

The Qualification Materials submitted require the following Categories of Required Information to be submitted in the following order in one single PDF. Please number items accordingly

1. Municipality or Organization name and business address, including telephone number and primary email contact.

- a. **University of Vermont**
Planning Design and Construction
31 Spear Street, Burlington Vermont 05401
ARCH@UVM.EDU
802-656-3291

If organization, please state date of incorporation in State of Vermont and type of organization. If your organization is a federally recognized 501-c-3, and/or or state registered non-profit, please state year(s) status confirmed. If neither, please name the organization which serves as your fiscal sponsor. If municipality or regional planning commission, type in N/A regarding non-profit status.

- b. **See Attached letter from IRS and below link to UVM website regarding legal status.**
 - c. <https://www.uvm.edu/generalcounsel/legal-name-and-status-university>.
2. Identification of basin(s) of interest. Please type in: Northern Lake Champlain Direct Drainages Basin (Basin 5):
 - a. **Lake Champlain – Shelburne Bay**
 - b. **Bartlett Brook**
 3. Please list any and all grants from the State of Vermont for water quality related work that you have received and managed from 2018 through the present in the following format:

Year Awarded	State of Vermont Grant Source (abbreviated), Name of Project	Type of Project (note all phases: development, prelim. design, final design, construction)
	N/A	

Abbreviation key: ERP-Ecosystem Restoration Program; CWBG-Clean Water Block Grant; DIBG-Design Implementation Block Grant; GIA- Grants-in-Aid; GSIBG-Green Schools Initiative Block Grant; PPDBG-Partnership Project Development Block Grant; WBBG-

Woody Buffer Block Grant; WCLP-Watershed Conservation License Plate; (ADD AS NEEDED)

4. Please list any and all grants from Non-State-of-Vermont sources for water quality related work that you have received and managed from 2018 through the present in the following format:

Year Awarded	Non-State-of-Vermont Grant Source (abbreviated), Name of Project	Type of Project (note all phases: development, prelim. design, final design, construction)
N/A		

Abbreviation key: USACE- Army Corps of Engineers; EPA – Environmental Protection Agency; LCBP-Lake Champlain Basin Program); NRCS-Natural Resources Conservation Service; USFWS-U.S. Fish & Wildlife Service (ADD AS NEEDED)

5. Qualifications of and Experience of Key Staff For each key staff member (up to three), respondents shall identify the person's name, email address, tenure, role and their previous experience with similar projects (working with landowners, supervising subcontractors, grant/project management and reporting to funding agencies, and/or accounting/finance, etc.). Resumes are optional but if submitted please limit to one page per staff member. Typical staff members noted would be project managers, field staff and accounting / grant management staff.

a. Construction Manager: Adam Frazier, P.E. (018.0134340)

- i. Adam.Frazier@UVM.EDU
- ii. 802-355-0655
- iii. UVM: 2018 – present
- iv. Licensed civil engineer with background in site development, design and permitting. Resume available upon request.

b. Grant Managing Department: UVM Sponsored Project Administration (SPA)

- i. If awarded, this grant will be managed through the Sponsored Projects Administration department at UVM. This is the department that will review and accept the terms of the agreement if UVM is selected for this grant. The particular persons will be assigned when submitted for agreement review.
- ii. www.uvm.edu/spa

6. Financial and Accounting information proposed for work performed under this contract

- An hourly wage rate schedule for all potential employees billed to this contract for Fiscal Year 2024 starting July 1, 2023, thru June 30, 2024.
- Any proposed Overhead rates (e.g. Fringe benefits) expressed as a percentage of the hourly wage or as a cost per hour per employee for FY24. This can be a range if such detail is not available.
- Any proposed Indirect rate for FY24 that would be charged as well and if so to which types of expenses.
- An hourly dollar rate schedule for any equipment for FY24
- Any mileage rate for any vehicles for FY24
- Any proposed markup rate applied to bills from subcontractors, suppliers, etc. for FY24
- Type of accounting system.

[Note: Please include information on FY23 if you are submitting this information in response to the 2nd Call for Applications and you want to start your project before July 1, 2023.]

- a. UVM is covering internal and consultant-related costs for this current round of funding. This request is for the construction-related contractor portion of the project, which has been bid and awarded.**

7. Diversity, Equity & Inclusion (DEI)

Please note, if applicable any partnerships or regular subcontracting or vendor relationships with any DBE¹ firms.

Lastly, please describe your commitment to, and experience with addressing diversity, equity and inclusion principles and how you would suggest incorporating these principles in the proposed project phases.

- a. UVM has a strong and ongoing commitment to DEI principles. We have developed departments and policies relating to DEI located here:**

<https://www.uvm.edu/diversity>

¹ Disadvantaged business enterprise or DBE means a for-profit [small business concern](#) -

(1) That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and

(2) Whose management and daily business operations are controlled by one or more of the [socially and economically disadvantaged individuals](#) who own it.

b. Our contracts bind contractors to university policies and procedures.

8. References

The respondent shall submit names, email addresses, and phone numbers of at least two references familiar with your municipality's /organization's ability, experience, and reliability in the performance and management of projects of a similar nature. Note: These can be from agencies that awarded grants to you.

- a. References can be provided if required, but UVM has a long history of large scale, multi-million-dollar construction projects. This project has the funding commitment through our yearly deferred maintenance budget. The project has been bid and awarded to SDI Ireland who is committed to completing this project in the '24 construction season.**



Water Quality Restoration Formula Grant Basin 5, Subgrant Application Form, Round 4

Submit this form to Dan Albrecht, B5 CWSP Manager, dalbrecht@ccrpcvt.org along with other required documents noted in the amended Call for Applications **by 4 p.m., EDT November 3, 2023.**

<i>Project Eligibility</i>	
Please Review the following eligibility documents before completing this application: 1) FY23 Clean Water Initiative Program Funding Policy (click here) 2) Act 76, Clean Water Service Provider Rule and Guidance & explanatory materials (click here)	
Is the portion of the project that you are seeking funding for considered non-regulatory and voluntary? i.e., the portion of the phosphorus being treated/reduced is not a required or compelled element of a regulatory permit (e.g. MS4 permit, MRGP, 3-9050 permit, wetland permit, etc.) or a legal settlement. (Answer must be YES to proceed).	Yes
Does your project type meet the applicable definitions and minimum standards as provided in the CWIP Funding Policy (Answer must be YES to proceed).	Yes
Has your organization/municipality submitted a Pre-Application form for this Call for Applications by October 13, 2023. (Answer must be YES to proceed). Pre-Application Form is available at https://www.ccrpcvt.org/northern-lake-champlain-cwsp/#funding	Yes
Has your organization/municipality been pre-qualified to receive subgrants from the CCRPC / Basin 5 Clean Water Service Provider? If No, please submit a Qualification Materials along with your application to dalbrecht@ccrpcvt.org . Qualification Materials templates are available at https://www.ccrpcvt.org/northern-lake-champlain-cwsp/#funding	No
Have you discussed your application with the DEC Basin Planner, Karen Bates? If not, we encourage you to do so, prior to your proposal being deliberated on by the Basin 5 Water Quality Council.	No

