foot wide cement concrete sidewalk along the new roadway, starting at approximately station 0+70 and terminating at the existing sidewalk at approximate station 8+10. This leaves a gap along Meadow Terrace between Upland Road and the start of the new roadway with no sidewalk. The project should be required to construct the approximately 90 l.f. of new sidewalk to make this connection between Upland Road and the new roadway.

   ➢ **The plans have been revised in response to this comment. The plans should be further revised to provide an accessible curb ramp at the intersection of this new sidewalk with Meadow Terrace (across from Upland Road).**

3) On Sheet C-1.2, the new sidewalk jogs at approximately station 8+10 to avoid an existing light pole where it ties into the existing sidewalk. In doing so, the new sidewalk extends partially outside of the City right-of-way. The plans should be revised such that the new sidewalk remains entirely inside the City right-of-way.

   ✓ **This comment has been addressed.**

4) The plans should be revised to provide a longitudinal transition detail from the existing Meadow Terrace roadway cross section to the new roadway cross section. This is an important detail to help minimize differential movement between the insulated/non-insulated roadway cross sections.

   ✓ **This comment has been addressed.**

5) The revised access drive serving the existing CTE buildings is shown with a fairly steep grade leading to/from the new roadway. The plans should be revised to provide a maximum 3% grade for the first 20 feet from the new roadway.

   ✓ **This comment has been addressed.**

6) On Sheet CD-2, the Typical "Local Residential Street" Cross Section detail sidewalk cross section does not meet the LDC requirements. This detail should be revised to reflect the requirements shown on Page D-4 of the LDC.

   ✓ **This comment has been addressed.**

7) On Sheet CD-3, the Cross Section details for the "New Thickened Concrete Walk Detail" and the "New Concrete Walk Detail" do not meet the LDC requirements. These details should be revised to reflect the requirements shown on Page D-4 of the LDC.

   ✓ **This comment has been addressed.**

8) On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "Match existing pavement thickness (7" max)". This note should be revised to state "Match existing pavement thickness (3-1/2" minimum)".

   ✓ **This comment has been addressed.**

9) On Sheet CD-3, the notes for the Replacement of Existing Road Subbase and Bituminous Pavement detail appear to apply to the repair of potholes. The applicant should provide clarification and make revisions as needed.

   ✓ **This comment has been addressed.**

10) On Sheet CD-3, note #6 of the Replacement of Existing Road Subbase and Bituminous Pavement detail should be revised to state "Fill top of hole with Type IV bituminous concrete and compact in lifts no more than 2" thick.", not 2' thick as currently written.

   ✓ **This comment has been addressed.**

11) On Sheet CD-3, the Replacement of Existing Road Subbase and Bituminous Pavement detail includes a note stating "If concrete road base is present, it must be replaced with 3,500 psi concrete to match existing conditions. Dowel existing concrete and new concrete with #4 rebar 18" o.c. embed rebar in existing and new concrete 9" deep." This note should be revised to state "If concrete road base is present, it must be completely removed within the limits of the excavation and replaced with new compacted gravel subbase."

   ✓ **This comment has been addressed.**

12) On Sheet CD-3, the Curb Taper – 6' or 3' detail does not meet the LDC requirements. Depending on the curb height, the taper will need to be longer than 6' or 3' in order to comply with accessibility requirements.

   ✓ **This comment has been addressed.**

<u>Grading & Drainage</u>

1) On Sheet C-1.1, note #8 states that "All new storm pipes shall be PVC SDR 35 unless otherwise noted." On Sheet C-3.0, the profile labels all of the new stormwater pipes as being "new 15" HDPE". In addition, On Sheet CD-1, General Construction Note #20 states "All sewer and storm pipes shall be PVC SDR 35 unless otherwise noted." The plans should be revised to resolve this conflicting information and specify the size and material for new stormwater piping.

   ✓ **This comment has been addressed.**

2) On Sheet CD-6, the Storm Trench Detail should be revised to depict the pipe bedding material extending 6" above the top of the pipe, per the LDC requirements.

   ✓ **This comment has been addressed.**

3) On Sheet CD-6, the Storm Trench Detail should be revised to require compaction to be 95% of the maximum dry density using the standard proctor test, regardless of paved or unpaved installations.

   ✓ **This comment has been addressed.**

4) On Sheet CD-7, the Stormwater Disconnection Detail presents a note stating "Stone diaphragm for parking lot runoff. See detail." The plans should be revised to include a detail for a stone diaphragm.

   ✓ **This comment has been addressed.**

5) On Sheet CD-5, the Gravel Wetlands Outlet Structure Detail shows a 1" horizontal orifice at elevation 370.67, a 1" vertical orifice at elevation 371.90, and a 12" x 6" opening at elevation 373.30. The HydroCAD modeling shows a 1.6" vertical orifice at elevation 370.67, a 1.2" vertical orifice at elevation 371.90, and a 24" x 6" opening at elevation 373.30. Either the plans or the modeling should be revised to resolve the conflicting information, as appropriate.

   ✓ **This comment has been addressed.**

6) In the HydroCAD modeling, based on the outlet structure configuration shown on the plans, it appears that the opening at elevation 373.30 should be routed to the culvert outlet, not as a primary outlet. We wanted to bring this to the applicant's attention for their consideration.

   ✓ **This comment has been addressed.**

Water

1) On Sheet C-1.2, the location of the new curb stop for new Lot 6A should be relocated to be approximately one foot inside the City right-of-way.

   ✓ **This comment has been addressed.**

2) The two new water services at approximately station 3+45 for New Lot 8A are within 10 feet of New SMh B. The plans should be revised to provide a minimum of 10' of horizontal clearance between these utilities.

   ✓ **This comment has been addressed.**

3) The existing curb stops for the existing houses where the cul-de-sac is being removed will be located outside of the City right-of-way once the cul-de-sac is removed and the area absorbed into the adjacent lots. The plans should be revised to provide new curb stops located inside the new City right-of-way (preferred) or to provide an easement to the City for access to the existing curb stops.

   ✓ **This comment has been addressed.**

4) The new hydrant at approximately station 3+45 LT conflicts with a proposed tree. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed waterlines and water services and existing/proposed trees.

   ✓ **This comment has been addressed.**

5) On Sheet CD-4, the Water Service Detail has a label stating "*3/4" min. water service type k copper or CTS polyethylene.*" This detail should be revised to remove the reference to CTS polyethylene. All water services 2" and smaller shall be Type K copper per the LDC requirements.

   ✓ **This comment has been addressed.**

6) On Sheet CD-4, the Typical Hydrant Detail should be revised to require a 5" Storz connection, not 4" as currently shown.

   ✓ **This comment has been addressed.**

7) On Sheet CD-4, the Typical Hydrant Detail should be revised to refer to the LDC requirements instead of the CWD specifications as currently shown.

   ✓ **This comment has been addressed.**

8) On Sheet CD-4, the Typical Hydrant Detail should be revised to add a requirement for a "mud plug" for the valve box.

   ✓ **This comment has been addressed.**

Sanitary Sewer

1) The proposed trees located at approximately stations 1+90 RT and 2+60 RT are too close to the new sewer. The plans should be revised to provide a minimum of 10' of horizontal clearance between existing/proposed sewer mains and sewer services and existing/proposed trees.

   ✓ **This comment has been addressed.**

2) On Sheet CD-6, the Sanitary Trench Detail should be revised to require 5' minimum cover, per the LDC requirements, not 4' as currently shown.

   ✓ **This comment has been addressed.**

Erosion Prevention and Sediment Control

1) The plans should be revised to depict the location of Construction Limit Barrier tape at the limits of disturbance. Silt fence shall not be used to demarcate the limits of disturbance.

   ✓ **This comment has been addressed.**

2) Sheet C-6.1 depicts areas that are to be seeded with VT Native Wildflower and Grass Seed Mix. This plan should be revised to require areas within the City right-of-way and easement areas to the City to be planted with Urban mix. This excludes the areas within the proposed gravel wetland, which should be seeded as currently shown on the plans.

   ✓ **This comment has been addressed.**

3) The plans should be revised to include a note requiring the contractor to remove any erosion control blanket/matting installed in the City right-of-way or within City easement areas upon vegetation establishment.

   ✓ **This comment has been addressed.**

4) The plans should be revised to require copies of any and all erosion inspection reports to be submitted to the City of Essex Junction Water Quality Superintendent.

   ✓ **This comment has been addressed.**

5) On Sheet C-4.0, Erosion Prevention and Sediment Control Note #6 specifies S150BN erosion control matting. On Sheet CD-8, the Erosion Control Blanket detail specifies S75BN erosion control matting. The plans should be revised to resolve this conflicting information.

   ✓ **This comment has been addressed.**

Lighting

1) The new light fixture depicted at approximately station 3+40 RT conflicts with two proposed water services and also the new stormwater pipe between New CB A3 and New CB A5. The plans should be revised to resolve these utility conflicts.

- **The plans have been revised in response to this comment. However, this new light fixture is now too close to the new sanitary sewer pipe between SMh B and SMh A. The plans should be revised to provide a minimum of five feet of clearance (10 feet preferred) between this proposed light fixture and the new sanitary sewer pipe.**

2) The plans/application materials should be revised to specify the correlated color temperature of the proposed light fixtures, as well as the proposed mounting heights.

   ✓ **This comment has been addressed.**

3) The Lighting Plan should be revised to present a numerical grid of lighting levels for the roadway and sidewalk areas, per the LDC requirements.

   - **The plans have been revised in response to this comment. Please see the Additional Comments at the end of this letter for additional comments pertaining to the revised Lighting Plan information.**

Traffic

1) On Sheet CD-8, Flaggers and Uniformed Traffic Officers note #2 should be revised to require the contractor to provide the City of Essex Junction with copies of the flagger certifications, not the State of Vermont as currently written.

   ✓ **This comment has been addressed.**

Additional Comments

1) There are several areas in the roadway with illumination values less than 0.2 footcandles. The Lighting Plan information should be revised to provide a minimum of 0.2 footcandles for the roadway.

2) The Lighting Plan information should be revised to present a numerical grid of lighting levels for the new sidewalk. Please note that a minimum of 0.2 footcandles should be provided along the new sidewalk.

We have no further comments at this time. Please feel free to contact me if you have any questions or if we may be of further service.

Respectfully,

Jeffrey P. Kershner

Jeffrey P. Kershner, P.E.
President

Cc: Rick Jones
Chelsea Mandigo
Jim Kellogg
Chris Yuen

LOT AREA AND FRONTAGE TABLE

(AFTER BOUNDARY LINE ADJUSTMENT)

LOT#	AREA (AC)	FRONTAGE (FT)
2A	0.43	84.48
3A	0.39	135.23
4A	0.347	106.21
6A	0.35	125.69
7A	2.89	256.66
8A	2.69	582.97

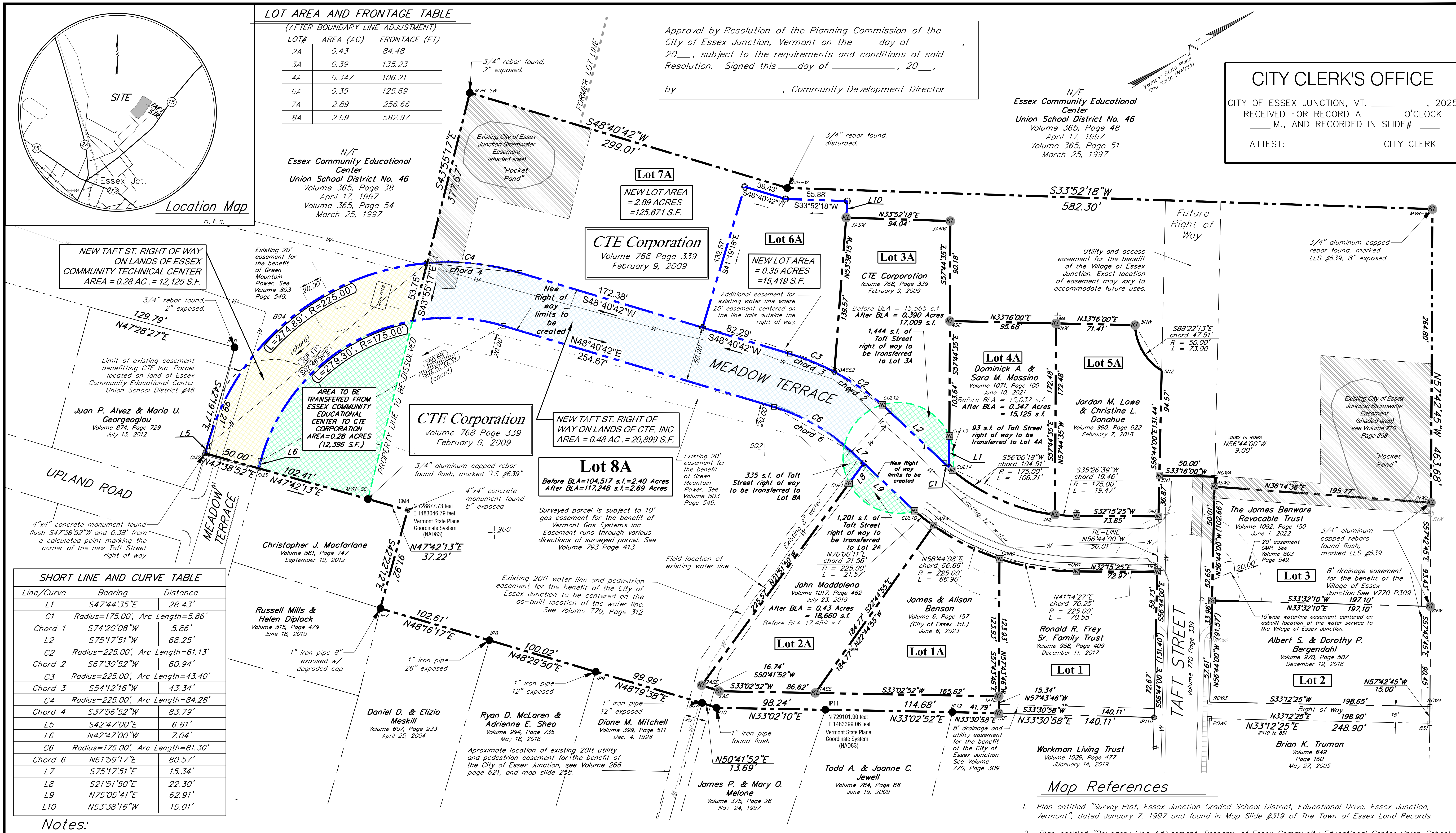
Approval by Resolution of the Planning Commission of the City of Essex Junction, Vermont on the ____day of __________, 20__, subject to the requirements and conditions of said Resolution. Signed this ____day of ____________, 20___,

by ________________, Community Development Director

CITY CLERK'S OFFICE

CITY OF ESSEX JUNCTION, VT. __________, 2025
RECEIVED FOR RECORD AT ____ O'CLOCK ____ M., AND RECORDED IN SLIDE# ____

ATTEST: ________________ CITY CLERK



SHORT LINE AND CURVE TABLE

Line/Curve	Bearing	Distance
L1	S47°44'35"E	28.43'
C1	Radius=175.00', Arc Length=5.86'	
Chord 1	S74°20'08"W	5.86'
L2	S75°17'51"W	68.25'
C2	Radius=225.00', Arc Length=61.13'	
Chord 2	S67°30'52"W	60.94'
C3	Radius=225.00', Arc Length=43.40'	
Chord 3	S54°12'16"W	43.34'
C4	Radius=225.00', Arc Length=84.28'	
Chord 4	S37°56'52"W	83.79'
L5	S42°47'00"E	6.61'
L6	N42°47'00"W	7.04'
C6	Radius=175.00', Arc Length=81.30'	
Chord 6	N61°59'17"E	80.57'
L7	S75°17'51"E	15.34'
L8	S21°51'50"E	22.30'
L9	N75°05'41"E	62.91'
L10	N53°38'16"W	15.01'

Notes:

1. Portions of the water lines depicted on plan were referenced from plan titled, "Water System Village of Essex Junction", by Donald Hamlin Consulting Engineers Inc., dated Feb. 2007 and field location of water lines by the Essex Junction Public Works Department.
2. The location and materials of existing utilities is not warranted to be exact or complete.
3. Concrete monuments shall be set along the right of way for all public streets.
4. All bearings are calculated and referenced to Vermont State Plane Grid North. Vermont State Plane Grid North was determined from survey grade GPS readings taken at the time of the survey.
5. This plat of survey depicts boundary location of the lands under the title of CTE Corporation and also the limits, where known, of easements, licenses and/or other servitudes and rights that may encumber or benefit the surveyed premises.
6. Monuments have been set in and on the ground where shown on the plat of survey where, in the opinion of the surveyor, it was necessary to perpetuate a corner not otherwise monumented.
7. Any boundary line location, based on deeds or documents recorded in the public records by which title or rights were conveyed to CTE Corporation, or title or rights in lands of CTE Corporation were otherwise delineated, is subject to accuracy and legality of those deeds or documents. Where those deeds or documents are improperly executed as a matter of law or contain errors or omissions in fact, or contain or are based upon erroneous conclusions of law, then the depicted boundary locations may not be valid.
8. The boundary line locations shown are also subject to accuracy and legality or lack of authority of any grantor or grantee who professed the right or ability to convey, receive or condemn property or rights in the surveyed property.
9. The location and depiction of boundary lines other than those of CTE Corporation are not warranted and all boundary lines depicted are subject to the accuracy and completeness of the public record.

Legend

⚲	Power pole
⌖12	Survey Control Point
✣	Existing hydrant
— — —	Easement Line
━ ━ ━	Property Line
━ ━ ━ (blue)	New Property Line
- - - (green)	Property Line to be Dissolved
— W — ⋈	Existing Water Line/gate valve
⊡	Concrete monument with brass tablet stamped LLS 132693 to be set
▣	Concrete monument found
◎	3/4" diameter Iron pin with aluminum cap stamped LLS 132693 to be set
●	Iron pin/spike found
KL ▣	4"x4" concrete monument with brass tablet stamped LLS 639 found flush
KL ●	3/4" diameter Iron pin with aluminum cap stamped LLS 639 found flush
△	Calculated point

0' 30' 60' 120' 180' 300'

Graphic Scale 1" = 60'

Map References

1. Plan entitled "Survey Plat, Essex Junction Graded School District, Educational Drive, Essex Junction, Vermont", dated January 7, 1997 and found in Map Slide #319 of The Town of Essex Land Records.
2. Plan entitled "Boundary Line Adjustment, Property of Essex Community Educational Center Union School District No. 46", prepared by Krebs & Lansing Consulting Engineers, Inc., dated January 16, 2008, and found in Map Slide #441 of The Town of Essex Land Records.
3. Plan entitled "U-46 School District Center for Technology Essex" prepared by Krebs & Lansing Consulting Engineers, Inc., dated October 10, 2008, last revised October 3, 2013 and found in Map Slide #464 of The Town of Essex Land Records. An earlier version of this plan was found in Slide #446.
4. Plan entitled "Final Lot Layout for Essex Jct. Grade School District" prepared by Green Mountain Surveys Inc. dated June 5, 1978, and found in Map Slide #105 of The Town of Essex Land Records.

Date revised	Description	Checked	Date
3/21/25	staff comments	swh	3/21/25

Certification

This survey is based on physical evidence found in the field and information abstracted from deeds and other pertinent records and this survey is consistent with that evidence. This plat conforms to 27 V.S.A. section 1403.

Benjamin L. Wright, L.L.S. #132693

STATE OF VERMONT
BENJAMIN L. WRIGHT
No. 132693
LICENSED LAND SURVEYOR

Surveyed	IAJ/BLW
Drawn	TJB/RAW/BLW
Checked	IAJ
Scale	1" = 60'
Date	February 26, 2025
Project	22351

Boundary Line Adjustment & Subdivision Plat

Lands of

CTE Corporation

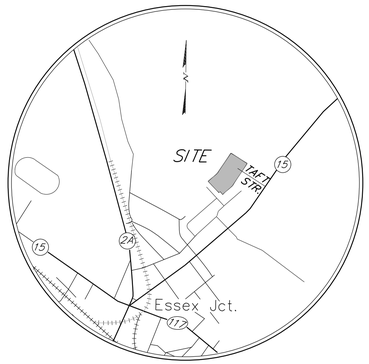
and

Essex Community Educational Center
Chittenden Supervisory Union # 46

Taft Street — City of Essex Junction

KREBS & LANSING Consulting Engineers, Inc.
164 Main Street, Colchester, Vermont 05446

File name



Location Map

n.t.s.

Notes:

1. This is not a boundary survey. Refer to plan entitled "Boundary Line Adjustment, Property of Essex Community Educational Center Union School District No. 46", dated January 16, 2008, prepared by Krebs & Lansing Consulting Engineers, Inc. Also see the current final plat on file for this project.
2. Portions of the water lines depicted on plan were referenced from plan titled, "Water System Village of Essex Junction", by Donald Hamlin Consulting Engineers Inc., dated Feb. 2007 and field location of water lines by the Essex Junction Public Works Department.
3. Gas Line information shown in plan was provided by Vermont Gas Systems Inc. Gas lines shown on this plan are based on visible evidence found in the field, record drawing information provided by VGS, and communication with representatives from VGS. Underground gas lines are not warranted to be exact of complete. Seek a VGS professional and contact Digsafe prior to commencing any work.
4. Underground utilizes shown on this plan are not warranted to be exact of complete. Contact Digsafe prior to commencing any work.
5. Krebs and Lansing completed field work in August 2014 as part of this plan.

Legend

- Existing path
- Survey Control Point
- Existing Sign
- Existing Light Pole
- Existing Deciduous Tree
- Existing Evergreen Tree
- Existing Spot Grade Elevation
- Existing Contour
- Existing Gas Line/Valve
- Existing Sewer Line/Manhole
- Existing Sewer Forcemain
- Existing Storm Line/Manhole/Basin
- Existing Overhead Electric Line/Power Pole
- Existing Underground Electric & Telephone Line
- Existing Site Lite Line
- Existing Tree Line
- Existing Chain Link Fence
- Existing Barbed Wire Fence
- Existing Underground Power
- Existing Water Line/Hydrant/Valve/Shutoff
- Approximate Property Line
- Existing Easement
- **NEW LOT LINE/RIGHT OF WAY**
- **NEW PAVEMENT**
- **NEW CONCRETE SIDEWALK**
- **NEW SEWER LINE/MANHOLE**
- **NEW WATER LINE/HYDRANT/VALVE/SHUTOFF**
- **NEW STORM LINE/MANHOLE/BASIN**

LOT AREA AND FRONTAGE TABLE

(AFTER BOUNDARY LINE ADJUSTMENT)

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2A	0.43	84.48
3A	0.39	135.23
4A	0.347	106.21
6A	0.35	125.69
7A	2.89	256.66
8A	2.69	582.97

North (NAD83) Vermont State Plane

CIVIL ENGINEER

KREBS & LANSING CONSULTING ENGINEERS

164 Main Street, Suite 201 P: (802) 878-0375
Colchester, Vermont 05446
www.krebsandlansing.com

Project:

CENTER FOR TECHNOLOGY ESSEX

Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No.	22351
Scale	1"=50'
Drawn by	SWH
Checked by	
Date	10/29/2024

Revisions

No.	Date	
1	11/20/24	Staff comments
2	12/04/24	"Orphan" lot merged into Lot8A
3	03/21/25	Staff & Engineer comments

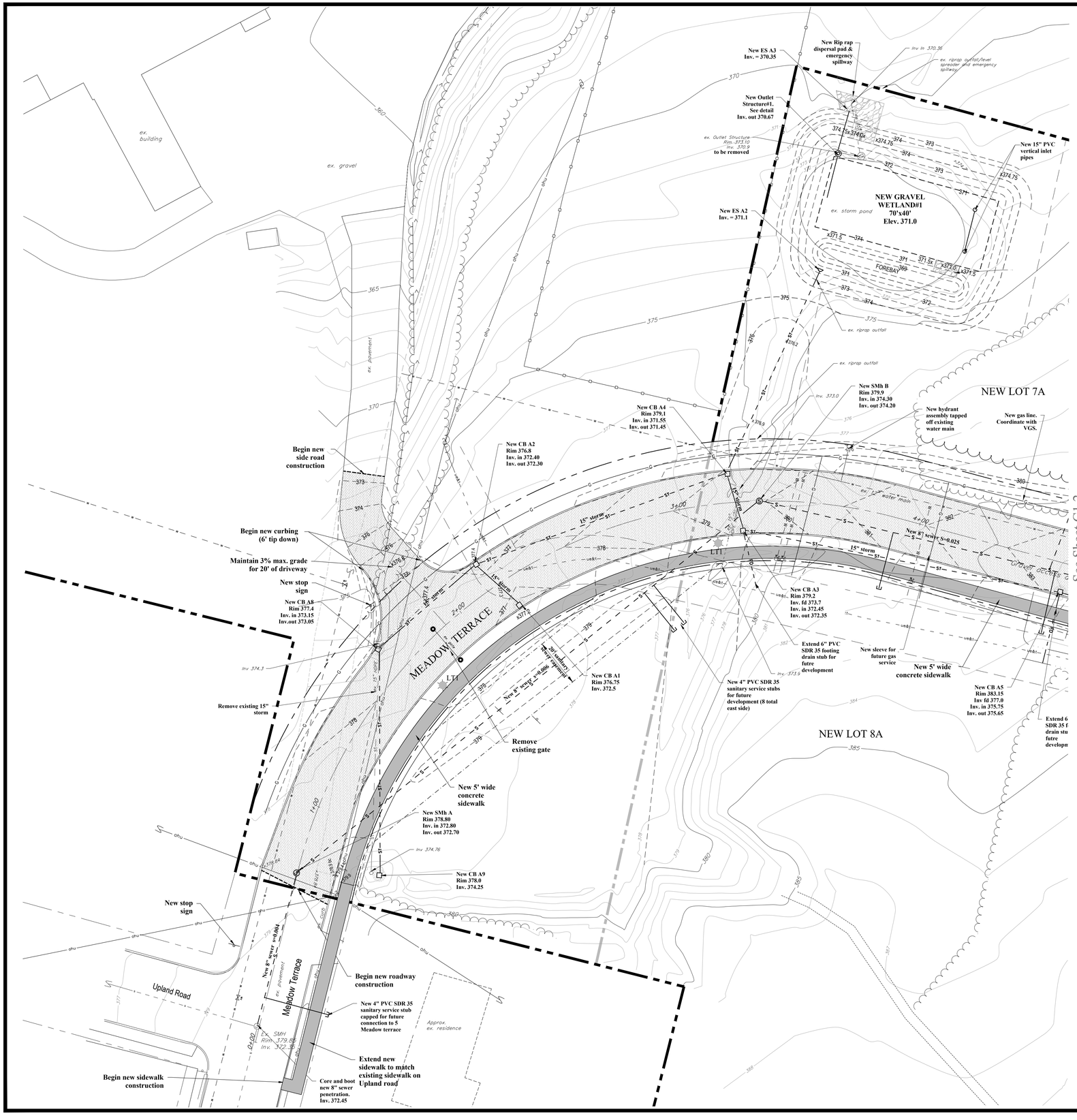
Drawing Title

Overall Site Plan Phase 3

Drawing No.

C-1

22351\DWGS\CTE-2025.dwg



NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DISTURBED AREAS BACK TO ORIGINAL CONDITION, INCLUDING BUT NOT LIMITED TO CURBING, SIDEWALKS, ROAD, PARKING AREAS, LANDSCAPING, SITE LIGHTING, ELECTRICAL, AND ETC. ALL ASPHALT SHALL BE SAWCUT PRIOR TO PAVING.
2. ALL STUMPS, ROCK, AND OTHER NON-APPROVED TRENCH BACKFILL MATERIAL DISCOVERED DURING CONSTRUCTION IS THE EXCLUSIVE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF IN A STATE APPROVED DISPOSAL LOCATION. ALL EXISTING SOILS REUSED FOR FILL SHALL CONFORM TO ALL APPLICABLE SECTIONS OF VTRANS SPECIFICATIONS SECTION 203-EXCAVATION & EMBANKMENTS. ANY SOIL REUSED TO ESTABLISH SUBGRADE UNDER ROADS AND APPLICABLE CONCRETE SIDEWALKS SHALL PASS A SUBGRADE PROOF ROLL WITH A LOADED TANDEM. REUSED SOILS THAT DO NOT PASS A SUBGRADE PROOF ROLL SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
3. ALL PASSING SIEVE, PROCTOR, AND COMPACTION TESTING EXPENSES SHALL BE PAID BY OWNER. TESTING COORDINATION, ALL OTHER REQUIRED TESTING, AND EXPENSES FOR FAILED TESTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
4. THE CONTRACTOR SHALL CONTACT GREEN MOUNTAIN POWER AND VERMONT GAS SYSTEMS PRIOR TO ANY WORK IN THE VICINITY OF THE RESPECTIVE UTILITIES.
5. THIS PROJECT REQUIRES COVERAGE UNDER A STATE CONSTRUCTION STORMWATER DISCHARGE PERMIT. THE CONTRACTOR SHALL BE THE ON-SITE COORDINATOR FOR THE PROJECT AND SHALL BE RESPONSIBLE FOR ALL REQUIRED INSPECTIONS (MINIMUM WEEKLY AND AFTER ANY STORM EVENT THAT PRODUCES A DISCHARGE), TURBIDITY READINGS, MAINTENANCE, AND REPORTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MAINTAINING AND REMOVING ALL EROSION AND SEDIMENT CONTROL DEVICES SHOWN ON THE PLANS OR DETAILS AND, TO THE MAXIMUM EXTENT PRACTICAL, TO MINIMIZE POTENTIAL CONTAMINATION OF STORMWATER RUNOFF FROM THE CONSTRUCTION ACTIVITIES.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL "AS-BUILT" MEASUREMENT AND DRAFTING REQUIREMENTS AS OUTLINED ON THE DETAIL SHEETS. ALL TRENCH EXCAVATIONS SHALL REMAIN OPEN UNTIL ALL AS-BUILT SURVEY SHOTS HAVE BEEN TAKEN. PROGRESS RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER ON A BI-WEEKLY BASIS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING TOPSOIL AS REQUIRED TO COMPLETE THE PROJECT. CONTRACTOR SHALL TEST TOPSOIL FOR APPROVAL BY THE OWNER AND ENGINEER. REFER TO POST CONSTRUCTION STABILIZATION PLAN FOR ADDITIONAL SOIL PREPARATION REQUIREMENTS.
8. ALL NEW STORM PIPES SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) UNLESS OTHERWISE NOTED.
9. TEMPORARY GROUNDWATER AND STORMWATER BY-PASS PUMPING AND/OR DIVERSION IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PUMPS AND EQUIPMENT TO PERFORM THE WORK. OVERNIGHT PUMPING IS NOT ALLOWED.
10. REMOVAL OF ALL EROSION CONTROL MATTING AND INLET PROTECTION IS THE RESPONSIBILITY OF THE CONTRACTOR.
11. ELECTRICAL AND COMMUNICATION LINES ON THIS PLAN ARE SHOWN FOR ILLUSTRATIVE/COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL PLANS AND SPECIFICATIONS FOR DESIGN.
12. BURIED NATURAL GAS IS SHOWN FOR ALIGNMENT PURPOSES ONLY. CONTACT VERMONT GAS SYSTEMS FOR DESIGN AND DETAILS OF NEW GAS LINE. CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXCAVATION, BACKFILL, AND RESTORATION FOR THE CONSTRUCTION OF THE NATURAL GAS LINES. VERMONT GAS SYSTEMS WILL PROVIDE THE PIPING, LABOR TO INSTALL, AND TESTING FOR THE NEW GAS MAIN. COORDINATE WORK AND ALL GAS SHUT DOWN PROCEDURES WITH THE OWNER.
13. REFER TO PLUMBING PLANS FOR WATERLINE AND SEWER DESIGN WITHIN FIVE FEET OF BUILDING.
14. THE CITY OF ESSEX JUNCTION SHALL BE GIVEN THE OPPORTUNITY TO HAVE AN AUTHORIZED REPRESENTATIVE INSPECT ALL PIPELINES (WATER, SEWER, AND STORM DRAINAGE) PRIOR TO BACKFILL. A MINIMUM OF 48 HOURS ADVANCE NOTIFICATION IS REQUIRED FOR INSPECTION.

LEGEND

- NEW LIGHT POLE AND BASE
- x363.9 — FINISH GRADE SPOT ELEVATION
- FINISH GRADE FLOW DIRECTION
- PRECONSTRUCTION EXCAVATION
- FINISH GRADE CONTOUR LINES (5 FOOT INTERVALS)
- FINISH GRADE CONTOUR LINES (1 FOOT INTERVALS)
- G — GV — PROPOSED GAS LINE/VALVE
- S — PROPOSED SEWER LINE/MANHOLE
- ST — PROPOSED STORM LINE/MANHOLE/BASIN
- UGP — NEW UNDERGROUND POWER
- W — NEW WATER LINE/SHUTOFF/VALVE
- NEW BUILDING
- NEW ASPHALT & SUBBASE
- REPLACE PAVEMENT (NO SUBBASE)
- NEW CONCRETE WALK
- NEW CONCRETE PAD
- NEW GRAVEL SURFACE
- ZONING DISTRICT LINE
- EASEMENT LINE

0' 20' 40' 80' 120'

Bar Scale 1" = 20'

Grid North (NAD83)
Vermont State Plane

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Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No.	22351
Scale	1" = 20'
Drawn by	SWH
Checked by	
Date	01/10/2025

Revisions

No.	Date	
	03/21/25	Staff & Engineer comments

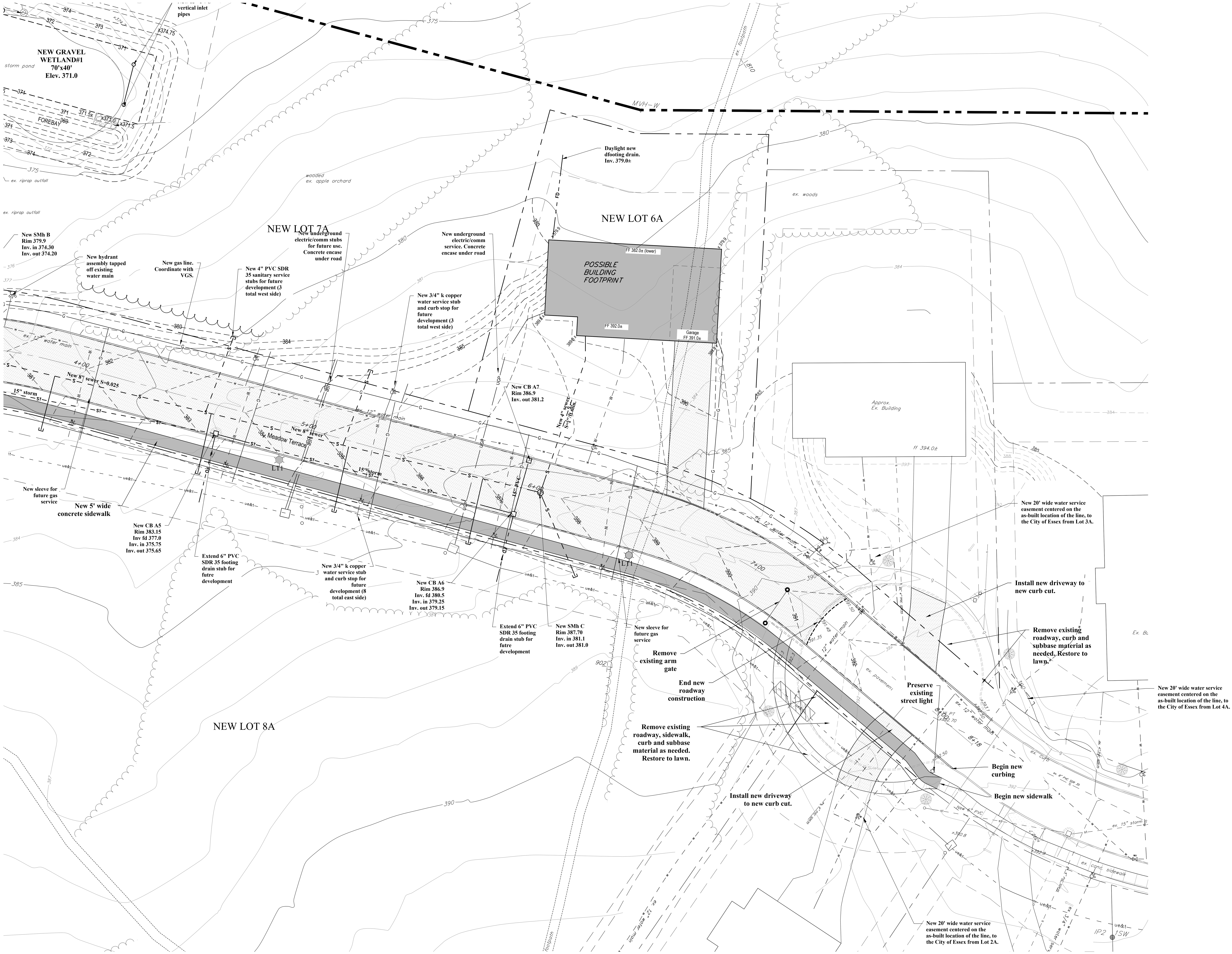
Drawing Title

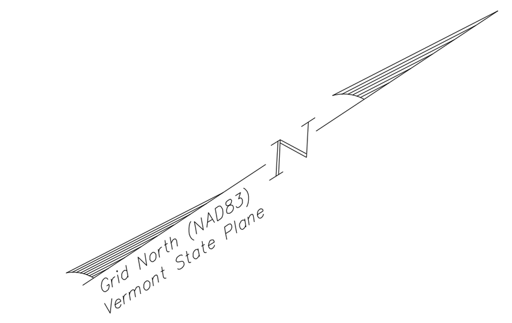
Site Plan
Phase 3

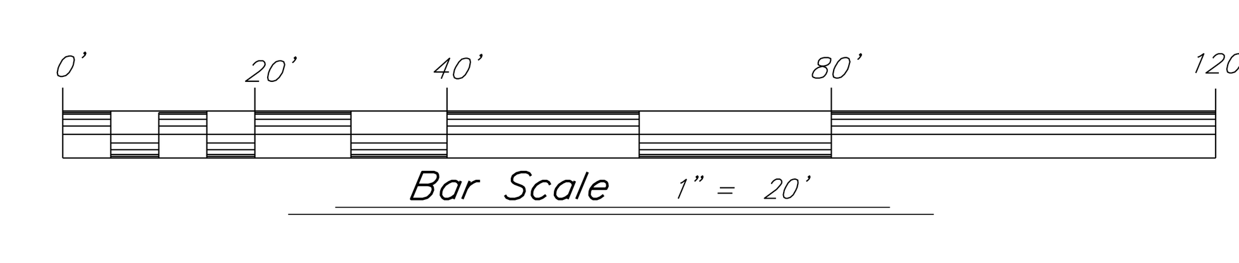
Drawing No.

C-1.1

22351\DWGS\CTE-2025.dwg







CIVIL ENGINEER

KREBS & LANSING CONSULTING ENGINEERS

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Project:

CENTER FOR TECHNOLOGY ESSEX

Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No. 22351
Scale 1" = 20'
Drawn by SWH
Checked by
Date 01/10/2025

Revisions

No.	Date	
	03/21/25	Staff & Engineer comments

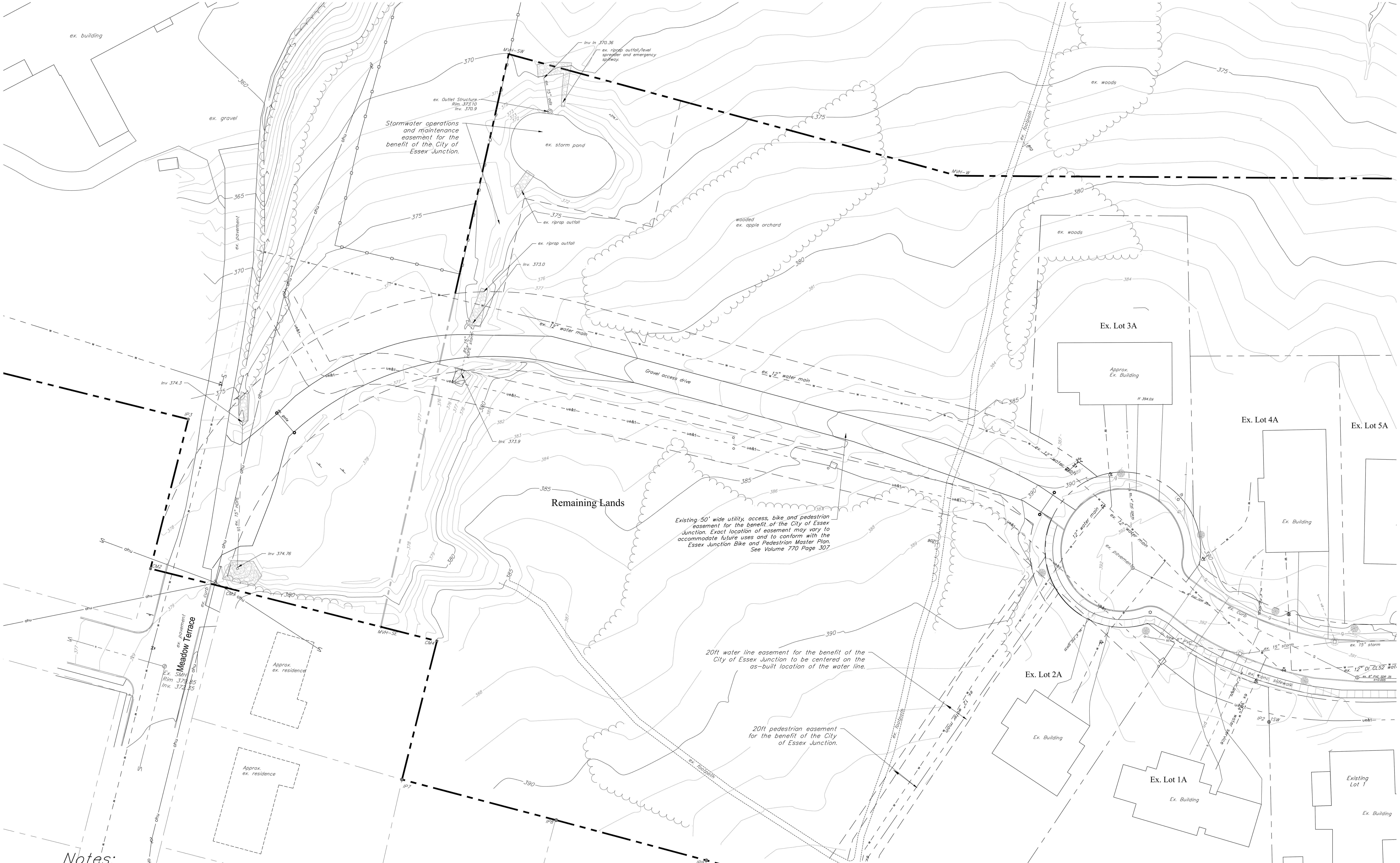
Drawing Title

Site Plan Phase 3

Drawing No.

C-1.2

22351\DWGS\CTE-2025.dwg



Notes:

1. This is not a boundary survey. Refer to plan entitled "Boundary Line Adjustment, Property of Essex Community Educational Center Union School District No. 46", dated January 16, 2008, prepared by Krebs & Lansing Consulting Engineers, Inc. Also see the current final plat on file for this project.

2. Portions of the water lines depicted on plan were referenced from plan titled, "Water System Village of Essex Junction", by Donald Hamlin Consulting Engineers Inc., dated Feb. 2007 and field location of water lines by the Essex Junction Public Works Department.

3. Gas Line information shown in plan was provided by Vermont Gas Systems Inc. Gas lines shown on this plan are based on visible evidence found in the field, record drawing information provided by VGS, and communication with representatives from VGS. Underground gas lines are not warranted to be exact of complete. Seek a VGS professional and contact Digsafe prior to commencing any work.

4. Underground utilizes shown on this plan are not warranted to be exact of complete. Contact Digsafe prior to commencing any work.