1. APPLICANT INFORMATION
Organization/Municipality Name: University of Vermont
Name of Point of Contact: Adam Frazier Title: Administrative Professional – Project Coordinator
Mailing Address: 31 Marsh Hall suite 10, Burlington Vermont 05401
Phone Number: 802 355-0655
E-mail Address: Adam.Frazier@uvm.edu
2. PROJECT INFORMATION
Project Title: UVM Horticultural Farm Dam Removal and Floodplain Restoration
Watershed Project Database Number: 11489
Project Type (according to Appendix B Project Types Table of the 2023 CWIP Funding Policy) : Floodplain Restoration Implementation
Project Phase you are seeking funding for (may check more than one box if applicable): <input type="checkbox"/> Identification / Assessment <input type="checkbox"/> Project Development <input type="checkbox"/> Preliminary Design <input type="checkbox"/> Final Design <input checked="" type="checkbox"/> Implementation/Construction
Project Location including watershed/sub-watershed, nearby landmarks, roads, etc. UVM Horticultural Farm in the headwaters of Bartlett Brook which drains to Shelburne Bay. Project GPS coordinates (e.g. 44.26278, -72.58054): 44.429679, -73.203311 Project Locator Map See Attached
3. PROJECT DESCRIPTION
<p><i>PROJECT OVERVIEW Please describe the proposed project in detail, especially the phosphorus reduction practices that will be developed, designed and/or implemented with the grant funds you are seeking. Please all describe the anticipated project schedule assuming a rough start date of August 1, 2023. Submit descriptive documents such as design cost proposals, excerpts from any prior studies, prior conceptual or final designs and other documents that may be useful for application reviewers.</i></p> <p>This project includes the removal of a failed earthen dam, installation of box culvert and the restoration of the former impoundment area into a floodplain. See attached design plans and cost breakdown from the contractor, S.D. Ireland. Bid results are included.</p>

4. Estimated annual average total phosphorus load reduction (kg/yr) & cost-effectiveness			
<p>a. Using pollution reduction calculator tools consistent with the methods included in DEC's <u>Standard Operating Procedures (SOPs) for Tracking and Accounting of Phosphorous</u>, what is the estimated annual average total phosphorus load reduction in kilograms per year of your proposed project? Submit a copy of the output from the calculation. <i>[If your proposed project consists of project identification/assessment or development, provide your best estimate of the types of projects you hope to investigate and their typical phosphorus reduction benefits.]</i></p> <p>3.6 kg/year. See attached FFI outputs</p>			
<p>b. Using the following formula, what is the Cost Effectiveness of your project:</p> <p>Cost effectiveness (\$/kg/yr) = (15 years/design life years of your project) * (total capital project cost (dollars) for design and construction) / (annual average total phosphorus source load reduction (kg/yr)). Note: we realize final construction costs may not be known with certainty. Use your best estimate. Type in the calculation for your project below. <i>[If your proposed project consists of project identification/assessment or development, provide your best estimate of the types of projects you hope to investigate and their typical phosphorus reduction benefits.]</i></p> <p>\$24,000±/kg/yr</p>			
<p>5. APPLICATION REQUEST BUDGET Attach a sheet showing how sub-totals calculated. Be sure you budget enough time/funds for Project Management/Completion (supervision of consultants, reporting tasks, check-in meetings with CWSP, DEC, landowners, consultants, etc.) to fully meet the required milestones and deliverables of your project type detailed in the CWIP Funding Policy.</p>			
Expense/Item	Grant Request	Leverage / Match Funds	Sub-Totals
APPLICANT			
Project Management/Completion (including salary/hourly costs and fringe benefits). Include any volunteers or ad hoc employees if applicable.			
Mileage Charges (use Federal 2023 rate of 65.5 cents/mile)			
Supplies / Materials not purchased by subcontractors			
Equipment Rentals or Equipment Use charges			
SUBCONTRACTORS			
Project Identification/Assessment /Development efforts			
Engineering/Design Services for 30% Design or Final Design			
Construction Management/Oversight Services			

Construction/Implementation Services	19,800+64,800		
Other eligible costs (see 2023 CWIP Funding Policy)			
Project Completion SUBTOTAL			
Indirect**: If you have a negotiated indirect rate, you typically charge, please use that. Otherwise, you may charge up to 10% on all APPLICANT costs and 10% on the first \$50,000 of SUBCONTRACTORS costs, noted in the rows above.			
Project Completion TOTAL (Project Completion SUBTOTAL + Indirect)	\$84,600		
<p>Procurement of subcontractors: For a pre-application or grant application, provision of prior proof of competitive procurement is not required. However, Subcontractors such as engineers/designers and construction services must be competitively procured either before or during the duration of the grant. Subgrantees will have to demonstrate that engineering/design services were sought from at least three firms prior to attaching a quote from a firm. Applicants are encouraged to competitively procure consultation/engineering/design services prior to submitting a grant application so that their budget request is firm for those services. Please attach any winning quotes/cost proposals for any services used in your budget above if applicable. For applications with Implementation/ Construction costs, Implementation/Construction services must be competitively procured but that can be done during the grant duration. If your project is a continuation of a project previously funded by the Basin 5 CWSP you may continue to use that same engineering design firm for subsequent phases.</p> <p>Please describe your plans for procurement either before or during the grant period. Be sure to read the requirements for procurement at https://www.ccrpcvt.org/northern-lake-champlain-basin-water-quality-council/#policies</p> <p>Project was competitively bid in accordance with UVM's Procurement Policies. See attached bid summary and additional backup from the awarded contractor.</p>			
<p>Future costs: if you are only seeking funds for Preliminary (30%) Design or Final (100%) Design, please provide a rough, "ballpark" estimate of anticipated Construction Costs. This information is needed for the Basin 5 CWSP to determine whether it is worth it to fund design services in the first place. For example, you could just provide examples of what other similar projects have cost. Do not put this estimate on the budget table above.</p> <p>This request is for the construction portion of the project and should be the final request.</p>			
<p>6. Co-benefits: describe how your project provides any of the following co-benefits See how co-benefits are defined & considered at https://www.ccrpcvt.org/northern-lake-champlain-basin-water-quality-council/#policies</p>			
<p>Hazard Mitigation: Project will remove a "significant" hazard dam from the watershed. Project is being coordinated with VTDEC Dam Safety Program.</p> <p>Education: Potential for floodplain project to be integrated into UVM curriculum for learning about water quality restoration of Lake Champlain.</p>			

Ecosystem Improvement: : **Project will replace a pond with a functional floodplain and forest providing carbon sequestration and filtration of farm runoff.**

Habitat Improvement: **Restores longitudinal connectivity in a headwaters stream for aquatic biota.**

Environmental Justice: Click or tap here to enter text.

Community Support: Click or tap here to enter text.

Other Benefits not captured above: Click or tap here to enter text.

7. OTHER CONSIDERATIONS

LEVEL OF UNCERTAINTY: Please describe the level of uncertainty of any elements of your budget.

There is limited uncertainty in this project given the lump sum nature and large amount of dewatering carried. The uncertainty comes from the re-work associated with rainstorms and the washouts that could be created on large rain events. SDI carried a large sum for this item and it is currently assumed no additional monies will be required.

BARRIERS: Please let us know any potential barriers/complications to completing this project and how you plan to manage those challenges during the duration of the grant.

Weather

LANDOWNER COOPERATION: Please provide an overview of the relative degree of commitment from the landowner to allowing the project to be constructed on their land. Is the landowner aware of the design life of the project and the need for visits during that time to the property for operations, maintenance, inspection & verification?

Please attach any letters or emails from the landowner indicating their support for the project and awareness of their required commitment. Note date of letter/email and sender below.

Attached is the fully executed contract signed by the VP of Finance and Administration and the Contractor.

OPERATIONS & MAINTENANCE: Please provide quantitative estimates of operation and maintenance costs on an annual basis where available. (e.g. person for 4 hours once per year). If not available, describe what types of maintenance activity might need to take place and how often.

Area will be a floodplain and natural cycles expected with limited maintenance required.

DESIGN LIFE: What is the design life of the project once constructed?