5. Krebs and Lansing completed field work in August 2014 as part of this plan.

Legend

- Existing path
- Survey Control Point
- Existing Sign
- Existing Light Pole
- Existing Deciduous Tree
- Existing Evergreen Tree
- 314.7 x Existing Spot Grade Elevation
- 150 Existing Contour
- g GV Existing Gas Line/Valve
- Existing Sewer Line/Manhole
- fm Existing Sewer Forcemain
- st Existing Storm Line/Manhole/Basin
- ohp Existing Overhead Electric Line/Power Pole
- ue&t Existing Underground Electric & Telephone Line
- lite Existing Site Lite Line
- Existing Tree Line
- Existing Chain Link Fence
- X Existing Barbed Wire Fence
- ugp Existing Underground Power
- w WV Existing Water Line/Hydrant/Valve/Shutoff
- Approximate Property Line
- Existing Easement

0' 30' 60' 120' 180'

Bar Scale 1" = 30'

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Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No.	22351
Scale	1" = 30'
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Date	10/29/2024

Revisions

No.	Date	
	03/21/25	Staff & Engineer comments

Drawing Title

Existing Conditions Plan

Drawing No.

C-2.0

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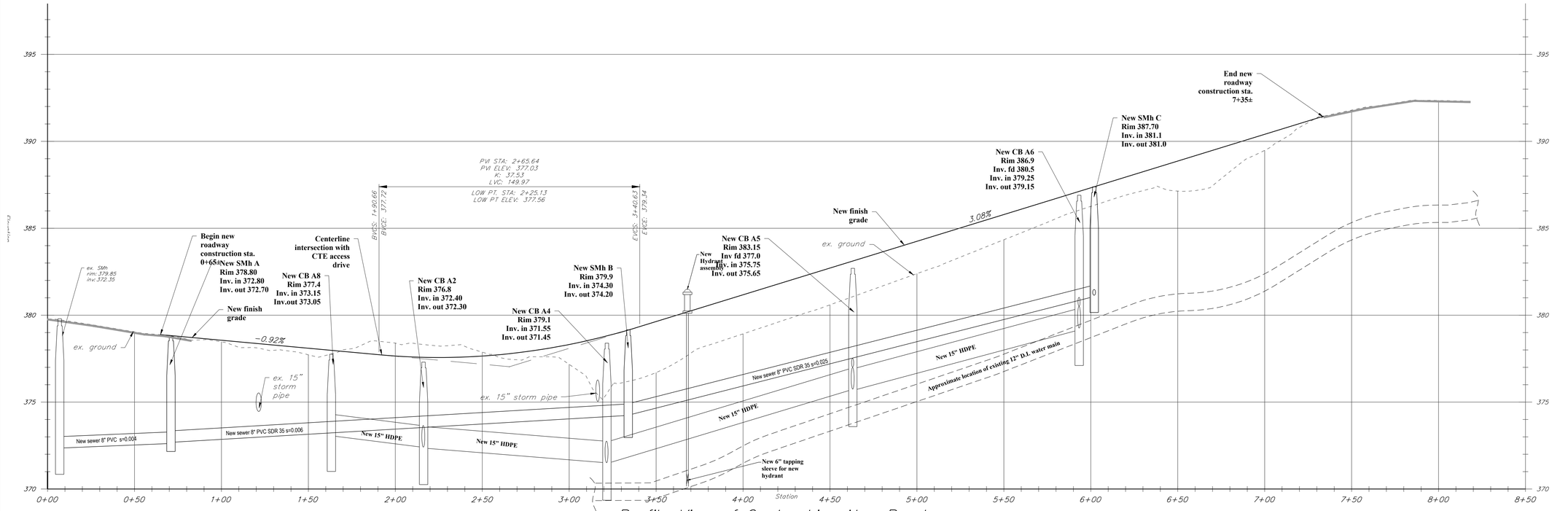


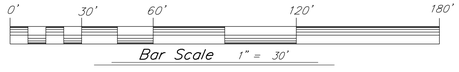
Profile View of Center Line New Roadway

Utility Profile Notes

1. Existing utility locations shown on this plan are approximate and may not show all existing utilities. Contractor shall verify location and elevation of all existing utilities prior to beginning utility work. The Contractor shall notify Engineer of field located utilities that differ from the plans. The Contractor shall coordinate with gas, electric, communications, etc. to avoid conflicts.
2. Existing utilities that are exposed shall be located by the Contractor in accordance with the AS-BUILT requirements outlined in the Details and Specifications.

ROADWAY PROFILE

hort: 1" = 30'
vert: 1" = 3'



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Scale Vert: 1" = 3' Horiz: 1" = 30'
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Drawing Title

Roadway and Utility Profile

Drawing No.

C-3.0

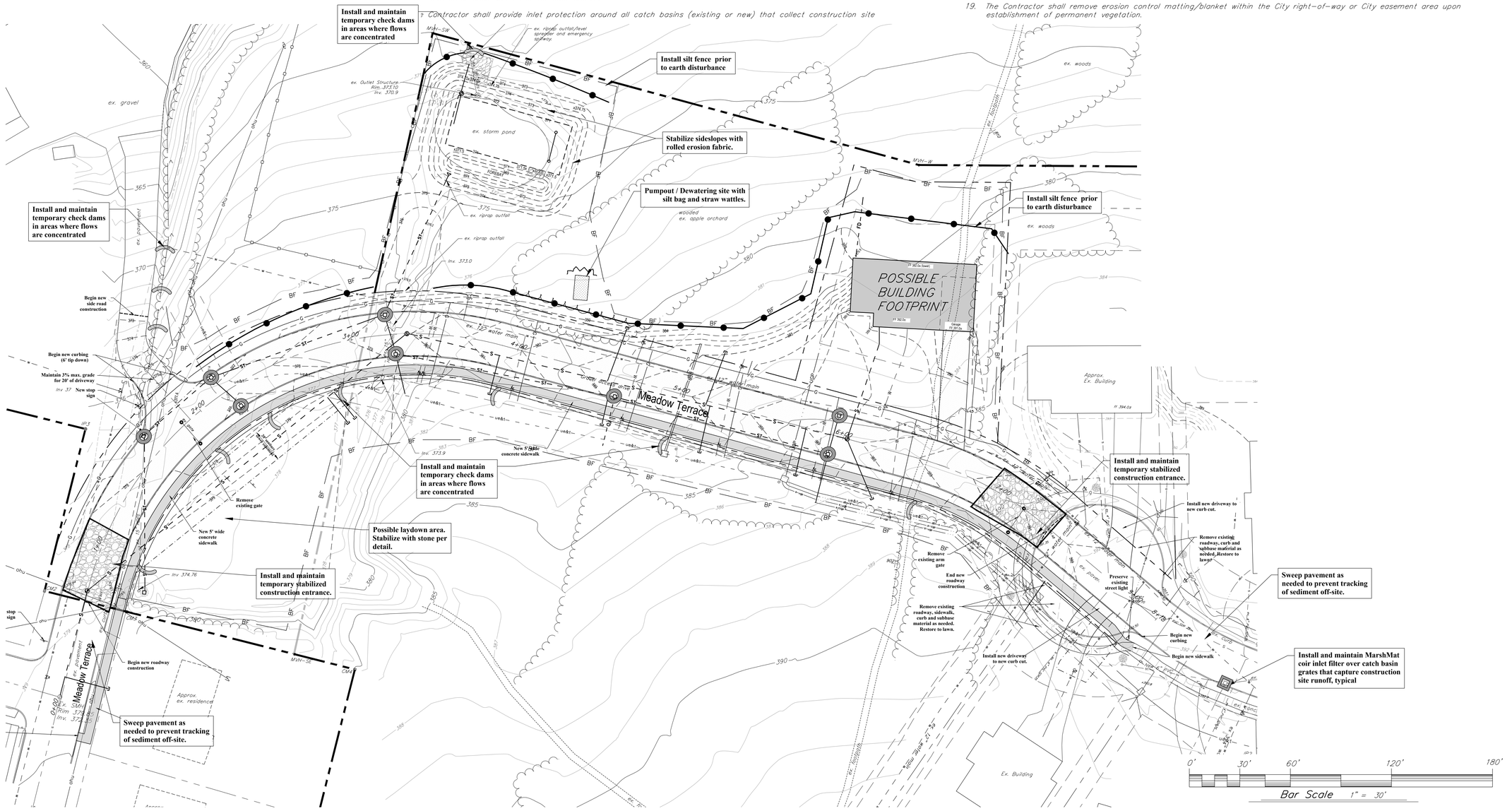
22351\DWGS\CTE-2025.dwg

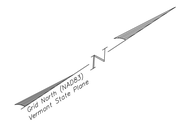
Legend

- Inlet Protection plus Marsh Mat Coir Inlet Filter
- Marsh Mat Coir Inlet Filter over Catch Basin Grate
- Existing Catch Basin
- Existing Contours
- Chain-link Construction limit barrier
- Orange Construction Fence
- Temporary Silt Fence
- Straw wattle (silt fence substitute only where indicated)
- Disturbance Limit Line
- Crushed stone for temporary site stabilization
- Barrier Fence

Erosion Prevention and Sediment Control Notes

1. Contractor shall be responsible for complying with all State and Local erosion prevention and sediment control standards and permit requirements during construction. Both the City and State Erosion Prevention & Sediment Control Permits shall be posted near the construction entrance, or in a location visible to the public.
2. The limit of disturbance shall be clearly defined by Contractor's surveyor prior to clearing. Clearing and grubbing shall not begin until disturbance limits and sediment controls are in place. All roots, stumps and deleterious materials shall be removed from the site. The Contractor shall minimize the amount of disturbed land at any given time.
3. The erosion prevention and sediment control practices shown on these plans are the minimum required for the project. The Contractor shall employ and maintain as many best management practices as necessary to prevent soil from leaving the construction site. If evidence is found of sediment tracking or eroded soil leaving the construction site, the Engineer may direct Site Contractor to implement additional best management practices at no additional cost to Owner.
4. All areas of disturbance shall be permanently or temporarily stabilized as soon as possible and within 48 hours of final grading. All areas of disturbance shall be at least temporarily stabilized daily during winter construction unless the following exceptions apply:
   a. Stabilization is not required if earthwork is to continue in the area in the next 24 hours and there is no precipitation forecast in the next 24 hours.
   b. Stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 ft. or greater (e.g. house foundation excavation, utility trenches). Stabilization measures shall include mulch and netting, erosion control matting, crushed stone, gravel, or pavement.
6. Unless specifically indicated on the plans acceptable methods of stabilization shall include:
   - STRAW Mulching – 2 tons per acre. Only STRAW mulch is allowed. Approximately 2" uniform thickness. Only allowed on relatively flat areas with minimum upslope watershed. Mulch must be properly secured with netting to prevent material from being blown away by wind (windthrow).
   - Hydroseeding* – Applied at the manufacturer's recommended application rate. Contractor shall provide evidence of proper application rate. Hydroseeding must be accompanied by erosion control matting in areas of concentrated flow.
   - Erosion control matting – S75BN matting must be applied to all slopes 3:1 (H:V) or greater (unless otherwise indicated).
   - Crushed stone or crushed gravel – Typically used for temporary access roads and construction staging areas.
7. The Contractor shall use water for dust control.
8. Contractor shall provide inlet protection around all catch basins (existing or new) that collect construction site stormwater runoff. At a minimum, MarshMat, or approved equal, coir inlet filters shall be installed over all catch basin grates. Additional inlet control shall be installed as identified on the plans or as warranted during construction. Inlet protection must be maintained until final stabilization has been reached.
9. A stabilized construction entrance (See Detail) shall be installed and maintained at all construction access locations if construction vehicles travel off the existing hardscape. Contractor shall be responsible for installing crushed stone to provide stable areas for construction vehicle traffic, staging, and storage. The Contractor is responsible for providing and maintaining sufficient stone to prevent rutting and sediment tracking.
10. Any paved roads used by construction vehicles shall be swept daily, or at a greater frequency, if dirt or gravel is tracked from the site. The swept debris shall be immediately removed from face of curb if applicable.
11. All temporary erosion and sediment control measures shall be removed within 30 days after final stabilization or after the measures are no longer needed, unless otherwise authorized.
12. All sediment removed from sediment control practices shall be placed in an approved soil disposal area.
13. All areas that do not have established vegetation by October 15th must be stabilized in accordance with the Winter Stabilization requirements outlined in the Low Risk Site Handbook. See Details.
14. After permanent seeding the Contractor shall be responsible for watering to ensure adequate vegetative growth. Weed growth is not considered acceptable vegetative growth.
15. The location of temporary construction fencing and the temporary access shown on the plan are for schematic purposes only. The Contractor shall be responsible for providing all necessary temporary construction fencing, temporary roads, staging areas, etc., necessary to complete the work.
16. Water from dewatering activities that flows off site must be clear. Turbid, or visibly discolored water must not be pumped into storm sewers.
17. The perimeter of the site and all BMPs will be inspected at the end of each workday to ensure that sediment will not leave the site. If sediment has traveled beyond the site boundary, it shall be swept up or otherwise removed and deposited on-site in an upgradient area at the end of each workday.
18. Provide copies of any and all erosion inspection reports to the City of Essex Junction Water Quality Superintendent.
19. The Contractor shall remove erosion control matting/blanket within the City right-of-way or City easement area upon establishment of permanent vegetation.





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Project:

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Revisions

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Drawing Title

Erosion and Sediment Control Plan

Drawing No.

C-4.0

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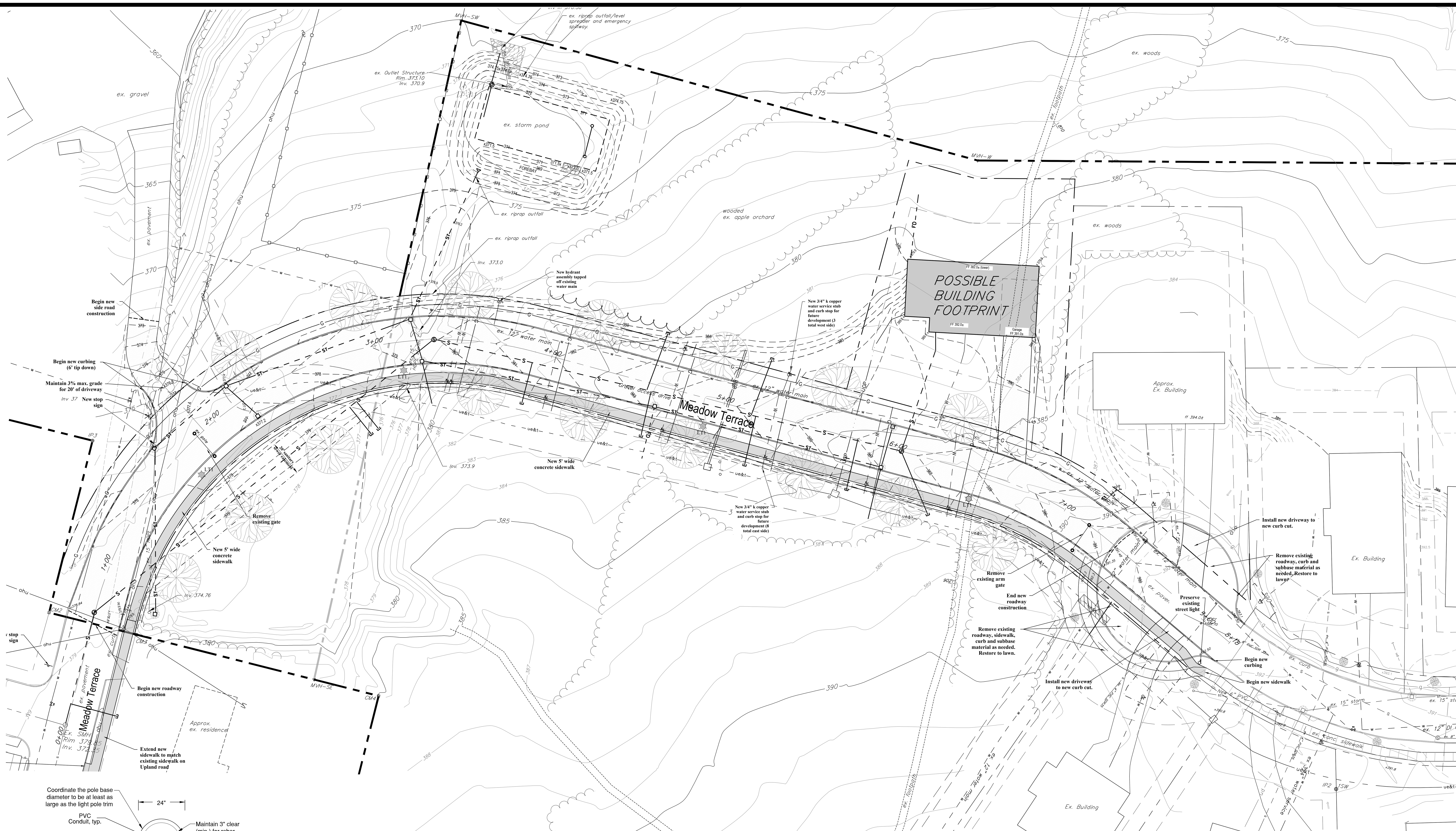

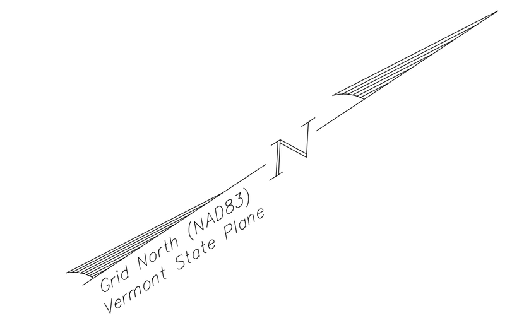

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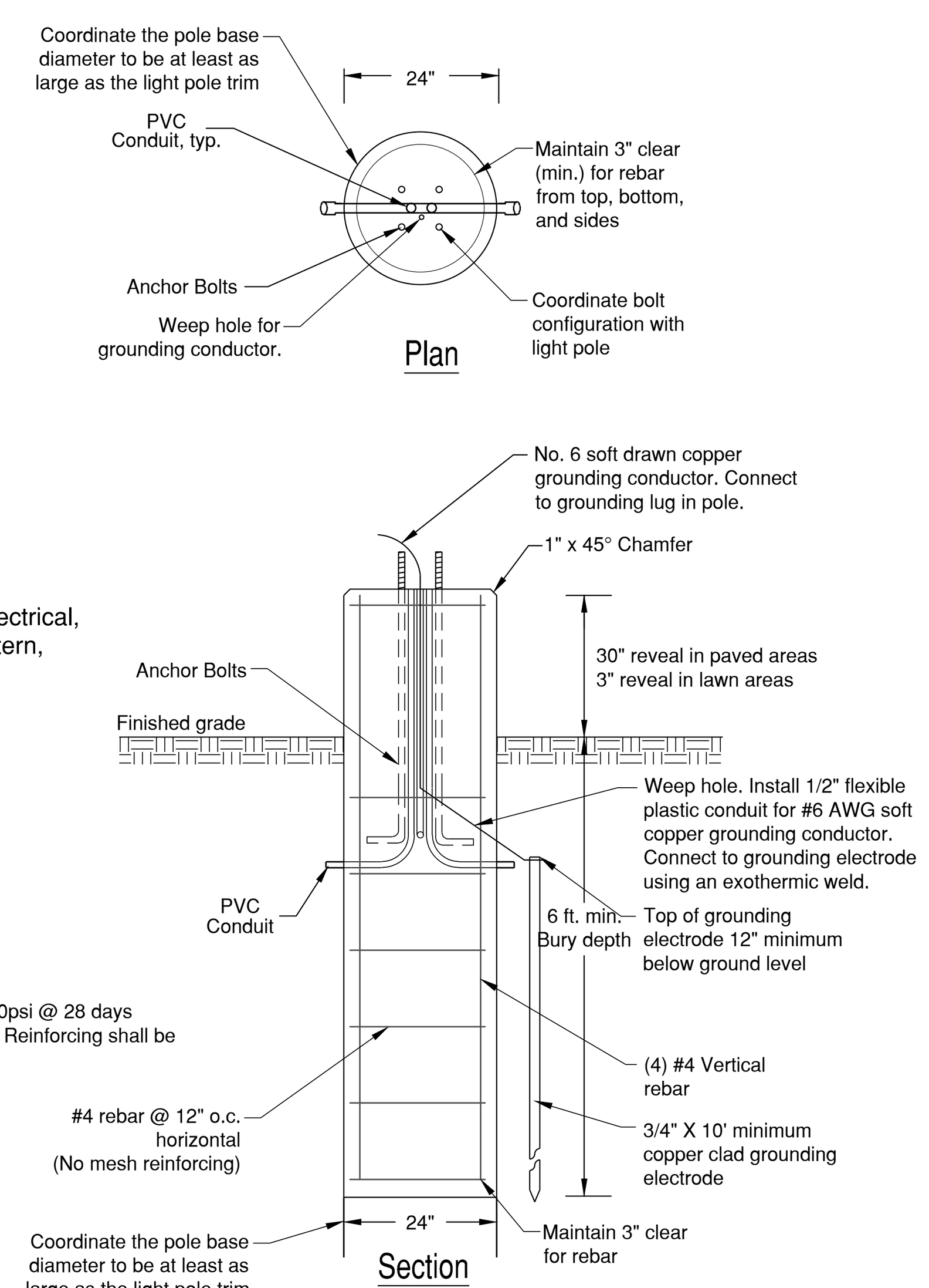


NOTE:
See Electrical Plans for electrical, conduit, light pole bolt pattern, and grounding design.

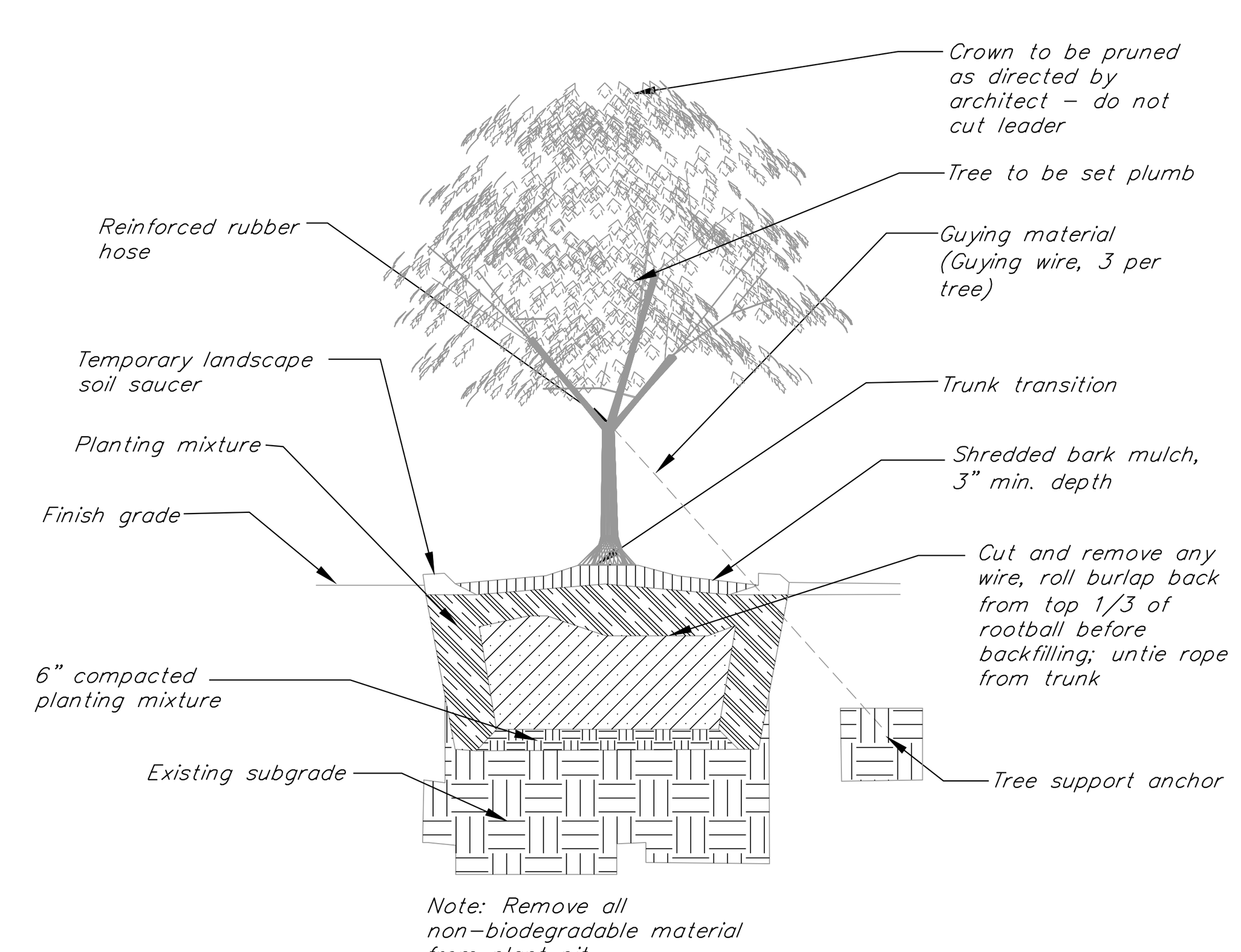
SPECIFICATIONS:
- Concrete Minimum Strength 5000psi @ 28 days
- Reinforcement per Specification. Reinforcing shall be ASTM A615 Grade 60
- PVC Conduit Supplied by Others
- Anchor Bolts Supplied by Others
- Weights Subject to Variation

Typical Light Pole Base
N.T.S.

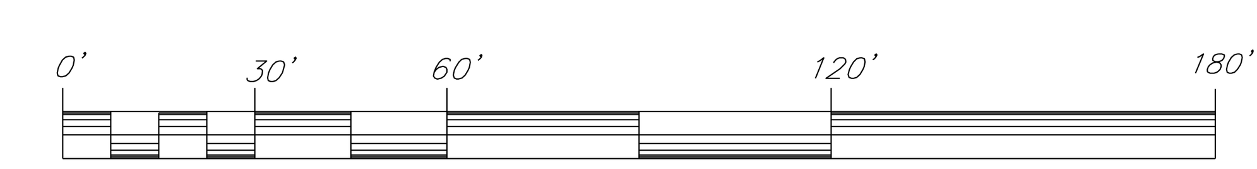
Tree Plant List

16 Northern
Red Oak
Quercus Ruba

LT1 **New light base**



Tree Planting Detail
N.T.S.



Bar Scale 1" = 30'

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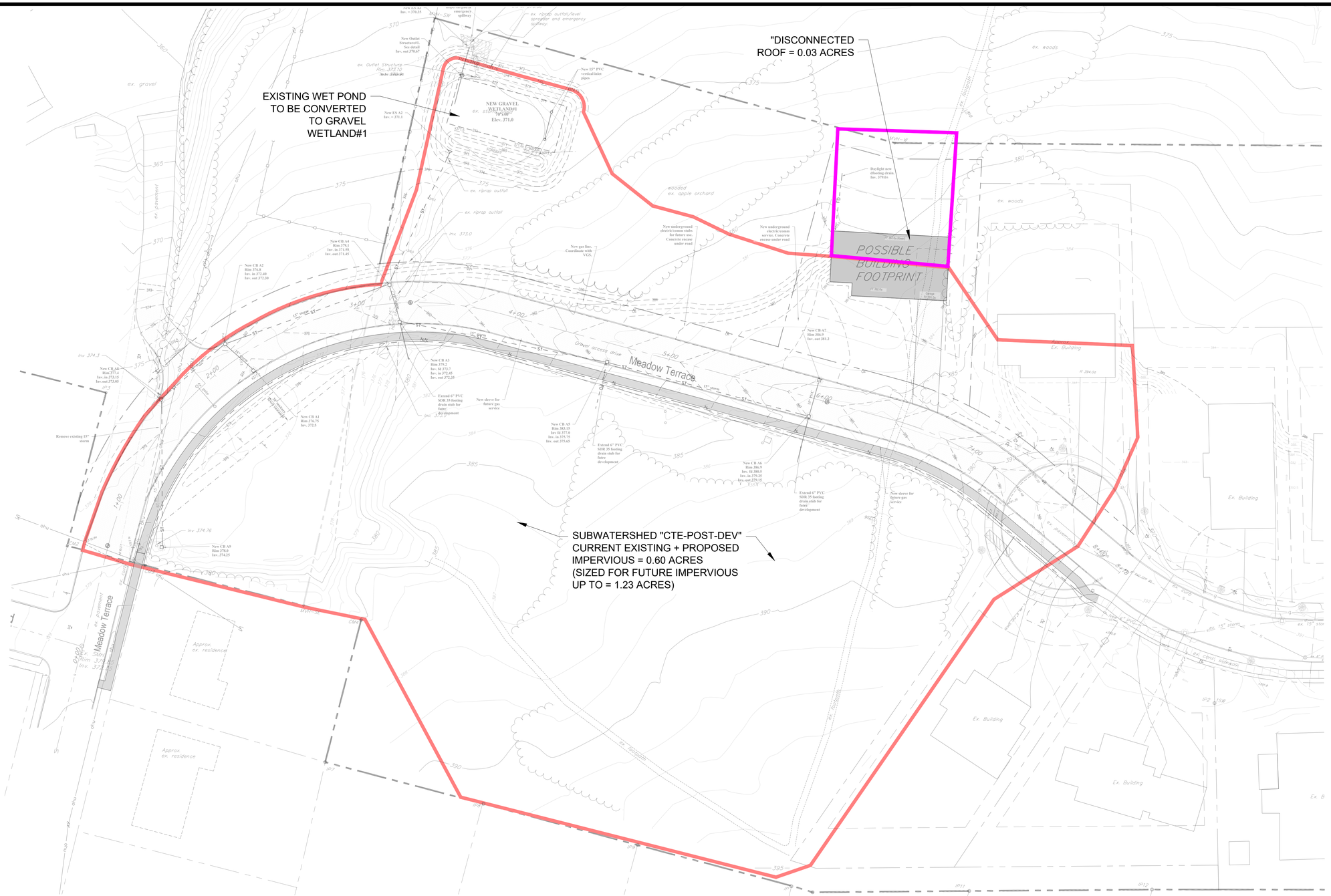
Drawing Title

Landscape & Lighting Plan

Drawing No.

C-5.0

22351\DWGS\CTE-2025.dwg



Watershed Legend

SUBWATERSHED "CTE-POST-DEV" DRAINING TO GRAVEL WETLAND#1

SUBWATERSHED DRAINING TO SIMPLE DISCONNECTION

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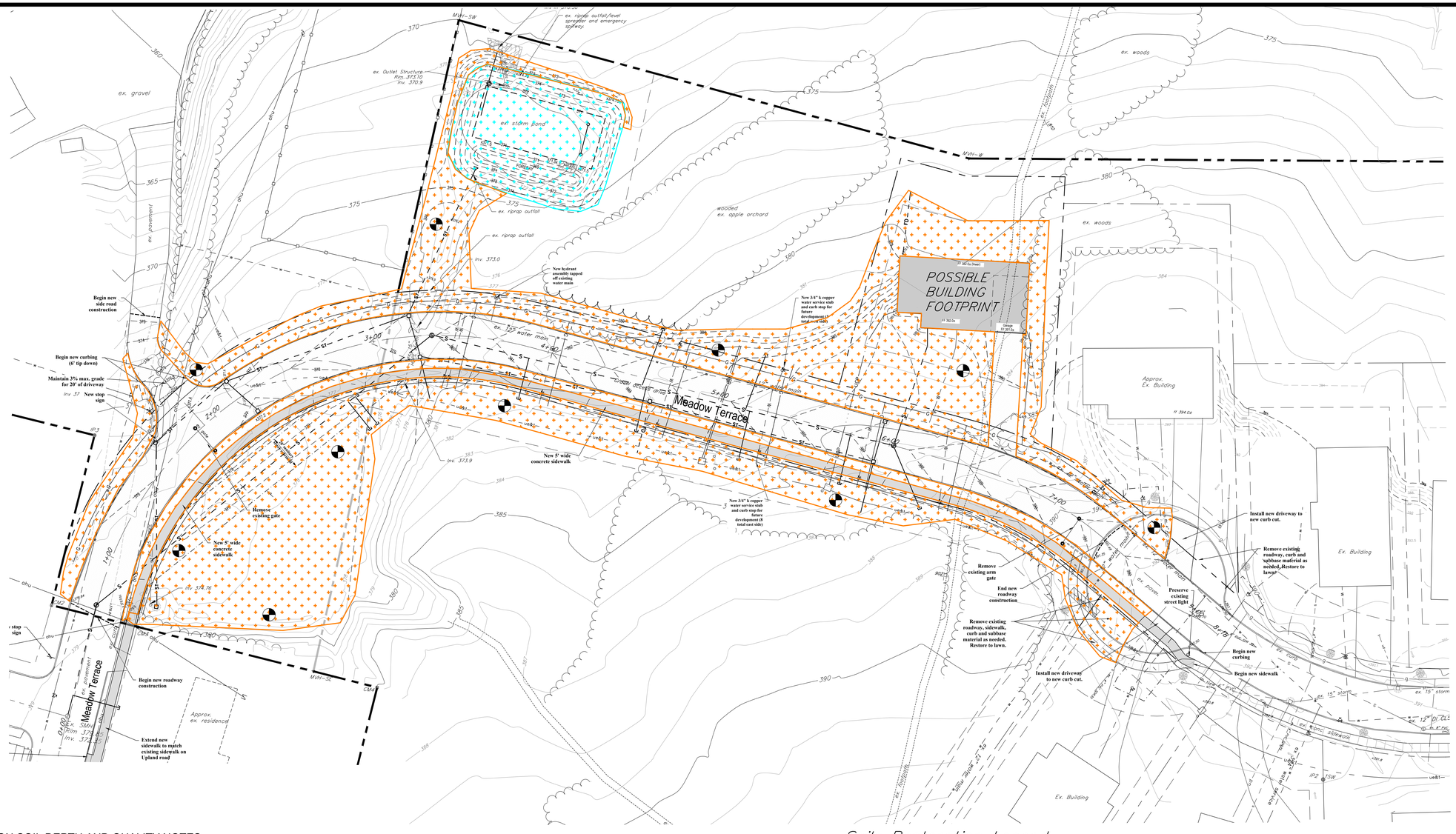
Drawing Title

WATERSHED PLAN

Drawing No.

C-6.0

22351\DWGS\CTE-2025.dwg



POST-CONSTRUCTION SOIL DEPTH AND QUALITY NOTES

SOIL RETENTION: RETAIN, IN AN UNDISTURBED STATE, THE DUFF LAYER AND NATIVE TOPSOIL TO THE MAXIMUM EXTENT PRACTICABLE.

SOIL QUALITY: ALL AREAS SUBJECT TO THE STANDARD SHALL DEMONSTRATE THE FOLLOWING:

A TOPSOIL LAYER WITH A MINIMUM ORGANIC MATTER CONTENT OF 4% DRY WEIGHT IN PLANTING BEDS AND TURF AREAS. THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF 4 INCHES, EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET THE CRITERIA.

COMPOST AND OTHER MATERIALS SHALL BE USED THAT MEET THE FOLLOWING REQUIREMENTS:

- THE COMPOST OR OTHER MATERIALS SHALL HAVE A CARBON TO NITROGEN RATIO BELOW 25:1.
- COMPOST SHALL MEET THE DEFINITION OF "COMPOST" IN THE AGENCY'S SOLID WASTE MANAGEMENT RULES OR SHALL MEET THE CONTAMINANT STANDARDS IN THE VERMONT SOLID WASTE MANAGEMENT RULES §6-1104(G)(6- 7), §6-1105(E)(8-9), AND §6-1106(E)(7-9). COMPOST OR OTHER ORGANIC MATERIALS MAY BE AMENDED TO MEET THE FOREGOING REQUIREMENTS.
- EXCEPTIONAL QUALITY BIOSOLIDS (EQ BIOSOLIDS) MAY BE USED AS A SOIL AMENDMENT, AT A MAXIMUM PROPORTION OF 35% OF THE TOTAL SOIL VOLUME, AND SHALL BE WELL MIXED WITH EXISTING SOIL BEFORE OR DURING APPLICATION.
- THE RESULTING SOIL SHALL BE CONDUCIVE TO THE TYPE OF VEGETATION TO BE ESTABLISHED.

THE SOIL QUALITY REQUIREMENTS SHALL BE MET BY USING ONE OR A COMBINATION OF THE FOLLOWING METHODS:

- OPTION 1: LEAVE UNDISTURBED NATIVE VEGETATION AND SOIL, AND PROTECT FROM COMPACTION DURING CONSTRUCTION. FAILURE TO ESTABLISH AND MAINTAIN EXCLUSIONARY CONTROLS AROUND THESE AREAS DURING THE CONSTRUCTION PHASE MAY TRIGGER THE REQUIREMENT TO RESTORE SOILS PER ONE OF THE FOLLOWING OPTIONS.
- OPTION 2: AMEND EXISTING SITE TOPSOIL OR SUBSOIL IN PLACE.
  a. SCARIFY OR TILL SUBSOILS TO 4 INCHES OF DEPTH OR TO DEPTH NEEDED TO ACHIEVE A TOTAL DEPTH OF 8 INCHES OF UNCOMPACTED SOIL AFTER CALCULATED AMOUNT OF AMENDMENT IS ADDED. EXCEPT FOR WITHIN THE DRIP LINE OF EXISTING TREES, THE ENTIRE SURFACE SHALL BE DISTURBED BY SCARIFICATION;
  b. AMEND SOIL TO MEET ORGANIC CONTENT REQUIREMENTS:
     1. PRE-APPROVED RATE: PLACE 1 INCH OF COMPOSTED MATERIAL WITH AN ORGANIC MATTER CONTENT BETWEEN 40 AND 65% AND ROTOTILL INTO 3 INCHES OF SOIL, OR
     2. CALCULATED RATE: PLACE CALCULATED AMOUNT OF COMPOSTED MATERIAL OR APPROVED ORGANIC MATERIAL AND ROTOTILL INTO DEPTH OF SOIL NEEDED TO ACHIEVE 4 INCHES OF SETTLED SOIL AT 4% ORGANIC CONTENT. "CONTRACTOR TO PROVIDE CALCULATION AND SITE SKETCH INDICATING AREAS USED FOR CALCULATIONS.
  c. RAKE BEDS TO SMOOTH AND REMOVE SURFACE ROCKS LARGER THAN 2 INCHES IN DIAMETER; AND
  d. WATER OR ROLL TO COMPACT SOIL IN TURF AREAS TO 85% OF MAXIMUM DRY DENSITY.
- OPTION 3: REMOVE AND STOCKPILE EXISTING TOPSOIL DURING GRADING.
  a. STOCKPILE SOIL ON SITE IN A DESIGNATED CONTROLLED AREA, AT LEAST 50 FEET FROM SURFACE WATERS, WETLANDS, FLOODPLAINS, OR OTHER CRITICAL RESOURCE AREAS;
  b. SCARIFY OR TILL SUBGRADE TO A DEPTH OF 4 INCHES. EXCEPT FOR WITHIN THE DRIP LINE OF EXISTING TREES, THE ENTIRE SURFACE SHALL BE DISTURBED BY SCARIFICATION;
  c. STOCKPILED TOPSOIL SHALL ALSO BE AMENDED, IF NEEDED, TO MEET THE ORGANIC CONTENT REQUIREMENTS:
     1. PRE-APPROVED RATE: COMPOST SHALL BE INCORPORATED WITH AN ORGANIC MATTER CONTENT BETWEEN 40 AND 65% INTO THE TOPSOIL AT A RATIO 1:3, OR
     2. CALCULATED RATE: INCORPORATE COMPOSTED MATERIAL OR APPROVED ORGANIC MATERIAL AT A CALCULATED RATE TO ACHIEVE 4 INCHES OF SETTLED SOIL AT 4% ORGANIC CONTENT;"
  d. REPLACE STOCKPILED TOPSOIL PRIOR TO PLANTING, SCREEN TOPSOIL, AND;
  e. RAKE TO LEVEL, AND REMOVE SURFACE ROCKS LARGER THAN 2 INCHES IN DIAMETER.
  f. OPTION 4: IMPORT TOPSOIL MIX, OR OTHER MATERIALS FOR MIXING, INCLUDING COMPOST, OF SUFFICIENT ORGANIC CONTENT AND DEPTH.
  g. SCARIFY OR TILL SUBGRADE TO A DEPTH OF 4 INCHES. EXCEPT FOR WITHIN THE DRIP LINE OF EXISTING TREES, THE ENTIRE SURFACE SHALL BE DISTURBED BY SCARIFICATION;
  h. PLACE 4 INCHES OF IMPORTED TOPSOIL MIX ON SURFACE. THE IMPORTED TOPSOIL MIX SHALL CONTAIN 4% ORGANIC MATTER. SOILS USED IN THE MIX SHALL BE SAND OR SANDY LOAM AS DEFINED BY THE USDA; SHOP DRAWING SUBMITTAL IS REQUIRED. FIND USDA SIEVE FOR SAND AND SANDY LOAM.
  i. RAKE BEDS TO SMOOTH AND REMOVE SURFACE ROCKS LARGER THAN 2 INCHES IN DIAMETER;
  j. WATER OR ROLL TO COMPACT SOIL IN TURF AREAS TO 85% OF

SOIL MANAGEMENT

- IDENTIFIES AREAS ON THE SITE SUBJECT TO THE STANDARD;
- SOIL DEPTH AND QUALITY SHALL BE ESTABLISHED TOWARDS THE END OF CONSTRUCTION AND ONCE ESTABLISHED, PROTECTED FROM COMPACTION, SUCH AS FROM LARGE MACHINERY, VEHICLE TRAFFIC, AND FROM EROSION;
- AFTER SOIL AMENDMENTS AND PLACEMENT IS COMPLETE, AND PRIOR TO SEEDING AND MULCHING, CONTRACTOR SHALL PERFORM VERIFICATION SAMPLING IN LOCATIONS INDICATED ON SAMPLING PLAN. VERIFICATION SAMPLING SHALL INCLUDE NINE, 8 INCH DEEP (MIN) TEST HOLES PER ACRE OF AREA SUBJECT TO THE STANDARD. TEST HOLES SHALL BE EXCAVATED USING ONLY A SHOVEL DRIVEN SOLELY BY INSPECTOR'S WEIGHT AND SHALL BE AT LEAST 50 FEET APART FROM EACH OTHER.
- A DENSE AND VIGOROUS VEGETATIVE COVER SHALL BE ESTABLISHED OVER TURF AREAS.

Soils Restoration Legend

SOILS SUBJECT TO POST-CONSTRUCTION SOIL DEPTH & QUALITY STANDARD. PLANT WITH URBAN SEED MIX

SOILS SUBJECT TO POST-CONSTRUCTION SOIL DEPTH & QUALITY STANDARD. PLANT WITH VERMONT WET MEADOW & RETENTION BASIN SEED MIX

POST-CONSTRUCTION SOIL DEPTH & QUALITY STANDARD VERIFICATION TEST PIT. MINIMUM 9/ACRE.

Estimated 1.0 acre disturbance x 9 test pits/acre = 9 verification test pits (min).

VERMONT NATIVE SEED MIX LIST:

Seed Mix Name	Species	Application Rate	Area	Estimated Quantity
Vermont Wet Meadow & Detention Basin Mix	Switchgrass (*Panicum virgatum*), Virginia wild rye (*Elymus virginicus*), Red fescue (*Festuca rubra*), Fox sedge (*Carex vulpinoidea*), Woolgrass (*Scirpus cyperinus*), Green bulrush (*Scirpus atrovirens*), Nodding bur-marigold (*Bidens cernua*), Boneset (*Eupatorium perfoliatum*), Joe-pye weed (*Eupatoriadelphus maculatus*), soft rush (*Juncus effusus*), Sensitive fern (*Onoclea sensibilis*), Blue vervain (*Verbena hastata*), New England aster (*Symphyotrichum nova-angliaea*)	35 Lbs. / Acre	1.14 Acres	39.8 Lbs.
Vermont Native Wildflower & Grass Mix	Indiangrass (*Sorghastrum nutans*), Little bluestem (*Schizachyrium scoparium*), Virginia wild rye (*Elymus virginicus*), Side oats grama (*Bouteloua curtipendula*), Partridge pea (*Chamaecrista fasciculata*), Black-eyed susan (*Rudbeckia hirta*), American senna (*Senna hebecarpa*), Golden alexanders (*Zizia aurea*), Big bluestem (*Andropogon gerardii*), Smooth ox-eye (*Heliopsis helianthoides*), Maryland senna (*Senna marilandica*), Whorled rosinweed (*Silphium trifoliatum*), Narrow-leaved goldenrod (*Euthamia graminifolia*)	18 Lbs. / Acre	0.965 Acres	17.4 Lbs.