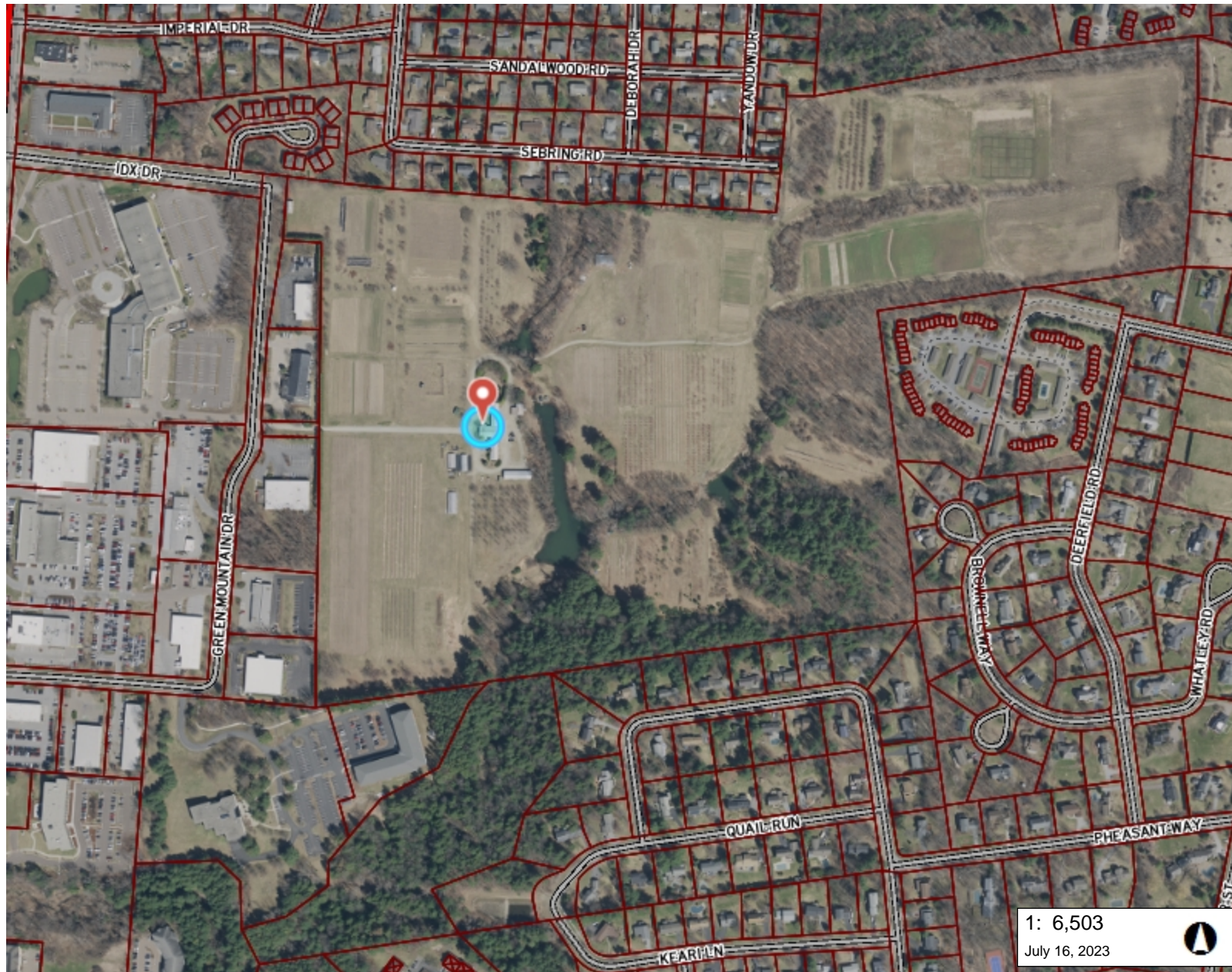
50+ years

In addition to submitting the Subgrant Application Form, complete & submit the **following documents, combined in the following order, into one PDF:**

- Project Locator Map

- Descriptive documents as noted in Project Description section of this application.
- Completed DEC [Interim Phosphorus Reduction Calculator Tool v1.0](#) (only required for Preliminary Design, Final Design and/or Implementation projects);
- Winning quotes/cost proposals from subcontractors proposed in budget (if applicable);
- Letters/emails from landowner(s) indicating support and awareness of required commitment
- Completed [DEC screening form](#); (only required for Preliminary Design, Final Design and/or Implementation projects)

In addition to familiarizing yourself with Vermont DEC's *FY23 Clean Water Initiative Program Funding Policy* the page for the Basin 5 Water Quality Council <https://www.ccrpcvt.org/northern-lake-champlain-basin-water-quality-council/> to view examples of previous pre-applications and applications considered by the Council.



LEGEND

- Parcels (standardized)
- Roads**
 - Interstate
 - US Highway; 1
 - State Highway
 - Town Highway (Class 1)
 - Town Highway (Class 2,3)
 - Town Highway (Class 4)
 - State Forest Trail
 - National Forest Trail
 - Legal Trail
 - Private Road/Driveway
 - Proposed Roads
- Town Boundary

1: 6,503

July 16, 2023



330.0 0 165.00 330.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

© Vermont Agency of Natural Resources

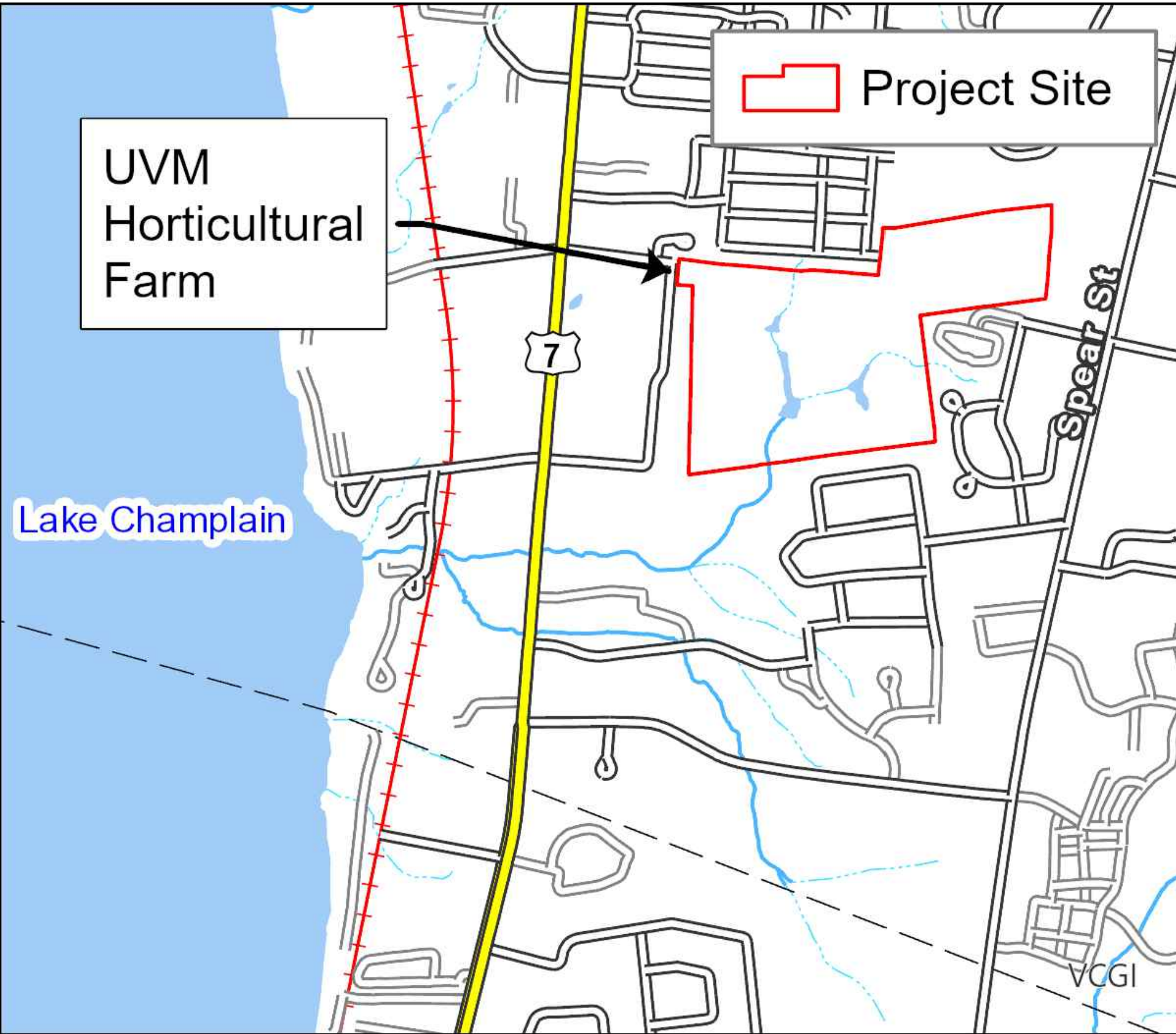
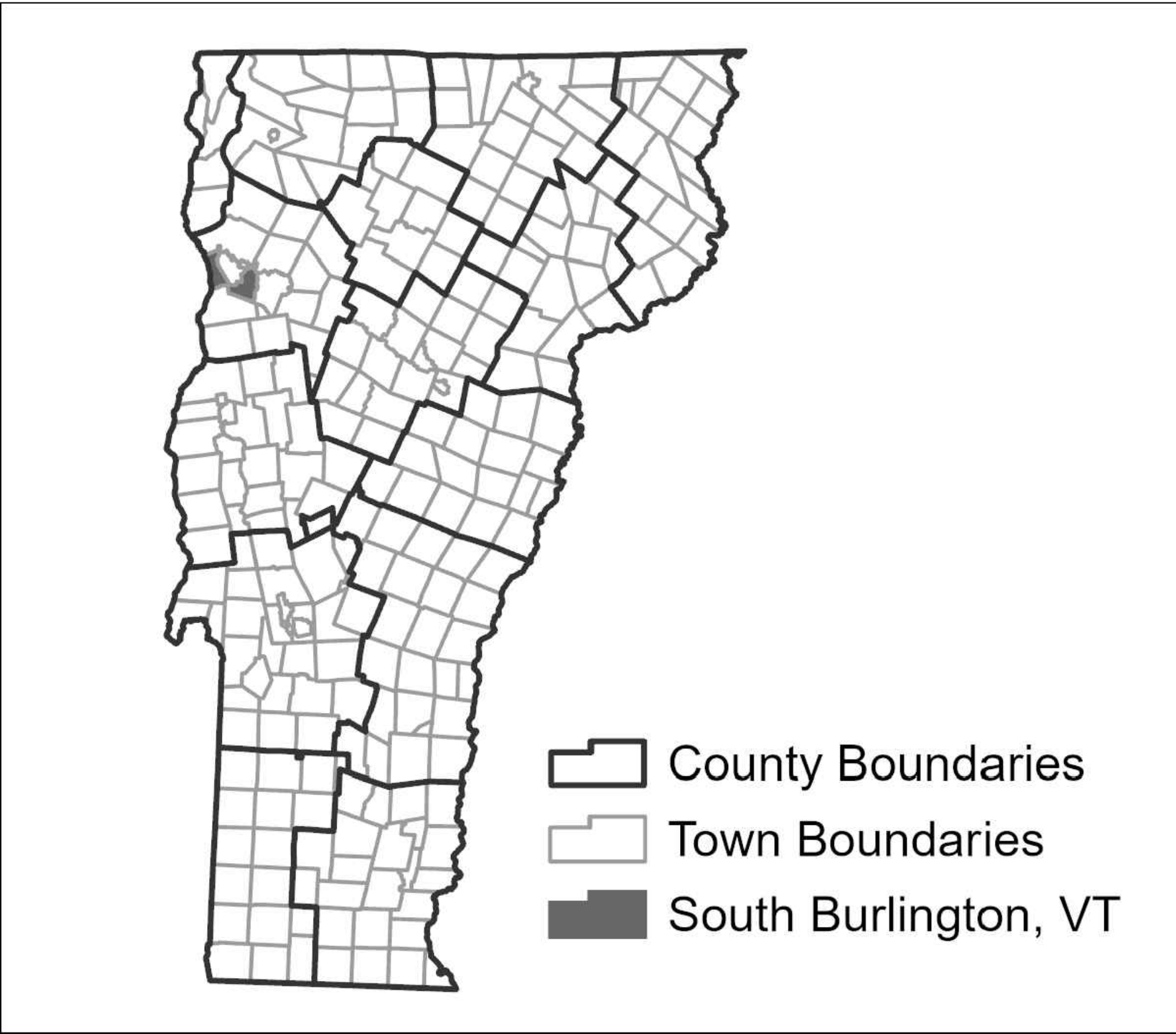
1" = 542 Ft. 1cm = 65 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

NOTES

Map created using ANR's Natural Resources Atlas



UNIVERSITY OF VERMONT HORTICULTURAL FARM
DAM REMOVAL AND STREAM/WETLAND
RESTORATION
GREEN MOUNTAIN DR,
SOUTH BURLINGTON, VERMONT

FINAL PLANS
JUNE 6, 2023

THIS PROJECT CONSISTS OF THE REMOVAL OF A DAM AND IN-STREAM IMPOUNDMENT ON BARTLETT BROOK. APPROXIMATELY 650 LINEAR FEET OF STREAM WILL BE RESTORED WITHIN THE EXISTING POND BOTTOM. IN ADDITION, A BOX CULVERT WILL BE INSTALLED BELOW THE EXISTING DAM EMBANKMENT FOR AN AGRICULTURAL ACCESS ROAD CROSSING.

DRAWING INDEX

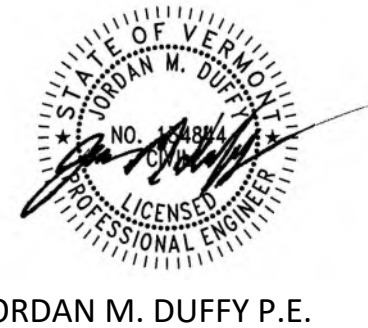
NO.	NAME	TITLE
1	EX-1	SITE PLAN - EXISTING CONDITIONS
2	PR-1	SITE PLAN - PROPOSED CONDITIONS - OVERVIEW
3	PR-2	SITE PLAN - PROPOSED CONDITIONS - STREAM
4	PR-3	SITE PLAN - PROPOSED CONDITIONS - STREAM
5	PR-4	SITE PLAN - PROPOSED CONDITIONS - CULVERT
6	PRO-1	PROFILE - STREAM CENTERLINE
7	PRO-2	PROFILE - ACCESS ROAD
8	CP-1	CONSTRUCTION PLAN - CONTROL OF WATER PLAN
9	CP-2	CONSTRUCTION PLAN - STABILIZATION PLAN
10	CP-3	CONSTRUCTION PLAN - STABILIZATION PLAN
11	DT-1	CONSTRUCTION DETAILS
12	DT-2	CONSTRUCTION DETAILS
13	DT-3	CONSTRUCTION DETAILS
14	DT-4	CONSTRUCTION DETAILS
15	DT-5	CONSTRUCTION DETAILS
16	N-1	CONSTRUCTION NOTES
17	N-2	CONSTRUCTION NOTES