ADDITIONAL SOILS RESTORATION

1. SOIL DEPTH AND QUALITY SHALL BE ESTABLISHED TOWARDS THE END OF CONSTRUCTION, AND ONCE ESTABLISHED, BE PROTECTED FROM COMPACTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF THE POST CONSTRUCTION SOIL DEPTH AND QUALITY.
3. VERIFICATION SHALL BE VIA A SAMPLING SCHEME THAT INCLUDES NINE 8" DEEP TEST HOLES PER ACRE OF AREA SUBJECT TO THE STANDARD.
4. TEST HOLES SHALL BE EXCAVATED USING ONLY A SHOVEL DRIVEN SOLELY BY THE INSPECTOR'S WEIGHT AND SHALL BE AT LEAST 50 FEET APART FROM EACH OTHER.
5. ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS (LOD) ARE SUBJECT TO THE POST-CONSTRUCTION SOIL DEPTH AND QUALITY STANDARD

0' 30' 60' 90'
Bar Scale 1" = 30'

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Grid North (NAD83)
Vermont State Plane

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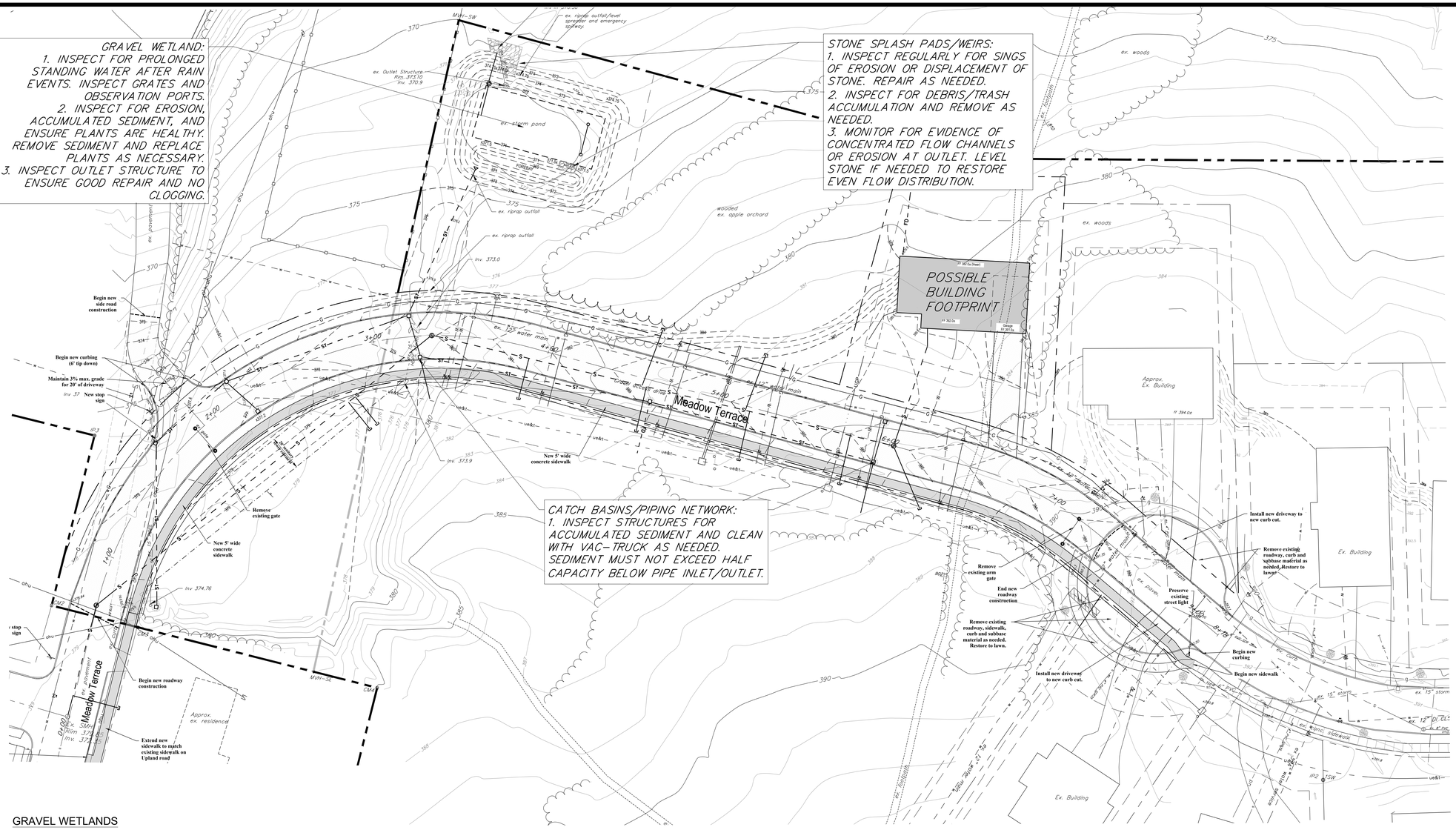
Drawing Title
Post Construction Soil Depth & Quality Plan

Drawing No.
C-6.1

22351\DWGS\CTE-2025.dwg



GRAVEL WETLANDS

Maintenance: The plant biomass should be harvested annually, and accumulated sediment removed at intervals of 5-10 years. These activities may disrupt the wetlands system and may require some vegetation re-establishment. The riser pipes may clog and will require annual clean-out (it should be done in the winter time when one can walk on the wetland).

- *First Year Post-Construction:* Inspection frequency should occur after every major storm in the first year following construction.
  - Inspect that the system drains within 24-48 hours.
  - The plants may need watering if necessary during the first growing season. Revegetate if the vegetation is poorly establishing.
  - Identify areas of erosion and make timely repairs.
  - Check all inlets, outlets and subdrains for proper functioning. Risers may need to be cleaned.
- *Post-Construction:* Inspection frequency should occur at least every 6 months and after every major storm. Activities are expected to include:
  - Check the basin for a dense root mat establishment of wetland vegetation.
  - Check and clean the risers if there is evidence of standing water, discolored water or accumulated sediments in the cells.
  - Check and clean the forebay for sediments, trash and debris. When sediments have accumulated to a depth of 12 inches, standing water is persistent or wetland vegetation become established, the forebay will need to be excavated and reformed.
  - Verify that the cells drain within 24-48 hours. Sediment will need to be removed when an accumulation of 4 inches is evident over the wetland surface.
  - Check and clean all outlets and overflow spillway if blocked or there is evidence of structural damage or erosion.
  - Remove decaying vegetation, litter and debris.
  - Check for foreign species. Particular care must be used to avoid the unintended introduction of invasive species such as purple loosestrife (Lythrum salicaria) and common reed (Phragmites australis). It is recommended that a qualified wetland biologist be consulted when these are found in the area of the gravel wetland.

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Project:
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Essex Junction, Vermont

Project No.	22351
Scale	1" = 30'
Drawn by	TJB/SWH
Checked by	
Date	01/30/2025

Revisions

No.	Date	
	03/21/25	Staff & Engineer comments

Drawing Title
STORMWATER MAINTENANCE PLAN

Drawing No.
C-6.2

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GENERAL CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DISTURBED AREAS BACK TO ORIGINAL CONDITION, INCLUDING BUT NOT LIMITED TO CURBING, SIDEWALKS, ROAD, PARKING AREAS, LANDSCAPING, SITE LIGHTING, ELECTRICAL, AND ETC. ALL ASPHALT SHALL BE SAW-CUT PRIOR TO PAVING.
2. THE METHODS AND MATERIALS OF CONSTRUCTION SHALL CONFORM TO THE LATEST STANDARDS OF THE STATE OF VERMONT AND CITY OF ESSEX JUNCTION, ALL WORK SHALL BE IN CONFORMANCE WITH ALL PERMITS AND APPROVALS ISSUED FOR THE PROJECT. IN CASE OF CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY AS DIRECTED BY ENGINEER. ALL WORK SHALL BE DONE IN A WORKMANLIKE MANNER AND COMPLETED IN THE TIME SPECIFIED BY OWNER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK AND MATERIALS SHOWN AND REQUIRED TO MAKE THE JOB COMPLETE. THESE DRAWINGS DO NOT SHOW EVERY FITTING OR APPURTENANCE. MATERIALS SHALL BE AS SPECIFIED ON THE DRAWINGS. MANUFACTURER'S PRODUCT SPECIFICATIONS SHALL BE SUBMITTED FOR ALL MATERIALS TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
4. THE LOCATION AND SIZE OF EXISTING UNDERGROUND UTILITIES IS NOT WARRANTED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES AND SHALL CONTACT THE AFFECTED UTILITY COMPANY, THE ENGINEER AND THE MUNICIPALITY PRIOR TO MAKING ANY HOOK UPS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXISTING UTILITIES AND THEIR UNINTERRUPTED SERVICES. ALL OFF-SITE BACKFILL, SHEETING, SHORING, DEWATERING, CLEARING AND GRUBBING, EROSION CONTROL, DUST CONTROL, TRAFFIC CONTROL, GRADING, AND ALL INCIDENTALS SHALL BE INCLUDED AS PART OF THE REQUIRED WORK.
5. THE CONTRACTOR SHALL VERIFY ALL TEMPORARY BENCH MARKS BEFORE USE.
6. THE WORKMEN AND PUBLIC SHALL BE PROTECTED BY THE CONTRACTOR FROM ANY AND ALL HAZARDS CONNECTED WITH THE CONSTRUCTION WORK. OPEN TRENCHES, MATERIALS, OR EQUIPMENT WITHIN THE WORKING LIMITS ARE TO BE GUARDED BY THE USE OF ADEQUATE BARRICADES OR FLAGMEN. ALL BARRICADES LEFT IN POSITION OVERNIGHT ARE TO BE PROPERLY LIGHTED. KEROSENE POTS ARE NOT ACCEPTABLE. WHEN WORK NARROWS THE USABLE PAVEMENT, FLAGMEN SHALL BE EMPLOYED TO AID THE FLOW OF TRAFFIC SO THAT THERE WILL BE NO UNDUE DELAYS. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE SAFETY OF ALL WORKMEN, THE GENERAL PUBLIC AND ALL DAMAGES TO PROPERTY OCCURRING FROM OR UPON THE WORK OCCASIONED BY NEGLIGENCE OR OTHERWISE GROWING OUT OF A FAILURE ON THE PART OF THE CONTRACTOR TO PROTECT PERSONS OR PROPERTY FROM HAZARDS OF OPEN TRENCHES, MATERIALS, OR EQUIPMENT AT ANY TIME OF THE DAY OR NIGHT WITHIN THE WORKING AREA. ALL WORK SHALL BE IN CONFORMANCE TO OSHA REGULATIONS, TITLE 19, PARTS 1926.651 AND 1926.652, AND APPLICABLE TO VOSHA REGULATIONS.
7. THE CONTRACTOR SHALL VERIFY ALL UTILITY INTERSECTIONS AND CONTACT ENGINEER AND OWNER WITH CONFLICTS.
8. THE CONTRACTOR SHALL CALL, DIG SAFE PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL CONTACT THE CITY OF ESSEX JUNCTION 48 HOURS IN ADVANCE OF ANY EXCAVATION SO THEY CAN MARK THE LOCATIONS OF UTILITIES NOT COVERED BY DIG SAFE.
9. THE CONTRACTOR SHALL COORDINATE FINAL LOCATION AND INVERTS FOR WATER, SEWER, AND STORM BUILDING CONNECTIONS WITH THE ARCHITECT, STRUCTURAL ENGINEER, AND MECHANICAL ENGINEER.
10. ALL STUMPS, ROCK, AND OTHER NON-APPROVED TRENCH BACKFILL MATERIAL DISCOVERED DURING CONSTRUCTION IS THE EXCLUSIVE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROPERTY AND DISPOSED OF IN A STATE APPROVED DISPOSAL LOCATION. ALL EXISTING SOILS REUSED FOR FILL SHALL CONFORM TO ALL APPLICABLE SECTIONS OF VTRANS SPECIFICATIONS SECTION 203-EXCAVATION & EMBANKMENTS.CONTRACTOR SHALL REVIEW SOIL INVESTIGATION REPORT AND SOILS LOGS PRIOR TO BID. ANY SOIL REUSED AS FILL UNDER ROADS AND APPLICABLE CONCRETE SIDEWALKS SHALL PASS A SUBGRADE PROOF ROLL WITH A LOADED TANDEM. FILL SOILS THAT DO NOT PASS A SUBGRADE PROOF ROLL SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
11. ALL PASSING SIEVE, PROCTOR, AND COMPACTION TESTING EXPENSES SHALL BE PAID BY OWNER. TESTING COORDINATION, ALL OTHER REQUIRED TESTING, AND EXPENSES FOR FAILED TESTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
12. THE CONTRACTOR SHALL CONTACT THE GREEN MOUNTAIN POWER (GMP) PRIOR TO ANY WORK IN THE VICINITY OF THE EXISTING ELECTRIC CONDUITS.
13. THIS PROJECT WILL LIKELY NOT REQUIRE COVERAGE UNDER AN STATE OF VERMONT GENERAL CONSTRUCTION STORMWATER DISCHARGE PERMIT. THE CONTRACTOR WILL STILL FOLLOW RULES, REGULATIONS, AND DIRECTION OUTLINED IN THE STATE OF VERMONT "LOW RISK HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL" FROM FEBRUARY 2020.THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING, MAINTAINING AND REMOVING ALL EROSION AND SEDIMENT CONTROL DEVICES SHOWN ON THE PLANS OR DETAILS AND, TO THE MAXIMUM EXTENT PRACTICAL, TO MINIMIZE POTENTIAL CONTAMINATION OF STORMWATER RUNOFF FROM THE CONSTRUCTION ACTIVITIES.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL "AS-BUILT" MEASUREMENT AND DRAFTING REQUIREMENTS AS OUTLINED ON THE DETAIL SHEETS. ALL TRENCH EXCAVATIONS SHALL REMAIN OPEN UNTIL ALL AS-BUILT SURVEY SHOTS HAVE BEEN TAKEN. PROGRESS RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER AS INDICATED IN THE RECORD DRAWING SPECIFICATIONS.
15. SEE EROSION CONTROL AND LOGISTICS PLANS FOR LOCATIONS OF STAGING / STORAGE AREAS.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SIGNAGE AND CONSTRUCTION BARRIER/SAFETY FENCING NECESSARY FOR PROVIDING SAFE VEHICULAR AND PEDESTRIAN ACCESS THROUGH OR AROUND THE SITE DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE THIS WITH THE CITY OF ESSEX JUNCTION AND THE CITY OF ESSEX JUNCTION DEPARTMENT OF PUBLIC WORKS.
17. DEFINITION OF "PRECONSTRUCTION EXCAVATION" FOR THESE CONTRACT DOCUMENTS SHALL BE: THE SITE CONTRACTOR SHALL EXPOSE UTILITIES AND OBTAIN ALL NECESSARY INFORMATION, INCLUDING BUT NOT LIMITED TO, INVERT ELEVATION, SIZE, DEPTH, PIPE TYPE, JOINT LOCATION, ETC. CONTRACTOR SHALL TRANSIT SURVEY THE LOCATION AND ELEVATIONS OF THE UTILITY. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH SKETCHES INDICATING HORIZONTAL AND VERTICAL INFORMATION OF PIPE OR CONDUIT TYPE AND SIZE, CROSS-SECTION INFORMATION, CONCRETE ENCASEMENT INFORMATION (TOP AND BOTTOM ELEVATIONS, WIDTH, ETC.), JOINT LOCATION, ETC. OF EACH REQUIRED EXISTING UNDERGROUND UTILITY. ACCURACY OF HORIZONTAL LOCATION IS WITHIN 1 FOOT, AND ACCURACY OF VERTICAL ELEVATION IS WITHIN 0.02 FT. (1/4"). COORDINATE ALL EXCAVATION WITH CITY, OWNER, AND ENGINEER. PRECONSTRUCTION EXCAVATIONS SHALL OCCUR PRIOR TO ORDERING STRUCTURES AND PRIOR TO UTILITY CONSTRUCTION TO FACILITATE REDESIGN AND/OR DESIGN CONFIRMATION.
18. THE LOCATION OF THE PRECONSTRUCTION EXCAVATION SYMBOLS DOES NOT NECESSARILY INDICATE THE LOCATION OF THE BURIED UTILITY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIND AND EXPOSE THE UTILITY.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF IMPORTING AND PLACING TOPSOIL AND/OR COMPOST NECESSARY TO COMPLETE THE PROJECT. CONTRACTOR SHALL TEST TOPSOIL FOR APPROVAL BY THE OWNER AND ENGINEER.
20. ALL SEWER AND STORM PIPES SHALL BE PVC SDR 35 (SANITARY) OR CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) UNLESS OTHERWISE NOTED. ALL NEW SANITARY AND STORM PIPES SHALL BE LAID WITH A LASER TO ELEVATION AND SLOPE AS SHOWN ON THE PLANS.
21. CORE AND BOOT ALL EXISTING STRUCTURES UNLESS OTHERWISE NOTED.
22. ALL NEW CATCH BASINS AND SANITARY SEWER MANHOLE MUST HAVE ONE 6" PRECAST CONCRETE GRADE RING.
23. ALL WATERLINE PIPE SHALL BE DOUBLE CEMENT LINED DUCTILE IRON PIPE, CLASS 52. ALL BENDS AND FITTINGS SHALL HAVE POURED IN PLACE CONCRETE THRUST BLOCKS, REDI-MIX AND SACRETE IS NOT ACCEPTABLE.
24. TEMPORARY GROUNDWATER, STORMWATER, AND SEWER BY-PASS PUMPING AND/OR DIVERSION IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY PUMPS AND EQUIPMENT TO PERFORM THE WORK. OVERNIGHT PUMPING IS NOT ALLOWED.
25. ALL SIDEWALKS SHALL HAVE 2% MAXIMUM CROSS SLOPE. ALL RAMPS AND STAIRS SHALL HAVE A LANDING AT THE BOTTOM WITH A MAXIMUM SLOPE OF 2% FOR 5 FEET.
26. CONTRACTOR TO PIN CONCRETE SIDEWALK/SLABS TO ALL CONTACT POINTS WITH STAIRS, BUILDING, BIKE SLAB, RETAINING WALLS, ETC.
27. CONTRACTOR SHALL MAINTAIN FULL OCCUPANCY AND FIRE DEPARTMENT ACCESS TO ALL SURROUNDING BUILDINGS. COORDINATE ALL TEMPORARY ACCESS WITH THE MUNICIPALITY.
28. BURIED NATURAL GAS IS SHOWN FOR ALIGNMENT PURPOSES ONLY. CONTACT VERMONT GAS SYSTEMS FOR DESIGN AND DETAILS OF NEW GAS LINE. CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXCAVATION, BACKFILL, AND RESTORATION FOR THE CONSTRUCTION OF THE NATURAL GAS LINES. VERMONT GAS SYSTEMS WILL PROVIDE THE PIPING, LABOR TO INSTALL, AND TESTING FOR THE NEW GAS MAIN. COORDINATE WORK AND ALL GAS SHUT DOWN PROCEDURES WITH THE OWNER.
29. REMOVAL OF ALL EROSION CONTROL IS THE RESPONSIBILITY OF THE CONTRACTOR.
30. AT THE END OF THE PROJECT, CLEAN THE SUMPS OF ALL NEW AND EXISTING CATCH BASINS AND STORM MANHOLES WITHIN THE PROJECT LIMITS. FOR BASINS WITHIN THE CITY STREET, CONTRACTOR IS REQUIRED TO NOTIFY THE CITY OF ESSEX JUNCTION UPON COMPLETION OF CATCH BASIN CLEANING SO THE CITY CAN INSPECT THE WORK PERFORMED.
31. ELECTRICAL AND LIGHTING ARE SHOWN FOR ILLUSTRATIVE/COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL PLANS AND SPECIFICATIONS FOR DESIGN.
32. SEE LANDSCAPE AND/OR STRUCTURAL PLANS FOR ALL RETAINING WALLS, UTILITY PADS, STAIRS, AND EXTERIOR CONCRETE AT DOORS.
33. REFER TO PLUMBING, MECHANICAL AND/OR FIRE PROTECTION PLANS FOR WATER, SEWER AND STORM DESIGN WITHIN FIVE FEET OF THE BUILDING.

EPSC GENERAL NOTES:

1. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) PRACTICES SHALL BE IMPLEMENTED IN ALL AREAS WHERE THERE IS AN INCREASED RISK OF EROSION, AND WHERE THERE IS POTENTIAL FOR DISCHARGE OF STORMWATER RUNOFF (EITHER DIRECT OR INDIRECT) TO A WATER BODY.
2. EPSC MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITIES WITHIN A GIVEN DRAINAGE AREA WITH THE EXCEPTION OF LAND DISTURBANCE THAT MAY RESULT FROM ACCESSING THE AREA(S) WITH EQUIPMENT IN WHICH EPSC MEASURES ARE TO BE INSTALLED. THIS EXCEPTION INCLUDES LAND DISTURBANCE THAT MAY RESULT FROM ACCESS OF EQUIPMENT THAT IS NEEDED FOR:EXPLORATION AND/OR EPSC MEASURE INSTALLATION PHASES OF THE PROJECT. TEMPORARY SEDIMENT BASINS, TEMPORARY SEDIMENT TRAPS, PERIMETER DIKES, TEMPORARY SEDIMENT BARRIERS, AND OTHER TEMPORARY MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE WITH THE EXCEPTION OF THOSE ACTIVITES STATED ABOVE. EARTH DISTURBANCE INCLUDES STUMPING AND GRUBBING OF CLEARED AREAS.
3. EPSC MEASURES SHALL BE INSTALLED PURSUANT TO THE EPSC PLAN, THE 2020 STATE OF VERMONT LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL, THE 2020 VERMONT EROSION PREVENTION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS, AND/OR ANY OTHER RELEVANT PROJECT PERMITS.
4. ALL PROPOSED CHANGES SHALL BE APPROVED BY THE ON-SITE PLAN COORDINATOR (OSPC) OR HIS/HER DESIGNEE PRIOR TO IMPLEMENTATION.
5. NO MAJOR CLEARING/LOGGING ACTIVITIES ARE PROPOSED FOR THE PROJECT.
6. PERMISSION MUST BE GRANTED BY VT DEC PRIOR TO USE OF ANY SUPPORT ACTIVITIES OCCURRING OUTSIDE OF THE APPROVED PROJECT BOUNDARIES.
7. ALL PARTIES ASSOCIATED WITH CONSTRUCTION ACTIVITIES WHO MEET EITHER OF THE FOLLOWING TWO CRITERIA OF “PRINCIPAL OPERATOR” MUST OBTAIN COVERAGE UNDER THE CONSTRUCTION STORMWATER DISCHARGE PERMIT FOR THE PROJECT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES BY THAT OPERATOR:
   A. THE PARTY HAS OPERATIONAL CONTROL OVER CONSTRUCTION PLANS AND SPECIFICATION, INCLUDING BUT NOT LIMITED TO THE ABILITY TO MAKE MODIFICATIONS TO THOSE PLANS AND SPECIFICATIONS; OR
   B. THE PARTY HAS CONTINUOUS DAY-TO-DAY OPERATIONAL CONTROL OF THOSE ACTIVITIES AT THE PROJECT THAT ARE NECESSARY TO ENSURE COMPLIANCE WITH AN EPSC PLAN FOR THE SITE OR OTHER PERMIT CONDITIONS (E.G., THEY ARE AUTHORIZED TO DIRECT WORKERS AT A SITE TO CARRY OUT ACTIVITIES REQUIRED BY THE EPSC PLAN OR COMPLY WITH OTHER PERMIT CONDITIONS).

EPSC CONSTRUCTION NOTES:

1. EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED TO THE EXTENT PRACTICABLE.
2. A VEGETATED BUFFER SHALL BE MAINTAINED FOR WATER BODIES WHERE FEASIBLE (E.G., WETLANDS AND STREAMS).
3. TO THE EXTENT PRACTICABLE, SURFACE FLOW SHALL BE DIVERTED AWAY FROM EXPOSED SOILS VIA DIVERSION BERMS, EARTH DIKES, PERIMETER DIKES/SWALES, TEMPORARY SWALES, WATER BARS, AND/OR CHECK DAMS.
4. RESOURCE AREAS (E.G., WETLANDS, STREAMS, RTE PLANT SPECIES) SHALL BE FLAGGED PRIOR TO ANY CONSTRUCTION RELATED ACTIVITIES OCCURRING WITHIN CLOSE PROXIMITY TO THOSE AREAS.
5. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT VIOLATE WATER QUALITY STANDARDS OR CONTRIBUTE TO EROSION. DEWATERING DETAILS SHALL BE REVIEWED AND APPROVED BY OSPC PRIOR TO USE.
6. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN STEEP SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL (SEE DETAILS), FLUME, OR SLOPE DRAIN STRUCTURE.
7. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
   A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
   B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES, WHERE FEASIBLE, BUT NOT IN RESOURCE AREAS.
8. WHERE FEASIBLE, ALL SEDIMENT REMOVED FROM SEDIMENT CONTROL PRACTICES AS PART OF MAINTENANCE SHALL BE DISPOSED OF IN AN AREA THAT IS AT LEAST ONE OF THE FOLLOWING, WITH IMMEDIATE STABILIZATION FOLLOWING DISPOSAL OF MATERIAL:
   A. LESS THAN 5±% SLOPE
   B. AT LEAST 100 FEET FROM ANY DOWNSLOPE WATER BODY OR CONVEYANCE TO A WATER BODY, INCLUDING A DITCH
   C. VEGETATED
9. DISTURBED AREAS BORDERING OR DRAINING TO EXISTING ROADS SHALL HAVE AN APPROPRIATE SEDIMENT BARRIER (E.G., SILT FENCE) SPANNING THE EDGE OF THE DISTURBANCE TO PREVENT WASHING OF SEDIMENT ONTO ROADWAYS OR INTO ROAD DITCHES.
10. IN ADVANCE OF PREDICTED RAINFALL OR SNOWMELT, ALL EPSC MEASURES THAT ARE LOCATED IN ACTIVE AREAS OF EARTH DISTURBANCE SHALL BE INSPECTED AND REPAIRED, AS NEEDED. IF NECESSARY, THIS SHALL INCLUDE TEMPORARY STABILIZATION OF ALL DISTURBED SOILS ON THE SITE IN ADVANCE OF THE ANTICIPATED RUNOFF PERIOD.
11. DUST CONTROL SHALL BE HANDLED VIA WATER APPLICATION TO ROADWAYS AND OTHER AREAS WHERE DUST MAY BE GENERATED.

GENERAL GRADING AND SITE WORK NOTES

1. ALL AREA DISTURBED AND ALL AREAS WITHIN THE CLEARING LIMITS SHALL BE GRADED AND COVERED WITH A MINIMUM OF 6" OF LOAM TOPSOIL. ADDITIONAL TOPSOIL DEPTHS AND SPECIFICATIONS MAY BE OUTLINED BY THE LANDSCAPE ARCHITECT FOR SPECIFIC AREAS. THE AREAS TO BE LOAMED SHALL BE FREE AND CLEAR OF ROOTS, WASTE MATERIAL AND OTHER DELETERIOUS MATERIAL. TOPSOIL SHALL BE SPREAD AND LIGHTLY COMPACTED TO A DEPTH OF 6". TOPSOIL SHALL BE APPROVED BY THE ENGINEER AND/OR LANDSCAPE ARCHITECT. ALL SIDE SLOPES ARE TO BE LOAMED.
2. ALL TURF ESTABLISHMENT SHALL BE IN ACCORDANCE WITH SECTION 651 OF THE VT STANDARD SPECIFICATIONS 2018 AND THE MUNICIPALITY SPECIFICATIONS. MULCHING SHALL FOLLOW SEEDING BY NO MORE THAN 24 HOURS.
3. ALL CUT SLOPES SHALL BE NO STEEPER THAN 2.0H ON 1.0V. ALL FILL SLOPES SHALL BE NO STEEPER THAN 2.0H ON 1.0V.
4. THE CONTRACTOR SHALL NOT DISTURB ANY GROUND BETWEEN OCTOBER 15TH BETWEEN APRIL 15TH WINTER MONTHS, UNLESS APPROVED BY THE ENGINEER.
5. TEMPORARY SILT FENCE SHALL BE ERECTED PRIOR TO ANY CLEARING OR CONSTRUCTION. FENCING MAY BE ERECTED IN PHASES, BUT IN NO CASE SHALL GROUND DISTURBANCE PROCEED FENCING. SPECIAL AREAS MAY BE DESIGNATED BY THE OWNER FOR PRESERVATION OF EXISTING TREES. THESE AREAS SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE NO DAMAGE IS DONE TO DESIGNATED TREES.
6. EXISTING PLANTINGS ARE LOCATED IN GENERAL AREAS AS SHOWN ON THIS PLAN. CONTRACTOR SHALL PROTECT PLANTINGS SO AS NOT TO DAMAGE THESE OR THEIR ROOT SYSTEMS.
7. SLOPE STABILITY BASED UPON UNSATURATED SOIL CONDITIONS. IF DURING CONSTRUCTION SATURATED SOILS ARE ENCOUNTERED, CONTACT THE ENGINEER IMMEDIATELY.

WATER & SEWER CONSTRUCTION NOTES

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CONSTRUCTION OF WATER MAIN, STORM AND SANITARY SEWER SYSTEMS AS SHOWN ON THE PLANS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL NECESSARY ADAPTERS, FITTINGS, ETC. TO MAKE CONNECTIONS TO THE EXISTING AND PROPOSED UNITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK SHOWN OR IMPLIED ON THE PLANS AND/OR REFERENCED IN THE SPECIFICATIONS AND PERMITS. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL BY THE ENGINEER, ALL TYPES OF MATERIALS AND PRODUCTS USED.
2. THE CONTRACTOR SHALL COORDINATE ALL WORK ON THE WATER SUPPLY SYSTEM WITH THE OWNER, THE CITY OF ESSEX JUNCTION, CITY OF ESSEX JUNCTION DEPARTMENT OF PUBLIC WORKS, ESSEX JUNCTION WATER DEPARTMENT (EWD), AND THE CIVIL ENGINEER. ALL WATER INSTALLATION WORK AND WATER DISTRIBUTION MATERIALS MUST COMPLY WITH THE CURRENT ESSEX JUNCTION WATER DEPARTMENT'S SPECIFICATIONS.
3. THESE PLANS ARE NOT RESPONSIBLE FOR DESIGN OF WATER AND SEWER SERVICES WITHIN 5 FEET OF THE BUILDING. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR EXTENDING THE SERVICES TO THE PLUMBING AND/OR FIRE SYSTEM CONNECTION WITHIN THE BUILDING. SEE PLUMBING ENGINEER, MECHANICAL ENGINEER AND/OR FIRE PROTECTION PLANS FOR SCOPE, DESIGN AND SPECIFICATIONS WITHIN 5 FT. OF THE BUILDING.
4. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS AND APPURTENANCES TO COMPLETE THE WATERLINE CONSTRUCTION WORK. THIS INCLUDES TEMPORARY FITTINGS AND GAUGES NECESSARY TO SAFELY COMPLETE THE FLUSHING ACTIVITIES REQUIRED PRIOR TO MAKING CONNECTIONS WITH BUILDING PLUMBING.
5. THE PROJECT SHALL BE CONSTRUCTED, COMPLETED, MAINTAINED, AND OPERATED IN ACCORDANCE WITH THE APPROVED PLANS. NO CHANGES SHALL BE MADE IN THE PROJECT WITH OUT THE WRITTEN APPROVAL OF THE CITY, ESSEX JUNCTION WATER DEPARTMENT, AND THE CIVIL ENGINEER. A COPY OF THE FINAL APPROVED PLANS SHALL BE SUBMITTED TO THE CITY PRIOR TO CONSTRUCTION OF THE WATER SYSTEM IMPROVEMENTS.
6. THE CITY AND ESSEX JUNCTION WATER DEPARTMENT SHALL BE NOTIFIED IN ADVANCE TO INSPECT ALL MECHANICAL JOINTS FITTINGS, MAIN LINE TAPS, APPURTENANCES, THRUST BLOCKS, WATER LINE CROSSINGS, AND TESTING PRIOR TO OCCURRENCE OR BACKFILLING.
7. ALL DOMESTIC SERVICES AND FIRE SPRINKLER SYSTEMS THAT ARE CONNECTED TO THE PUBLIC WATER SYSTEM SHALL BE PROTECTED WITH A BACKFLOW PREVENTION ASSEMBLY, AND AN APPROPRIATE THERMAL EXPANSION SYSTEM. THE MECHANICAL CONTRACTOR SHALL COORDINATE APPROVED BACKFLOW PREVENTION WITH THE CITY AND ESSEX JUNCTION WATER DEPARTMENT.

WATER MAINS

1. APPLIES TO NEW DOMESTIC WATER MAINS AND SERVICES.
2. THE PIPE FOR WATER MAIN GREATER THAN 2" SHALL BE CL52 DOUBLE CEMENT LINED DUCTILE IRON. DUCTILE IRON FITTINGS SHALL CONFORM TO AWWA C110, 350 POUNDS WORKING PRESSURE. VALVES SHALL BE MANUFACTURED TO MEET ALL REQUIREMENTS OF AWWA SPECIFICATION C509 OR C515. FOUR-INCH AND SIX-INCH PIPE SHALL HAVE NO LESS THAN 2 BRASS WEDGES INSTALLED AT EACH JOINT. EIGHT-INCH AND TEN-INCH PIPE SHALL HAVE NO LESS THAN 3 WEDGES INSTALLED AT EACH JOINT. THE PIPE FOR WATER SERVICES LESS THAN 2" SHALL BE K-COPPER.
3. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH AWWA C600. THE PIPE SHALL BE KEPT FREE OF FOREIGN MATTER AND DEBRIS DURING INSTALLATION. WHEN THE PROCESS OF PIPE LAYING HAS STOPPED, ANY OPEN ENDS OF PIPE SHALL BE PLUGGED. THERE SHALL BE A MINIMUM OF 6'-0" COVER OVER ALL PIPE AND SERVICE LINES. ANY PIPE DEFLECTION SHALL NOT EXCEED FIFTY (50%) PERCENT OF RECOMMENDED MANUFACTURER'S MAXIMUM DEFLECTION. BACKFILL MATERIALS AND PROCEDURES SHALL BE AS DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL SHEETING AND/OR SHORING NECESSARY TO COMPLY WITH OSHA - VOSHA REGULATIONS.
4. THE TESTING OF THE WATER MAIN SHALL CONSIST OF THE TESTING OF ALL INSTALLED PIPE, SERVICES AND HYDRANTS IN ACCORDANCE WITH AWWA C600. THE TESTING SHALL CONSIST OF A PRESSURE TEST AND LEAKAGE TEST. ALL TESTING SHALL BE DONE WITH POTABLE WATER AND IN THE PRESENCE OF THE ENGINEER, REPRESENTATIVES FROM THE MUNICIPALITY AND THE MUNICIPALITY PUBLIC WORKS. THE PRESSURE TEST CONSISTS OF MAINTAINING A MINIMUM INTERNAL PIPE PRESSURE OF 200 PSI FOR TWO (2) HOURS. THE TESTING ALLOWANCE SHALL BE DEFINED AS THE MAXIMUM QUANTITY OF MAKEUP WATER THAT IS ADDED INTO A PIPELINE UNDERGOING HYDROSTATIC PRESSURE TESTING, OR ANY VALVED SECTION THEREOF, IN ORDER TO MAINTAIN PRESSURE WITHIN +/- 5 PSI OF THE SPECIFIED TEST PRESSURE (AFTER THE PIPELINE HAS BEEN FILLED WITH WATER AND THE AIR HAS BEEN EXPELLED). NO PIPE INSTALLATION WILL BE ACCEPTED IF THE QUANTITY OF MAKEUP WATER IS GREATER THAN THAT DETERMINED BY THE FOLLOWING FORMULA:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = TESTING ALLOWANCE (MAKEUP WATER), IN GALLONS PER HOUR
S = LENGTH OF PIPE TESTED, IN FEET
D = NOMINAL PIPE DIAMETER, IN INCHES
P = AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST, IN POUNDS PER SQUARE INCH (GAUGE)

5. CHLORINATING OF THE SYSTEM SHALL BE ACCOMPLISHED AFTER THE WATER MAIN HAS BEEN SUCCESSFULLY PRESSURE TESTED AND THOROUGHLY FLUSHED. DISINFECTING SHALL BE IN ACCORDANCE WITH AWWA C-651. THE DISINFECTING PROCESS SHALL BE DEEMED ACCEPTABLE ONLY AFTER TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES, TAKEN FROM THE FLUSHED AND DISINFECTED MAIN 24 HOURS APART, SHOWS NO EVIDENCE OF BACTERIOLOGICAL CONTAMINATION. FOR PROPER DISINFECTION USE MINIMUM 25 MG/L CHLORINE CONCENTRATION FOR 24 HOURS. THE CONCENTRATION MUST REMAIN ABOVE 10 MG/L. TABLET DISINFECTING IS NOT ACCEPTABLE. DECHLORINATION SHALL BE REQUIRED WHILE FLUSHING THE ORIGINAL CHLORINE FROM THE NEW LINE. COORDINATE WITH THE THE MUNICIPALITY AND THE MUNICIPALITY PUBLIC WORKS REGARDING THE THE DISPOSAL OF THE HIGHLY CHLORINATED WATER FLUSHED FROM THE NEW WATERLINE. PRIOR TO WATER SERVICES BEING USED FOR POTABLE WATER, CONTRACTOR SHALL BACTERIA TEST THE WATER SOURCE FROM AN INTERIOR FIXTURE AND GET IT TESTED BY THE VERMONT HEALTH DEPARTMENT OR OTHER APPROVED LAB.
6. THE WATER MAIN SHALL BE THOROUGHLY FLUSHED WITH A MINIMUM FLOW VELOCITY OF 2.5 FT/S TO FLUSH FOREIGN MATERIALS OUT OF THE VALVES AND HYDRANTS. AT LEAST 48 HOURS PRIOR TO WATERLINE FLUSHING, THE CONTRACTOR SHALL CONTACT THE OWNER, MUNICIPALITY FIRE DEPARTMENT, THE DISTRICT WATER SUPPLY COMPANY, AND THE ENGINEER. REFER TO FLUSHING REQUIREMENTS ON C-2.01 FOR FIRE SERVICE MAINS.

SANITARY SEWER

1. ALL SEWER LINES AND MANHOLES SHALL BE THOROUGHLY TESTED BY THE CONTRACTOR IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION RULES (11/06/2023).
2. ALL SANITARY MANHOLES SHALL BE VACUUM TESTED IN THE PRESENCE OF THE ENGINEER. THE STRUCTURE SHALL BE TESTED PRIOR TO BACKFILL WITH THE LOWEST SEAM EXPOSED. TEST PROCEDURES AND PRESSURE SHALL BE DETERMINED JOINTLY BY THE LOCAL APPROVAL AGENCY AND THE ENGINEER. FAILURE OF ANY VACUUM TEST SHALL NECESSITATE REPAIR AND/OR REPLACEMENT OF THE STRUCTURE AND RETEST. WATER TESTING MANHOLES IS NOT ACCEPTABLE. FURTHER TESTING REQUIREMENTS FOR MANHOLES CAN BE FOUND IN THE CITY OF ESSEX JUNCTIONS LDC SECTION 115.D.6.
3. ALL SANITARY MAINS SHALL BE AIR TESTED IN THE PRESENCE OF THE ENGINEER. AT A MINIMUM, THE TEST PRESSURE SHALL BE 4 POUNDS PER SQUARE INCH AT THE HIGHEST POINT ALONG THE TEST FOR 4 MINUTES. SANITARY LINES SHALL ALSO BE TESTED TO THE REQUIREMENTS OF THE CITY OF ESSEX JUNCTIONS LDC SECTION 115.D.6.
4. UTILITY TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING SANITARY TESTING AT A MINIMUM OF 24 HOURS PRIOR TO THE TEST. BASED ON AVAILABILITY OF ENGINEER'S STAFF, THE ENGINEER SHALL ACCOMMODATE THE TESTING SCHEDULE WITHIN 24 HOURS OF THE CONTRACTOR REQUESTED TEST DATE/TIME.
5. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER IF PRE-SCHEDULED TESTING AND/OR WATER/SEWER CONSTRUCTION IS CANCELED. IF CONTRACTOR DOES NOT CONTACT ENGINEER AND ENGINEER VISITS THE SITE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENGINEER'S FEES/MILEAGE FOR SITE VISIT.

ADDITIONAL NOTES AND TESTING REQUIREMENTS

1. IN ADDITION TO THE ABOVE REQUIREMENTS AND APPLIES TO WATER AND SANITARY SEWER.
2. ALL WATER LINES AND SEWER LINES SHALL BE THOROUGHLY TESTED BY THE CONTRACTOR IN ACCORDANCE WITH THE ENVIRONMENTAL PROTECTION RULES (11/06/2023) AND THE CHAPTER 21 WATER SUPPLY RULES (03/17/2020) (THE MORE STRINGENT RULE SHALL APPLY).
3. ALL PRIVATE OR MUNICIPAL WATERLINES SHALL BE TESTED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN AWWA C600 AND/OR NFPA 24.
4. NO WATER MAIN SHALL BE CLOSER THAN TEN (10) FEET TO ANY SANITARY SEWER OR SANITARY MANHOLE AND FIVE (5) FEET TO ANY CATCH BASIN OR STORM SEWER LINE. PROVIDE MINIMUM OF 18" VERTICAL SEPARATION BETWEEN WATER MAIN AND STORM/SANITARY SEWER CROSSING.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AS-BUILTS TO SERVICE LOCATIONS, AND ANY WATER MAIN FITTINGS. AS-BUILTS SHALL BE RECORDED IN ACCORDANCE WITH THE OUTLINED PROCEDURES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ENGINEER AND A REPRESENTATIVE FROM THE CITY OF ESSEX JUNCTION AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION ON ANY PORTION OF THE EXTERIOR WATER OR SANITARY SYSTEMS. THIS NOTIFICATION REQUIREMENT SHALL CONTINUE TO THE COMPLETION OF THE WATER AND SANITARY SYSTEMS.
7. UTILITY TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING WATER AND SANITARY TESTING, WITH THE ENGINEER AND MUNICIPALITY PUBLIC WORKS, AT A MINIMUM OF 48 HOURS PRIOR TO THE TEST. BASED ON AVAILABILITY OF ENGINEER'S STAFF, THE ENGINEER SHALL ACCOMMODATE THE TESTING SCHEDULE WITHIN 48 HOURS OF THE CONTRACTOR REQUESTED TEST DATE/TIME.
8. THE CONTRACTOR SHALL PRE-TEST WATER FOR 2 HOURS. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF PRE-TEST FAILED.
9. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE ENGINEER IF PRE-SCHEDULED TESTING AND/OR WATER/SEWER CONSTRUCTION IS CANCELED. IF CONTRACTOR DOES NOT CONTACT ENGINEER AND ENGINEER VISITS THE SITE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENGINEER'S FEES/MILEAGE FOR SITE VISIT.
10. THE CONTRACTOR SHALL COORDINATE WATER/SEWER CONSTRUCTION WITH THE MUNICIPALITY. THE CONTRACTOR SHALL LEAVE THRUST BLOCKS AND OTHER REQUIRED SECTIONS OF NEW LINE EXPOSED UNTIL MUNICIPALITY HAS INSPECTED AND APPROVED IT.

ALL SEWER, WATER, AND STORM DRAINAGE UTILITIES INSTALLED ON THE PROJECT SITE TO BE OBSERVED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY OF ESSEX JUNCTION PRIOR TO BACKFILLING THE UTILITY BEING INSTALLED

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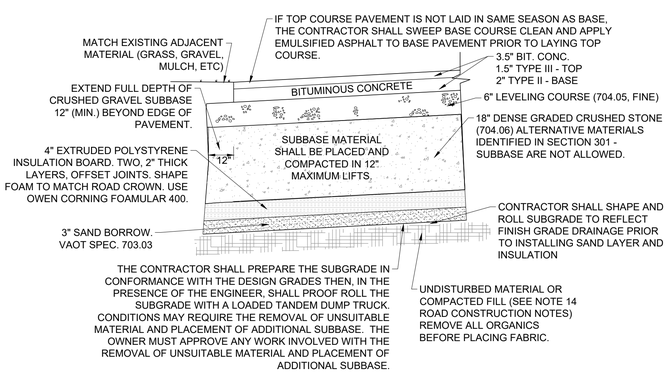

WITHOUT CURB

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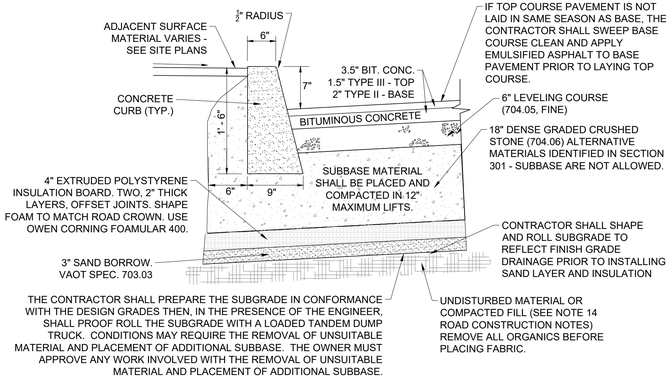


WITH CONCRETE CURB

N.T.S.