EXISTING CONDITIONS AND SOURCE NOTES

- BASE MAP PROVIDED BY KREBS AND LANSING CONSULTING ENGINEERS. EXISTING GRADE TOPOGRAPHIC INFORMATION PROVIDED BY KREBS AND LANSING FIELD SURVEY, UNIVERSITY OF VERMONT AND LIDAR DATA FROM VCGI. BATHYMETRIC DATA PROVIDED FROM FIELD SURVEY DATA OF THE SITE COLLECTED BY FEA WITH A TOTAL STATION AND TRIMBLE SURVEY GPS ON 7/7/2022.
- GEOGRAPHIC DATA AND PLANS ARE REFERENCED TO THE VERMONT STATE PLANE IN US SURVEY FEET (NAVD83). ELEVATIONS ARE BASED ON NAVD88.
- PARCEL BOUNDARY DATA SHOWN ON THE PLANS ARE FROM VCGI.

PREPARED BY:


 Fitzgerald
Environmental
Associates, LLC
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

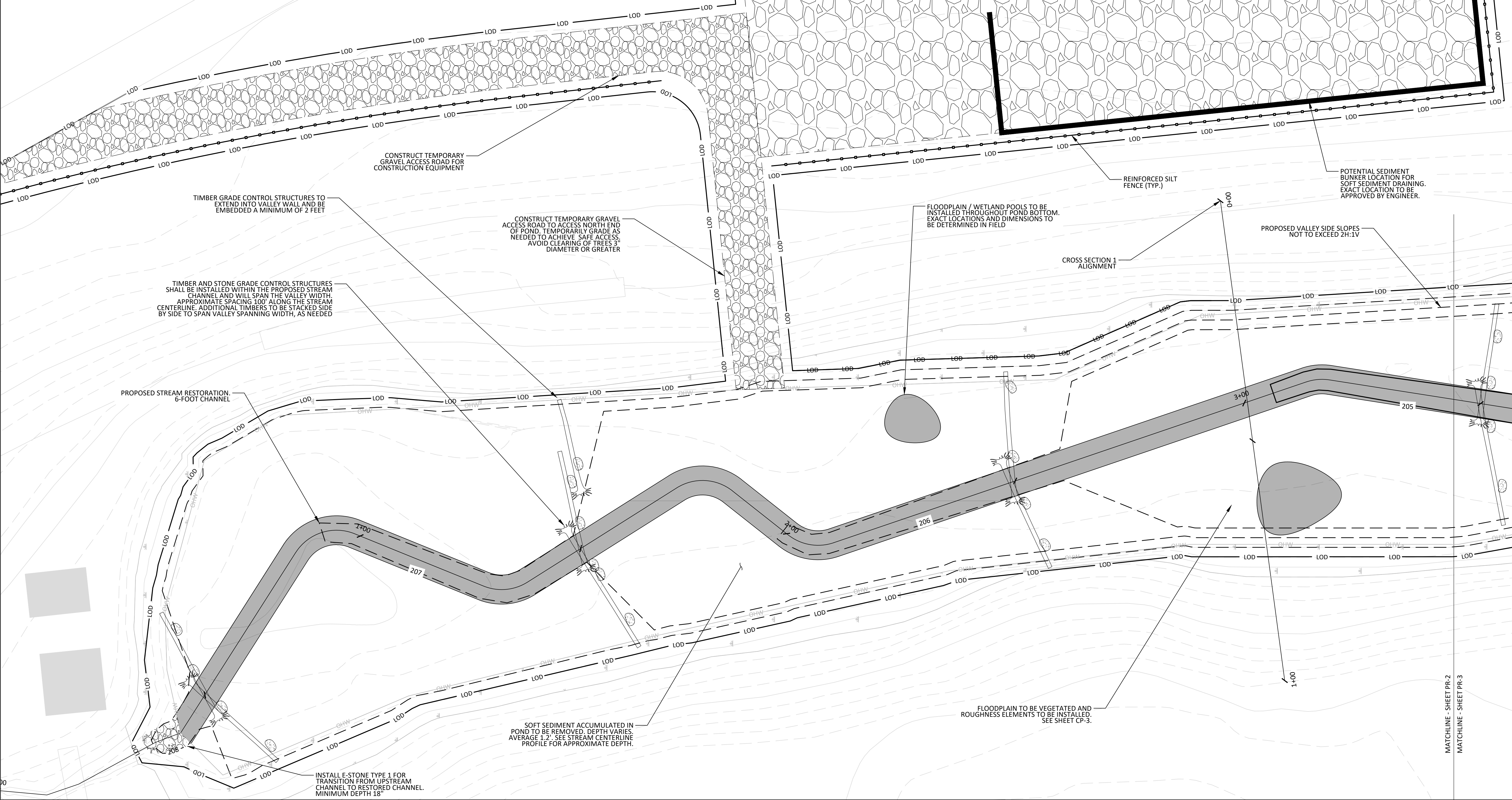
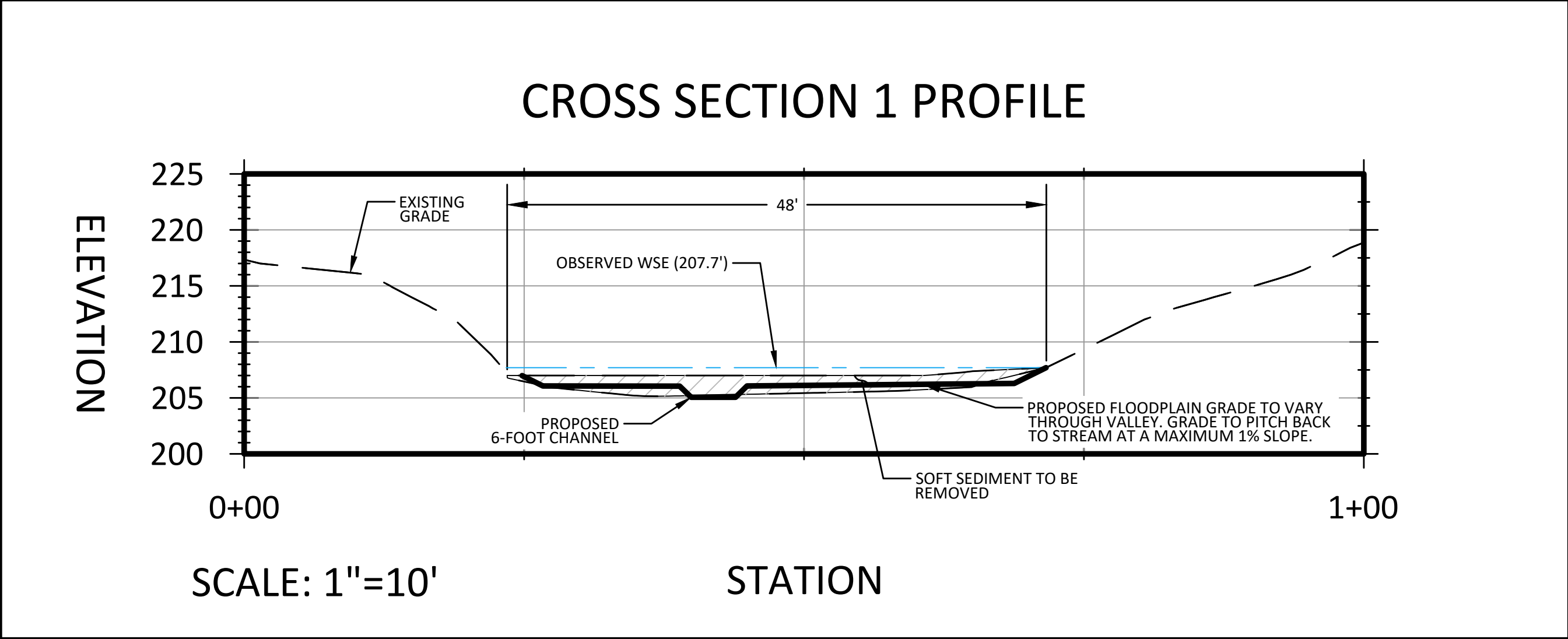


JORDAN M. DUFFY P.E.



PREPARED FOR:

 UNIVERSITY OF VERMONT
Physical Plant Department
284 East Avenue
Burlington, VT 05405
The
UNIVERSITY
of VERMONT
UVM



Fitzgerald Environmental Associates, LLC

164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS & LANSING CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebandlansing.com

STATE OF VERMONT
NO. 1444
JAMES M. WILSON
LICENSED PROFESSIONAL ENGINEER

SIGNATURE		
#	REVISIONS	DATE
	DESCRIPTION	

10 0 5 10
1 INCH = 10 FEET

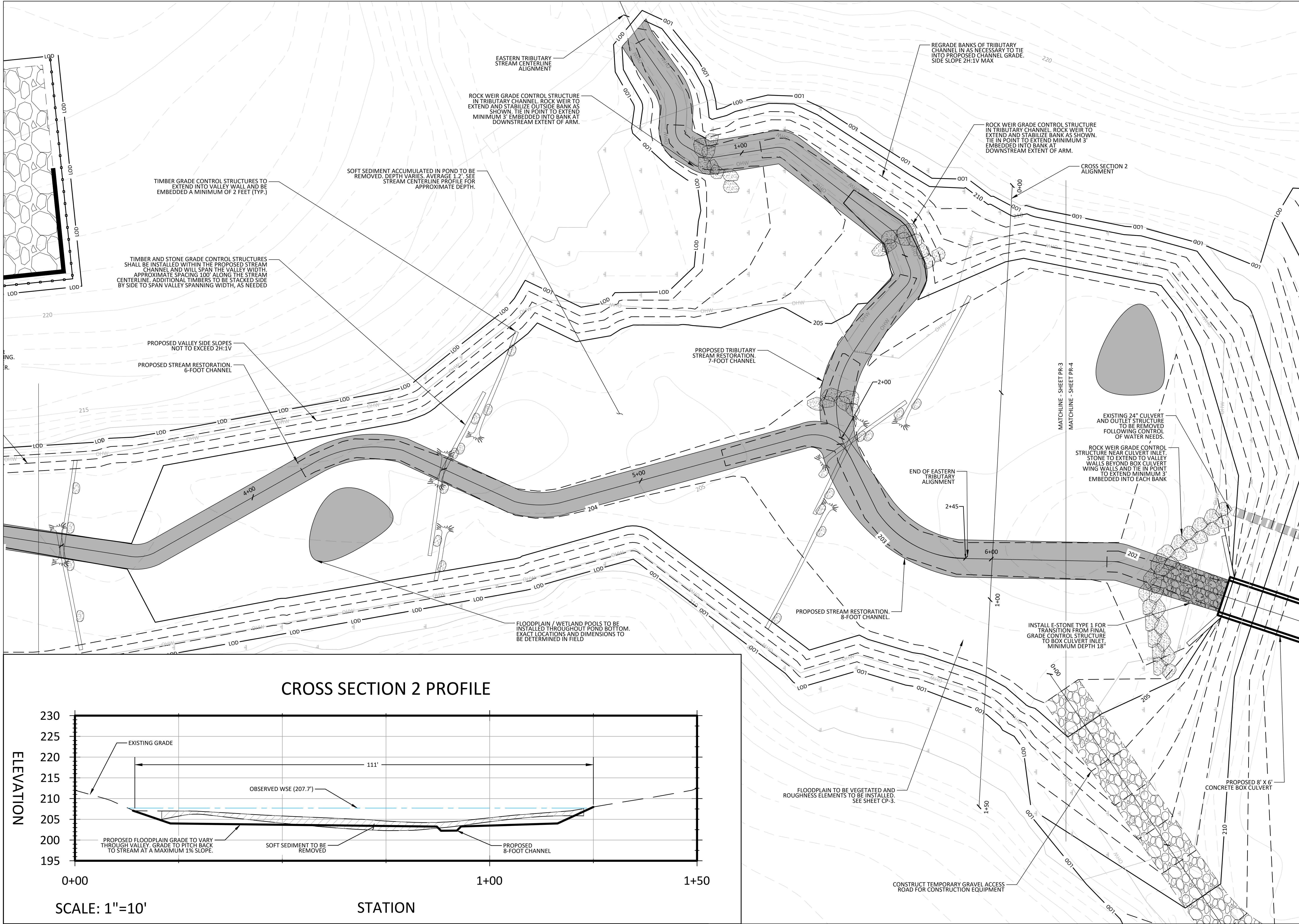
N

SITE PLAN - PROPOSED CONDITIONS - STREAM

UVM HORTICULTURAL FARM DAM REMOVAL AND STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

DRAWN	JMD	CHECKED	EPF
SCALE	1"=10'		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	3 OF 17		
PR-2			
SHEET NAME			



Fitzgerald Environmental Associates, LLC
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS & LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebsandlansing.com