GRAVEL NOTES

1. THE CONTRACTOR TO TAKE SIEVE ANALYSIS OF GRAVEL AS SOON IT ARRIVES ON SITE OR REQUIRE QUARRY TO PROVIDE A CERTIFIED ANALYSIS FOR ENGINEERS REVIEW.
2. TRAVEL OVER GRAVEL WITH ANY VEHICLE TRACKING SOIL PRIOR TO PLACEMENT OF PAVEMENT IS PROHIBITED.
3. IF GRAVEL IS CONTAMINATED AFTER PLACEMENT, THE SITE CONTRACTOR SHALL BE RESPONSIBLE REMOVAL OF ALL CONTAMINATED GRAVEL AND PAYING FOR ALL RECOMMENDED SIEVE ANALYSIS AS DETERMINED BY THE ENGINEER.

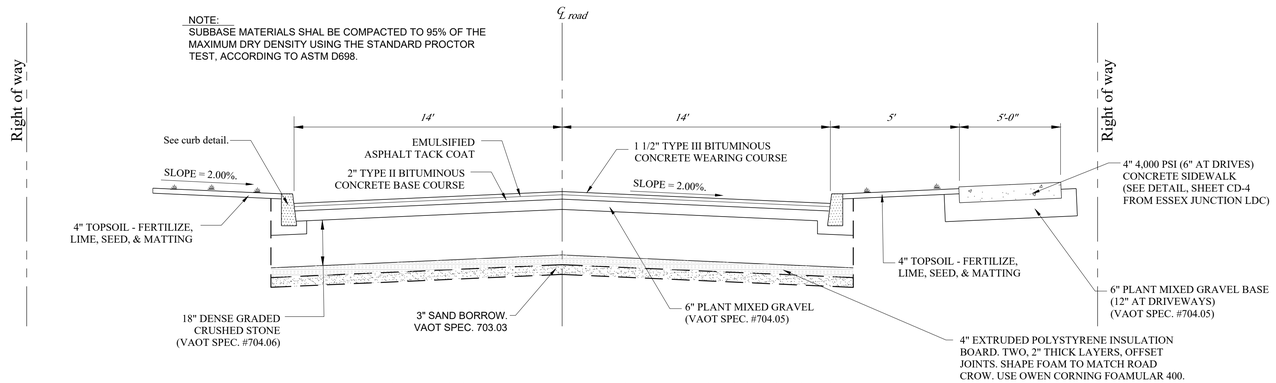
CONTRACTOR SHALL MATCH EXISTING SUBBASE AND PAVEMENT DEPTHS. COORDINATE WITH THE CITY OF ESSEX JUNCTION.

TYPICAL ROAD CROSS SECTION DETAILS - WITH CONCRETE CURBS AND WITHOUT CURBS

N.T.S.

NOTES FOR CONCRETE CURB

1. BROOM FINISH CONCRETE, ALL JOINTS TO BE TOOL FINISHED, EXPANSION/CONTRACTION JOINTS EVERY 20' WITH 1/2" JOINT FILLER, SCORE 1/3 TOTAL DEPTH AT 10' INTERVALS
2. APPLY 2 COATS OF CERTI-VEX AC 1315 CURE/SEAL COMPOUND TO ALL CONCRETE SURFACES, PER THE MANUFACTURER'S SPECIFICATIONS.
3. CONCRETE MAY NOT BE POURED IF FROST IS PRESENT OR THAWING IN THE SUBGRADE, IF THE TEMPERATURE IS 40° F OR LESS, OR DURING UNSEASONABLE WEATHER CONDITIONS.
4. CONCRETE CURB RADII LESS THAN 200 FT SHALL BE FORMED WITH FLEXIBLE FORMS. ALL CONCRETE USED IN THE CONSTRUCTION OF CONCRETE CURB SHALL BE AIR ENTRAINED AND MADE WITH PORTLAND CEMENT. THE CONCRETE SHALL MEET SECTION 541 OF THE STATE OF VERMONT STANDARD SPECIFICATION FOR CLASS A CONCRETE AND HAVE 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
5. JOINT FILLER SHALL BE RESILIENT NON-EXTRUDING CELLULAR FIBER JOINT, UNIFORMLY SATURATED WITH ASPHALT, OFFERING A MINIMUM OF 70% RECOVERY AFTER COMPRESSION.
6. THE ENGINEER SHALL BE CONTACTED AT LEAST 24 HOURS PRIOR TO FORMING CONCRETE CURB TO REVIEW LAYOUT.



TYPICAL "LOCAL RESIDENTIAL STREET" CROSS SECTION

N.T.S.

ROAD CONSTRUCTION NOTES

1. ALL REFERENCES TO ROAD SHALL APPLY TO PARKING AREAS AS WELL.
2. NEW ROAD SHALL BE CONSTRUCTED TO THE LINE AND GRADE SHOWN ON THE DRAWINGS. THE ROAD AND UTILITY LOCATIONS SHALL BE AS TYPICALLY DETAILED UNLESS OTHERWISE SHOWN.
3. ALL ROAD AND PARKING CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE VERMONT AGENCY OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" 2018, HEREAFTER CALLED VERMONT HIGHWAY SPECIFICATIONS, SPECIFICATIONS FOUND ON THESE PLANS, AND CITY/TOWN SPECIFICATIONS. IN CASE OF CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY AS DETERMINED BY THE ENGINEER. ALL GRAVEL AND STORM SEWER STRUCTURES SHALL BE APPROVED BY CITY ENGINEER.
4. THE CONTRACTOR SHALL FOLLOW VERMONT HIGHWAY SPECIFICATIONS (2018) SECTION 203.11 FOR PLACING AND SPREADING EMBANKMENTS.
5. FILL MATERIAL FOR ROAD EMBANKMENT SHALL BE APPROVED BY THE ENGINEER. FILL SHALL BE PLACED IN 12" LIFTS, WETTED AND COMPACTED WITH SATISFACTORY COMPACTION EQUIPMENT TO 95% OF MAXIMUM DENSITY (STANDARD PROCTOR).
6. ROAD IN FILL SECTIONS SHALL BE PLACED AND COMPACTED A MINIMUM OF 3 FEET ABOVE TOP OF ANY UTILITY TO BE INSTALLED BEFORE TRENCH IS EXCAVATED FOR PIPE PLACEMENT. IN TRENCHES AND CUT SECTIONS, THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SHEETING, SHORING AND BRACING TO MAINTAIN COMPLIANCE WITH ALL OSHA/VOSHA REGULATIONS.
7. METHODS FOR CONSTRUCTION OF SUBGRADE SHALL CONFORM TO VERMONT HIGHWAY SPECIFICATIONS (2018) 203.12 OR AS DETERMINED BY THE ENGINEER.
8. ANY SUBGRADE OR SUBBASE DISTURBED BY CONTRACTOR, OR RENDERED UNSUITABLE BY CONSTRUCTION MACHINERY, SHALL BE REMOVED AND REPLACED WITH APPROVED GRANULAR BACKFILL AT THE CONTRACTOR'S EXPENSE. THE SUBGRADE SHALL BE COMPACTED TO ATTAIN AT LEAST 95% OF THE MAXIMUM DENSITY (STANDARD PROCTOR) BEFORE PLACING ROAD OR EMBANKMENT MATERIALS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF COMPACTION IN THE ROAD AND UTILITY TRENCHES.
10. SAND FILL SHALL CONFORM TO VERMONT HIGHWAY SPECIFICATIONS (2018) 703.03, TABLE 703.03A. GRANULAR BORROW SHALL CONFORM TO THE VERMONT HIGHWAY SPECIFICATIONS 703.04 GRANULAR BORROW, TABLE 703.04A.
11. GRAVEL SUBBASE FOR PAVEMENT SHALL CONFORM TO VERMONT HIGHWAY SPECIFICATIONS (2018) 704.05, TABLE 704.05A, COARSE.
12. LEVELING COURSE SHALL CONFORM TO VERMONT HIGHWAY SPECIFICATIONS (2018) 704.05, TABLE 704.05A, FINE. SHOULDERS SHALL CONFORM TO SECTION 704.12, AGGREGATE FOR SHOULDERS.
13. BITUMINOUS CONCRETE PAVEMENT SHALL CONFORM TO VERMONT HIGHWAY SPECIFICATIONS (2018) SECTION 404 AND 406. BINDER COURSE SHALL BE TYPE II, AND FINISH WEARING COURSE SHALL BE TYPE III OR IV. BASE COURSE PAVING TO BE PLACED FIRST YEAR, SURFACE COURSE TO BE PLACED THE SECOND OR THIRD YEAR, DETERMINED BY THE ENGINEER.
14. EMBANKMENT FILL FOR ROAD AND PARKING SHALL BE A SIEVE SPECIFICATION AS FOLLOWS:

SIEVE	% FINER
4"	100
2"	85-100
#4	60-100
#200	12 MAXIMUM

15. IF PROOF ROLL FAILS, CONTRACTOR SHALL REMOVE THE SITE SOIL AND REPLACE IT WITH SAND WITH THE ABOVE SPEC. UNTIL A PROOF ROLE CAN BE PLACED WITHOUT FAILING. ENGINEER WILL JUDGE PASS/FAILURE OF PROOF ROLE, THIS WILL BE PERFORMED WITHOUT FURTHER COSTS TO THE OWNER.

AS-BUILT (RECORD) DRAWINGS FOR SITE UTILITIES

AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE OWNER WITH A COMPLETE UTILITY RECORD DRAWING IN AUTOCAD AND PDF FORMAT. AUTOCAD FILE SHALL HAVE A HORIZONTAL COORDINATE SYSTEM BASED ON NAD83 VERMONT STATE PLANE 4400 (US SURVEY FOOT). ELEVATIONS SHALL BE BASED ON THE NAVD88 (US SURVEY FOOT). CONTRACTOR TO PROVIDE ALL INFORMATION TO THE ENGINEER TO MAKE RECORD MATERIALS FOR THE CITY OF ESSEX JUNCTION, WHICH WILL BE IN THE SAME DATUM AND FILE TYPES REQUESTED. THE RECORD DRAWING SHALL MEETS THE SPECIFICATIONS BELOW:

UTILITY

WATER
- ALL PIPE SIZES AND TYPES SHALL BE PROVIDED.
- PROVIDE RECORD ALIGNMENT AND PROFILE WATERLINE.
- ALL WATER GATE VALVES AND SHUT-OFF VALVES SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES.
- ALL BENDS, FITTINGS, CAPS, CONNECTIONS, ETC. SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES AND THE TOP OF PIPE ELEVATION SHALL BE PROVIDED ACCURATE TO 0.1 FEET.
- BOTH WATER CONNECTIONS WITH THE BUILDING JUST OUTSIDE THE BUILDING SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. TOP OF PIPE ELEVATION AT THIS LOCATION WILL ALSO BE DOCUMENTED, ACCURATE TO 0.1 FEET.
- LOCATION OF THE WATER LINES FINAL CONNECTION WITH THE MUNICIPAL WATER SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. TOP OF PIPE ELEVATION AT THIS LOCATION WILL ALSO BE DOCUMENTED, ACCURATE TO 0.1 FEET.

STORM
- ALL PIPE SIZES AND TYPES SHALL BE PROVIDED.
- ALL CATCH BASINS, STORM MANHOLES, AND STORMWATER TANKS SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. (INCLUDE 4 CORNERS OF TANKS)
- LOCATION OF THE STORMS FINAL CONNECTION WITH THE MUNICIPAL SEWER SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. TOP OF PIPE ELEVATION AT THIS LOCATION WILL ALSO BE DOCUMENTED, ACCURATE TO 0.1 FEET.

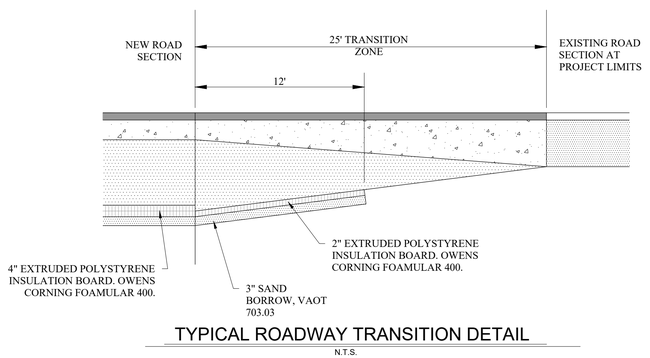
SEWER
- ALL PIPE SIZES AND TYPES SHALL BE PROVIDED.
- SEWERS CONNECTION WITH THE BUILDING JUST OUTSIDE THE BUILDING SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. TOP OF PIPE ELEVATION AT THIS LOCATION WILL ALSO BE DOCUMENTED, ACCURATE TO 0.1 FEET.
- LOCATION OF THE SEWERS CONNECTION WITH THE MUNICIPAL SEWER SHALL BE HORIZONTALLY LOCATED WITH THREE (3) SWING TIES. TOP OF PIPE ELEVATION AT THIS LOCATION WILL ALSO BE DOCUMENTED, ACCURATE TO 0.1 FEET.

ELECTRIC
- HORIZONTAL ALIGNMENT SHALL BE ACCURATELY SKETCHED ON A SITE PLAN. THE SITE PLAN SHALL BE SPECIFIC TO ELECTRIC AND COMMUNICATION UTILITIES ONLY.
- TRENCH X-SECTION (NUMBER AND TYPE CONDUIT, ENCASEMENT DETAIL, CONDUIT LENGTH, RUN DIRECTION) SHALL BE PROVIDED FOR EACH RUN OF CONDUIT. IF THE CROSS-SECTION CHANGES MID RUN THE LOCATION OF THE CHANGE MUST BE INDICATED WITH A NEW CROSS SECTION DETAIL.

VT GAS
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING OWNER WITH A COMPLETE "MARK-UP" PLAN SHOWING THE LAYOUT OF VT GAS PIPING.

SITE LIGHTING
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TO THE OWNER A COMPLETE "MARK-UP" PLAN SHOWING THE LAYOUT OF THE SITE LIGHTING CONDUIT FROM LIGHT POLE TO LIGHT POLE.

OTHER
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND IDENTIFYING ALL EXISTING UTILITIES THAT ARE EXPOSED IN THE PROCESS OF INSTALLING NEW UTILITIES.
- CONTRACTOR IS TO PERFORM A SURVEY OF THE NEW ADA RAMPS.



TYPICAL ROADWAY TRANSITION DETAIL

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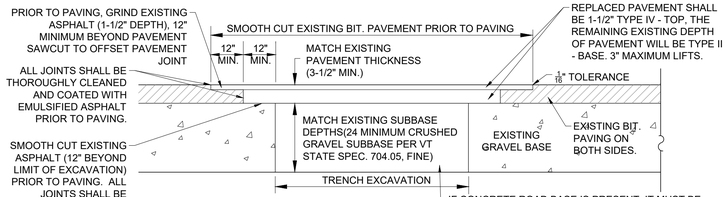
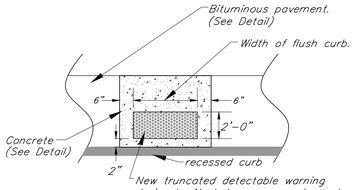


REPLACEMENT OF EXISTING ROAD SUBBASE AND BITUMINOUS PAVEMENT

NOTES

1. SET UP AND MAINTAIN SIGNS AND OTHER SAFETY CONTROL DEVICES.
2. RESHAPE TRENCH/HOLE PATCH AREA BY CUTTING WITH A CONCRETE SAW INTO SQUARE OR RECTANGULAR SHAPE AND CUT SIDE FACED VERTICALLY. RESHAPE DOWNWARD SOLID MATERIAL AND AROUND HOLE/TRENCH TO SOUND PAVEMENT.
3. BACKFILL TRENCH IN 6" LIFTS AND COMPACT EACH TO 95% OF MAXIMUM DENSITY OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 STANDARD PROCTOR.
4. REMOVE ALL LOOSE MATERIAL AND THOROUGHLY SWEEP THE HOLE/TRENCH AREA, CLEAN ANY MUD AND STANDING WATER.
5. APPLY LIQUID ASPHALT TRACK TO VERTICAL FACES IN UNIFORM MANNER. DO NOT PUDDLE TRACK COAT ON BOTTOM HOLE/TRENCH.
6. FILL TOP OF HOLE/TRENCH WITH TYPE IV BITUMINOUS CONCRETE AND COMPACT IN LIFTS NO MORE THAN 2" THICK. EACH LIFT SHOULD BE THOROUGHLY COMPACTED WITH A VIBRATORY PLAT COMPACTOR OR A PORTABLE ROLLER. EXPERIENCE HAS SHOWN THAT 15 TO 20 PASSES WITH THE VIBRATORY ROLLER AND MIX TEMPERATURE ABOVE 250°F (121°C) ARE NECESSARY TO ENSURE GOOD COMPACTION. HAND TAMP SHOULD ONLY BE USED FOR SMALL AREAS LESS THAN 1 S.F.
7. CLEAN UP AREA. DO NOT LEAVE EXCESS FILL OR EXCAVATED MATERIAL ON THE PAVEMENT. REMOVE SAFETY SIGNS.

ALL SEWER, WATER, AND STORM DRAINAGE UTILITIES INSTALLED ON THE PROJECT SITE TO BE OBSERVED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY OF ESSEX JUNCTION PRIOR TO BACKFILLING THE UTILITY BEING INSTALLED



Detectable Warning Placement Detail

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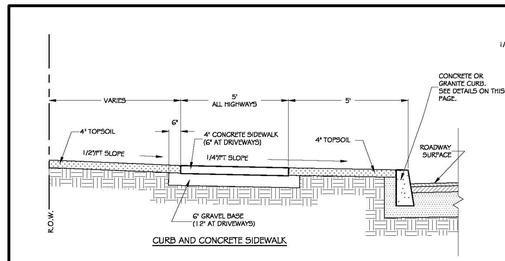
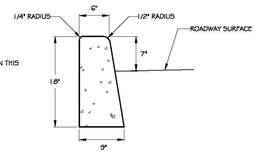


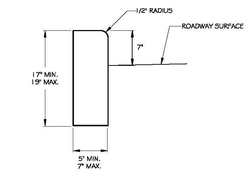
CURB AND CONCRETE SIDEWALK



END AREA OF 0.98 SQ. FEET

TYPICAL CONCRETE CURB

1. ALL CURB RADII LESS THEN 200' SHALL BE FORMED USING FLEXIBLE FORMS.
2. CURB REVEAL AT DRIVEWAYS SHALL BE 1" MAX. AND 1/4" MAX. AT HANDICAP ACCESS RAMPS.
3. CURBING SHALL BE CONSTRUCTED IN 10 FOOT SECTIONS WITH 1/8" JOINTS BETWEEN SECTIONS.
4. SIDEWALK SHALL BE CAST IN 100' SECTIONS WITH NO EXPANSION JOINTS. CONNECTION TO EXISTING SIDEWALK AND BETWEEN 100 FOOT SECTIONS SHALL BE ACCOMPLISHED WITH STEEL DOWELS, SPACED 12" ON CENTER. SIDEWALK ADJACENT TO CURB SHALL BE SEPARATED BY 4 MIL POLYETHYLENE. SIDEWALK JOINTS SHALL BE SAW CUT AT 5' INTERVALS TO 1/3 THE SIDEWALK DEPTH. STRUCK TRANSVERSE FALSE JOINTS SHALL NOT BE UTILIZED.
5. ALL MATERIALS AND CONSTRUCTION TO BE ACCORDING TO SPECIFICATIONS.
6. SOME AREAS REQUIRE WALKS OF GREATER WIDTH OF THE DISCRETION OF THE VILLAGE.
7. CONCRETE WALKS SHALL BE 6" THICKNESS ACROSS DRIVES.
8. ALL SIDEWALKS SHALL BE TREATED WITH CERTI-VEX AC 1315, PER THE MANUFACTURER'S INSTRUCTIONS.



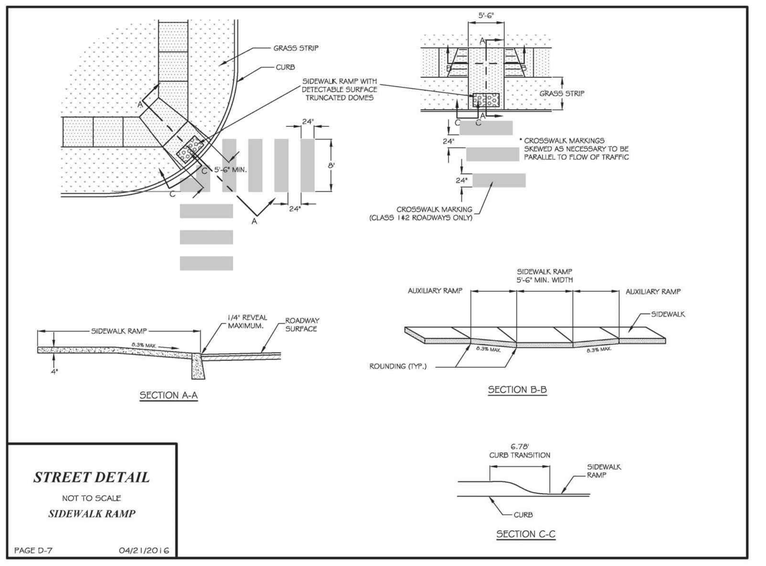
TYPICAL GRANITE CURB

STREET DETAIL

NOT TO SCALE

CURB AND CONCRETE SIDEWALK

PAGE D-4 04/21/2016



STREET DETAIL

NOT TO SCALE

SIDEWALK RAMP

PAGE D-7 04/21/2016

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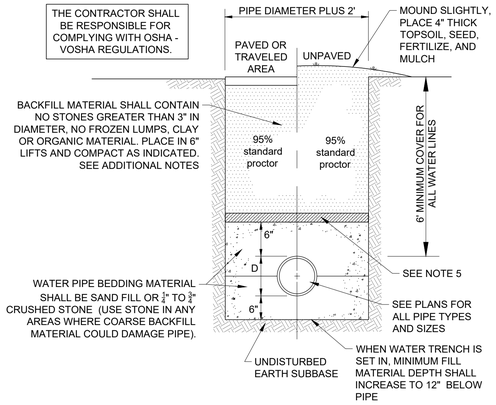
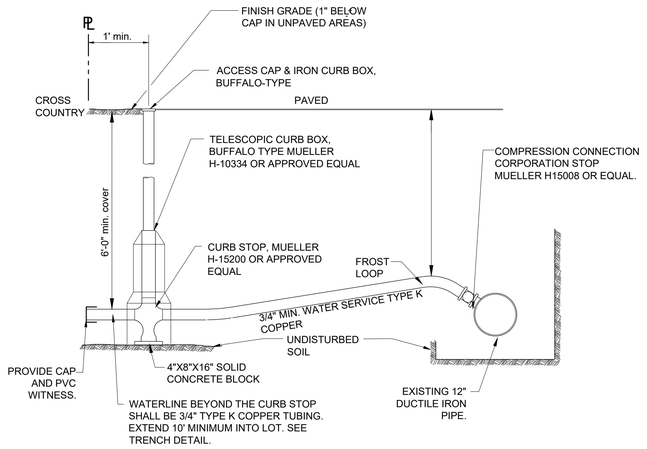


NOTES

1. THE CONTRACTOR SHALL KEEP THE TRENCH ENTIRELY FREE OF WATER AT ALL TIMES UNTIL THE WORK IS COMPLETE AND READY FOR BACKFILLING.
2. THE SIDES OF THE TRENCHES SHALL BE SHEETED OR SLOPED TO THE ANGLE OF REPOSE IF THE TRENCH IS 4' OR MORE IN DEPTH.
3. BACKFILL TRENCH IN 6" LIFTS AND COMPACT EACH LIFT TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 STANDARD PROCTOR.
4. BACKFILL SHALL HAVE NO STONES LARGER THAT 1.5-INCHES IN DIAMETER.
5. SEE DETAIL WATERLINE PIPE INSULATION REQUIREMENTS.
6. ALL WORK SHALL CONFORM TO THESE SPECIFICATIONS AND PLANS UNLESS OTHERWISE SPECIFIED.
7. INSTALL A CONTINUOUS SHEATHED SOLID CONDUCTOR COPPER TRACER WIRE OVER PIPE. THE WIRE SHALL BEGIN IN A TEST BOX ADJACENT TO ONE HYDRANT AND RUN TO A TEST BOX ADJACENT TO THE NEXT HYDRANT.

WATER TRENCH DETAIL

N.T.S.



NO VALVES, HYDRANTS, CURB STOPS ETC. SHALL BE OPERATED WITHOUT PRIOR APPROVAL BY THE MUNICIPALITY. ALL TAPS LARGER THAN 3/4" REQUIRE THE USE OF BRONZE SADDLES. ALL BRASS UNIONS AND ADAPTERS SHALL BE MUELLER.

TAP MAY BE MADE DIRECTLY TO DUCTILE IRON PIPE.

ALL BRASS UNIONS AND ADAPTERS SHALL BE MUELLER, OR EQUAL.

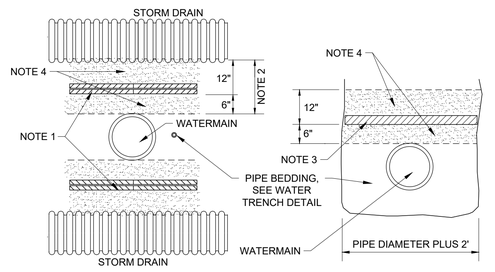
THE CONTRACTOR SHALL NOT INSTALL CURB BOX IN SIDEWALK OR PAVEMENT.

SUBMIT SHOP DRAWINGS TO ENGINEER FOR ALL COMPONENTS OF THE WATER SYSTEM.

SEE WATER TRENCH DETAIL FOR BEDDING REQUIREMENTS

WATER SERVICE DETAIL

N.T.S.

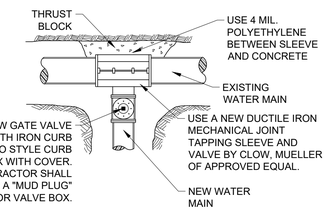


NOTES :

1. INSULATION THICKNESS BETWEEN WATER MAINS AND STORM DRAINS SHALL BE A MINIMUM OF 4" IN THICKNESS. EACH SHEET SHALL BE OFFSET ON EACH LAYER SO AS TO NOT CREATE VOIDS. INSULATION IS REQUIRED IF THE SEPARATIONS IS LESS THAN 18".
2. THE ISOLATION DISTANCES FOR INSULATING STORM DRAINS UNDER WATER MAINS ARE THE SAME AS CROSSING OVER.
3. IF COVER OVER SERVICE IS BETWEEN 5'-6', PLACE 2" THICK INSULATION BOARD OVER PIPE. IF COVER IS BETWEEN 4'-5' THEN PLACE 4" THICK INSULATION BOARD OVER PIPE. IN NO CASE SHALL THERE BE LESS THAN 5' OF COVER IN PAVED ARES OR 4' OF COVER IN GRASS AREAS.
4. BACKFILL WITH APPROVED EXCAVATED MATERIAL IN 6" LIFTS AND COMPACT EACH LIFT TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE. BACKFILL SHALL HAVE NO STONES LARGER THAN 1.5-INCHES, IN ORDER TO AVOID DAMAGING INSULATION.
5. ALL WORK SHALL CONFORM TO THESE SPECIFICATIONS AND PLANS UNLESS OTHERWISE SPECIFIED.

WATERLINE PIPE INSULATION DETAIL

N.T.S.

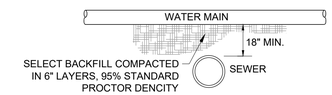


NOTES

1. WET TAP SHALL BE INSTALLED BY PERSONS APPROVED BY THE LOCAL MUNICIPALITY AND CHAMPLAIN WATER DISTRICT.
2. PRIOR TO TAPPING THE MAIN A 200 PSI HYDROSTATIC TEST SHALL BE PERFORMED ON THE VALVE AND SLEEVE ASSEMBLY. THE TEST PRESSURE SHALL BE MAINTAINED FOR AN ADEQUATE AMOUNT OF TIME TO ENSURE NO LEAKAGE AT THE TAPPING SLEEVE ASSEMBLY.

TYPICAL TAPPING SLEEVE AND VALVE

N.T.S.



NOTES

1. THE LOCATION OF SEWER MAINS IN RELATION TO WATER MAINS SHALL BE IN ACCORDANCE WITH THE CITY OF ESSEX JUNCTIONS LDC REQUIREMENTS.
2. SEWERS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. IF THIS DISTANCE CANNOT BE OBTAINED, THEN THE PIPES SHALL BE INSTALLED ACCORDING TO EPR, CHAPTER 1, APPENDIX 1A, 11A.
3. 18" SEPARATION SHALL BE MAINTAINED WHETHER WATER IS OVER OR UNDER SEWER. IF THIS DISTANCE CANNOT BE OBTAINED, THEN THE PIPES SHALL BE INSTALLED ACCORDING TO EPR CHAPTER 1, 11B.

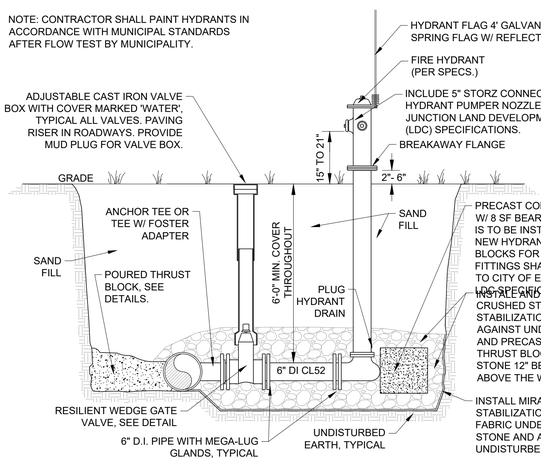
CROSSINGS

SEWERS CROSSING WATER MAINS SHALL BE LAID BENEATH THE WATER MAIN WITH AT LEAST 18 INCHES VERTICAL CLEARANCE BETWEEN THE OUTSIDE OF THE SEWER AND THE OUTSIDE OF THE WATER MAIN. WHEN IT IS POSSIBLE TO MAINTAIN THE 18" VERTICAL SEPARATION:

1. THE CROSSING SHALL BE ARRANGED SO THAT ONE FULL LENGTH OF SEWER IS CENTERED ABOVE OR BELOW THE WATER LINE WITH SEWER JOINTS AS FAR AS POSSIBLE FROM WATER JOINTS;
2. THE SEWER PIPE MUST BE CONSTRUCTED TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 20 FEET EITHER SIDE OF THE CROSSING OR A TOTAL OF THREE PIPE LENGTHS, WHICHEVER IS GREATER;
3. THE SECTION CONSTRUCTED TO WATER STANDARDS MUST BE PRESSURE TESTED TO MAINTAIN 50 PSI FOR 15 MINUTES WITHOUT LEAKAGE PRIOR TO BACKFILLING BEYOND ONE FOOT ABOVE THE PIPE TO ASSURE WATER TIGHTNESS;
4. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN.

WATER AND SEWER CROSSINGS DETAIL

N.T.S.

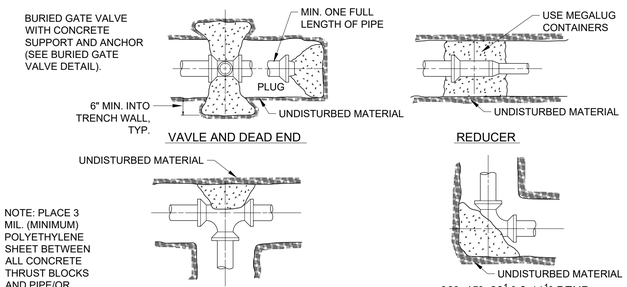


NOTES

1. THE CONTRACTOR SHALL CONFIRM HYDRANT SPECIFICATION WITH MUNICIPALITY AND CITY OF ESSEX JUNCITON BEFORE ORDERING. HYDRANT SHALL BE IN ACCORDANCE WITH AWWA C-502, 3-WAY POST TYPE BREAKAWAY, MUELLER SUPER CENTURION 200, A-423 OR KENNEDY GUARDIAN K-81A WITH TWO 2 1/2" HOSE NOZZLES AND ONE 4 1/2" PUMPER NOZZLE. SECURE BURLAP BAG OVER HYDRANT UNTIL PLACED INTO SERVICE.
2. ALL FITTINGS ARE TO HAVE WEDGE STYLE RETAINER GLANDS
3. PRIOR TO POURING THRUST BLOCKS ALL FITTINGS ARE TO BE WRAPPED WITH 4mil. POLYETHYLENE.

TYPICAL HYDRANT DETAIL

N.T.S.



SOIL TYPE - CLAY/SILT

SIZE / FITTING	6"	8"	12"
11¼° & 22½° BENDS	3	4	9
45° BENDS	4	8	17
90° BENDS	9	16	35
TEES OR END CAPS	6	11	25
VALVES	3	3	3

SQ FT BEARING AREA

BASED ON 100 PSI WORKING PRESSURE PLUS 100 PSI SURGE ALLOWANCE AND BEARING CAPACITY OF 1000 LBS/SQ FT

SOIL TYPE - SAND

SIZE / FITTING	6"	8"	12"
11¼° & 22½° BENDS	2	2	5
45° BENDS	2	4	9
90° BENDS	4	8	17
TEES OR END CAPS	3	6	12
VALVES	2	2	2

SQ FT BEARING AREA

BASED ON 100 PSI WORKING PRESSURE PLUS 100 PSI SURGE ALLOWANCE AND BEARING CAPACITY OF 2000 LBS/SQ FT

SOIL TYPE - TILL/SHALE

SIZE / FITTING	6"	8"	12"
11¼° & 22½° BENDS	1	1	2
45° BENDS	1	2	4
90° BENDS	2	4	9
TEES OR END CAPS	2	3	6
VALVES	2	2	2

SQ FT BEARING AREA

BASED ON 100 PSI WORKING PRESSURE PLUS 100 PSI SURGE ALLOWANCE AND BEARING CAPACITY OF 4000 LBS/SQ FT

THRUST BLOCK DETAIL

N.T.S.

NOTES

1. A THRUST BLOCK SHALL BE INSTALLED AT ALL WATER MAIN BENDS, REDUCERS, END CAPS AND TEES.
2. PRECAST THRUST BLOCKS ARE NOT ACCEPTABLE.
3. POURED CONCRETE (3,500 PSI MIN) MUST BE USED FOR THRUST BLOCKS. REDI-MIX AND SACRETE IS NOT ACCEPTABLE.
4. USE EBAA MEGA-LUG, SIGMA, OR EQUAL, WEDGE-ACTION MECHANICAL JOINT RESTRAINTS WITH TWIST OFF NUTS AT ALL FITTINGS.

ALL SEWER, WATER, AND STORM DRAINAGE UTILITIES INSTALLED ON THE PROJECT SITE TO BE OBSERVED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY OF ESSEX JUNCTION PRIOR TO BACKFILLING THE UTILITY BEING INSTALLED

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Project:

CENTER FOR TECHNOLOGY ESSEX

Taft Street & Meadow Terrace
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Project No.	22351
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Revisions

No.	Date	
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Drawing Title

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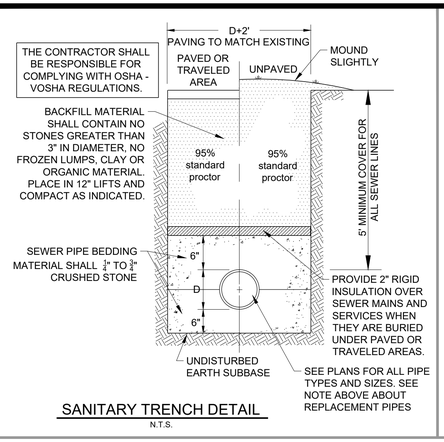
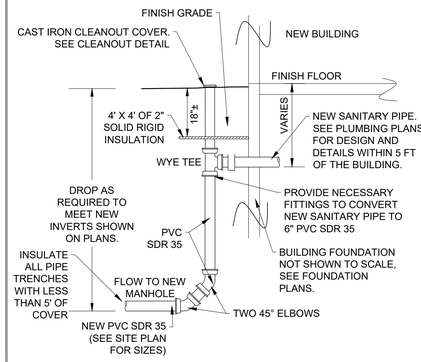


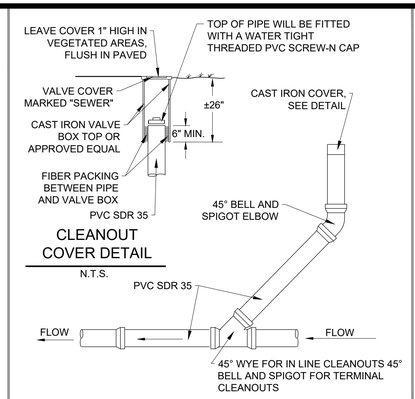
SANITARY TRENCH DETAIL
N.T.S.

SANITARY MAINS NOTES

1. THE PIPE AND FITTINGS FOR SANITARY SEWER SHALL MEET THE REQUIREMENTS OF ASTM SPECIFICATION D3034 FOR 4" - 15" SDR 35 AND F679 FOR 18" - 27". ALL PIPE SHALL BE LAID TO THE LINE AND GRADE SHOWN ON THE PLANS.
2. THE PIPE FOR GRAVITY SANITARY SEWER SHALL BE AS SHOWN ON THE PLANS AND DETAILED BELOW:
   - ALL PIPE SHALL BE LAID TO THE LINE AND GRADE AS SHOWN ON THE PLANS.
   - PVC SDR 35 - POLYVINYL CHLORIDE PIPE - PIPE SHALL CONFORM TO ASTM SPECIFICATION D-3034 OR F679, (PVC) SEWER PIPE AND FITTINGS, SDR35.
   - PIPE WITH RECYCLED CONTENT IS NOT ACCEPTABLE.
3. PVC SDR 35 SANITARY AND STORM PIPES SHALL BE INSTALLED SO THAT THE INITIAL DEFLECTION SHALL BE LESS THAN 5%.
4. PVC SDR 35 PIPE SHALL NOT BE INSTALLED WHEN THE TEMPERATURE DROPS BELOW 32° F OR GOES ABOVE 100° F UNLESS PRIOR APPROVAL IS OBTAINED FROM THE ENGINEER. EXTRA CARE IS REQUIRED WHEN HANDLING PVC PIPE DURING COLD WEATHER. PVC PIPE SHALL NOT BE STORED OUTSIDE AND EXPOSED TO PROLONGED PERIODS OF SUNLIGHT AS PIPE DISCOLORATION AND REDUCTION IN PIPE IMPACT STRENGTH WILL OCCUR. IF PVC PIPE IS TO BE STORED ON SITE FOR 1 MONTH OR LONGER IT SHALL BE COVERED WITH CANVAS OR OTHER OPAQUE MATERIAL.
5. THE INSTALLED GRAVITY SANITARY SEWER PIPE SHALL BE LOW PRESSURE AIR TESTED IN THE PRESENCE OF THE ENGINEER. AFTER CLEANING THE PIPE, THE PIPE SECTION (MANHOLE TO MANHOLE) SHALL BE TESTED ACCORDING TO THE PROCEDURES OUTLINED IN THE STATE OF VERMONT WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES, EFFECTIVE 11/06/23.

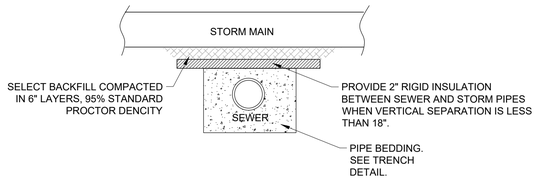


DROP OUTLET PLUMBING CONNECTION DETAIL
N.T.S.

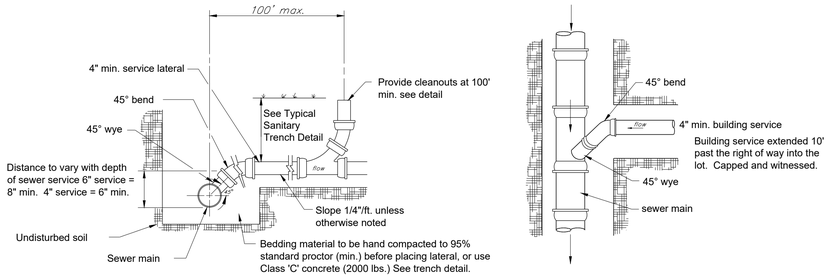


STORM/SANITARY SEWER CLEANOUT DETAIL
N.T.S.

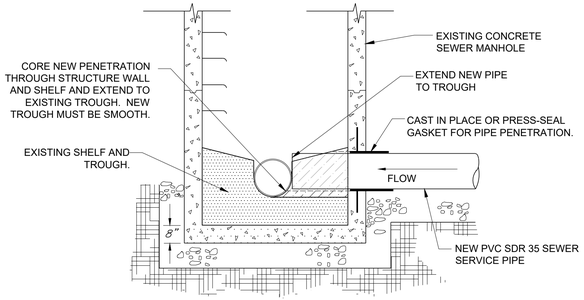
ALL SEWER, WATER, AND STORM DRAINAGE UTILITIES INSTALLED ON THE PROJECT SITE TO BE OBSERVED BY AN AUTHORIZED REPRESENTATIVE OF THE CITY OF ESSEX JUNCTION PRIOR TO BACKFILLING THE UTILITY BEING INSTALLED



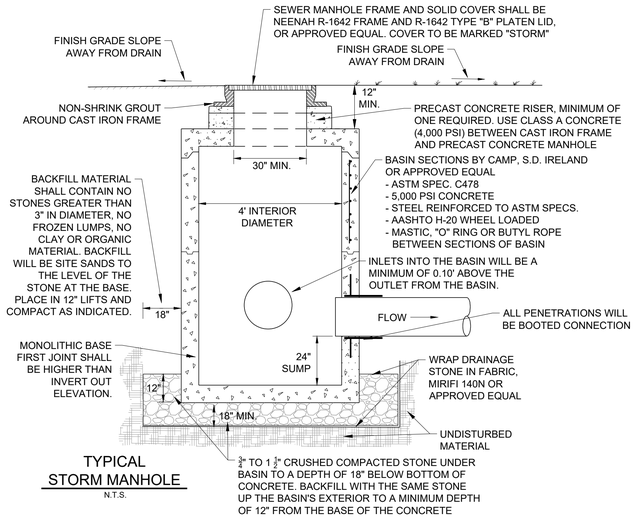
INSULATED SANITARY/STORM CROSSING DETAIL
N.T.S.



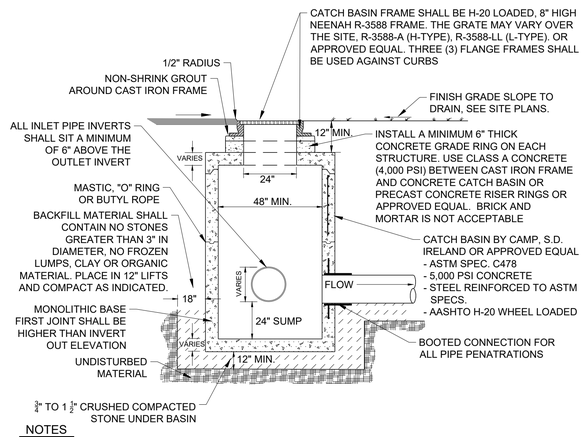
BUILDING SERVICE CONNECTION DETAIL
N.T.S.



SEWER MANHOLE CONNECTION DETAIL
N.T.S.



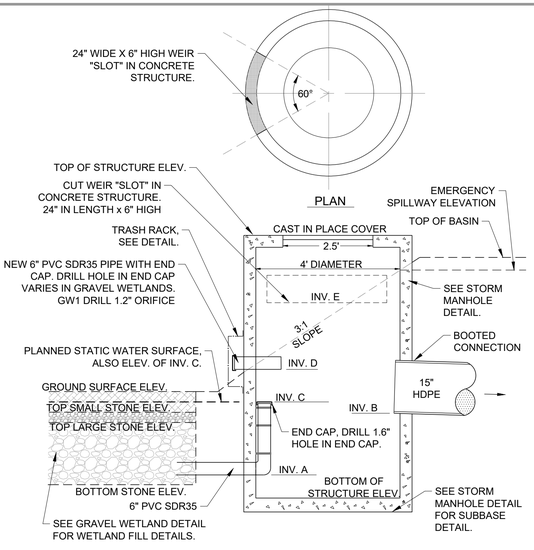
TYPICAL STORM MANHOLE
N.T.S.