DAVID W. WOOD
No. 1444
LICENSED PROFESSIONAL ENGINEER
CIVIL
VERMONT

SIGNATURE

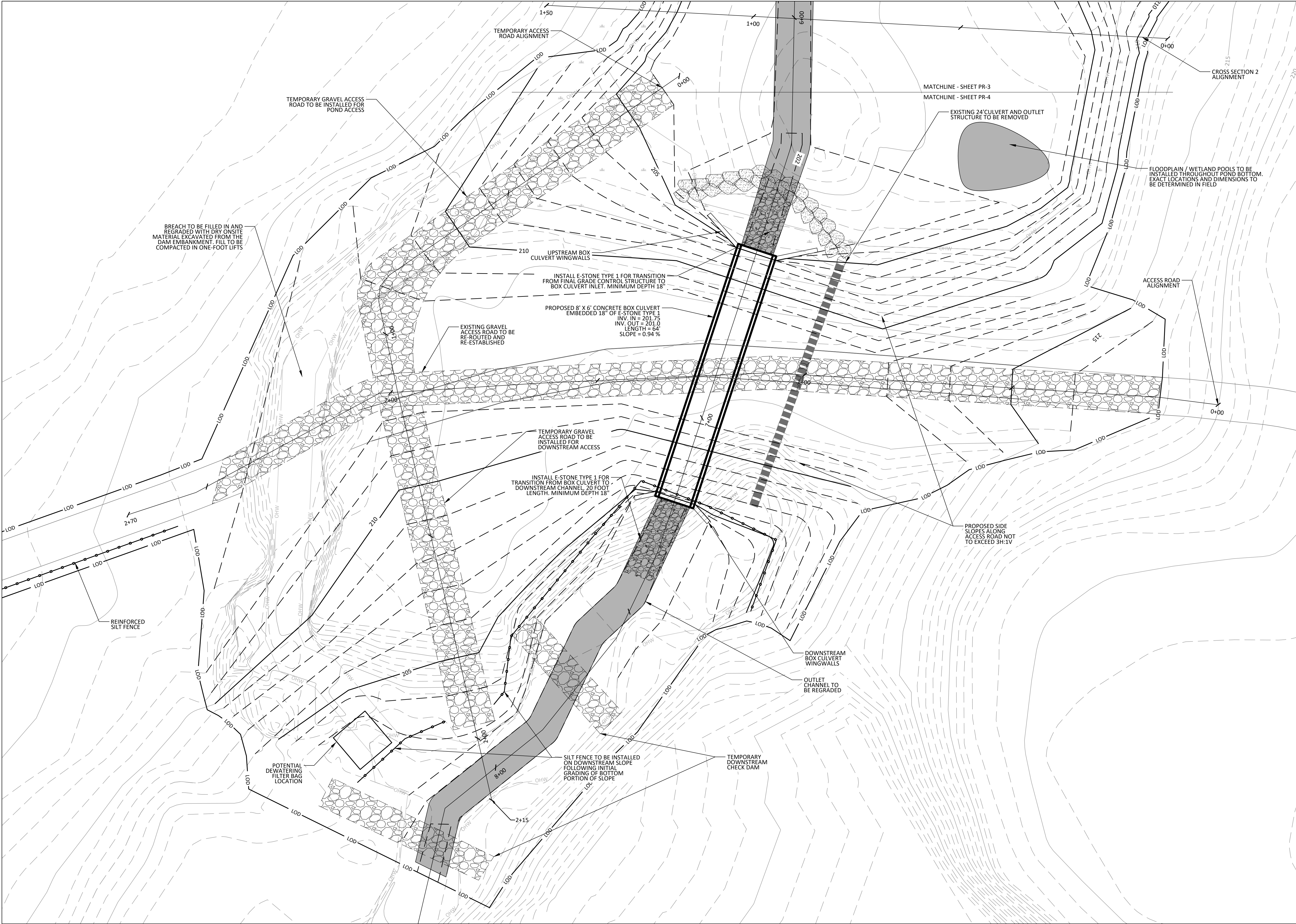
REVISIONS		
#	DESCRIPTION	DATE

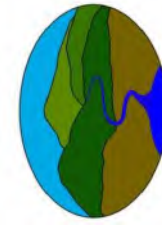
10 0 5 10
1 INCH = 10 FEET

N


SITE PLAN - PROPOSED CONDITIONS - STREAM
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION
GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

DRAWN	JMD	CHECKED	EPF
SCALE	1"=10'		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	4 OF 17		
PR-3			
SHEET NAME			

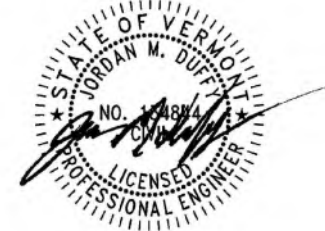




Fitzgerald
Environmental
Associates, LLC

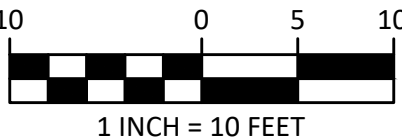


KREBS &
LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebsandlansing.com




SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE



10 0 5 10
1 INCH = 10 FEET



N

SITE PLAN - PROPOSED CONDITIONS - CULVERT

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN	JMD	EPF
CHECKED		

1"=10'