NOTES

1. ALL ROOF DRAINS WHICH OUTLET INTO CATCH BASIN, SHALL BE DESIGNED BY THE MECHANICAL ENGINEER TO OVERFLOW ROOF SCUPPERS WITHOUT FAILING WITHIN THE BUILDING. ALL ROOF DRAIN INVERTS WILL SIT A MINIMUM OF 12" ABOVE THE INVERT OUT OF CATCH BASIN.

TYPICAL CATCH BASIN
N.T.S.



GRAVEL WETLANDS
OUTLET STRUCTURE DETAIL
N.T.S.

Gravel Outlet Structure Elevation Schedule

Gravel Wetland	Bottom of Pond & Top of Wetland Cell Elev. (ft) (ELEV. XX in Detail)	Planned Static Water Elev. (ft)	Bottom Elev. In Structure (ft)	Invert Elev. (ft) (INV. A)	Invert Elev. (ft) (INV. B)	Invert Elev. (ft) (INV. C)	Invert Elev. (ft) (INV. D)	Invert Elev. (ft) (INV. E)	Emergency Spillway Elev.n (ft)	Top of Structure Elev. (ft)	Top of Basin Elev. (ft)
1	371.00	370.67	368.00	368.33	370.67	370.67	371.90	373.30	374.00	375.00	374.75

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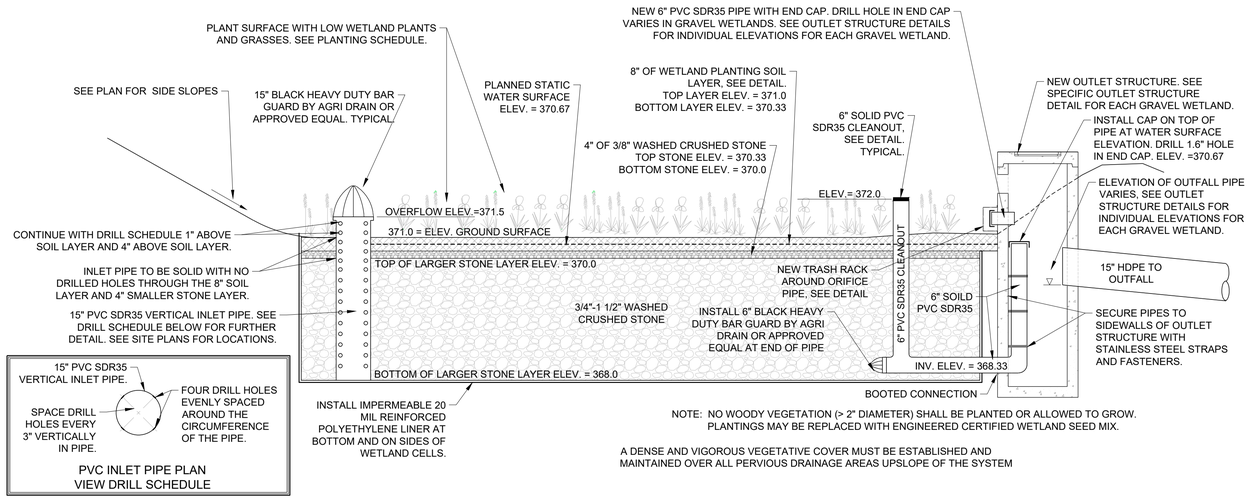

NOTE: NO WOODY VEGETATION (> 2" DIAMETER) SHALL BE PLANTED OR ALLOWED TO GROW. PLANTINGS MAY BE REPLACED WITH ENGINEERED CERTIFIED WETLAND SEED MIX.

A DENSE AND VIGOROUS VEGETATIVE COVER MUST BE ESTABLISHED AND MAINTAINED OVER ALL PERVIOUS DRAINAGE AREAS UPSLOPE OF THE SYSTEM

GRAVEL WETLAND DETAIL

N.T.S.

WETLAND PLANTING SOIL CHARACTERISTICS

Parameter	Value
pH range	6.0 to 7.0
Soil (low hydraulic conductivity (0.1–0.01 ft/day) with soil texture conforming to Hydrologic Soil Group D) Recommended grain size distribution	
Sieve Size	Percent Passing
0.5"	100%
No. 10	75–95% (±5%)
No. 100	40–90% (±5%)
No. 200	35–85% (±5%)
Utilitization of on-site material to manufacture the soil layer is encouraged, provided the soil meet specifications	

GRAVEL WETLAND SOIL SHALL CONFORM TO THE "BIORETENTION AND GRAVEL WETLAND SOIL MEDIA TESTING GUIDANCE" DOCUMENT PREPARED BY THE UNIVERSITY OF VERMONT, SEA GRANT LAKE CHAMPLAIN, AND WATERSHED CONSULTING

THE GRAVEL WETLAND SOIL SHALL BE TESTED IN ACCORDANCE WITH THE PHOSPHORUS TESTING PROCEDURE BELOW;
PHOSPHORUS TESTING IS REQUIRED FOR THE UPPER MEDIA LAYER OF THE GRAVEL WETLAND SOIL. FINAL MIXES MUST HAVE A PHOSPHORUS SATURATION RATIO (PSR) LESS THAN OR EQUAL TO 0.10 AND SHALL BE TESTED IN ACCORDANCE WITH THE FOLLOWING PROTOCOL:

1. SAMPLES ARE TO BE AIR DRIED AND SIEVED THROUGH 2MM PRIOR TO TESTING.
2. AIR-DRIED, SIEVED SOIL SAMPLES ARE TO THEN BE EXTRACTED WITH THE MEHLICH-3 SOLUTION (0.2 M CH_3COOH + 0.25 M NH_4NO_3 + 0.015 M HNO_3 + 0.001 M EDTA) BY SHAKING A SOIL-SOLUTION SUSPENSION FOR 5 MINUTES AT A 1:10 RATIO (SOIL MASS IN GRAMS: SOLUTION VOLUME IN ML), FOLLOWED BY FILTERING TO REMOVE PARTICLES (PORE SIZE OF 2 UM IS RECOMMEDED, MAX PORE SIZE = 8 UM).
3. EXTRACTS FROM THE MEHLICH-3 PROCEDURE ARE TO BE ANALYZED FOR P, FE, AND AL BY ICP-OES.
4. THE PHOSPHORUS SATURATION RATIO (PSR) IS CALCULATED AS FOLLOWS:

$$PSR = \frac{\left(\frac{P_{M3}}{31}\right)}{\left(\frac{Fe_{M3}}{56}\right) + \left(\frac{Al_{M3}}{27}\right)}$$

WHERE:
- P_{M3} = MEHLICH-3 P IN MG P PER KG DRY SOIL
- FE_{M3} = MEHLICH-3 FE IN MG FE PER KG DRY SOIL
- AL_{M3} = MEHLICH-3 AL IN MG AL PER KG DRY SOIL

MEHLICH-3 EXTRACTIONS FOLLOW THE ABOVE PROTOCOL. OTHER SOIL EXTRACTIONS, OR EXTRACTIONS USED TO QUANTIFY TOTAL ELEMENTS, ARE NOT ACCEPTABLE FOR THIS REQUIREMENT.

IN CASES WHERE INGREDIENT MIXING HAS NOT YET OCCURRED, INGREDIENTS CAN BE MIXED AT THE INTENDED VOLUMETRIC PROPORTIONS IN A SMALL BATCH (AT LEAST ONE QUART IN VOLUME) FOR TESTING PURPOSES. IF THIS SMALL BATCH TESTING APPROACH IS TAKEN, THE FINAL MATERIAL TO BE USED DURING INSTALLATION MUST BE RETESTED TO CONFIRM ACCEPTABLE PSR.

SOIL SAMPLES FOR P, FE, AND AL ANALYSIS VIA MEHLICH-3 EXTRACTION CAN BE SUBMITTED TO THE AGRICULTURAL AND ENVIRONMENTAL TESTING LABORATORY (AETL) LOCATED AT UVM. PLAN TO ALLOW 3-4 WEEKS FOR ANALYSIS.

HOW TO TAKE A SOIL SAMPLE [GO.UVM.EDU/SOIL-SAMPLING]
SUBMITTING A SOIL SAMPLE [GO.UVM.EDU/UVM-SOIL-LAB]

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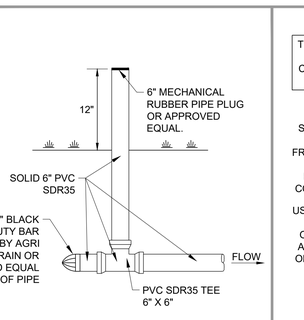
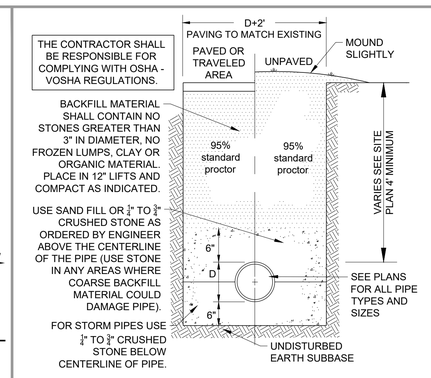


GRAVEL WETLAND CLEANOUT DETAIL

N.T.S.



STORM TRENCH DETAIL

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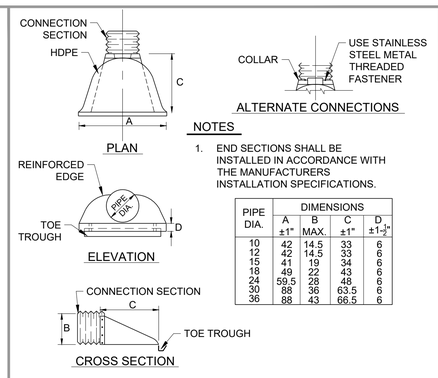


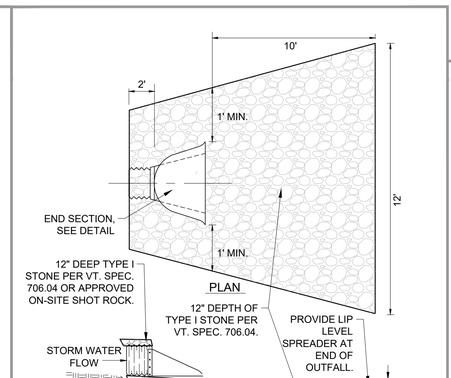
NOTES

1. END SECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION SPECIFICATIONS.

PIPE DIA.	DIMENSIONS A ±1"	B MAX.	C ±1"	D ±1-½"
10	42	14.5	33	6
12	42	14.5	33	6
15	41	19	34	6
18	49	22	43	6
24	59.5	28	48	6
30	88	36	63.5	6
36	88	43	66.5	6

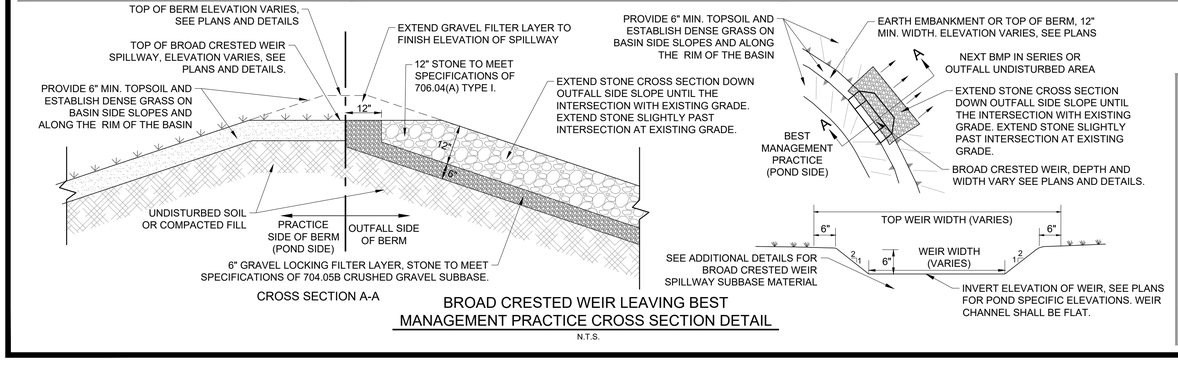
HDPE END SECTION DETAIL

N.T.S.



STORMWATER OUTFALL DETAIL

N.T.S.



BROAD CRESTED WEIR LEAVING BEST MANAGEMENT PRACTICE CROSS SECTION DETAIL

N.T.S.

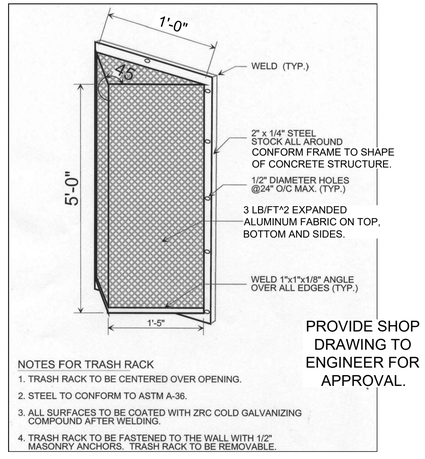


Figure D.1. Trash Rack Protection for Low Flow Orifice

TRASH RACK DETAIL

N.T.S.

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Essex Junction, Vermont

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Scale	not to scale
Drawn by	TJB
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Drawing Title

Civil Details

Drawing No.

CD-6

22351\DWGS\CTE Details 2025.dwg

WINTER EROSION CONTROL PROCEEDURES

(FOR ANY EARTH WORK PERFORMED BETWEEN OCTOBER 15TH AND APRIL 15TH)

WINTER EROSION CONTROL NARRATIVE:
OBJECTIVE - ANY SITE WORK PERFORMED LATER THAN OCTOBER 15TH WILL RESULT IN EXPOSED SOIL THROUGH THE WINTER. THIS PRESENTS A POTENTIAL FOR EROSION THROUGH THE WINTER. THE WINTER EROSION CONTROL MEASURES ARE INTENDED TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION ZONE DURING THAWS AND RAINSTORMS.

WINTER EROSION CONTROL SEQUENCE:
ON-SITE COORDINATOR - THE ON-SITE COORDINATOR SHALL BE SURE ALL EROSION CONTROL MEASURES REQUIRED FOR WINTER CONSTRUCTION ARE INSTALLED BY OCTOBER 15TH AND PRIOR TO GROUND FREEZING. IF A PERMITTED AREA CAN BE LEFT UNDISTURBED UNTIL THE SPRING THE CONTRACTOR SHALL MAKE EVERY EFFORT TO LIMIT THESE AREAS OF DISTURBANCE.

THE CONTRACTOR SHALL STABILIZE ANY PORTION OF THE SITE THAT IS BEING WORKED AND DISTURBED PRIOR TO BEGINNING CONSTRUCTION AT ANOTHER AREA OF THE SITE. AT NO TIME DURING WINTER CONSTRUCTION SHALL THERE BE MORE THAN 1 ACRE OF EXPOSED SOIL ON SITE.

ANTICIPATED WINTER CONSTRUCTION ACTIVITIES WILL INCLUDE ALL ASPECTS OF THE PROJECT PROPOSED DURING SUMMER CONSTRUCTION. THIS IS A CONTINUATION OF WORK WHICH WAS NOT COMPLETED DURING THE SUMMER. MAJOR GRADING IS EXPECTED TO BE COMPLETE BEFORE OCTOBER 15TH.

LIMITS OF DISTURBANCE - LOD WILL BE MOVED AND/OR REPLACED TO REFLECT THE BOUNDARY OF WINTER WORK. CONTRACTOR WILL MAINTAIN A MINIMUM 25' BUFFER FROM PERIMETER CONTROLS TO ALLOW FOR SNOW CLEARING AND MAINTENANCE.

SNOW STORAGE ON SITE - CONTRACTOR WILL CREATE A SNOW MANAGEMENT PLAN. PLAN WILL IDENTIFY LOCATIONS FOR ADEQUATE SNOW STORAGE AND CONTROL SNOW MELT. SNOW STORAGE WILL BE DOWN GRADIENT OF ALL DISTURBED AREAS AND WILL NOT PROHIBIT THE FUNCTION OF ALL PERMANENT STORMWATER TREATMENT STRUCTURES. CONTRACTOR SHALL KEEP ALL DRAINAGE STRUCTURES OPWN AND FREE OF SNOW AND ICE DAMS.

INSTALL SILT FENCE - SILT FENCE SHALL BE INSTALLED ON THE DOWNHILL SIDE OF THE WINTER CONSTRUCTION AREAS AND SOIL STOCKPILE AREAS, AS SHOWN ON THE PLAN, BY OCTOBER 15TH. IF THE GROUND IS UNFROZEN THE SILT FENCE SHALL BE DUG IN AS NORMAL. IF THE GROUND IS FROZEN CONTACT THE ENGINEER FOR ALTERNATE OPTIONS (STONE BERM, FILTREXX SILT SOXX, STRAW WATTLES, ETC.).

STABILIZED CONSTRUCTION ENTRANCE - THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL STABILIZED CONSTRUCTION ENTRANCES TO PREVENT SEDIMENT TRACKING OFF SITE. CONTRACTOR SHALL ENLARGE THE WIDTH OF ACCESS TO PROVIDE ADDITIONAL ROOM FOR SNOW STOCKPILING, IF NEEDED. ADDITIONAL STONE SHALL BE ADDED OR THE LENGTH SHALL BE INCREASED, IF ICE AND SNOW LIMITS CONSTRUCTION ENTRANCE'S ABILITY TO HOLD SEDIMENTS ON SITE.

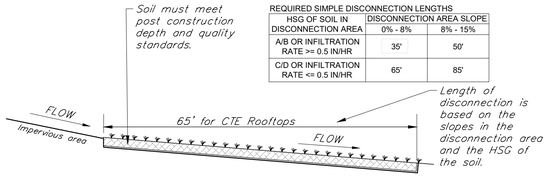
WINTER STABILIZATION – ALL DISTURBED AREAS NOT INVOLVED IN WINTER CONSTRUCTION SHALL BE AT LEAST TEMPORARILY STABILIZED BY OCTOBER 15. AFTER OCTOBER 15TH, ALL AREAS DISTURBED DURING WINTER CONSTRUCTION SHALL BE STABILIZED DAILY TO PREVENT EXPOSURE FROM RAIN EVENTS AND ACCUMULATION OF SNOWFALL (SEE EXCEPTIONS BELOW). CONTRACTOR SHALL ADD ADDITIONAL STONE, AS NECESSARY, TO PROVIDE STABILIZATION THROUGH WINTER CONSTRUCTION ON ALL AREAS WHERE CONSTRUCTION TRAFFIC IS ANTICIPATED.

EXCEPTIONS:

- HYDROSEEDING AFTER OCTOBER 15TH AND BEFORE APRIL 15TH MUST BE STABILIZED WITH STRAW MULCH OR EROSION CONTROL MATTING.*
- SNOW AND/OR ICE MUST BE REMOVED TO, AT MOST, ONE INCH PRIOR TO APPLYING MULCH OR EROSION CONTROL STABILIZATION MATTING.
- IF NO PRECIPITATION, WITHIN 24 HOURS, IS FORECASTED AND WORK WILL RESUME IN THE SAME DISTURBED AREA WITHIN 24 HOURS, DAILY STABILIZATION IS NOT NECESSARY.
- DISTURBED AREAS THAT COLLECT AND RETAIN RUNOFF, SUCH AS OPEN UTILITY TRENCHES, REQUIRE STABILIZATION AT THE END OF EACH WORK WEEK.

MAINTENANCE - ALL DISTURBED AREAS SHALL BE MONITORED BY THE CONTRACTOR AND THE ON-SITE PLAN COORDINATOR IN ACCORDANCE WITH THE INSPECTION REQUIREMENT OUTLINED IN THE INDIVIDUAL CONSTRUCTION STORMWATER PERMIT. THE CONTRACTOR AND ON-SITE PLAN COORDINATOR SHALL EVALUATE THE SITE AFTER A THAW OR RAINSTORM. THE CONTRACTOR OR ON-SITE PLAN COORDINATOR SHALL NOTIFY THE ENGINEER IF ANY EROSION CONTROL MEASURES APPEAR TO BE INADEQUATE. THE CONTRACTOR OR ON-SITE PLAN COORDINATOR SHALL IMMEDIATELY (WITHIN THE SAME BUSINESS DAY) IMPLEMENT ANY FURTHER EROSION CONTROL MEASURES SPECIFIED BY THE ENGINEER. THE CONTRACTOR OR ON-SITE PLAN COORDINATOR SHALL ADD MULCH, AS NECESSARY, THROUGHOUT THE WINTER AFTER THAWS OR RAINSTORMS. THE MULCH DEPTH SHALL BE BROUGHT UP TO 2". THE MULCH AND SILT FENCE SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER (70% STABILIZATION) IS ESTABLISHED IN THE SPRING. THE SITE SHALL BE REMULCHED AND RESEEDED, IN THE SPRING, AS REQUIRED TO ESTABLISH A VIGOROUS PERMANENT GROUND COVER.

INSPECTION - THE ON-SITE COORDINATOR SHALL BE RESPONSIBLE FOR, AT A MINIMUM, DAILY WRITTEN INSPECTIONS WHILE THE SITE IS DISTURBED OR WEEKLY IF EVERYTHING IS STABILIZED BUT CONSTRUCTION IS ON-GOING. IF, DURING WINTER CONSTRUCTION, EARTH DISTURBANCE ACTIVITIES TEMPORARILY CEASE AND THE SITE HAS BEEN FULLY STABILIZED, INSPECTION AND MONITORING REQUIREMENTS FOR THE ON-SITE COORDINATOR MAY BE REDUCED TO ONCE PER MONTH MINIMUM. ALL INSPECTION SHEETS SHALL BE KEPT ON SITE AND BE AVAILABLE UPON REQUEST.



REQUIRED SIMPLE DISCONNECTION LENGTHS

HSG OF SOIL IN DISCONNECTION AREA	DISCONNECTION AREA SLOPE	
	0% - 8%	8% - 15%
A/B OR INFILTRATION RATE >= 0.5 IN/HR	35'	50'
C/D OR INFILTRATION RATE <= 0.5 IN/HR	65'	85'

NOTES

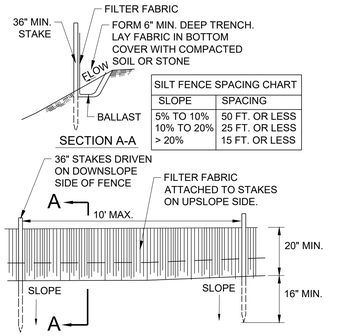
1. Disconnection width for rooftops shall be at least 12'
2. Contributing rooftop area to each downspout shall be less than 1,000 sq.ft.
3. Splash pads shall be provided at all downspouts
4. During construction disconnection area will be temporarily seeded and heavily mulched. post construction contractor shall re-grade any erosion, remove build up sediments, permanent seed and heavily re-mulch.
5. Topsoil will be well graded and free of woody debris, sticks and roots.
6. Contractor shall double seeding rate for disturbed area within the vegetative filter strip.

Stormwater Disconnection Detail

N.T.S.

NOTES

1. AT A MINIMUM, EPSC MEASURES MEET VT DEC STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION AND SEDIMENT CONTROL OR PREVIOUSLY APPROVED INTERCHANGEABLE PRACTICES.
2. PERIMETER CONTROLS SHALL BE UTILIZED IN SMALL AREAS < 1 ACRE. IN AREAS > 1 ACRE, TEMPORARY SEDIMENT TRAPS OR TEMPORARY SEDIMENT BASINS ARE TO BE UTILIZED.
3. PERIMETER CONTROLS SHALL BE INSTALLED ON DOWNSLOPE SIDE OF PLANNED EARTH DISTURBANCE.
4. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITIES WITHIN UPSLOPE CONTRIBUTING AREA.
5. SILT FENCE SHALL NOT BE USED AS CONSTRUCTION DEMARCATION.
6. SILTSOXX CAN BE USED AS A SILT FENCE ALTERNATIVE, WITH PRIOR APPROVAL OF THE ENGINEER. SEE DETAIL.
7. IF SILT FENCE IS INSTALLED WHEN GROUND IS FROZEN, A GRAVEL, SHOT ROCK, OR SAND BALLAST MUST BE USED.



SILT FENCE SPACING CHART

SLOPE	SPACING
5% TO 10%	50 FT. OR LESS
10% TO 20%	25 FT. OR LESS
> 20%	15 FT. OR LESS

TYPICALTEMPORARY SILT FENCE

N.T.S.

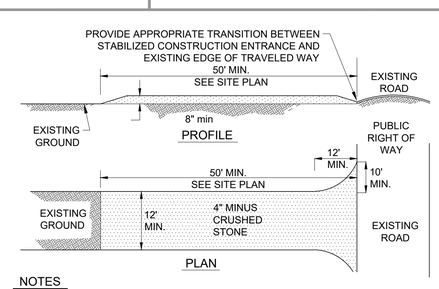
PERMANENT SEED MIX SHALL BE USED AS EARLY AS PRACTICABLE BETWEEN 5/15 AND 9/15 AND SHALL MEET THE FOLLOWING CRITERIA:

SEED	% WEIGHT
RED FESCUE	50%
SHEEP FESCUE	25%
RED TOP	5%
WHITE CLOVER	10%
ANNUAL RYE	10%

TEMPORARY SEED MIX SHALL BE USED BETWEEN 9/16 AND 5/14 AND SHALL MEET THE FOLLOWING CRITERIA:

SEED	% WEIGHT	%GERMINATION
WINTER RYE	80% MIN.	85% MIN.
RED FESCUE (CREEPING)	4% MIN.	80% MIN.
PERENNIAL RYE GRASS	3% MIN.	90% MIN.
RED CLOVER	3% MIN.	90% MIN.
OTHER CROP GRASS	0.5% MAX.	
NOXIOUS WEED SEED	0.5% MAX.	
INERT MATTER	1% MAX.	

SEEDING SPECIFICATIONS



NOTES

1. CONTRACTOR SHALL STABILIZE CONSTRUCTION ENTRANCE AS REQUIRED TO PREVENT TRACKING OF SEDIMENT OFF-SITE.
2. CONTRACTOR TO USE MIRAFI 500X UNDER STONE FOR TEMPORARY CONSTRUCTION ROADS.
3. CRUSHED STONE SHALL BE ADDED OR REPLACED WHEN 80% OF THE VOIDS ARE FILLED WITH SEDIMENT.
4. STONE SIZE SHALL BE 1-4".
5. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES IS ALLOWED.

STABILIZED CONSTRUCTION ENTRANCE

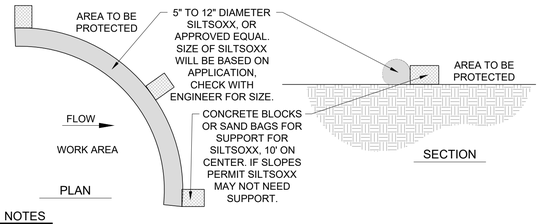
N.T.S.

NOTES:

1. THE CONTRACTOR SHALL PROVIDE COPIES OF ANY AND ALL EROSION INSPECTION REPORTS TO THE CITY OF ESSEX JUNCTION WATER QUALITY SUPERINTENDENT.
2. THE CONTRACTOR SHALL REMOVE ANY EROSION CONTROL MATTING/BLANKET IN THE CITY RIGHT OF WAY OR CITY EASEMENT AREA UPON ESTABLISHMENT OF VEGETATION.

GUIDE TO MULCH MATERIALS, RATES, AND USES

	QUALITY STANDARDS	PER 1000 SQ. FT.	PER ACRE	DEPTH OF APPLICATION	REMARKS
WOOD CHIPS OR SHAVINGS	AIR-DRIED. FREE OF OBJECTIONABLE COARSE MATERIAL	500-900 LBS	10-20 TONS	2 - 7"	USED PRIMARILY AROUND SHRUB AND TREE PLANTINGS AND RECREATION TRAILS TO INHIBIT WEED COMPETITION. RESISTANT TO WIND BLOWING. DECOMPOSES SLOWLY.
WOOD FIBER CELLULOSE (PARTLY DIGESTED WOOD FIBERS)	MADE FROM NATURAL WOOD USUALLY WITH GREEN DYE AND DISPERSING AGENT	50 LBS	2,000 LBS.	-	APPLY WITH HYDROMULCHER. NO TIE DOWN REQUIRED. LESS EROSION CONTROL PROVIDED THAN 2 TONS OF HAY OR STRAW.
GRAVEL, CRUSHED STONE OR SLAG	WASHED; SIZE 2B OR 3A - 1½"	9 CU. YDS.	405 CU. YDS.	3"	EXCELLENT MULCH FOR SHORT SLOPES AND AROUND PLANTS AND ORNAMENTALS. USE 2B WHERE SUBJECT TO TRAFFIC. (APPROXIMATELY 2,000 LBS./CU. YD.). FREQUENTLY USED OVER FILTER FABRIC FOR BETTER WEED CONTROL.
HAY OR STRAW	AIR-DRIED; FREE OF UNDESIRABLE SEEDS & COARSE MATERIALS	90-100 LBS 2-3 BALES	2 TONS (100-120 BALES)	COVER ABOUT 90% SURFACE	USE SMALL GRAIN STRAW WHERE MULCH IS MAINTAINED FOR MORE THAN THREE MONTHS. SUBJECT TO WIND BLOWING UNLESS ANCHORED. MOST COMMONLY USED MULCHING MATERIAL. PROVIDES THE BEST MICRO-ENVIRONMENTAL FOR GERMINATING SEEDS.
COMPOST	UP TO 3" PIECES, MODERATELY TO HIGHLY STABLE	3-9 CU. YDS.	134-402 CU. YDS.	1 - 3"	COARSER TEXTURED MULCHES MAY BE MORE EFFECTIVE IN REDUCING WEED GROWTH AND WIND EROSION.
EROSION CONTROL MIX	WELL-GRADED MIXTURE OF PARTICLE SIZES. ORGANIC CONTENT BETWEEN 80-100%, DRY WEIGHT. PARTICLE SIZE SHALL PASS 6" SCREEN (100%)	* SLOPES 3(HZ.):1(VERT.) OR FLATTER = 2 INCH DEPTH PLUS ADDITIONAL 1/2 INCH DEPTH PER 20 FT. OF SLOPE UP TO 100 FT. ** SLOPES BETWEEN 3(HZ.):1(VERT.) AND 2(HZ.):1(VERT.) = 4 INCH DEPTH PLUS ADDITIONAL 1/2 INCH PER 20 FT. OF SLOPE UP TO 100 FT. *** SLOPES STEEPER THAN 2(HZ.):1(VERT.) USE OF EROSION CONTROL MIX AND MULCH DEPTH TO BE REVIEWED AND APPROVED PRIOR TO USE BY OSPC OR EPSC SPECIALIST			COMPRISED OF SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. MAY CONTAIN ROCK < 4" IN DIAMETER. ORGANICS SHALL BE FIBROUS AND ELONGATED. NO LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS.

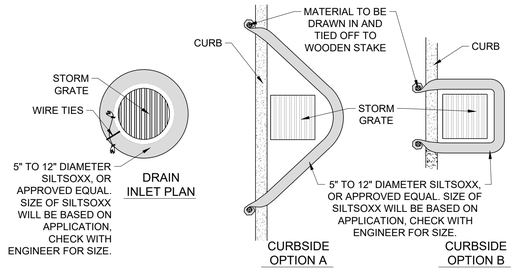


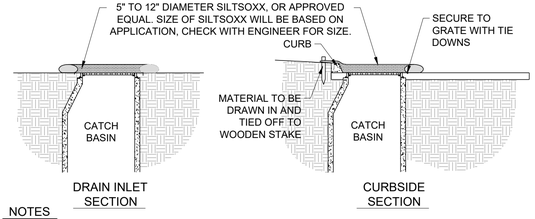
NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE, AND REMOVAL OF SILTSOXX IN ALL LOCATIONS SHOWN ON THE PLANS.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND ADDITIONAL SILTSOXX WILL BE ADDED WHEN SEDIMENT REACHES HALF OF PRODUCT HEIGHT.
3. WHEN INSTALLING LENGTHS OF SILTSOXX, LENGTHS WILL OVERLAP BY MINIMUM 2' WHEN TRANSITIONING TO A NEW LENGTH OF WATTLE.
4. CONTRACTOR SHALL REFER TO ALL MANUFACTURES SPECIFICATIONS AND DETAILS.
5. SILTSOXX IS A SPECIFIC MANUFACTURER, OTHER MANUFACTURERS WITH EQUAL PRODUCTS MAY BE USED IF APPROVED BY ENGINEER.

TYPICAL SILTSOXX INSTALLATION ON PAVEMENT

N.T.S.





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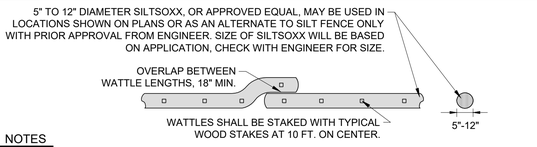
SILTSOXX INLET PROTECTION

N.T.S.



NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE, AND REMOVAL OF SILTSOXX IN ALL LOCATIONS SHOWN ON THE PLANS. SILTSOXX MAY BE LEFT IN PLACE IF THE CONTRACTOR SEEDS AND MULCHES OVER SILTSOXX FOR GROWTH POST CONSTRUCTION.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND ADDITIONAL WATTLES WILL BE ADDED WHEN SEDIMENT REACHES HALF OF PRODUCT HEIGHT.
3. WHEN INSTALLING LENGTHS OF SILTSOXX, LENGTHS WILL OVERLAP BY MINIMUM 18" WHEN TRANSITIONING TO A NEW LENGTH OF SILTSOXX.
4. CONTRACTOR SHALL REFER TO ALL MANUFACTURES SPECIFICATIONS AND DETAILS.
5. SILTSOXX IS A SPECIFIC MANUFACTURER, OTHER MANUFACTURERS WITH EQUAL PRODUCTS MAY BE USED IF APPROVED BY ENGINEER.
6. SILTSOXX CAN BE USED AS A SILT FENCE ALTERNATIVE, WITH PRIOR APPROVAL OF THE ENGINEER.

TYPICAL SILTSOXX SEDIMENT CONTROL

N.T.S.

CIVIL ENGINEER
KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201 P: (802) 878-0375
Colchester, Vermont 05446
www.krebsandlansing.com

Project:

CENTER FOR TECHNOLOGY ESSEX

Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No. 22351
Scale not to scale
Drawn by TJB
Checked by SWH
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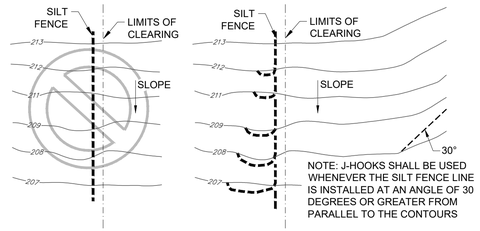


INCORRECT
SILT FENCE INSTALLED PARALLEL TO SLOPE (PERPENDICULAR TO CONTOUR) IN ONE, LONG RUN

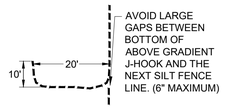
NOTE: J-HOOKS SHALL BE USED WHENEVER THE SILT FENCE LINE IS INSTALLED AT AN ANGLE OF 30 DEGREES OR GREATER FROM PARALLEL TO THE CONTOURS

CORRECT
SILT FENCE INSTALLED IN SHORTER RUNS WITH J-HOOKS TO AVOID CONCENTRATION OF FLOWS AT ONE LOCATION BY TRAPPING RUNOFF AT MULTIPLE POINTS ALONG A SLOPE.

NOTES

1. PROPER INSTALLATION OF J-HOOKS PROVIDES SILT FENCE THE ABILITY TO TEMPORARILY POND RUNOFF, ALLOWING TIME FOR SEDIMENTS TO SETTLE.
2. LONG RUNS OF SILT FENCE BETWEEN J-HOOKS SHOULD BE AVOIDED REFER TO ADJACENT TABLE FOR PROPER SPACING OF J-HOOKS.
3. J-HOOKS SHOULD BE BUILT ALONG CONTOUR IN A "SMILE" SHAPE WITH A MINIMUM WIDTH OF 20 FEET AND MINIMUM DEPTH OF 10 FEET.
4. ALONG A NARROW RIGHT OF WAY, NARROWER J-HOOKS CAN BE USED WITH A HIGHER SPACING FREQUENCY.

SLOPE STEEPNESS	MAXIMUM SPACING BETWEEN SILT FENCE J-HOOKS (FT.)
2:1 SLOPE (50%)	25
3:1 SLOPE (33%)	50
4:1 SLOPE (25%)	75
5:1 SLOPE OR FLATTER (50%)	100



AVOID LARGE GAPS BETWEEN BOTTOM OF ABOVE GRADIENT J-HOOK AND THE NEXT SILT FENCE LINE. (6" MAXIMUM)

TYPICAL SILT FENCE "J-HOOK" CONSTRUCTION

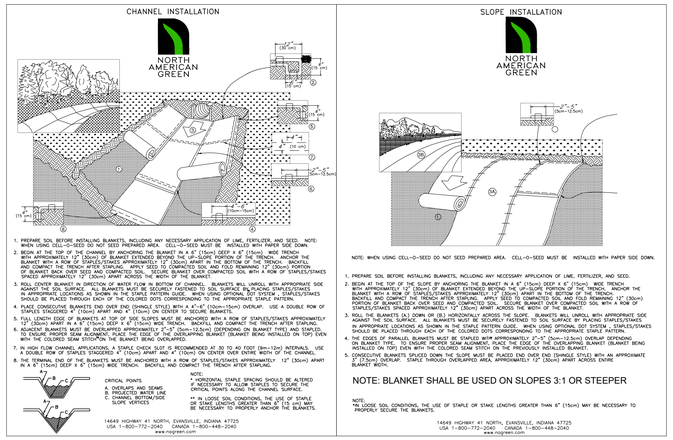
N.T.S.

CONTRACTOR IS RESPONSIBLE FOR COORDINATING FINAL TRAFFIC PLANNING WITH THE CITY OF ESSEX JUNCTION.

SITE NOTES

1. POSTED SPEED LIMIT = 25 MPH
2. FIELD CONDITIONS SHALL DICTATE THE ACTUAL SIGN PLACEMENT.
3. USE "TRUCKS ENTERING" WARNING SIGNS FOR APPROACH INSTALLED 50' IN ADVANCE OF ACCESS DRIVE WHEN TRUCK ACTIVITY IS AT A MINIMUM.

IF ADDITIONAL FLAGGING AND TRAFFIC MITIGATION IS NEEDED WITHIN THE R.O.W. WHICH IS NOT PERMANENTLY CLOSED. THE WORK WILL BE PERFORMED BETWEEN THE HOURS OF 9AM AND 3PM, OR AT NIGHT. THIS IS TO AVOID FURTHER LANE CLOSURE DURING THE RUSH HOUR TIMES.



EROSION CONTROL BLANKET

NORTH AMERICAN GREEN S75BN

MATERIAL SPECIFICATIONS:

- EROSION CONTROL BLANKET SHALL BE A MACHINE-PRODUCED MAT OF 100% AGRICULTURAL STRAW.
- THE BLANKET SHALL BE OF CONSISTENT THICKNESS WITH THE STRAW EVENLY DISTRIBUTED OVER THE ENTIRE AREA OF THE MAT. THE BLANKET SHALL BE COVERED ON THE TOP SIDE WITH 100% BIODEGRADABLE WOVEN NATURAL ORGANIC FIBER NETTING HAVING AN APPROXIMATE 1/2" X 1" MESH AND BE SEWN TOGETHER WITH BIODEGRADABLE THREAD.
- STRAW EROSION CONTROL BLANKET SHALL BE S75BN AS MANUFACTURED BY NORTH AMERICAN GREEN, INC. (812-867-6632) OR EQUIVALENT. EROSION CONTROL BLANKET SHALL HAVE THE FOLLOWING PROPERTIES:

MATERIAL CONTENT:

- STRAW: 100% (0.50 lbs/sq.yd.)(0.27 kg/m^2)
- NETTING: ONE SIDE ONLY, LENO WOVEN 100% BIODEGRADABLE NATURAL ORGANIC FIBER (APPROX. WEIGHT 9.3 lbs./100 sq. ft.)
- THREAD: BIODEGRADABLE

PHYSICAL SPECIFICATIONS (ROLL):

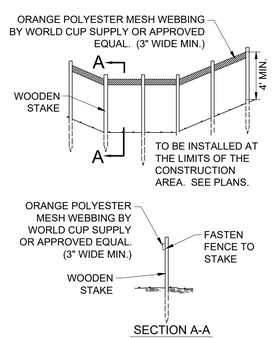
- WIDTH: 6.67 feet (2.03 m)
- LENGTH: 108 feet (32.92 m)
- WEIGHT: 46.4 lbs. ± 10% (21.05 kg)
- AREA: 80 sq. yd. (50 m^2)

TEMPORARY TRAFFIC CONTROL GENERAL NOTES (VAOT STANDARD T-1)

1. TRAFFIC CONTROL DEVICES NOT DETAILED IN THE VERMONT AGENCY OF TRANSPORTATION (VAOT) "STANDARD DRAWINGS" OR THE PROJECT PLANS SHALL BE IN ACCORDANCE WITH THE "MANUAL ON TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
2. CONSTRUCTION SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY OR UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER.
3. DIAMOND SHAPED CONSTRUCTION SIGNS SHALL BE 48 INCH BY 48 INCH.
4. CONSTRUCTION SIGN COVERS SHALL CONSIST OF A PANEL, PAINTED FLAT BLACK, THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.
5. SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.
6. NO CROSS-BRACING OR BACK-BRACING TO KEEP POSTS PLUMB WILL BE ALLOWED. CONCRETE FOUNDATIONS, COLLARS OR SOIL BEARING PLATES ARE NOT PERMITTED. CONSTRUCTION SIGNS SHALL BE PLACED ON TWO POSTS.
7. CONSTRUCTION SIGNS INSTALLED ON POSTS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST FIVE FEET ABOVE THE EDGE OF PAVEMENT AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT, FOUR FEET OUTSIDE GUARDRAIL, OR TWO FEET OUTSIDE CURBING OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE SIDEWALK OR EDGE OF PAVEMENT, WHICHEVER IS HIGHER.
8. PORTABLE SIGNS SHALL BE PLACED ON THE EDGE OF ROADWAY AND A MINIMUM OF ONE FOOT ABOVE THE TRAVELED WAY. ALL VEGETATION THAT INTERFERES WITH VISIBILITY OF THE SIGNS SHALL BE REMOVED. WHEN PLACED BEHIND GUARDRAIL, THE BOTTOM OF THE SIGN FACE SHALL BE ABOVE THE TOP OF THE GUARDRAIL.
9. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
10. ROLL UP CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VI AND TYPE VI I UNLESS OTHERWISE NOTED.
11. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING THE "AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS" (AASHTO) M 268 ["AMERICAN SOCIETY FOR TESTING AND MATERIALS" (ASTM) D 4956] TYPE VI I I OR IX REQUIREMENTS UNLESS OTHERWISE NOTED.
12. WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL MEET "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 OR THE AASHTO "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH). THE APPROPRIATE RESOURCE SHALL BE DETERMINED AS DESCRIBED IN THE MASH PUBLICATION. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POSTS. WHEN ANCHORS ARE INSTALLED, STUBS SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
13. ROADWAY AND SHOULDER WIDTHS DEPICTED ON THE STANDARD DRAWINGS MAY VARY.
14. THESE STANDARD DRAWINGS ARE INTENDED TO SERVE AS VTRANS STANDARD OPERATING PROCEDURE. IT IS NOTED THAT COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL WORK ZONE MAY BE MODIFIED DUE TO FIELD CONDITIONS, AT THE DISCRETION OF THE ENGINEER.
15. REFER TO TABLES 6H-3 & 6H-4 FOR SPACING OF SIGNS AND CONES.
16. MAINTAIN 12' TRAVEL LANES WHENEVER POSSIBLE. REFER TO THE FOLLOWING 2009 MUTCD TYPICAL APPLICATIONS FOR VARYING FIELD CONDITIONS:
USE TA-1 FOR WORK BEYOND SHOULDER, PAGE 634.
USE TA-6 FOR SHOULDER WORK WITH MINOR ENCROACHMENT, PAGE 644.
USE TA-10 FOR LANE CLOSURE ON 2 LANE ROAD USING FLAGGERS, PAGE 652.
USE TA-14B WHEN MOBILIZING SOLAR PANELS AND EQUIPMENT TO THE SITE, PAGE 660.
17. EXTRA CARE SHALL BE GIVEN DURING PEAK TRAFFIC FLOW TO LIMIT STOPPING TRAFFIC FOR EXTENDED PERIODS OF TIME.
18. IF EQUIPMENT TRAVELS ON THE ROADWAY, THE EQUIPMENT SHOULD BE EQUIPPED WITH APPROPRIATE FLAGS, HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS, AND/OR A SLOW MOVING VEHICLE SIGN.

NOTES

1. ACCEPTABLE EPSC MEASURE DETAILS ARE PROVIDED BELOW.
2. AT A MINIMUM, EPSC MEASURES MEET VT DEC STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION AND SEDIMENT CONTROL OR PREVIOUSLY APPROVED INTERCHANGEABLE PRACTICES.
3. LIMITS OF DISTURBANCE (OR "CONSTRUCTION DEMARCATION") SHALL BE INSTALLED PRIOR TO ANY EARTH DISTURBING ACTIVITIES.
4. BARRIER TAPE/ROPE: FOR USE WHERE PROPOSED DISTURBANCE BORDERS NON-WOODED, VEGETATED AREAS MORE THAN 100 FT FROM THE NEAREST WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC.). BARRIER TAPE IS HIGH VISIBILITY FIBERGLASS TAPE, MINIMUM 3" IN WIDTH COMMONLY USED IN SKI AREAS FOR DEMARCATING CLOSED AREAS. BARRIER TAPE AND ROPE SHOULD BE ATTACHED TO STAKES, AT A MINIMUM HEIGHT OF 4 FT FROM THE GROUND.
5. MINIMUM 1 TO 2 ROWS OF MESH BARRIER TAPE TO BE INSTALLED ALONG CONSTRUCTION PERIMETER.
6. EACH ROW OF BARRIER TAPE TO BE 3" WIDE MINIMUM.
7. BARRIER TAPE TO BE ORANGE.
8. SECURE BARRIER TAPE TO STAKES OR EXISTING TREE TRUNKS WITH BOTTOM ROW AT 4' DISTANCE FROM GROUND SURFACE (MINIMUM).
9. MAINTAIN AND REPLACE AS NEEDED. REMOVE AT COMPLETION OF PROJECT PER OSPC.
10. IN EVENT THE OSPC DETERMINES BARRIER TAPE IS NOT SUFFICIENT, REPLACE WITH ORANGE CONSTRUCTION FENCE OR SNOW FENCE.



TYPICAL CONSTRUCTION LIMIT BARRIER

N.T.S.

FLAGGERS AND UNIFORMED TRAFFIC OFFICERS

1. PROJECT IS PROPOSING PERMANENT CLOSURE THROUGH THE CONSTRUCTION PERIOD TO CONNECT UTILITIES AND BUILDING SIDEWALK AND CURB. FLAGGERS ARE NOT NEEDED FOR THIS PERMANENT CLOSURE. HOWEVER, FLAGGERS MAY BE NEEDED FOR CONSTRUCTION TURNING AND OTHER MISC. TIMES. IF FLAGGERS ARE DEEMED NECESSARY THE CONTRACTOR WILL HIRE PROFESSIONAL TRAFFIC FLAGGERS AND FOLLOW THE FOLLOWING ITEMS.
2. FLAGGERS SHALL HAVE CURRENT DOCUMENTATION OF HAVING COMPLETED AN APPROVED 4 HOUR TRAINING COURSE. THE CONTRACTOR SHALL PROVIDE THE CITY OF ESSEX JUNCTION WITH COPIES OF CERTIFICATION OF THE COURSE ATTENDED.
3. ALL FLAGGERS AND UTO WORKING TRAFFIC CONTROL SHALL WEAR SAFETY APPAREL MEETING REQUIREMENTS OF ISEA "AMERICAN NATIONAL STANDARD FOR HIGH-VISIBILITY APPAREL AND HEADWEAR" AND LABELED AS MEETING THE ANSI 107-2004 STANDARD PERFORMANCE FOR CLASS II RISK EXPOSURE. INDIVIDUALS ENGAGED IN TRAFFIC CONTROL SHALL WEAR THE HIGH-VISIBILITY VEST WITH "TRAFFIC CONTROL" VISIBLE WITHOUT EXCEPTION.
4. UNIFORM TRAFFIC CONTROL OFFICERS OR TRAINED FLAG PERSONS SHALL DIRECT TRAFFIC WHENEVER REQUIRED.
5. NOTE THAT THE UTO, UNDER AUTHORITY GRANTED BY LAW (TITLE 23 VSA) MAY DIRECT AND CONTROL TRAFFIC. SUITABLE EXAMPLES IN WORK ZONES MIGHT INCLUDE THE DIRECTION AND CONTROLS OF TRAFFIC AT INTERSECTIONS WHERE SIGNALS ARE NOT FUNCTIONING. IN THESE INSTANCES THE PRESENCE OF THE BLUE LIGHT MAY NOT BE NECESSARY. THE WEARING OF DEPARTMENTALLY REQUIRED AND APPROVED REFLECTIVE GARMENTS IS REQUIRED.
6. FLAGGERS ARE ALLOWED TO STOP AND RELEASE TRAFFIC AS INDICATED IN THE 2009 MUTCD, SECTION 6E.07 FLAGGER PROCEDURES.

CIVIL ENGINEER
KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201 P: (802) 878-0375
Colchester, Vermont 05446
www.krebsandlansing.com

Project:

CENTER FOR TECHNOLOGY ESSEX

Taft Street & Meadow Terrace
Essex Junction, Vermont

Project No.	22351
Scale	not to scale
Drawn by	TJB
Checked by	SWH
Date	01/23/2025

Revisions

No.	Date	
	03/21/25	Staff & Engineer comments

Drawing Title

Civil Details

Drawing No.

CD-8

22351\DWGS\CTE Details 2025.dwg

Project	CTE-Taft Street	**Catalog #**	ARCH-S-PA2-50-740-U-T3-AP-HSS-PR7	**Type**	
Prepared by	Ben L	**Notes**		**Date**	3/25/25

Streetworks

Archeon Small

Roadway Luminaire

Product Features

Light ARchitect™ | BAA | FADC

Interactive Menu

Product Certifications

cULus CERTIFIED | IP66 [3] | 3G VIB | TSHI SYSTEMS CERTIFIED | ida DARK SKY APPROVED [1] | DLC LISTED [2] | DLC LISTED PREMIUM [2]

Quick Facts

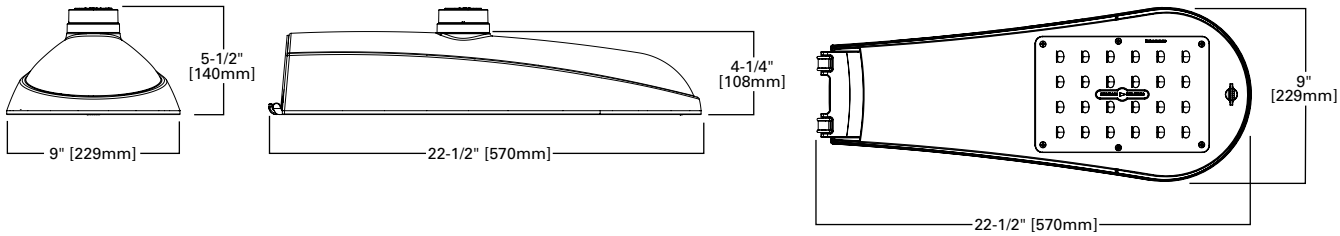
- Die-cast aluminum construction; Single latch tool-less entry
- Replaces up to 250W equivalent HID; -40°C to 40°C with optional 50°C operating range
- Pole-mounted; Optional arm and offset adjustable arm mounting
- 120-277V, 240-480V, 347V, and 480V, 50/60Hz operation

Connected Systems

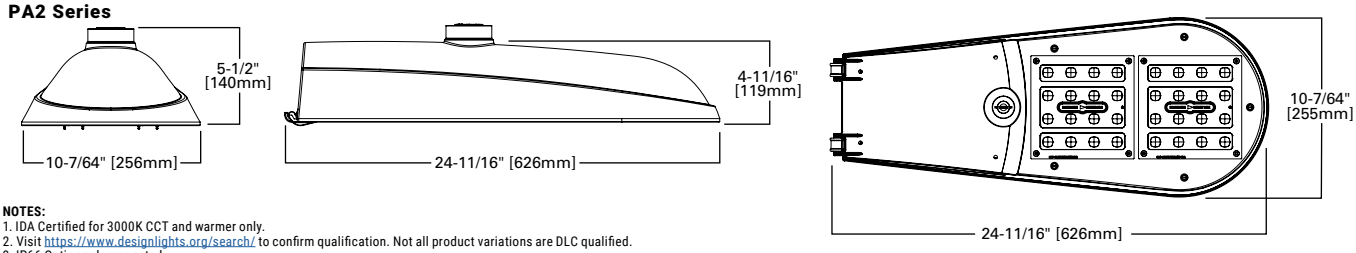
- WaveLinx PRO Wireless
- WaveLinx LITE Wireless
- Telensa

Dimensional Details

PA1 Series



PA2 Series



NOTES:
1. IDA Certified for 3000K CCT and warmer only.
2. Visit https://www.designlights.org/search/ to confirm qualification. Not all product variations are DLC qualified.
3. IP66 Optic enclosure rated.

Ordering Information

SAMPLE ORDER NUMBER: **ARCH-S-PA1-100-740-U-T2R-A15-AP-10K-PR**

Product Family [3]	Light Engine	Wattage Bucket	Color Temperature	Voltage	Distribution	Mounting	Finish
ARCH-S=Archeon Small **BAA-ARCH-S=** Archeon Small Buy American Act Compliant [1,5] **TAA-ARCH-S=**Archeon Small Trade Agreements Act Compliant [1,5]	**PA1** (Only available up to 100W)	**30** **40** **50** **60** **70** **80** **90** **100**	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **827**=80CRI, 2700K [5] **AMB**=Amber 590nm [16,17]	**U**=Universal (120-277V) **1**=120V [21] **2**=208V [21] **3**=240V [21] **4**=277V [21] **8**=480V [4,21] **9**=347V [21] **DV1**=240V-480V [4,22]	**T2R**=Type II Roadway **T2U**=Type II Urban **T3**=Type III **T4W**=Type IV Wide **5WQ**=Type V Square Wide	**[Blank]**=None **A15**=15" Straight Mast Arm [9] **ASJS15**=Adjustable Slipfitter (Factory set at 15° degrees) **ASJS25**=Adjustable Slipfitter (Factory set at 25° degrees) **ASJS45**=Adjustable Slipfitter (Factory set at 45° degrees)	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **WH**=White
	PA2	**20** **30** **40** **50** **60** **70** **80** **90** **100** **110** **120** **130**					

Options (Add as Suffix)	Controls	Accessories (Order Separately) [2]
F=Single Pole Fusing, specify voltage (120V, 277V, 347V) **FF**=Double Pole Fusing, specify voltage (208V, 240V, 480V) **10MSP**=Parallel 10kV MOV Surge Protection Device **10K**=Series 10kV UL 1449 Surge Protection Device **20MSP**=Parallel 20kV MOV Surge Protection Device **20K**=Series 20kV UL 1449 Surge Protection Device **20KI**=Series 20kV UL 1449 Surge Protection Device with light indicator **L90**=PA2 Optics Rotated 90° Left [23] **R90**=PA2 Optics Rotated 90° Right [23] **HSS**=Factory Installed House Side Shield [8,26] **GRSBK**=PA2 Glare Reducing Shield Black [23] **GRSWH**=PA2 Glare Reducing Shield Black [23] **HA**=50°C High Ambient Temperature [7] **K**=Level Indicator **CC**=Coastal Construction [19] **LCF**=PA2 Trim Painted to Match Housing [23] **Dxxxxx**=DOT configuration - contact factory quotes team **Uxxxxx**=Utility configuration - contact factory quotes team	**PSC**=Photocontrol Shorting Cap **NPC**=NEMA Photocontrol - Multi-Tap **LLPC**=Longlife Photocontrol Included **PR**=NEMA 3-PIN Twistlock Photocontrol Receptacle [6] **PR7**=NEMA 7-PIN Twistlock Photocontrol Receptacle **FADC**=Field Adjustable Dimming Controller [18] **5LTD**=DALI **SPB1**=Dimming Occupancy Sensor with Bluetooth Interface [20] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8'-20' Mounting [20] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21'-40' Mounting [20] **WPS2XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting [12,13,14,15] **WPS4XX**=WaveLinx Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting [12,13,14,15] **WLS2XX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting [12,13,14] **WLS4XX**=WaveLinx Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting [12,13,14]	**OA / RA1013**=Photocontrol Shorting Cap **OA1223**=10kV Surge Module Replacement **OA/RA1014**=NEMA Photocontrol - 120V **OA/RA1016**=NEMA Photocontrol - Multi-Tap **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1201**=NEMA Photocontrol - 347V **A15-XX**=Arm (15" Straight Arm) [9,10] **ASJS15-XX**=Adjustable slipfitter (Factory set at 15 degrees) [10] **ASJS25-XX**=Adjustable slipfitter (Factory set at 25 degrees) [10] **ASJS45-XX**=Adjustable slipfitter (Factory set at 45 degrees) [10] **HS-ARCH-24**=PA1 Field Installed ARCH House Side Shield [8,26] **VGS-ARCH**=PA1 Short Vertical Drop Shield [27] **VGL-ARCH**=PA1 Long Vertical Drop Shield [27]

NOTES:

1. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to **DOMESTIC PREFERENCES** website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.
2. Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information.
3. Customer is responsible for engineering analysis to confirm pole and fixture compatiblity for all applications. Refer to our white paper WP513001EN for additional support information.
4. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
5. Extended lead times may apply.
6. If "PR" selected, dimming functionality not available, dimming leads will be capped.
7. Option not available with PA1-90, PA1-100, PA2-100+.
8. HS-ARCH not available with 5WQ and T2U distribution.
9. Round pole adapter and mounting hardware included. "M" drill pattern.
10. Replace XX with color designation.
11. Only available with "U" universal voltage. Not available with PA2.
12. Controls system is not available with photocontrol receptacles (PR , PR7) or other controls systems (FADC, SPBx).
13. Replace XX with sensor color (WH, BZ or BK).
14. Sensor passive infrared (PIR) may be overly sensitive with operating below -20°C (-4°F).
15. For this device to be field-configurable, requires WAC Gateway components WAC-PoE and WPOE-120 in appropriate quantities. Only compatible with WaveLinx system and software and requires system components to be installed for operation. See website for more WaveLinx application information.
16. Not available with HA option.
17. Amber 590nm +/-5nm for wildlife and observatory use. Supplied in PA1-30 and PA2-40 wattage bucket only.
18. Cannot be used with PR7 or other motion response control options.
19. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.
20. Smart device with Sensor Configuration mobile application by Wattstopper required to change system defaults.
21. Required for voltage specific options
22. Only available for 80W through 130W.
23. PA2 Only.
24. Utilizes internal step-down transformer when 347V or 480V is selected.
25. Not available with PA1-30, PA1-90, and PA1-100.
26. Not available with PA2-110 through PA2-130.
27. Kit to install one side for one luminaire.

Product Specifications

Construction
- Heavy-duty die-cast aluminum housing and door
- Tool-less entry, hinged removable door for easy maintenance
- 3G vibration rated

Optics
- Choice of four patented, high efficiency AccuLED Optics
- Available in Type IIR, IIU, III, IV wide and V square wide the optics are precisely designed to shape the distribution maximizing efficiency and application spacing
- Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 2200K, 2700K, 3000K, 3500K, and 5000K CCT
- For the ultimate level of spill light control, an optional house side shield accessory is available and can be field or factory installed
- Optics are IP66 enclosure rated
- IDA Certified for 3000K CCT and warmer only

Electrical
- 120-277V, 240-480V, 347V, and 480V; 50/60Hz operation
- Standard 0-10V dimming
- Optional 10kV and 20kV surge common- and differential-mode surge protection available
- Ambient operating temperature from -40°C to 40°C; 50°C HA, high ambient, capability available
- Standard with three position tunnel type compression terminal block
- Greater than 97% and 94% lumen maintenance expected at 50,000 and 100,000 hours respectively with calculated L70 greater than 150,000 hours
- Replaces 50W to 250W HID
- Luminaire available with the field adjustable dimming controller (FADC) to manually adjust wattage and reduce the total lumen output and light levels. Comes pre-set to the highest position at the lumen output selected

Mounting
- **PA1 Mounting:** Two-bolt/one-bracket slipfitter with cast-in pipe stop and 2.5° leveling steps
- **PA2 Mounting:** Four-bolt/two-bracket slipfitter with cast-in pipe stop and 2.5° leveling steps
- Fixed-in-place bird guard seals around 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) mounting arms
- Optional 15" pole mount arm available with round pole adapter and mounting hardware included

Finish
- Housing and cast parts finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear
- Consult your lighting representative at Cooper Lighting Solutions for a complete selection of standard colors

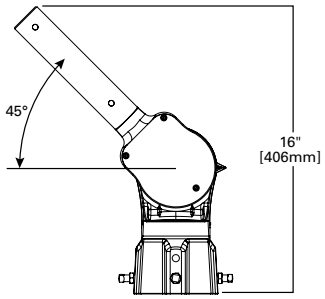
Shipping Data
PA1
- Approximate Net Weight: 12 lbs. (5.4 kgs.)
- Effective Projected Area: 0.5 (Sq. Ft.)

PA2
- Approximate Net Weight: 12.25 lbs. (5.6 kgs.)
- Effective Projected Area: 0.7 (Sq. Ft.)

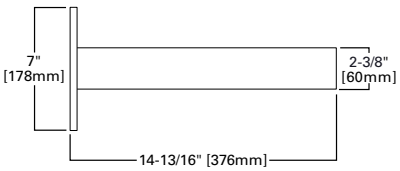
Warranty
- Five year limited warranty, consult website for details www.cooperlighting.com/legal

Mounting Details

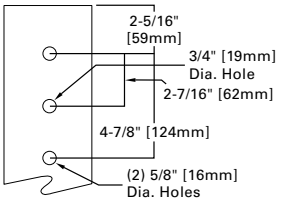
Adjustable Slipfitter Offset Arm



15" Straight Arm



Type "M" - Drilling Pattern



Energy and Performance Data

Lumen Maintenance

Light Engine	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours*	L70*
PA1	25°C	99.7%	98.2%	97.6%	95.4%	>150,000
	40°C	98.7%	96.4%	95.5%	92.0%	>150,000
	50°C	99.2%	97.3%	96.5%	93.6%	>150,000
PA2	25°C	99.4%	97.8%	97.2%	94.7%	>150,000
	40°C	98.5%	96.0%	95.0%	91.2%	>150,000
	50°C	99.7%	98.5%	97.9%	95.9%	>150,000

Note: * Calculations provided in accordance with IES TM-21-11 using the configuration resulting in highest LED temperature. Previous versions of IES TM-21 where theoretical calculations were used are no longer recommended as a proxy of lumen depreciation.

LED Color Multipliers

	CCT					
	2200	2700	3000	3500	4000	5000
CRI	Lumen Multiplier*					
70	0.74	0.84	0.91	0.93	1.00	1.00
80	--	0.75	--	--	--	--

Note: * Estimates, refer to IES files for accuracy.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

View Archeon Small IES files

FADC Settings

FADC Position	Percent of Typical Lumen Output
1	25%
2	46%
3	55%
4	62%
5	72%
6	77%
7	82%
8	85%
9	90%
10	100%

Note: +/-5% typical value

Energy and Performance Data

Power and Lumens (PA1 Light Engine) (70CRI - 4000K)

Light Engine - PA1		PA1-30	PA1-40	PA1-50	PA1-60	PA1-70	PA1-80	PA1-90	PA1-100
Power (Watts)		31	40	54	64	74	83	94	96
Wattage Label		30	40	50	60	70	80	90	100
Input Current @ 120V (A)		0.26	0.34	0.45	0.53	0.62	0.70	0.78	0.80
Input Current @ 277V (A)		0.12	0.16	0.21	0.24	0.28	0.31	0.35	0.35
Input Current @ 347V (A)		0.10	0.13	0.16	0.19	0.22	0.24	0.28	0.28
Input Current @ 480V (A)		0.07	0.09	0.13	0.15	0.17	0.18	0.21	0.21
Optics									
T2R	Lumens	4,756	6,137	7,912	9,083	10,127	10,942	11,729	11,850
	Lumens Per Watt	153	153	146	141	136	131	124	123
	Bug Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2
T2U	Lumens	4,739	6,114	7,884	9,052	10,091	10,905	11,688	11,809
	Lumens Per Watt	152	152	146	141	136	131	124	123
	Bug Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3
T3	Lumens	4,729	6,102	7,868	9,033	10,071	10,882	11,664	11,785
	Lumens Per Watt	152	152	145	141	136	131	124	122
	Bug Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
T4W	Lumens	4,700	6,062	7,819	8,976	10,006	10,813	11,591	11,710
	Lumens Per Watt	151	151	144	140	135	130	123	121
	Bug Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
5WQ	Lumens	4,832	6,234	8,040	9,230	10,291	11,120	11,918	12,042
	Lumens Per Watt	155	155	148	144	139	133	126	125
	Bug Rating	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2

Power and Lumens (PA2 Light Engine) (70CRI - 4000K)

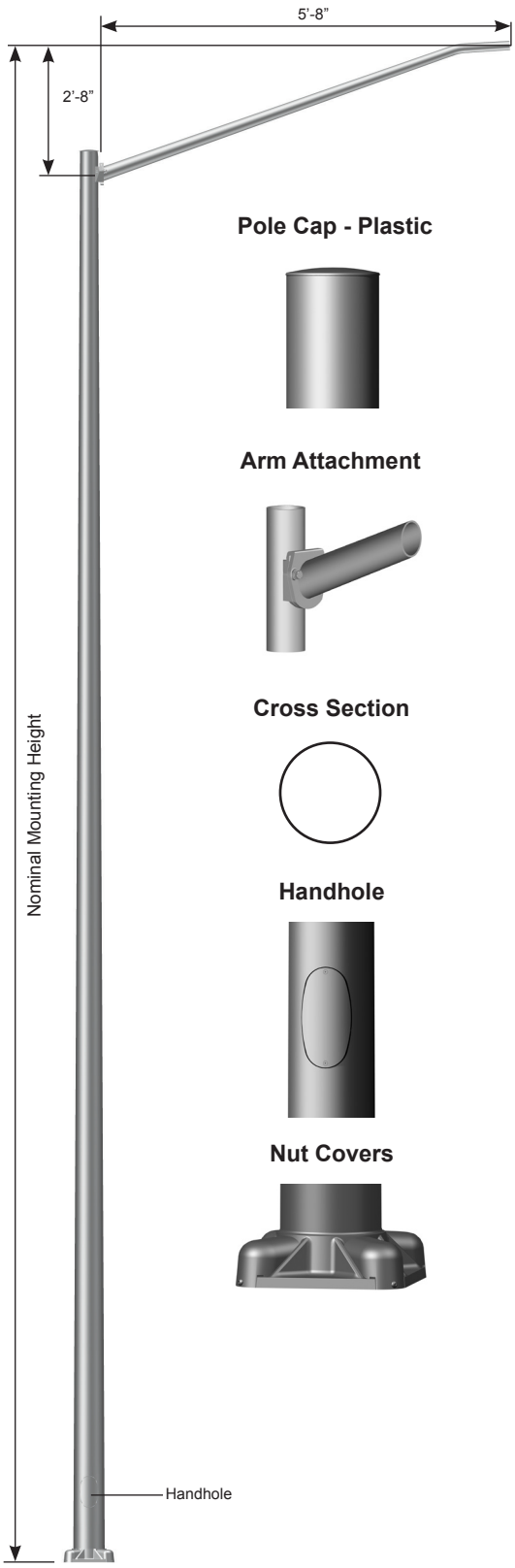
Light Engine - PA2		PA2-20	PA2-30	PA2-40	PA2-50	PA2-60	PA2-70	PA2-80	PA2-90	PA2-100	PA2-110	PA2-120	PA2-130
Power (Watts)		23	33	43	53	63	73	83	93	103	113	123	133
Wattage Label		20	30	40	50	60	70	80	90	100	110	120	130
Input Current @ 120V (A)		0.20	0.28	0.36	0.45	0.53	0.61	0.69	0.77	0.86	0.96	1.02	1.10
Input Current @ 277V (A)		0.09	0.13	0.16	0.20	0.24	0.27	0.31	0.34	0.38	0.42	0.46	0.49
Input Current @ 347V (A)		0.07	0.10	0.13	0.16	0.18	0.21	0.24	0.27	0.30	0.33	0.36	0.39
Input Current @ 480V (A)		0.06	0.08	0.09	0.11	0.13	0.16	0.17	0.19	0.22	0.24	0.26	0.28
Optics													
T2R	Lumens	3,706	5,265	6,723	8,043	9,495	10,744	11,875	12,883	13,956	15,091	15,688	16,268
	Lumens Per Watt	158	157	155	150	150	147	143	139	135	132	128	124
	Bug Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
T2U	Lumens	3,648	5,183	6,618	7,917	9,346	10,576	11,689	12,682	13,738	14,854	15,442	16,014
	Lumens Per Watt	155	155	152	148	148	144	141	137	133	130	126	122
	Bug Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3
T3	Lumens	3,693	5,247	6,700	8,015	9,461	10,707	11,833	12,838	13,907	15038	15,633	16,211
	Lumens Per Watt	157	157	154	150	150	146	143	139	135	132	128	123
	Bug Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3
T4W	Lumens	3,680	5,228	6,676	7,987	9,428	10,669	11,791	12,793	13,858	14,985	15,578	16,154
	Lumens Per Watt	157	156	153	149	149	146	142	138	134	131	127	123
	Bug Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G3
5WQ	Lumens	3,810	5,413	6,912	8,269	9,761	11,046	12,208	13,245	14,348	15,514	16,128	16,725
	Lumens Per Watt	162	162	159	154	155	151	147	143	139	136	132	127
	Bug Rating	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com

valmont STRUCTURES

ROUND TAPERED ALUMINUM
Elliptical Mast Arm
6′ Single - Double Simplex Mount

Job Name: CTE Ta□t Street	Client Name:
Job Location - City: Essex □unction State: □T	Created By: Date:
Product: □M0632S-□□084060□T4-SB□ Quote:	Customer Approval: Date:



Pole Cap - Plastic

Arm Attachment

Cross Section

Handhole

Nut Covers

SPECIFICATIONS

Pole - The pole shaft is extruded from seamless alloy aluminum.

Pole Top - A removable pole cap is provided.

Luminaire Arm - Luminaire arms are conically tapered from seamless alloy aluminum to 2.38" OD at the luminaire end.

Luminaire Arm Attachment - Connection allows arm to be erected and held in place by gravity and secured by two bolts.

Handhole - A covered handhole with hardware and grounding provision are provided.

Base Cover - Optional decorative base covers available as special order.

Anchor Base - The anchor base is cast from 356 alloy aluminum. The completed assembly is heat-treated to a T6 temper. Aluminum nut covers are included with anchor base unless otherwise specified.

Anchor Bolts - Anchor bolts conform to ASTM F1554 Grade 55 and are provided with two hex nuts and two flat washers. Bolts have an "L" bend on one end and are galvanized a minimum of 12" on the threaded end.

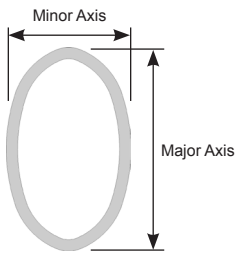
Hardware - All structural and non-structural fasteners are stainless steel.

Finish - The standard finish for the pole assembly and components is satin brushed, natural anodize, duranodic or polyester powder applied coating in accordance with Valmont's Specifications. Additional finish options available upon request.

Design Criteria - Please reference Design Criteria Specification for appropriate design conditions.

ARM DATA

Ovalized Arm Cross Section



ROUND TAPERED ALUMINUM
Elliptical Mast Arm
6′ Single - Double Simplex Mount

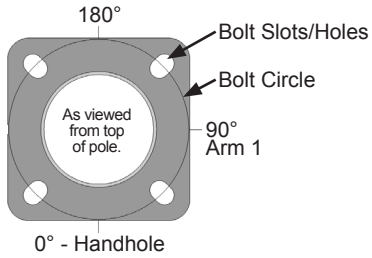
valmont STRUCTURES

Job Name:	Client Name:
Job Location - City: State:	Created By: Date:
Product: Quote:	Customer Approval: Date:

ANCHORAGE DATA

POLE		BASE PLATE				ANCHOR BOLTS		
BASE OD (IN)	WALL THK (IN)	BOLT CIRCLE DIA (IN)	BOLT CIRCLE ± (IN)	SQUARE (IN)	THK (IN)	DIA x LENGTH x HOOK (IN)	PROJECTION (IN)	± (IN)
6.00	0.156	9.50	0.75	10.32	0.630	0.75 x 17.00 x 3.00	3.50	N/A
6.00	0.188	9.50	0.75	10.32	0.630	0.75 x 17.00 x 3.00	3.50	N/A
7.00	0.156	10.56	0.43	11.26	0.750	1.00 x 36.00 x 4.00	4.13	N/A
8.00	0.156	11.63	0.37	12.05	0.750	1.00 x 36.00 x 4.00	4.13	N/A
8.00	0.188	11.63	0.37	12.05	0.750	1.00 x 36.00 x 4.00	4.13	N/A
8.00	0.250	11.63	0.37	12.05	0.750	1.00 x 36.00 x 4.00	4.13	N/A
9.00	0.156	13.25	0.75	12.48	1.250	1.00 x 36.00 x 4.00	4.13	N/A
9.00	0.188	13.25	0.75	12.48	1.250	1.00 x 36.00 x 4.00	4.13	N/A

Anchor Base Detail



LOAD AND DIMENSIONAL DATA

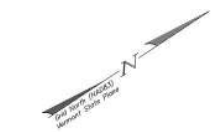
DESIGN INFORMATION							POLE DIMENSIONS					
NOMINAL MOUNTING HEIGHT	MAX WEIGHT[1] (LBS)	70 MPH w/1.3 GUST MAX EPA[1] (SQ FT)	80 MPH w/1.3 GUST MAX EPA[1] (SQ FT)	90 MPH w/1.3 GUST MAX EPA[1] (SQ FT)	100 MPH w/1.3 GUST MAX EPA[1] (SQ FT)	110 MPH w/1.3 GUST MAX EPA[1] (SQ FT)	POLE HEIGHT	BASE OD (IN)	TOP OD (IN)	WALL THK (IN)	STRUCTURE WEIGHT[2] (LBS)	MODEL NUMBER
20'-0"	75	6.0	4.7	3.6	2.8	2.3	17'-8"	6.00	4.00	0.156	68	1MA0632S-170840605T4
25'-0"	70	6.0	4.7	2.8	1.7	0.9	22'-8"	6.00	4.00	0.156	82	1MA0632S-220840605T4
	75	6.0	4.7	3.6	2.8	1.9	22'-8"	6.00	4.00	0.188	94	1MA0632S-220840606T4
	75	6.0	4.7	3.6	2.8	2.3	22'-8"	7.00	4.00	0.156	90	1MA0632S-220840705T4
30'-0"	70	6.0	4.7	2.9	1.7	0.8	27'-8"	7.00	4.00	0.156	106	+1MA0632S-270840705T4
	75	6.0	4.7	3.6	2.8	2.3	27'-8"	8.00	4.50	0.156	119	1MA0632S-270845805T4
35'-0"	75	6.0	4.7	3.0	1.8	0.8	32'-8"	8.00	4.50	0.156	138	+1MA0632S-320845805T4
	75	6.0	4.7	3.6	2.8	2.1	32'-8"	8.00	4.50	0.188	162	1MA0632S-320845806T4
	75	6.0	4.7	3.6	2.8	2.3	32'-8"	8.00	4.50	0.250	207	1MA0632S-320845808T4
	75	6.0	4.7	3.6	2.8	2.3	32'-8"	9.00	4.50	0.156	153	+1MA0632S-320845905T4
39'-0"	75	6.0	4.7	2.8	1.5	N/A	36'-8"	8.00	4.50	0.188	184	+1MA0632S-360845806T4
	75	6.0	4.7	3.6	2.1	1.0	36'-8"	9.00	4.50	0.156	174	+1MA0632S-360845905T4
	75	6.0	4.7	3.6	2.8	2.3	36'-8"	8.00	4.50	0.250	235	1MA0632S-360845808T4
	75	6.0	4.7	3.6	2.8	2.3	36'-8"	9.00	4.50	0.188	203	+1MA0632S-360845906T4

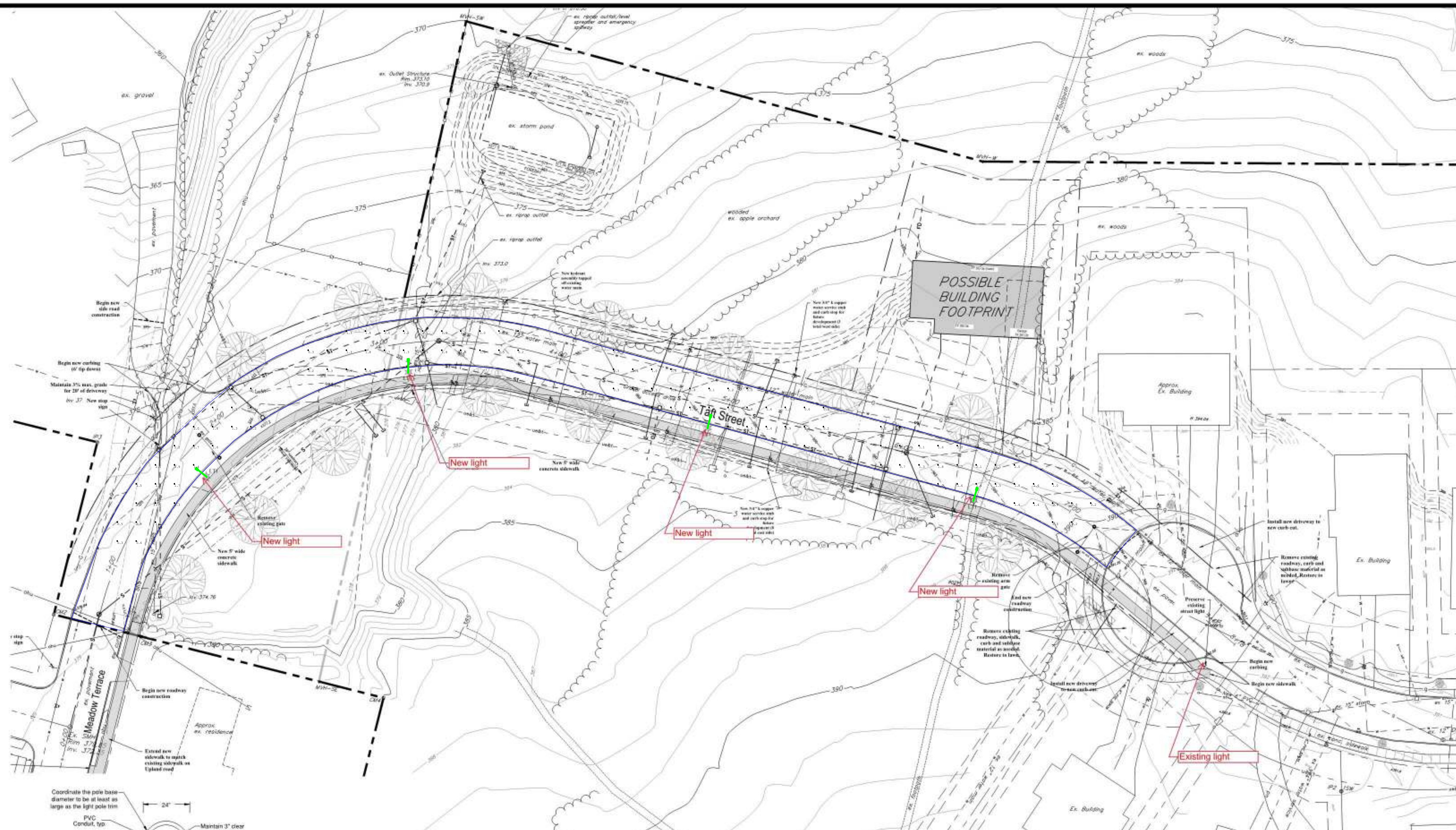
1. EPA represents the Effective Projected Area of each luminaire. Designs are limited to one luminaire per arm. Variations from sizes above are available upon inquiry at the factory. Satisfactory performance of poles is dependent upon the pole being properly attached to a supporting foundation of adequate design.
2. Structure weight is a nominal value which includes the pole shaft, base plate and luminaire arm(s).
+ Pole includes factory installed vibration damper.

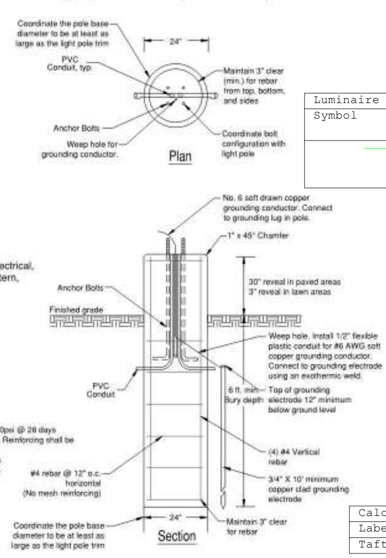
PRODUCT ORDERING CODES

CROSS SECTION	MODEL NUMBER	COLOR		OPTIONS
R				
R = Round	1MA0632S-170840605T4 1MA0632S-220840605T4 1MA0632S-220840606T4 1MA0632S-220840705T4 +1MA0632S-270840705T4 1MA0632S-270845805T4 +1MA0632S-320845805T4 1MA0632S-320845806T4 1MA0632S-320845808T4 +1MA0632S-320845905T4 +1MA0632S-360845806T4 +1MA0632S-360845905T4 1MA0632S-360845808T4 +1MA0632S-360845906T4	**Polyester Powder** DWH = White DSS = Sandstone BR = Burgundy HG = Hunter Green DNA = Natural Aluminum DCG = Charcoal Gray DMB = Medium Bronze SBN = Sanded Brown DNB = New Dark Bronze DDB = Dark Bronze SBK = Sanded Black DBL = Black DSB = Steel Blue DTG = Dark Green DBR = Red SC = Special Color (Contact Factory)	**Anodized** 204 = Clear Natural 311 = Light Bronze* 312 = Medium Bronze* 313 = Dark Bronze* 335 = Black* *Duranodic Anodize **Brushed** SBF = Satin Brushed	See Accessories at valmontstructures.com (Please Specify with Code)

SPC7564 12/22 valmontstructures.com carries the most current spec information and supersedes these guidelines.







NOTE:
See Electrical Plans for electrical, conduit, light pole bolt pattern, and grounding design.

SPECIFICATIONS:
- Concrete Minimum Strength 5000psi @ 28 days
- Reinforcement per Specification. Reinforcing shall be ASTM A615 Grade 60
- PVC Conduit Supplied by Others
- Anchor Bolts Supplied by Others
- Weights Subject to Variation

Typical Light Pole Base
N.T.S.

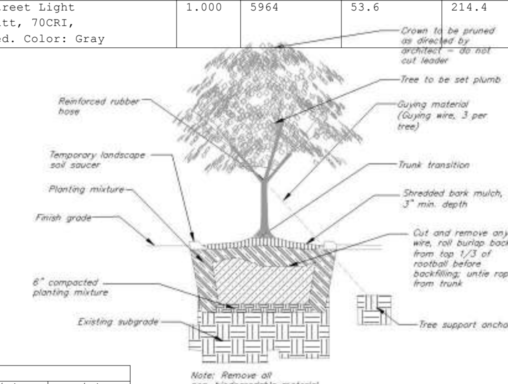
Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	Mounting Height
🟩	4	Pole Mast mounted Roadway Fixture	Single	ARCH-Shielded Street Light 4000k CCT, 50 Watt, 70CRI, Photocell enabled. Color: Gray	1.000	5964	53.6	214.4	20

Tree Plant List

16 Northern Red Oak
Quercus Ruba

LT1 New light base

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Taft Street_Planar	Illuminance	Fc	1.16	2.2	0.2	5.80	11.00



Tree Planting Detail
N.T.S.

0' 30' 60' 120' 180'
Bar Scale 1" = 30'

CIVIL ENGINEER
KREBS & LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
www.krebsandlansing.com
P: (802) 878-0375

Lighting Design Layout
Drawn By:
Ben LeClair
Green Mountain Electric Supply
802-338-9336

GREEN MOUNTAIN ELECTRIC SUPPLY

Project:
CENTER FOR TECHNOLOGY ESSEX
Taft Street
Essex, Vermont

Project No. 22351
Scale 1" = 30'
Drawn by TJB/SWH
Checked by
Date 01/30/2025

Revisions
No. Date

Drawing Title
Landscape & Lighting Plan

Drawing No.
C-5.0

22351\DWGS\CTE-2025.dwg

City of Essex Junction Sewer Allocation Request

Instructions:

1) Submit completed form to planning and zoning department electronically at thass@essexjunction.org during conceptual plan review and amended at final plan review, if necessary.

*2) Payment of **sewer allocation fee** is due upon zoning permit request (final municipal permit before start of construction). Refer to the current fee schedule for more information. Please note **sewer connection fees** may also be applicable.*

****

Applicant Name and Mailing Address:

CTE Corporation

3 Educational Drive, Essex Junction, VT 05452

Phone Number: 802-857-7532 **Email Address:** btravers@ewsd.org

Property Owner(s) Name and Mailing Address (if different):

Same

Project Address: Taft Street

Project Information (check or circle any that are applicable)

☒ **Single-family home** # of bedrooms 4 ☐ Multiplex (see Attachment A)

Business: # of employees_____ **Public restroom available:** Yes or No?

Type of business: ☐Animal groomer/kennel ☐Conference space
☐ Hair salon ☐ Tasting Room ☐ Brewery ☐ Car Wash

☐ Care Facility ☐ Catering ☐ Child Care Facility ☐Dentist office

☐ Doctors Office ☐ Grocery Store ☐ Hotel ☐ Laundromat

☐ Nail Salon ☐ Office ☐Restaurant ☐ Store ☐ Therapist office

☐Other _____

Detailed information about business (i.e. # of chairs with sinks, type of office or store)

Existing land use of parcel or building (be detailed):

If residential, include # of bedrooms. If commercial, include type of business, # of employees.

Sewer allocation request calculations (reference Attachment A for housing). If unsure leave blank. Staff will make the assessment and circulate it back to you for review:

1 house @ 2 or more bedrooms = 210 GPD

*Applicants should request the difference between Proposed and Existing Sewer Allocation. If the proposed change results in a net decrease in flow rates, no sewer allocation fee will apply.

Signature of Property Owner: R.W.I.

Date: February 24, 2025

****

STAFF USE ONLY

Existing Sewer Allocation: 0 **gpd** **Proposed Sewer Allocation:** 210 **gpd**

Provisional Sewer Allocation Requested*: 210 **gpd X $12.80 allocation fee =**

$ 2,688

Final Allocation Approved _____ **gpd**

Amount of fee to be paid prior to issuance of zoning permit $ 4197.90

Sewer Connection fee also required: 210 gpd @ $7.19/gal= $1509.90

DEPARTMENTAL APPROVAL

Wastewater signature: Chelsea H. Mandigo 2/25/2025

Planning signature: _____

City of Essex Junction

Attachment A

Number of bedrooms (BR) within dwelling unit	Wastewater Flowrate - Gallons/day (gpd)
1	140
2 or more	210

Examples:

1) **Studio or 1 BR apartment unit** = 140 gpd

2) **2 BR apartment unit** = 210 gpd

3) **2 BR house** = 210 gpd

4) **House or apartment unit with more than 2 BR** = 210 gpd

5) **Duplex** = sum of wastewater flowrates for each unit
   i.e. 2 two BR units in duplex= 2 X 210 gpd = 420 gpd

6) **Single family home with accessory apartment** = sum of wastewater flowrates for each unit
   i.e. 3 BR primary dwelling unit + 1 BR accessory apartment = 210 gpd + 140 gpd = 350 gpd

7) **Triplex, Fourplex and above** = sum of wastewater flowrates for each unit
   i.e. 3 two BR units in triplex = 3 X 210 gpd = 630 gpd
   i.e. 2 one BR units + 1 two BR unit = 140 gpd + 140 gpd + 210 gpd = 490 gpd

Attachment 1: Narrative, Location Map, and Soils Map
Center for Technology Essex (CTE) Subdivision

1. **Introduction**
   Krebs and Lansing Consulting Engineers Inc. (K&L) are writing on behalf of Summit Properties to apply for a State Stormwater Discharge Permit pursuant to General Permit 3-9050 for the Center for Technology Essex subdivision project located between Taft Street and Meadow Terrace in Essex Junction.

2. **Project Description**
   The applicant proposed to extend Taft Street from the existing cul-de-sac to Meadow Terrace and create one new building lot. A future application will contemplate additional building lots. Areas of the cul-de-sac will revert to the adjoining lots. The road will be extended along the alignment of the existing gravel path and 50' wide utility and access easement. Utility extensions will be installed along with the new roadway. Lot 6A will be a proposed building lot. Lots 7A and 8A are created by the extension of Taft Street and may be further subdivided in the future.

   The proposed stormwater treatment practices include retrofitting an existing Wet Pond into a Gravel Wetland and Simple Disconnection. A forebay is provided for pre-treatment of non-rooftop runoff for the Gravel Wetland.

3. **Existing Condition**
   The project is an expansion of the CTE Taft Street project permitted in 2015 via 6006-INDS. This permit has since been rolled into the City of Essex Junction's MS4 permit. The existing multi-use path will be expanded into a new road and sidewalk, with one new building lot. The site is bounded by residential development to the north and east, and the Essex Educational Center to the south and west.

   Existing soil types on this portion of the site are Munson and Raynham silt loams. These soils are classified as type D by the U.S. Soil Conservation Service, which indicates a high degree of runoff and low infiltrative capacity.

   The pre development condition was divided into a single watershed, generally the lands south of the existing Taft Street cul-de-sac. This is the area draining to SN002 in the previous permit. Lands north of the cul-de-sac are unchanged and drain to SN001 as referenced in the previous permit.

4. **Existing Stormwater System**
   The existing site drains to a wet pond the discharges to SN002.Stormwater in the watershed is conveyed to the wet pond via sheet flow, a culvert under the multi-use path, and swales.

5. Proposed Stormwater System:

The proposed stormwater collection, treatment, and detention system will utilize a combination of new and upgraded existing stormwater treatment practices (STPs).

The watershed draining to SN1 is unchanged and will continue to be treated by the existing wet pond. The watershed draining to SN2 contains all of the proposed improvements. This area will be treated by upgrading the existing wet pond into Gravel Wetland #1. Runoff will be directed to the gravel wetland via a series of catch basins and enclosed drainage. Pre-treatment will occur in a forebay. The gravel wetland will discharge via a controlled outlet structure and stabilized outfall.

In addition to the gravel wetland, the back half of the roof of the proposed house will sheet flow away from the building in accordance with a Simple Disconnection.

a) Description of Impervious Area: The proposed permitted area of impervious surface is 0.60 acres. All of this has been treated as new impervious surface. The new impervious surface is from building roofs, paved roads, driveways, parking, and concrete sidewalks and pads. The areas are further summarized below:

b) Receiving Body: S/N002: Unnamed tributary of Indian Brook.

c) Fish Habitat Designation for Receiving Water: Cold

d) Description of compliance with each of the treatment standards in the 2017 VSMM including the treatment practices or waivers used to meet each of the following standards:

i) Post-Construction Soil Depth and Quality Standard:

This standard will be met via two options outlined in the VSMM.

Option 1: Areas outside of construction will be left undisturbed and protected from compaction during construction. This option will apply only to the far westerly portion of the site.

Option 2: Remove and stockpile existing topsoil during construction. On site soil testing indicates and existing sandy loam topsoil layer on the site ranging from 7-13 inches in depth. Given that much of the finish site will be covered in building or paving, there will be an excess of existing topsoil to re store other disturbed areas such as setbacks, vegetated islands, swales, and side-slopes. Compost will be incorporated into the existing topsoil stockpile if needed to achieve 4% organic content.

ii) Groundwater Recharge Standard:

The Groundwater Recharge standard is waived because all of the soils on-site are Type D.

iii) Water Quality Treatment Standard (WQ_V):

S/N002: WQ_V will be met for the use of Gravel Wetlands #1. The stone voids in the gravel wetland will store 50% of the WQv draining to each wetland. The remaining 50% WQv is provided by extended detention using small diameter orifices to release the remaining WQv over a 24- hour period. Pre-treatment is provided by a forebay. Additional WQv is provided via Simple Disconnection.

iv) Channel Protection Standard (CP_V):

S/N002: The CP_V standard is met for by the use of Gravel Wetlands #1. The gravel wetland will feature an outlet structure using a low flow orifice to provide the required detention times.

v) Overbank Flood Protection Standard (Q_{P10}):

S/N002: The Overbank Flood Protection Standard is met for by the use of Gravel Wetland #1. The gravel wetland uses a controlled outlet devices to limit post development peak flows to below pre development levels for the 10 year, 24 hour storm event.

vi) Extreme Flood Protection Standard (Q_{P100}):

S/N002: The Extreme Flood Protection Standard is waived because less than 10 acres of impervious surface is proposed.

The following items are attached for review:

- **Complete NOI form**
- **Attachment 1: Narrative:** Narrative, Location Map, and Soils Map.
- **Attachment 2: Workbooks:** STP Selection Tool and Standards Compliance Workbook
- **Attachment 3: Worksheets:** STP and waiver worksheets, grouped by discharge point
- **Attachment 4: Modeling:** Runoff modeling and calculations demonstrating compliance with the applicable treatment standards.
- **Attachment 5: Plans:** Pertinent plan sheets with all required information outlined in Part 7 of the Application Requirements for Operational Permit Document.
- **Payment** in the amount of $756.00 to "State of Vermont".

Location Map

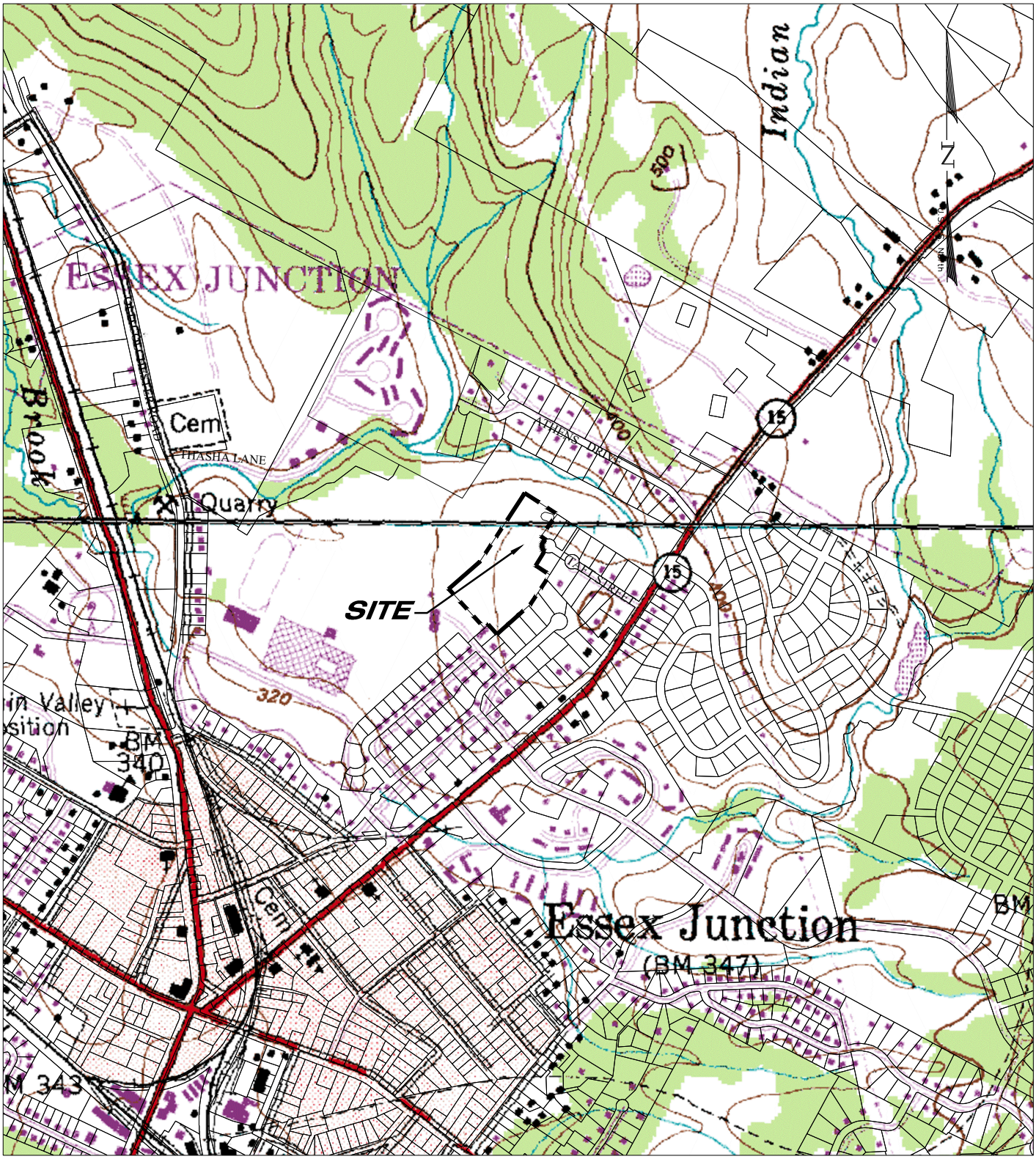
[Insert project specific location map here. You may download topographic map from the Natural Resource Atlas. Please show the site outline, the location of the discharge point(s) and receiving waters. The scale of the location map should be between 1:20,000 and 1:40,000.]

See Attached Location Map.

Soils Map

[Insert project specific soils map here. Soils information can be found at the Web Soil Survey website. Hydrologic Soil Groups— "HSGs" shall be overlaid with site outline. Soils information can also be provided as data layer on an existing or proposed condition plan sheet (if included as a data layer on one of the plan sheets please indicate that here]

See Attached Soils Map.



SCALE: 1" = 1000'

Krebs & Lansing
Consulting Engineers, Inc.
164 Main Street
Colchester, VT 05446
(802) 878-0375

USGS LOCATION MAP

CTE – Taft Street Extension
Taft Street, Essex Junction, Vermont

DATE: 01/30/25

CTE-usgs.dwg

Soil Map—Chittenden County, Vermont

Map Scale: 1:2,010 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Chittenden County, Vermont
Survey Area Data: Version 28, Aug 28, 2024

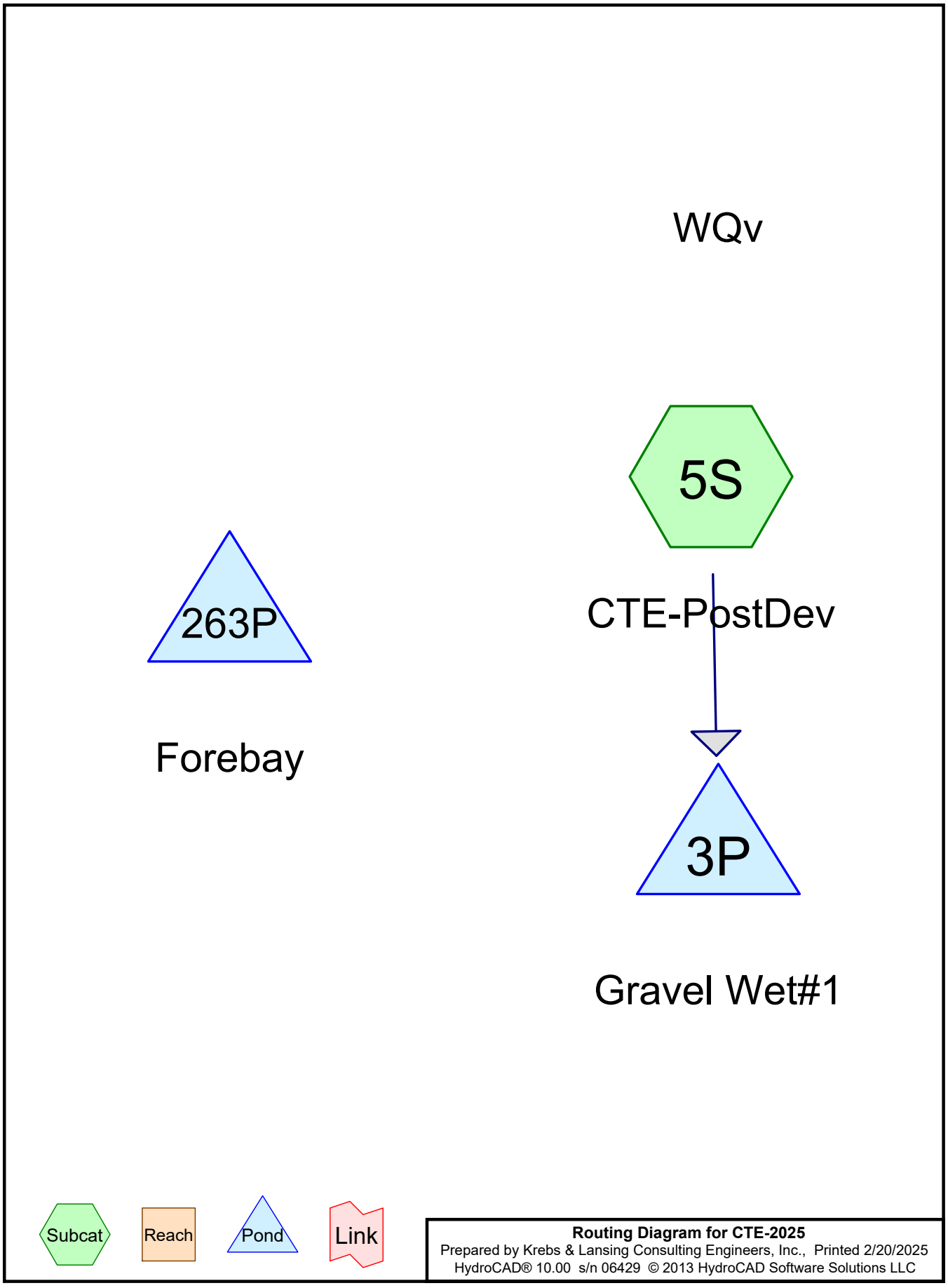
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2020—Jun 20, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MyB	Munson and Raynham silt loams, 2 to 6 percent slopes	14.0	94.1%
MyC	Munson and Raynham silt loams, 6 to 12 percent slopes	0.9	5.9%
Totals for Area of Interest		**14.9**	**100.0%**



Routing Diagram for CTE-2025
Prepared by Krebs & Lansing Consulting Engineers, Inc., Printed 2/20/2025
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Project Notes

Center for Technology
Subdivision - Phase 3
Post Development Stormwater Model

Summary for Subcatchment 5S: CTE-PostDev

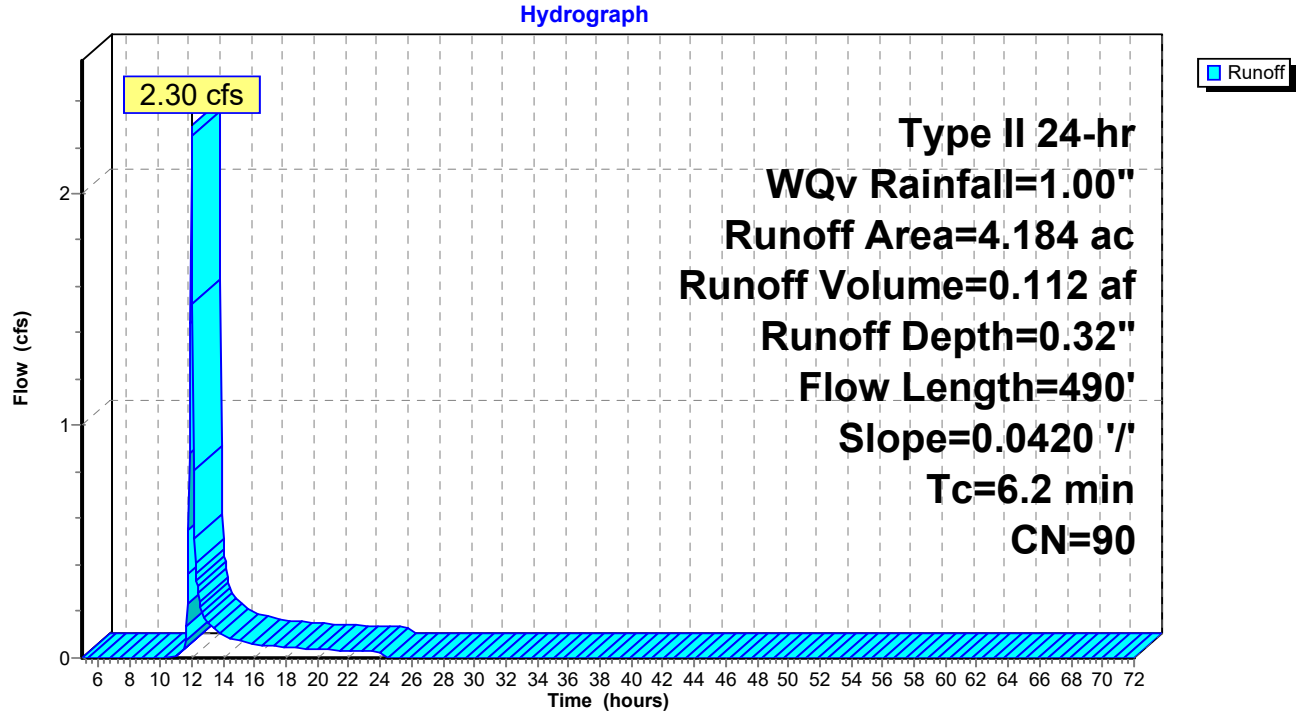
Runoff = 2.30 cfs @ 11.98 hrs, Volume= 0.112 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr WQv Rainfall=1.00"

	Area (ac)	CN	Description
*	4.184	90	watershed area
	4.184		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	490	0.0420	1.33		**Lag/CN Method, lag CN**

Subcatchment 5S: CTE-PostDev



Summary for Pond 3P: Gravel Wet#1

Inflow Area = 4.184 ac, 0.00% Impervious, Inflow Depth = 0.32" for WQv event
Inflow = 2.30 cfs @ 11.98 hrs, Volume= 0.112 af
Outflow = 0.07 cfs @ 15.27 hrs, Volume= 0.112 af, Atten= 97%, Lag= 197.3 min
Primary = 0.07 cfs @ 15.27 hrs, Volume= 0.112 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Starting Elev= 370.67' Surf.Area= 4,200 sf Storage= 2,029 cf
Peak Elev= 371.89' @ 15.27 hrs Surf.Area= 7,804 sf Storage= 4,647 cf (2,619 cf above start)

Plug-Flow detention time= 833.8 min calculated for 0.065 af (58% of inflow)
Center-of-Mass det. time= 443.9 min (1,303.6 - 859.7)

Volume	Invert	Avail.Storage	Storage Description
#1	368.00'	1,957 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 4,893 cf Overall x 40.0% Voids
#2	370.33'	141 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 1,407 cf Overall x 10.0% Voids
#3	371.00'	12,030 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		14,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
368.00	2,100	0	0
370.33	2,100	4,893	4,893

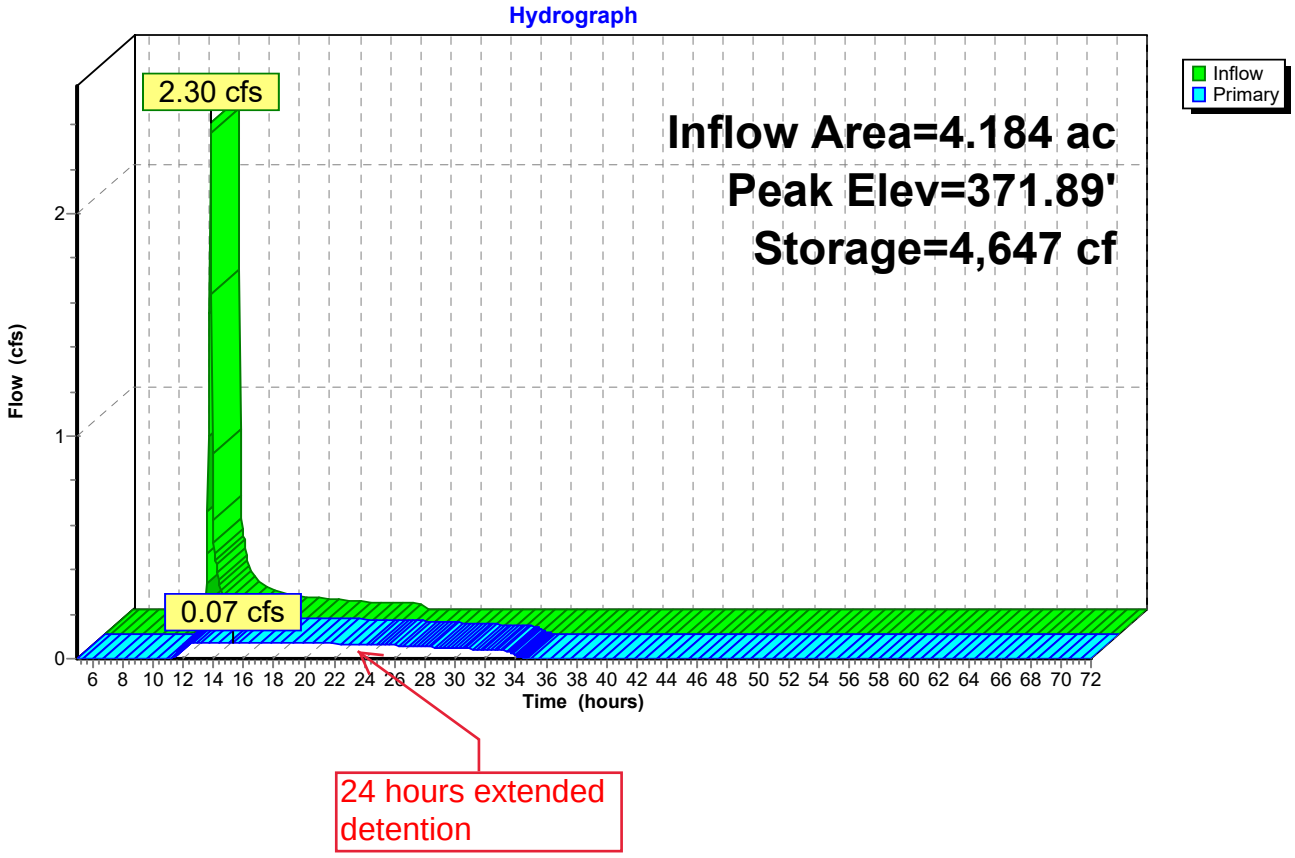
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.33	2,100	0	0
371.00	2,100	1,407	1,407

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
371.00	2,100	0	0
372.00	3,782	2,941	2,941
373.00	4,530	4,156	7,097
374.00	5,336	4,933	12,030

Device	Routing	Invert	Outlet Devices
#1	Primary	370.67'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 370.67' / 370.35' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	370.67'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	371.90'	**1.2" Vert. Orifice/Grate** C= 0.600
#4	Primary	373.30'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.07 cfs @ 15.27 hrs HW=371.89' (Free Discharge)
- **1=Culvert** (Passes 0.07 cfs of 3.63 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 5.18 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Controls 0.00 cfs)

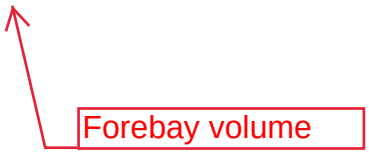
Pond 3P: Gravel Wet#1

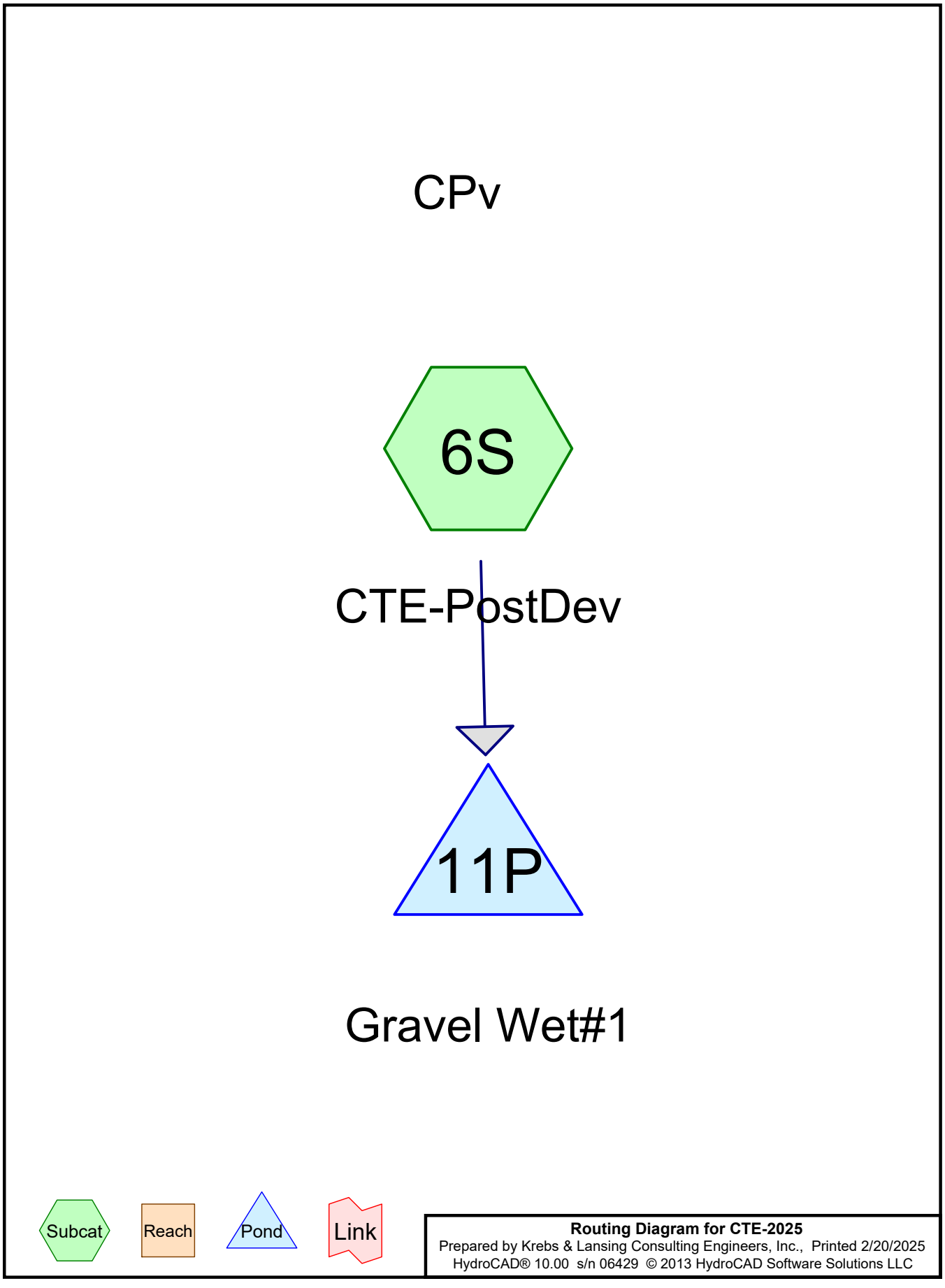


Summary for Pond 263P: Forebay

Volume	Invert	Avail.Storage	Storage Description
#1	369.00'	977 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
369.00	228	0	0
370.00	482	355	355
371.00	761	622	977




CPv
6S
CTE-PostDev
11P
Gravel Wet#1
Subcat
Reach
Pond
Link
Routing Diagram for CTE-2025
Prepared by Krebs & Lansing Consulting Engineers, Inc., Printed 2/20/2025
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Project Notes

Center for Technology
Subdivision - Phase 3
Post Development Stormwater Model

Summary for Subcatchment 6S: CTE-PostDev

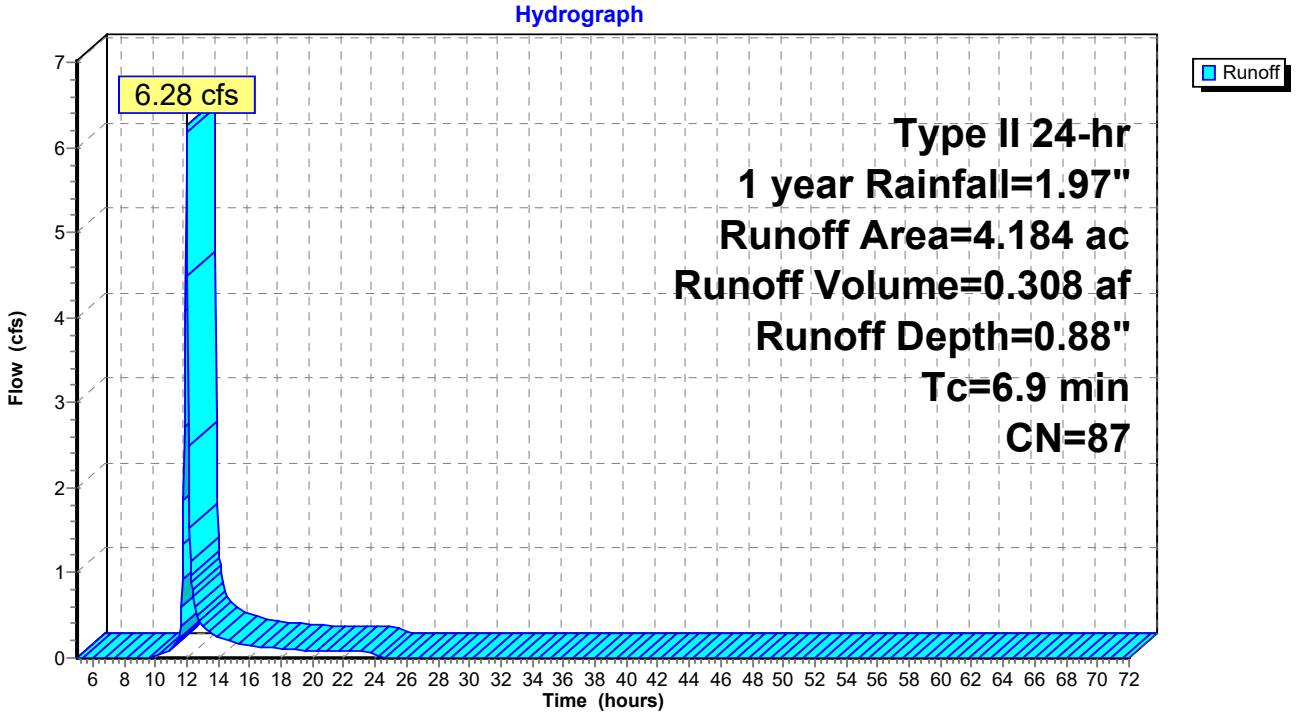
Runoff = 6.28 cfs @ 11.99 hrs, Volume= 0.308 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 year Rainfall=1.97"

	Area (ac)	CN	Description
*	4.184	87	watershed area
	4.184		100.00% Pervious Area

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

Subcatchment 6S: CTE-PostDev



Summary for Pond 11P: Gravel Wet#1

Inflow Area = 4.184 ac, 0.00% Impervious, Inflow Depth = 0.88" for 1 year event
Inflow = 6.28 cfs @ 11.99 hrs, Volume= 0.308 af
Outflow = 0.15 cfs @ 15.92 hrs, Volume= 0.308 af, Atten= 98%, Lag= 235.8 min
Primary = 0.15 cfs @ 15.92 hrs, Volume= 0.308 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Starting Elev= 370.67' Surf.Area= 4,200 sf Storage= 2,029 cf
Peak Elev= 373.24' @ 15.92 hrs Surf.Area= 8,923 sf Storage= 10,304 cf (8,275 cf above start)

Plug-Flow detention time= 913.3 min calculated for 0.261 af (85% of inflow)
Center-of-Mass det. time= 709.7 min (1,548.5 - 838.8)

Approx. 12 hour detention

Volume	Invert	Avail.Storage	Storage Description
#1	368.00'	1,957 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 4,893 cf Overall x 40.0% Voids
#2	370.33'	141 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 1,407 cf Overall x 10.0% Voids
#3	371.00'	12,030 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		14,128 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
368.00	2,100	0	0
370.33	2,100	4,893	4,893

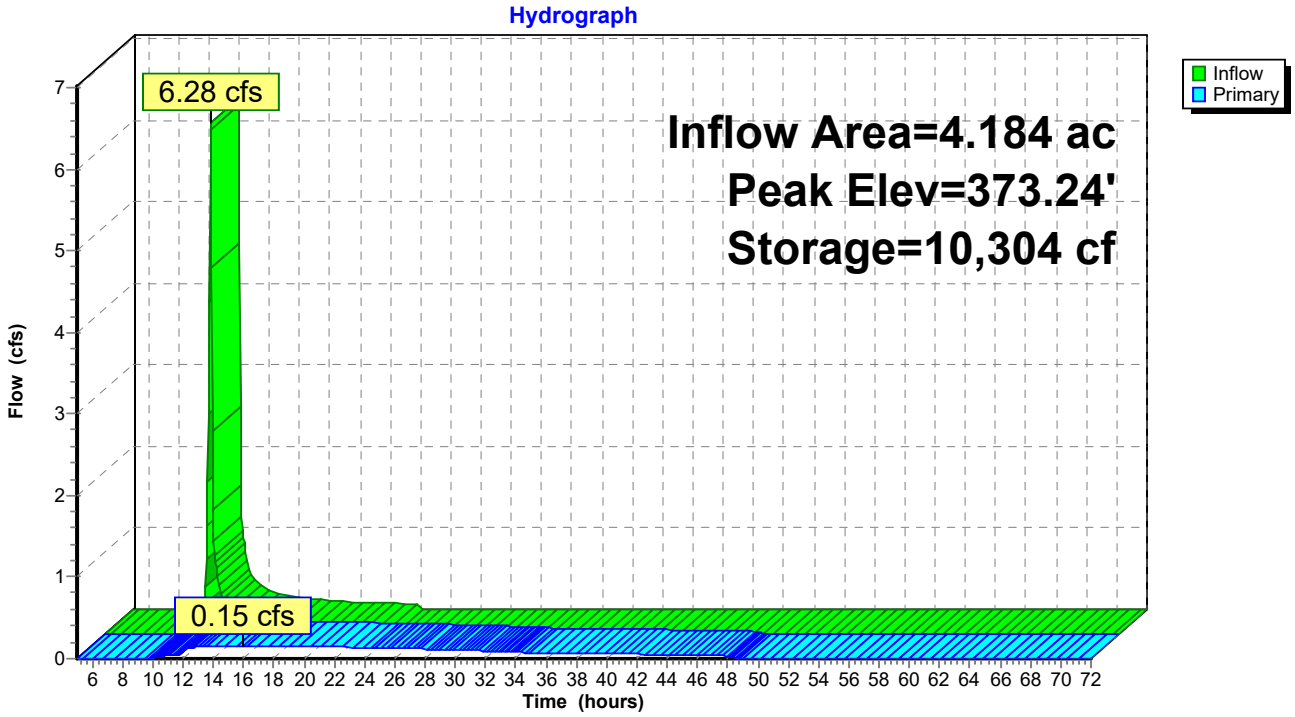
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.33	2,100	0	0
371.00	2,100	1,407	1,407

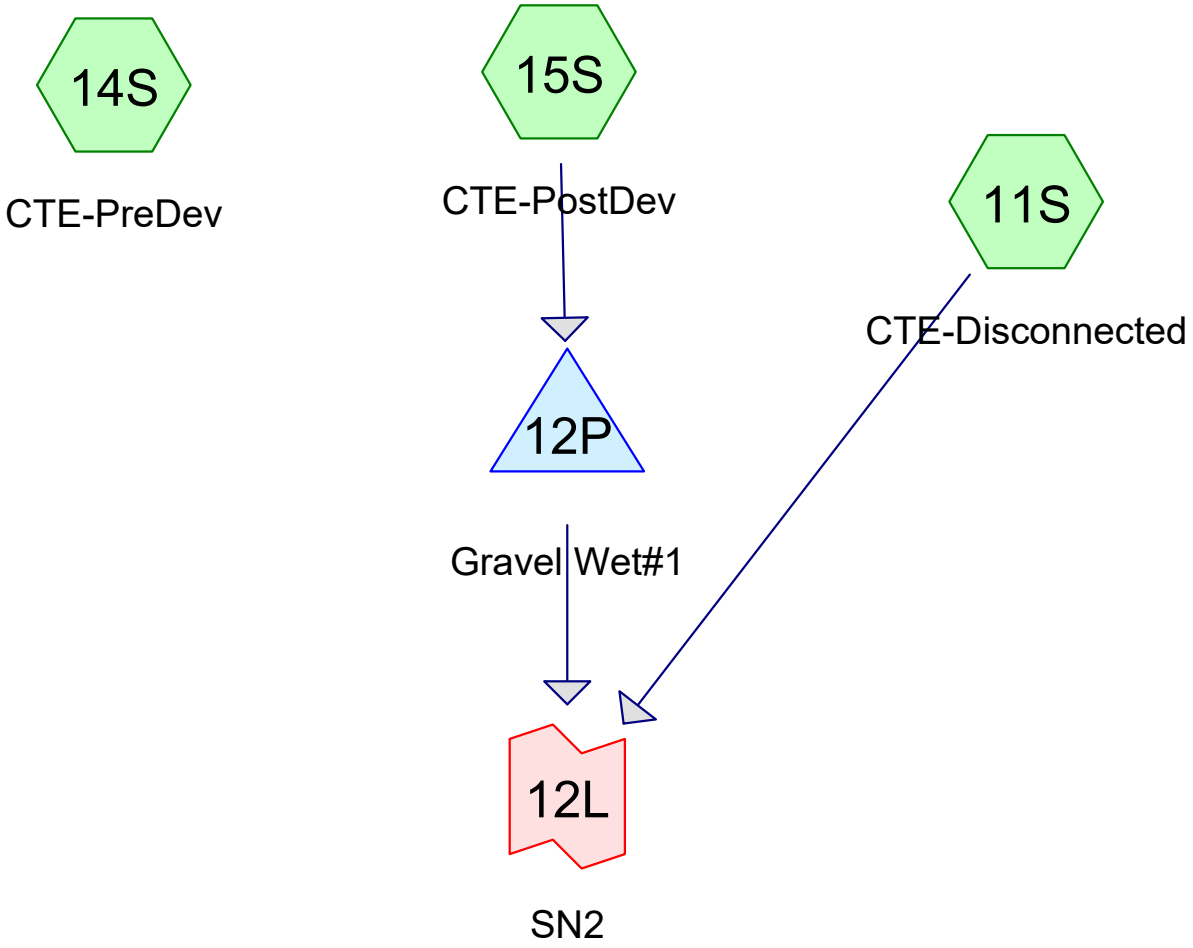
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
371.00	2,100	0	0
372.00	3,782	2,941	2,941
373.00	4,530	4,156	7,097
374.00	5,336	4,933	12,030

Device	Routing	Invert	Outlet Devices
#1	Primary	370.67'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 370.67' / 370.35' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	370.67'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	371.90'	**1.2" Vert. Orifice/Grate** C= 0.600
#4	Primary	373.30'	**24.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.15 cfs @ 15.92 hrs HW=373.24' (Free Discharge)
- **1=Culvert** (Passes 0.15 cfs of 6.51 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 7.62 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.04 cfs @ 5.47 fps)
- **4=Orifice/Grate** (Controls 0.00 cfs)

Pond 11P: Gravel Wet#1





Subcat Reach Pond Link

Routing Diagram for CTE-2025

Prepared by Krebs & Lansing Consulting Engineers, Inc., Printed 2/20/2025

Project Notes

Center for Technology
Subdivision - Phase 3
Post Development Stormwater Model

Summary for Subcatchment 11S: CTE-Disconnected

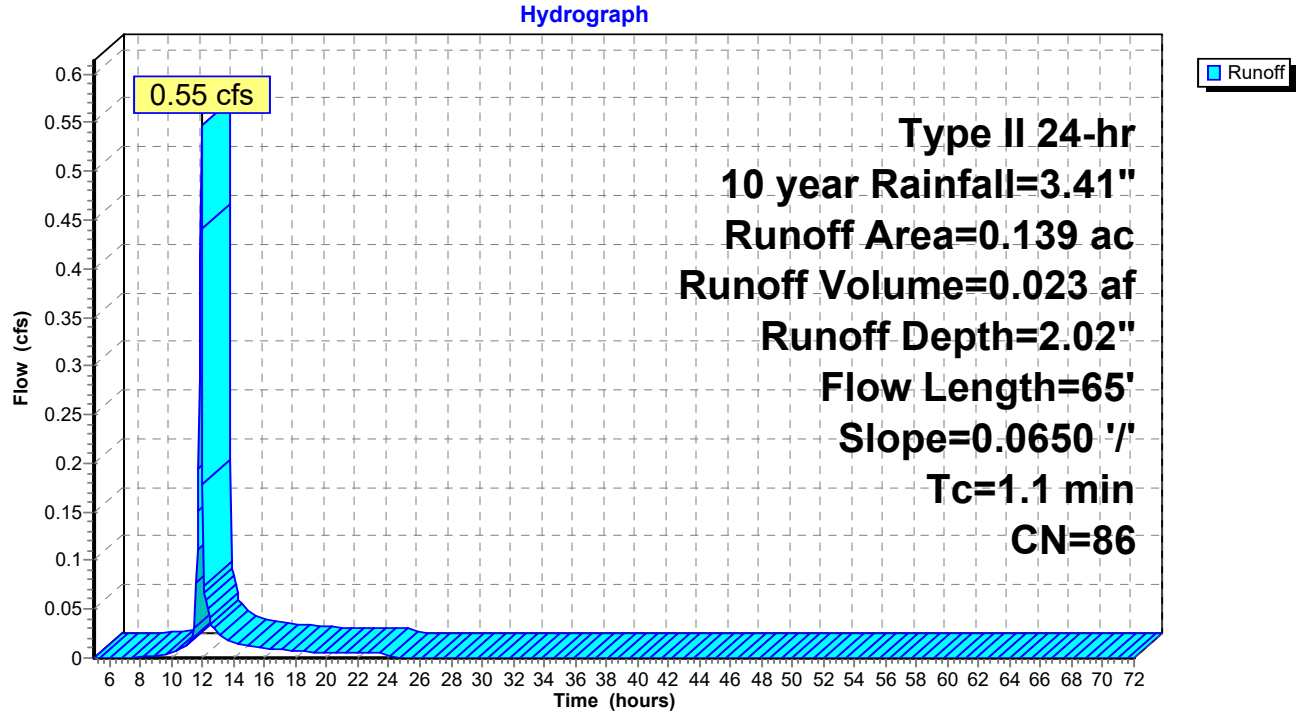
Runoff = 0.55 cfs @ 11.90 hrs, Volume= 0.023 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.41"

	Area (ac)	CN	Description
*	0.139	86	watershed area
	0.139		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	65	0.0650	0.95		**Lag/CN Method,**

Subcatchment 11S: CTE-Disconnected



Summary for Subcatchment 14S: CTE-PreDev

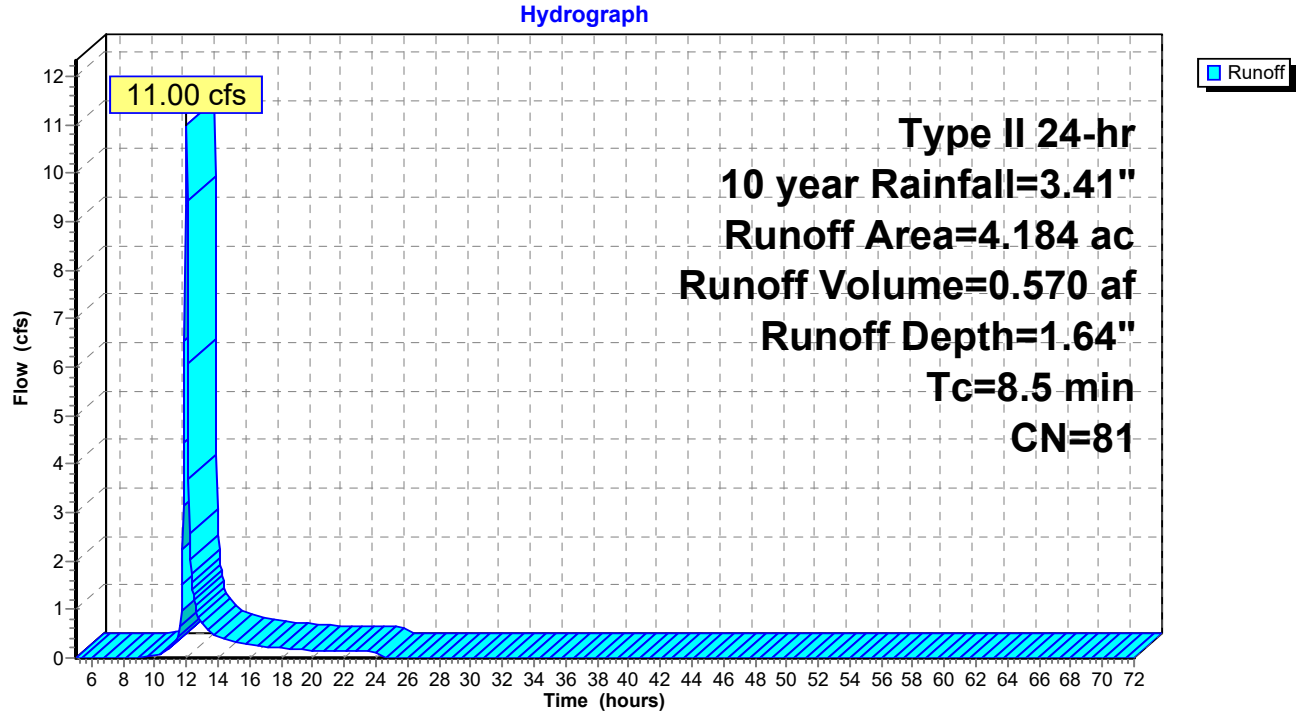
Runoff = 11.00 cfs @ 12.00 hrs, Volume= 0.570 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.41"

	Area (ac)	CN	Description
*	4.184	81	watershed area
	4.184		100.00% Pervious Area

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

Subcatchment 14S: CTE-PreDev



Summary for Subcatchment 15S: CTE-PostDev

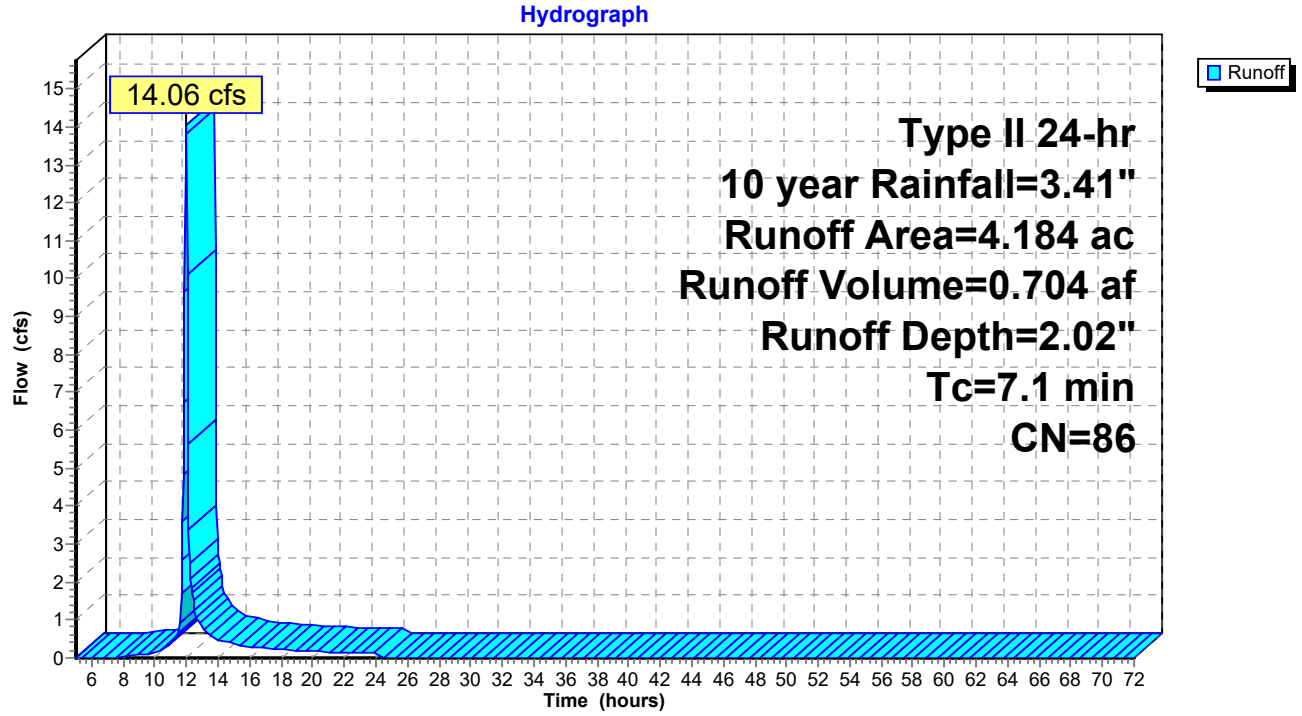
Runoff = 14.06 cfs @ 11.98 hrs, Volume= 0.704 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 year Rainfall=3.41"

	Area (ac)	CN	Description
*	4.184	86	watershed area
	4.184		100.00% Pervious Area

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

Subcatchment 15S: CTE-PostDev



Summary for Pond 12P: Gravel Wet#1

Inflow Area = 4.184 ac, 0.00% Impervious, Inflow Depth = 2.02" for 10 year event
Inflow = 14.06 cfs @ 11.98 hrs, Volume= 0.704 af
Outflow = 6.06 cfs @ 12.11 hrs, Volume= 0.704 af Atten= 57%, Lag= 7.4 min
Primary = 6.06 cfs @ 12.11 hrs, Volume= 0.704 af

Routing by Stor-Ind method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Starting Elev= 370.67' Surf.Area= 4,200 sf Storage= 2,029 cf
Peak Elev= 374.09' @ 12.11 hrs Surf.Area= 9,612 sf Storage= 14,602 cf (12,573 cf above start)

Plug-Flow detention time= 466.4 min calculated for 0.657 af (93% of inflow)
Center-of-Mass det. time= 393.9 min (1,211.6 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1	368.00'	1,957 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 4,893 cf Overall x 40.0% Voids
#2	370.33'	141 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 1,407 cf Overall x 10.0% Voids
#3	371.00'	16,274 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		18,371 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
368.00	2,100	0	0
370.33	2,100	4,893	4,893

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
370.33	2,100	0	0
371.00	2,100	1,407	1,407

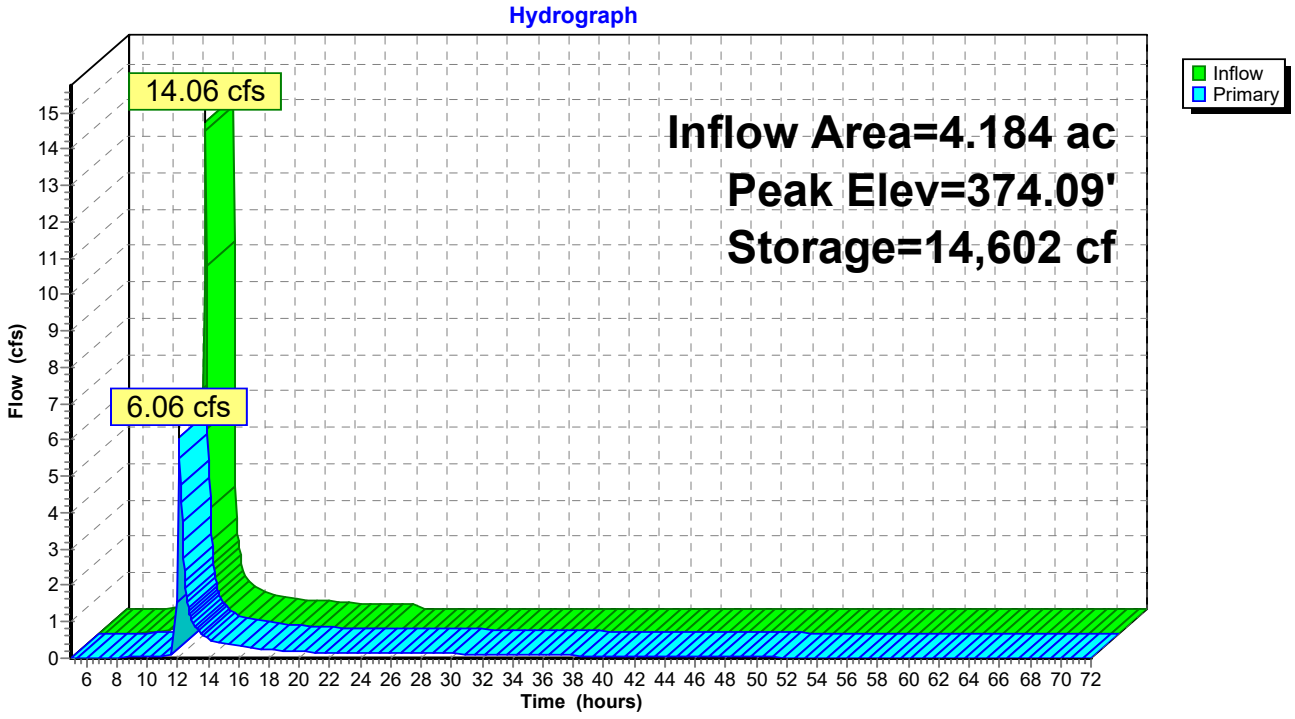
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
371.00	2,100	0	0
372.00	3,782	2,941	2,941
373.00	4,530	4,156	7,097
374.00	5,336	4,933	12,030
374.75	5,980	4,244	16,274

Device	Routing	Invert	Outlet Devices
#1	Primary	370.67'	**15.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 370.67' / 370.35' S= 0.0160 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	370.67'	**1.6" Vert. Orifice/Grate** C= 0.600
#3	Device 1	371.90'	**1.2" Vert. Orifice/Grate** C= 0.600
#4	Device 1	373.30'	**36.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#5	Primary	374.00'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=5.93 cfs @ 12.11 hrs HW=374.08' (Free Discharge)
- **1=Culvert** (Passes 5.39 cfs of 7.79 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 8.81 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 7.03 fps)
  - **4=Orifice/Grate** (Orifice Controls 5.21 cfs @ 3.47 fps)
- **5=Broad-Crested Rectangular Weir** (Weir Controls 0.54 cfs @ 0.67 fps)

Pond 12P: Gravel Wet#1

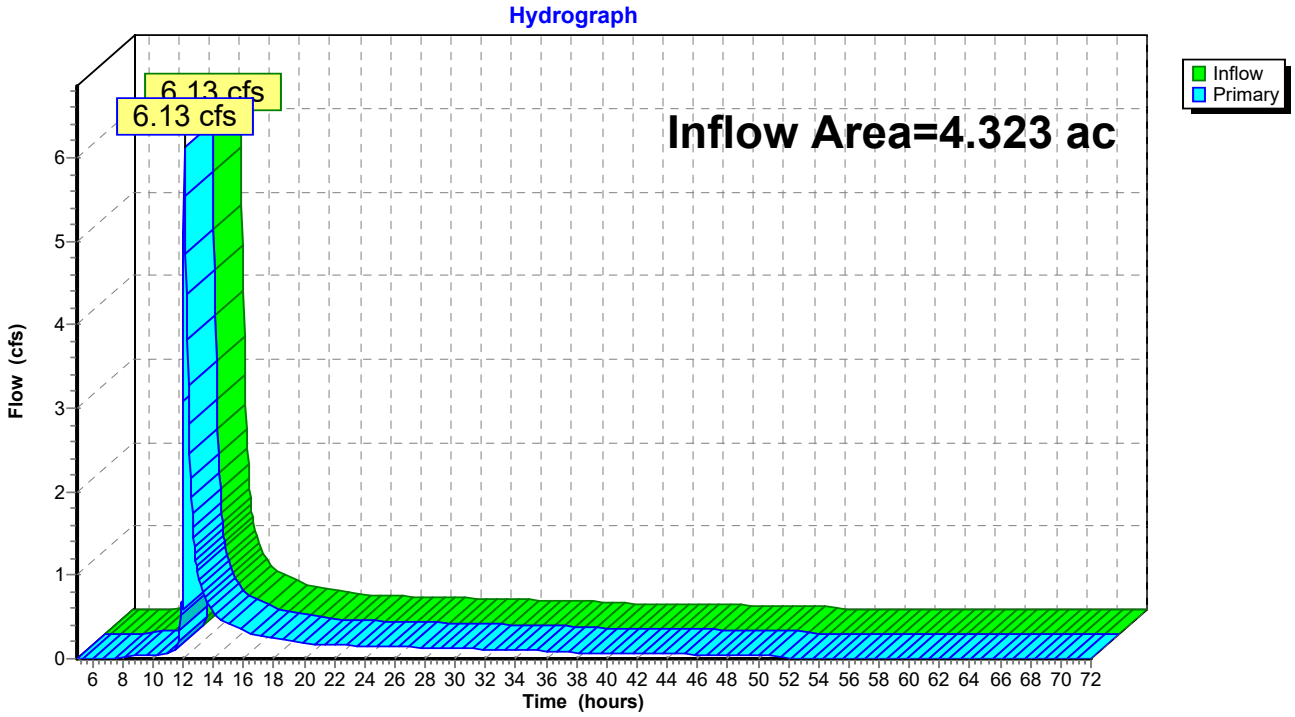


Summary for Link 12L: SN2

Inflow Area = 4.323 ac, 0.00% Impervious, Inflow Depth = 2.02" for 10 year event
Inflow = 6.13 cfs @ 12.11 hrs, Volume= 0.727 af
Primary = 6.13 cfs @ 12.11 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Link 12L: SN2



Vermont Operational Stormwater Permit - Standards Compliance Workbook

Standard Compliance Workbook Instructions

This workbook is designed to guide you through how to calculate and demonstrate compliance the standards in the 2017 Vermont State Stormwater Manual (VSMM). Before filling this workbook, you should always refer to the Stormwater Program homepage to ensure that you are using the most recent application materials.
Vermont Stormwater Application Materials webpage

Filling out the Workbook

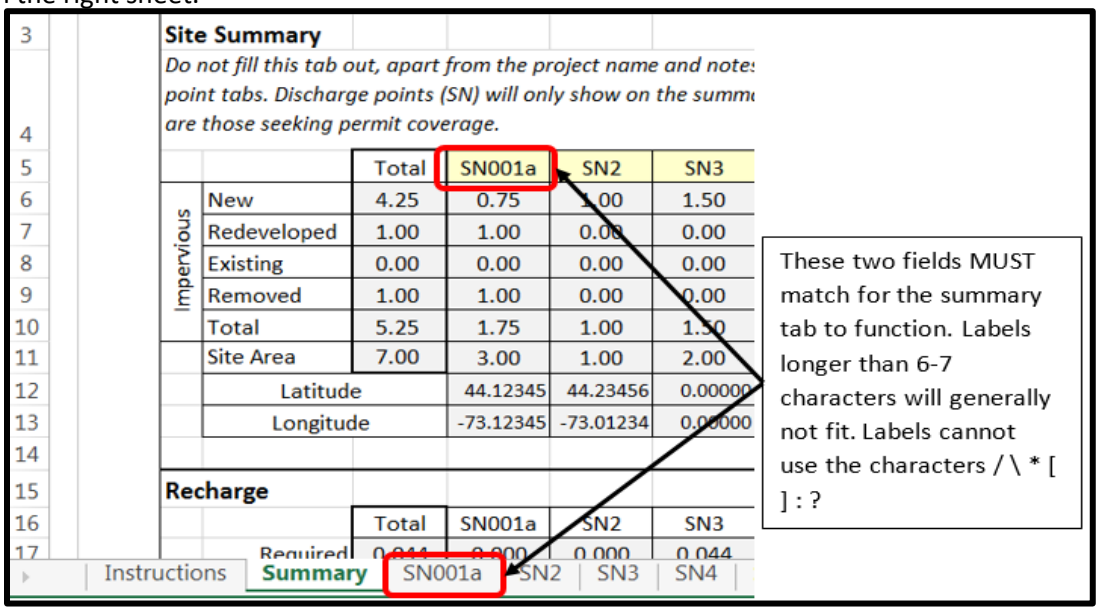
Blue boxes		must be filled out by the designer
Yellow boxes		may be filled out by the designer, but are optional
Grey boxes		contain values calculated from the information entered in the blue boxes

This workbook is protected so that the user can only edit blue and yellow boxes.

Workbook Tabs

This workbook is comprised of a "Summary" tab and several discharge point tabs labelled SN1, SN2, etc. Fill out one tab for each discharge point in your project. This workbook will be supported by sizing calculations and treatment volume (T_V) information completed via specific STP worksheets that must also be completed for each practice. The Summary tab provides an overview of how the standards are met across discharge points.

This workbook is designed to work with up to nine (9) discharge points or points of interest (POI) which come preloaded. **Changing Discharge Point Names:** If discharge points need to be renamed, the user must change both the label in line 5 of the summary tab AND the tab label in order for the summary tab to be able to pull data from the right sheet.



Designers working on a projects with more discharge points should contact their district reviewer. If your project contains fewer discharge points, unneeded tabs may be deleted, but cannot be added back. It is preferrable to right-click on the tab label and selecting "hide".

If you have questions regarding the completion of the workbook, contact the stormwater program:

Vermont Operational Stormwater Permit - Standards Compliance Workbook

Stormwater Technical Reviewers

Types of Impervious

When entering impervious on the discharge point tabs, the user is presented with several options depending on the type of permit coverage that is required.

Pre Development

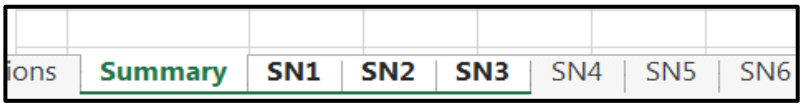
- ***Existing Impervious:*** Any impervious, other than impervious previously authorized under another permit that exists within the drainage area prior to the development for which permit coverage is being sought.
- ***Impervious Previously Authorized under 2002 VSMM*** : Any impervious previously authorized under the 2002 VSMM that is not being modified by the current permit application. The workbook will not calculate required treatment volumes for this impervious. It is included here only to maintain a record of the total impervious covered by the permit. This will automatically transfer through to the post development totals.

Post Development

- ***New Impervious:*** Impervious created as a part of the proposed development.
- ***Existing Impervious for Permit Coverage:*** Impervious that existed prior to the proposed development that is not undergoing alteration, but for which permit coverage is being sought. Treatment volumes will be calculated as for new development.
- ***Existing Impervious NOT for Permit Coverage:*** Impervious that existed prior to the proposed development that is not undergoign alteration and for which permit coverage is not being sought. Treatment volumes will not include this area.
- ***Redeveloped Impervious:*** Existing impervious that will be redeveloped under the proposed development and meets the jurisdictional threshold for redevelopment. Treatment volumes for this impervious will be calculated in accordance with the Section 2.4 in the Manual. Redevelopment within a discharge point that does meet jurisdictional threshold for redevelopment may be included as "Existing Not for Permit Coverage" unless voluntary permit coverage is being sought.

Printing/PDF Instructions

In order to select specific tabs of this worksheet to print or save as a pdf, hold down control while clicking on the desired tabs. The summary tab and any discharge points used in the project must be included with the permit application.



Notes

CN_{Adj} in Tc is currently restricted to 50-95, consistent with NEH, Part 630. If the CN_{Adj} falls outside this range, the outer bound of the range is used.

All curve numbers (CN) calculated in this workbook are flow-weighted. Pre and post-development CN are back calculated from the flow volume of the storm of interest.

Vermont Operational Stormwater Permit - Standards Compliance Workbook

Project Name CTE Subdivision

The name above will appear on all the discharge point tabs

Site Summary

Do not fill this tab out, apart from the project name and notes. It will auto-populated based on the values on the discharge point tabs. Discharge points (SN) will only show on the summary if an area has been entered on that tab. Areas listed below are those seeking permit coverage.

		Total	SN2
Impervious	New	1.08	1.08
	Redeveloped	0.07	0.07
	Existing	0.07	0.07
	Previously Authorized	0.00	0.00
	Total	1.22	1.22
	Site Area	4.18	4.18
	Latitude		44.50139
	Longitude		-73.10419
	Receiving Water		Unnamed tributary of Indian Brook

Recharge

	Total	SN2
Required	0.0000	0.0000
Provided	0.0025	0.0025
Standard met?	Yes	n/a

Notes:

Water Quality

	Total	SN2
Required	0.1154	0.1154
Provided	0.1154	0.1154
Standard met?	Yes	Yes

A minimum WQ_V of 0.2" ($P*R_V$) is required for sites with low impervious (<16.67%). This calculation has not been incorporated into this workbook. Designers should check that the minimum WQ_V has been met for their site.

Notes:

Channel Protection

	Total	SN2
Standard Applies?		Yes
Waiver		n/a
Method		Extended Detention
HC_V	0.1113	0.1113
T_V Provided	0.0025	0.0025

Notes:

Overbank Flood Protection

	SN2
Standard Applies?	Yes
Pre-Dev Q (cfs)	11
Routed, Post-Dev Q (cfs)	6.13
Waiver	n/a

Notes:

Extreme Flood Protection

	SN2
Standard Applies?	No
Pre-Dev Q (cfs)	0
Routed, Post-Dev Q (cfs)	0
Waiver	< 10 ac impervious

Notes:

General Notes

Vermont Operational Stormwater Permit - Standards Compliance Workbook

General Discharge Point Information

Project name	CTE Subdivision
Discharge point serial number (e.g. S/N 001)	S/N 002
Name of receiving water	Unnamed tributary of Indian Brook
Latitude (decimal degrees to five decimal places)	44.50139
Longitude (decimal degrees to five decimal places)	-73.10419

Precipitation Data

* Preciptation values shall be obtained from NOAA Atlas 14

Storm	WQ Storm	1 yr, 24 hr	10 yr, 24 hr	100 yr, 24 hr
Precipitation (inches)	1.00	1.97	3.41	5.12

Drainage Area Information

Pre Development Land Use (acres)

Landuse	A	B	C	D	Total
Grass	0.000	0.000	0.000	3.992	**3.992**
Meadow	0.000	0.000	0.000	0.000	**0.000**
Woods	0.000	0.000	0.000	0.000	**0.000**
Existing Impervious	0.000	0.000	0.000	0.192	**0.192**
Impervious previously authorized under 2002 VSMM (not included in calculations)					**0.000**
Total Pre Site Area					**4.184**

Post Development Land Use (acres)

Landuse	A	B	C	D	Total	%
Grass	0.000	0.000	0.000	2.959	**2.959**	
Meadow	0.000	0.000	0.000	0.000	**0.000**	
Woods	0.000	0.000	0.000	0.000	**0.000**	
New Impervious	0.000	0.000	0.000	1.083	**1.083**	*25.9%*
Existing for Permit Coverage (Treated to New Standards)	0.000	0.000	0.000	0.073	**0.073**	*1.7%*
Existing Impervious Not for Permit Coverage					**0.000**	*0.0%*
Redeveloped Impervious					**0.069**	*1.6%*
Impervious previously authorized under 2002 VSMM					**0.000**	
Total Site Area					**4.184**	
Total Impervious for Permit Coverage					**1.225**	
Net Reduced Impervious					**0.000**	*0.0%*
Reduced Existing Impervious (for redevelopment)					**0.050**	*42.0%*

Information for Calculating T_C by the Watershed Lag Method

	Average Catchment Slope, Y (%)	Hydraulic Length, l (ft)
Pre Development	4.2	490.00
Post Development	4.2	490.00

Vermont Operational Stormwater Permit - Standards Compliance Workbook

Runoff Calculations

	1 yr, 24-hr	10 yr, 24-hr	100 yr, 24-hr
Predevelopment runoff volume (ac-ft)	0.2090	0.5715	1.0754
Pre-routed, post development runoff volume (ac-ft)	0.3123	0.7103	1.2377

Tier 1/Runoff Reduction Practices

List all Tier 1 practices below with the associated treatment volume (T_V). The T_V will be applied to all treatment standards, except for Green Roofs, which do not receive recharge or water quality credit. Please include the appropriate STP worksheet(s) with the application.

Practice	T_V (ac-ft)	Practice	T_V (ac-ft)
Simple Disconnection	0.003		

Runoff Reduction Calculations

Standard	Re	WQ	CP	Q_{P10}	Q_{P100}
T_V Required (ac-ft)	0.0000	0.1154	0.1113	0.1497	0.1754
T_V Provided (ac-ft)	0.0025	0.0025	0.0025	0.0025	0.0025
T_V Remaining (ac-ft)	0.0000	0.1129	0.1088	0.1472	0.1729
Standard met with HCM?	n/a	No	No	No	No
Post-Development CN	n/a	90	87	86	86
CN_{adj}	n/a	90	87	86	86
Pre-Development CN	n/a	n/a	81	81	81

Groundwater Recharge Standard (Re)

Standard Applicable? ○ Yes ◉ No

Reason recharge not required (if No is selected): HSG D Soils

Re_V: 0.0000

Standard met with Tier 1 Practices? n/a

Recharge Notes:

Vermont Operational Stormwater Permit - Standards Compliance Workbook

Water Quality Treatment Standard (WQ)

	(ac-ft)
WQ_V - New & Existing	0.1041
WQ_V - Redevelopment	0.0113
Total WQ_V	0.1154
WQ_V met with Tier 1 practices	0.0025
WQ_V to be met with Tier 2 and/or Tier 3 practices	0.1129

		Apply Reduction?	
% Net Reduction	0.0%	(•) No ( ) Yes	
% Removed Existing Impervious (Redevelopment)	42.0%	(•) No ( ) Yes	Max 25% applied

Is all impervious treated by disconnection? (•) No ( ) Yes (WQv met)

NOTE: Please include a copy of the appropriate STP worksheet(s) with the application.

Tier 2 & 3 Water Quality Practice	WQ_V Provided (ac-ft)	Tier
Gravel Wetland	0.1129	Tier 2
Total WQ_V Provided (ac-ft)	0.1129	ac-ft
Is the WQ_V Standard met?	Yes	

Water Quality Notes:

Channel Protection Standard (CP)

Standard Applicable? (•) Yes ( ) No

Standard Met with HCM? **No**

The channel protection standard has not been fully met. Either increase Tv credit to fully meet HCM or provide extended detention.

Provide Extended Detention for: **0.310** ac-ft

Warm or Cold Water Fishery? (•) Cold ( ) Warm →

Provide: **12 hours of extended detention**

OR

☐ The Alternative Extended Detention Method (§2.2.5.4) is being used.

[See the Vermont Water Quality Standards for warm and cold water designations]

Extended Detention STP: Gravel Wetland #1

Modeling Info: When demonstrating CP compliance with extended detention in a hydrologic model, use the CN and T_C below if the practice being modelled is not a Tier 1 practice. The CN_{Adj} takes into account the reduction in runoff volume achieved through Tier 1 practices. The T_C is calculated by the watershed lag method using CN_{Adj} as CN'.

CN_{Adj}	87	Post Development T_C (min)	6.9	(Watershed Lag Method)

Channel Protection Notes:

Overbank Flood Protection (Q_{P10})

Standard Applicable?	(●) Yes ( ) No	
Standard Met with HCM?	No	*The QP10 standard has not been fully met. Provide additional STPs to ensure post development peak runoff does not exceed pre development peak runoff for the 10 yr, 24 hour storm event.*
STP used:	Gravel Wetland #1	
Pre-development peak discharge rate (cfs)	11.00	
Pre-routed, post-development peak discharge rate (cfs)	14.31	
Routed, post-development peak discharge rate (cfs)	6.13	

Modeling Info: When demonstrating Q_{P10} compliance in a hydrologic model, use the following CN and T_C below, if the practice used to meet Q_{P10} is not itself a Tier 1 practice. The CN_{Adj} takes into account the reduction in runoff volume achieved through Tier 1 practices. The T_C is calculated by the watershed lag method using CN_{Adj} as CN'.

Pre-Development CN (Flow-weighted composite)	81	Pre Development T_C (min)	8.5	(Watershed Lag Method)
CN_{Adj}	86	Post Development T_C (min)	7.1	
Overbank Flood Notes:				

Extreme Flood Protection (Q_{P100})

Standard Applicable?	( ) Yes (●) No	Waiver (if No is selected):	<10 acres impervious
Standard Met with HCM?	No	*The extreme standard has not been fully met. Provide additional STPs to ensure post development peak runoff does not exceed pre development peak runoff for the 100 yr, 24 hour storm event.*	
STP used:			
Pre-development peak discharge rate (cfs)			
Pre-routed, post-development peak discharge rate (cfs)			
Routed, post-development peak discharge rate (cfs)			

Modeling Info: When demonstrating Q_{P100} compliance in a hydrologic model, use the following CN and T_C below, if the practice used to meet Q_{P100} is not a Tier 1 practice. The CN_{Adj} takes into account the reduction in runoff volume achieved through runoff reduction practices. The T_C is calculated by the watershed lag method using CN_{Adj} as CN'.

Pre-Development CN (Flow-weighted composite)	81	Pre Development T_C (min)	8.5	(Watershed Lag Method)
CN_{Adj}	86	Post Development T_C (min)	7.3	
Extreme Flood Notes:				

STP Selection Matrix

Version 5/8/2017

Project Name:	CTE Subdivision
Discharge Point:	1

Step 1: Is the Water Quality Treatment Standard entirely managed with one or more of the following Tier 1 practices?

Infiltration Basins/ Trenches/ Chambers
Drywells
Bioretention (designed to infiltrate)
Filters (designed to infiltrate)
Reforestation[1]
Simple Disconnection
Disconnection to Filter Strips and Vegetated Buffers
Dry Swales (designed to infiltrate)
Permeable Pavement[1]

○ Yes ◉ No

Proceed to Step 2

1. These practices do not require specific justification due to feasibility limitations

Step 2: Assess the feasibility of using Tier 1 Practices

Complete the matrix below in its entirety for each drainage area.

Tier 1 Practices are available to meet the Water Quality Treatment Standard. If using one of these practices, stop here. If additional site constraints exist other than those listed here, proceed to Step 3.		**Infiltration Basin/ Trench/ Chamber**	**Drywell**	**Bioretention (infiltrating)**	**Simple Disconnection**	**Disconnection to Filter Strips or Vegetated Buffer**	**Dry Swales (infiltrating)**	**Filters (infiltrating)**
Practice Availability for Water Quality Treatment?		Not Feasible	Not Feasible	Not Feasible	Yes	Yes	Not Feasible	Not Feasible
Feasibility Restriction	**Response**	**Practice Availability Based on Restrictions**						
Do underlying soils have an infiltration rate of less than 0.2 inches per hour, as confirmed by field geotechnical tests or are classified as Hydrologic Soil Group D according to the NRCS Soil survey?	◉ Yes ○ No	Not Feasible	Not Feasible	Not Feasible	n/a	n/a	Not Feasible	Not Feasible
Will runoff to the practice include discharge from a hotspot landuse or activity?	○ Yes ◉ No	Available	Available	Available	Available	Available	Available	Available
Is the site a brownfield or contaminated site where infiltration is restricted or where infiltration would increase the threat of pollution migration, as confirmed in writing by the Department's Waste Management and Prevention Division?	○ Yes ◉ No	Available	Available	Available	Available	Available	Available	Available
Is the slope of the vegetated buffer greater than 15%	○ Yes ◉ No	n/a	n/a	n/a	Available	Available	n/a	n/a
Is the slope of the filter strip greater than 15%	○ Yes ◉ No	n/a	n/a	n/a	Available	n/a	n/a	n/a
Is the slope of the vegetated buffer greater than 8%	○ Yes ◉ No	n/a	n/a	n/a	n/a	Available	n/a	n/a
Are natural slopes where an infiltration trench or basin could be sited greater than 15%	○ Yes ◉ No	Available	n/a	Available	n/a	n/a	Available	Available
Bottom of practice would be below seasonal high water table	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Seasonal high water table or bedrock would be less than 1 foot from the bottom of the practice.	○ Yes ◉ No	Available	Available	n/a	n/a	n/a	n/a	n/a
Seasonal high water table or bedrock would be less than 3 feet from the bottom of the practice.	○ Yes ◉ No	Available	n/a	n/a	n/a	n/a	n/a	n/a

Will the practice be located within 75 feet down-gradient of a wastewater disposal area system, within 35 feet up-gradient or 75 feet down-gradient of a wastewater disposal system?	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Will the practice be located within 150 feet of a drinking water source located in an unconfined aquifer?	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Will the practice be located within 100 feet of a drinking water source located in bedrock or a confined unconsolidated aquifer?	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Will the practice be located within Zone 1 or Zone 2 of a public community groundwater source protection area?	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Will the practice be located within 200 feet of non-transient non-community groundwater source?	○ Yes ◉ No	Available	Available	Available	n/a	n/a	Available	Available
Will the practice violate any restrictions of the Vermont Wastewater and Potable Water Supply Rules, or their replacement?	○ Yes ◉ No	Available	Available	Available	Available	Available	Available	Available

Step 3: Other feasibility constraints for remaining Tier 1 and Tier 2 practices

If, following completion of Step 2 of the STP Selection Tool there are no Tier 1 Practices available for use on the project site, designers shall consider the use of Tier 2 practices for treatment of the Water Quality Treatment Standard.

Is the Water Quality Treatment Standard entirely managed with Tier 2 Practices? ◉ Yes ○ No

Stop. No further justification is needed.

If the the use of a Tier 1 or Tier 2 Practice is infeasible for reasons beyond those listed in Step 2 of the STP Selection Matrix, a designer may submit site specific detailed feasibility justification that such practices are not feasible following the guidance in Section 2.2.4.1 of the 2017 VSMM. Only after completion of the STP Selection Matrix and determination that Tier and Tier 2 Practices are infeasible shall a designer consider Tier 3 Practices or existing stormwater infrastructure for meeting the Water Quality Treatment Standard (WQTS) on the project site.

Provide written feasibilty justification below or list attachments

Version: 11/30/2020

Project Name:	**CTE Subdivision**
Discharge Point:	**S/N 002**
Treatment Wetland #	**Gravel Wetland #1**

Treatment Wetlands (4.3.5)

	Practice Drainage Area	For Permit Coverage	Not for Permit Coverage	Total to Practice
1	Total Area (acres)	4.184	0.000	4.184
2	New Impervious (acres)	1.230	0.000	1.230
3	Redeveloped Impervious	0.000	0.000	0.000
		WQ_V for credit	WQ_V not for credit	Total WQ_V
4	WQ_V to practice	0.1097	0.0000	0.1097

Modified CN for WQ (1.0") storm: 90

↑Enter this value on the Standards Compliance Workbook

5 Practice Type: ○ Shallow surface wetland ◉ Gravel wetland

6 Discharges to Cold or Warm Water Fishery: ◉ Cold ○ Warm

Note: Designers may use the Practice Drainage Area Runoff Calculator (second tab) for calculation of practice-specific runoff volumes for other treatment standards.

** Questions preceded by an asterix (*) may change based on previously entered values*

	Conveyance (4.3.5.2)	Response	Attachment location
7	Are inlets stabilized to ensure that non-erosive conditions exist for at least the 1-year, 24 hour storm?	○ Yes ○ No	Plan Sheet C-1.1
8	Has a low for orifice been provided to meet the the WQ_V and CP_V extended	◉ Yes ○ No	Detail CD-6
9	Have the outfalls and the conveyance to the discharge point been designed and protected to avoid erosion?	◉ Yes ○ No	C-1.1 and CD-6
10	Has a liner designed in accordance with Section 4.3.5.2 been provided if the infiltration rate exceed 0.05 inches per hour and the wetland is located above	◉ Yes ○ No	Detail CD-6
11*	Have inlet pipes been set at the permanent pool or the base of the gravel bed?	◉ Yes ○ No	C-1.1 and CD-6
12*	Is outlet elevation designed such that a sub-surface water level is maintained in the gravel wetland?	◉ Yes ○ No	Detail CD-6
13*	If the gravel wetland is designed with an organic soil layer at the surface, have vertical perforated riser pipes been provided to deliver stormwater stormwater from the surface down to the gravel bed?	◉ Yes ○ No	Detail CD-6

	Pre-Treatment (4.3.6.3)	Response	Attachment location
14	Has pretreatment been provided for non-rooftop runoff?	○ Yes ○ No	Plan Sheet C-1.1

15	What type of pretreatment is being used?	☐ Swale ☑ Forebay (10% WQv) ☐ Proprietary ☐ Filter Strip ☐ Deep Sump Catch Basins	Plan Sheet C-1.1

	Treatment (4.3.6.4)		**Response**	**Attachment location**
16	What is the volume stored in the forebay or other volumetric pre-treatment if used? (minimum 10% WQ_V)	ft^3	977	WQv Modeling
17	What is the volume stored in the permanent pool?	ft^3	2014	WQv Modeling
18	What is the total WQ_V stored at the normal water level (pre-treatment + permanent pool)?	ft^3	2991	WQv Modeling
19*			○ Yes ○ No	
20*			○ Yes ○ No	
21	Does the pre-treatment volume plus the permanent pool equal at least 50% of the WQ_V?		62.6%	**Yes**
22	Is the remaining WQ_V provided for by extended detention over 24 hours?		◉ Yes ○ No	WQv Modeling
23	Has a minimum flow path at normal water level of 3:1 been provided?		◉ Yes ○ No	Plan Sheet C-1.1
24	What is the Storage Volume of the practice. Include the permanent pool and any volume used for providing extended detention.	ac-ft	0.243	**Enter this on the eNOI**

	Landscaping (4.3.6.5)	**Response**	**Attachment location**
25	Are all deep pool areas of ≥ 4 feet depth with side slopes steeper than 4:1 (H:V) surrounded by a safety bench with ≤6% slope extending 10 feet outward from the normal water edge to the toe of the side slope?	◉ Yes ○ No	Plan Sheet C-1.1
26	Has an aquatic been been provided that extends at least 5 feet inward from the normal water edge and is no more than 18 inches deep?	◉ Yes ○ No	Plan Sheet C-1.1
27	Has a planting plan been prepared showing how aquatic and terrestrial areas will be stabilized, including plant species, plant locations, sources of plant material and any required soil amendments?	◉ Yes ○ No	Detail CD-6
28	Has a setback been provided that extends 25 feet from the maximum design water surface elevation of the practice?	◉ Yes ○ No	Plan Sheet C-1.1
29	Does the planting plan specify that no woody vegetation >2 inches in diameter shall be planted or allowed to grow on the dam, within 15 feet of the dam or the toe of the embankment, or within 25 of a principal spillway outlet?	◉ Yes ○ No	Detail CD-6
30	Are any donor organic soils used in the practice obtained from a source other than natural wetlands?	◉ Yes ○ No	N/A

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application.

Version: 3/28/2018

Project Name:	**CTE Subdivision**
Discharge Point:	**2**
Disconnection Area #	**1**

Simple Disconnection (4.2.2)

	Disconnected Area	For Permit Coverage	Not for Permit Coverage	Total to Practice
1	Total Area (acres)	0.138	0.000	0.138
2	Impervious (acres)	0.030	0.000	0.030
		WQ_V for credit	WQ_V not for credit	Total WQ_V
3	WQ_V to practice	0.0028	0.0000	0.0028

Modified CN for WQ (1.0") storm: 88

4 Disconnected Area Type: ☑ >10 ft, or conveyed by downspout; ☐ 10 ft contributing length or less

** Questions preceded by an asterix (*) may change based on previously entered values*

	Feasibility (4.2.2.1)	**Response**	**Attachment location**
5	For areas conveyed by sheetflow, is the width of the disconnection area (perpendicular to the direction of flow) equal to or greater than the area being disconnected?	◉ Yes ○ No	Sheets C-6 and CD-7
6*	For rooftop areas conveyed by downspouts, is the disconnection area at least 12 feet wide?	◉ Yes ○ No	Sheet CD-7
7*	For rooftop areas conveyed by downpouts, is the contributing area to any one discharge location no greater than 1,000 square feet?	◉ Yes ○ No	Sheet CD-7
8	Do the underlying soils of the disconnection area meet the Post-Construction Soil Depth and Quality Standard?	◉ Yes ○ No	Sheet CD-7
9*	Is the maximum contributing impervious flow path length to any one discharge location no greater than 75 feet?	◉ Yes ○ No	Sheet CD-7
10*		○ Yes ○ No	
11	Are disconnection areas configured such that there is no overlap between adjacent disconnection areas?	◉ Yes ○ No	Sheet CD-7
12	Is the maximum slope of the disconnection area no steeper than 15%?	◉ Yes ○ No	Sheets C-6 and CD-7
13	For sites with septic systems, is the disconnection flow path cross-gradient or down-gradient of the leachfield?	○ Yes ○ No	NA

	Conveyance (4.2.2.2)	**Response**	**Attachment location**
14	Is the runoff conveyed as sheet flow across the disconnection area for the applicable design storms and prevented from channelizing?	◉ Yes ○ No	
15	Is the disconnection surface directed away from buildings so as to protect foundations and basements?	◉ Yes ○ No	

16*	Are downspouts at least 10 feet from the nearest downgradient impervious surface to prevent reconnection?	(●) Yes ( ) No	Sheets C-6 and CD-7
17*	Has a stone diaphragm, level spreader, splash pad, or other acceptable flow spreading devide been specified for each downspout outlet?	(●) Yes ( ) No	Sheets C-6 and CD-7
18	For runoff not conveyed by downspout, does the runoff drain either as sheet flow or drain to a subsurface drain field that is not directly connected to the drainage network?	(●) Yes ( ) No	

	Pretreatment (4.2.2.3)	**Response**	**Attachment location**
19	Is runoff from qualifying surfaces prevented from co-mingling with other runoff, such that pre-treatment is not required?	(●) Yes ( ) No	

	Required Disconnection Length for Contributing Areas >10 ft and Downspouts		**Response**	**Attachment location**
20*	Disconnected Impervious Surface	acres	0.03	Sheets C-6
21*	Soil HSG	$f_c \geq 1$ in/hr for $T_V = HC_V$ $f_c \geq 0.5$ in/hr for $T_V = WQ_V$ $f_c < 0.5$ in/hr for $T_V = WQ_V$	( ) A ( ) A/B (●) C/D	
22*	What is the slope of the disconnection area?		(●) <8% ( ) 8-15%	Sheets C-6
23*		inches	0.00	
24*	What is the required length of the disconnention area for the rooftop runoff?	ft	65.0	Sheets C-6 and CD-7
25*	What disconnection length is provided for the rooftop runoff?	ft	65.0	Sheets C-6 and CD-7

	Required Disconnection for Contributing Areas ≤10 ft		**Response**	**Attachment location**
26*	n/a, Disconnection area ≤10ft wide not selected in Question 4	acres	0	
27*		ft	0	
28*			( ) <8% ( ) 8-15%	
29*			( ) Yes ( ) No	
30*		inches	0.00	
31*		ft	0.0	
32*		ft	0.0	

Treatment Volume Calculation

33	What is the treatment volume provided by the STP?	T_V (cu-ft)	108.90	
34	What is the treatment volume provided by the STP?	T_V (ac-ft)	0.0025	

↑ Enter this value on the Standards Compliance Worksheet

	Treatment (4.2.2.4)	**Response**	**Attachment location**
35*		○ Yes ○ No	

	Landscaping (4.3.2.5)	**Response**	**Attachment location**
36	Is a dense vegetative cover specified for the disconnection area on the plan sheet/detail sheet?	◉ Yes ○ No	Sheet CD-7

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application.

Extreme Flood Protection Standard Waiver Worksheet

Fill out this worksheet for each discharge point in which use of this waiver is sought.

Extreme Flood Protection Standard (Q_{P100}) Waiver (*check only one*)**:**

☐ 1. A site that has a direct discharge to waters with a drainage area equal to or greater than or equal to 10 square miles and that is less than 5% of the watershed area at the site's upstream boundary.

Name of Waters at Discharge Point:	
Drainage Area of Waters at Discharge Point (square miles):	

☒ 2. The impervious on site or otherwise associated within a common plan of development, constructed after 2002, is less than 10 acres.

☒ **Yes** ☐ **No**

☐ 3. A downstream analysis was completed, pursuant to Section **Error! Reference source not found.** of the 2017 V SMM, that indicated extreme flood control is not necessary for the site.

Has adequate conveyance from the site to the discharge point been verified?	☐ **Yes**	☐ **No**
Has supporting information (e.g. narrative description, calculations, modeling) for the completed downstream analysis been included with the application?	☐ **Yes**	☐ **No**

For a project that has more than one discharge point and that discharges to different receiving waters, waiver eligibility shall be determined on a "per receiving water" basis. Receiving waters are considered separate if the drainage area at their downstream point of confluence is greater than 10 square miles.

For example, if discharge point S/N 001 drains directly to the Winooski River (greater than 10 square miles), but discharge point S/N 002 drains to a small tributary of the Winooski River, then S/N 001 could be waived from the Extreme Flood Protection Treatment Standard using Waiver 2, but S/N 002 could not. However, S/N002 may be still eligible for Waiver 1.

For additional information please go to the 2017 Vermont Stormwater Management Manual, Sections 2.2.7 and 2.5.