2023-06-05

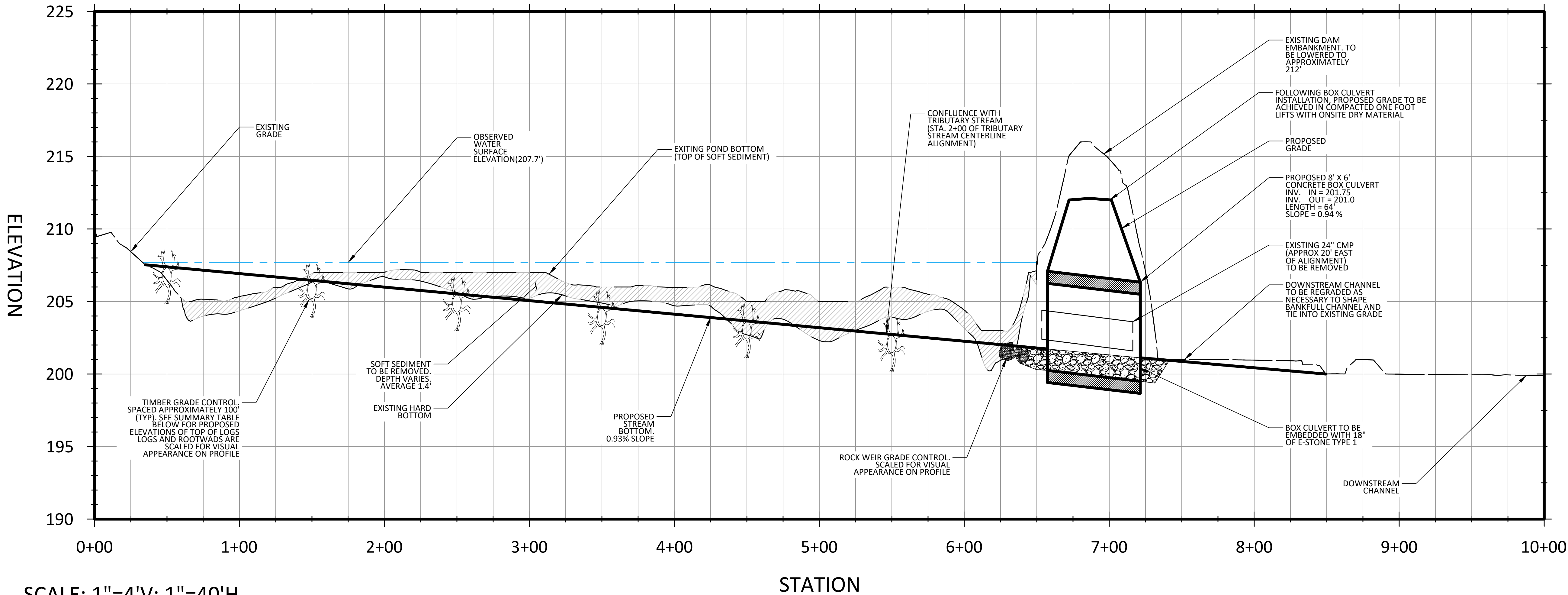
22024

5 OF 17

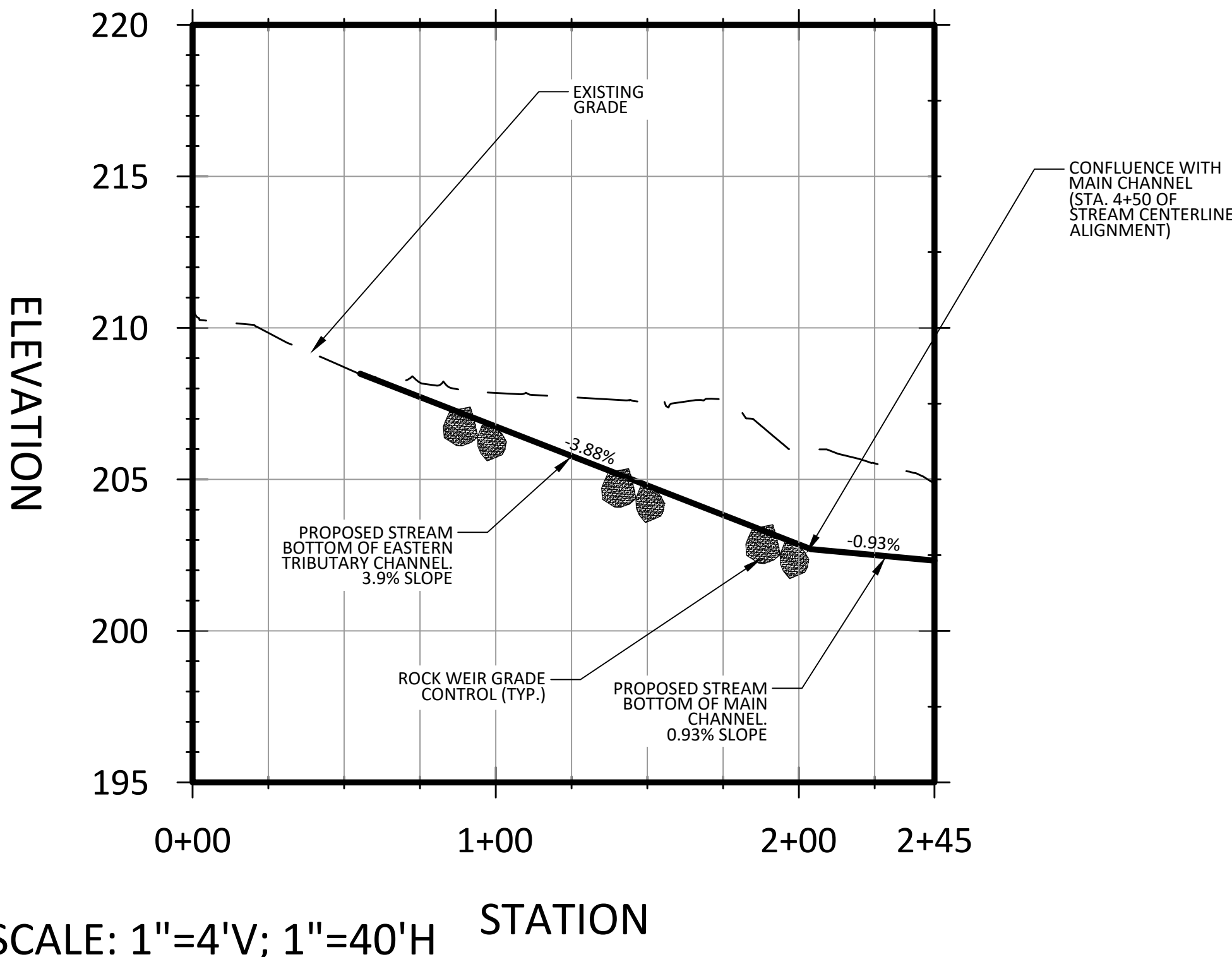
PR-4

SHEET NAME

STREAM CENTERLINE PROFILE

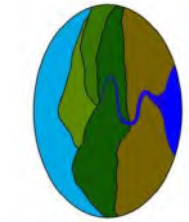


EASTERN TRIBUTARY STREAM CENTERLINE PROFILE



GRADE CONTROL SUMMARY TABLE		
STRUCTURE	STATION	TOP ELEVATION
TIMBER 1	0+50	207.39
TIMBER 2	1+50	206.46
TIMBER 3	2+50	205.53
TIMBER 4	3+50	204.59
TIMBER 5	4+50	203.62
TIMBER 6	5+50	202.73
STONE	6+40	201.89

Fitzgerald
Environmental
Associates, LLC



164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778

www.fitzgeraldenvironmental.com



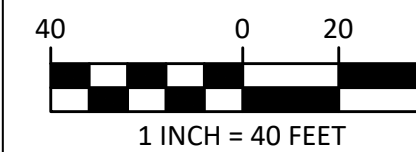
164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebsandlansing.com



SIGNATURE

REVISIONS

#	DESCRIPTION	DATE

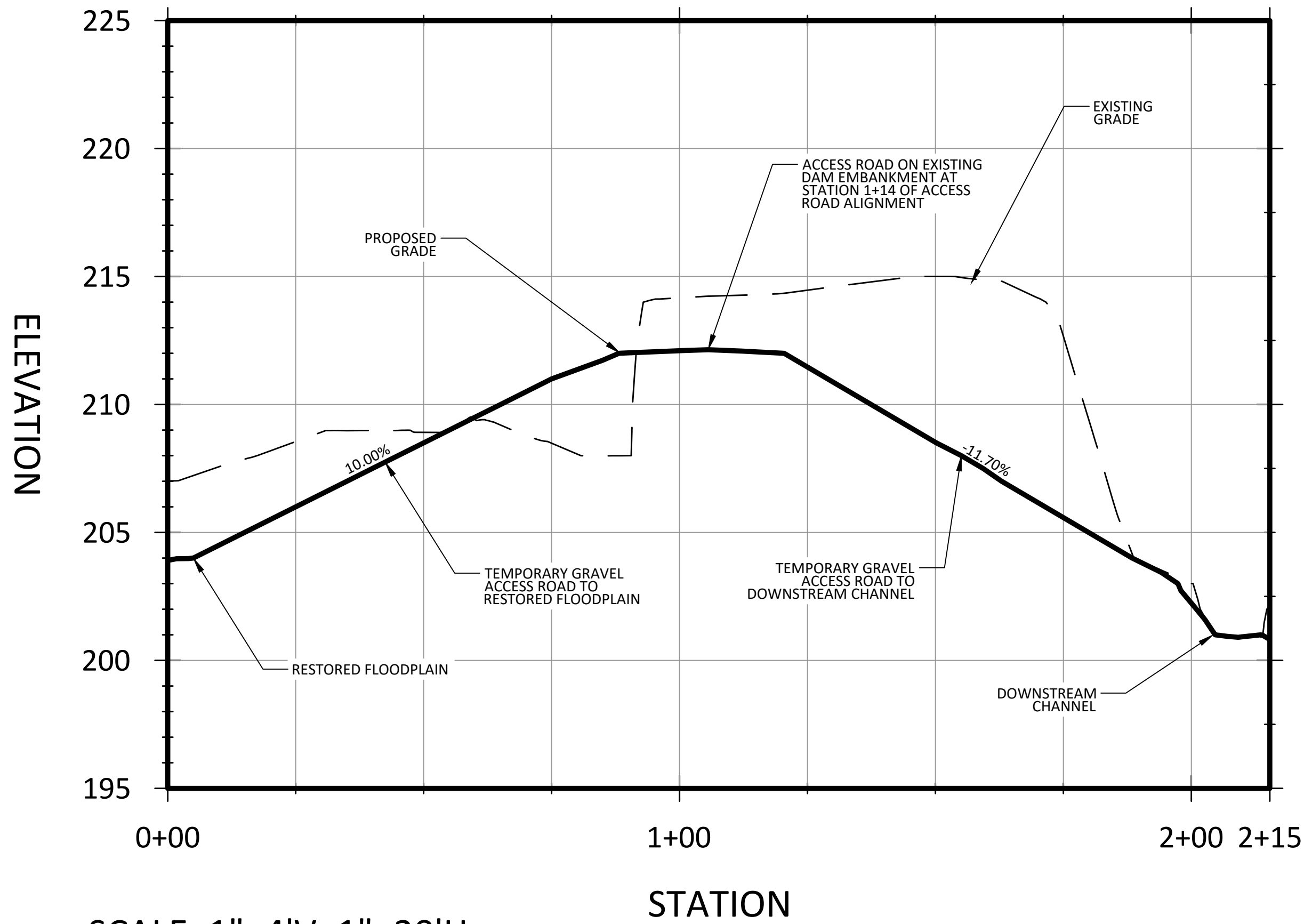


PROFILE - STREAM CENTERLINE
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION
GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

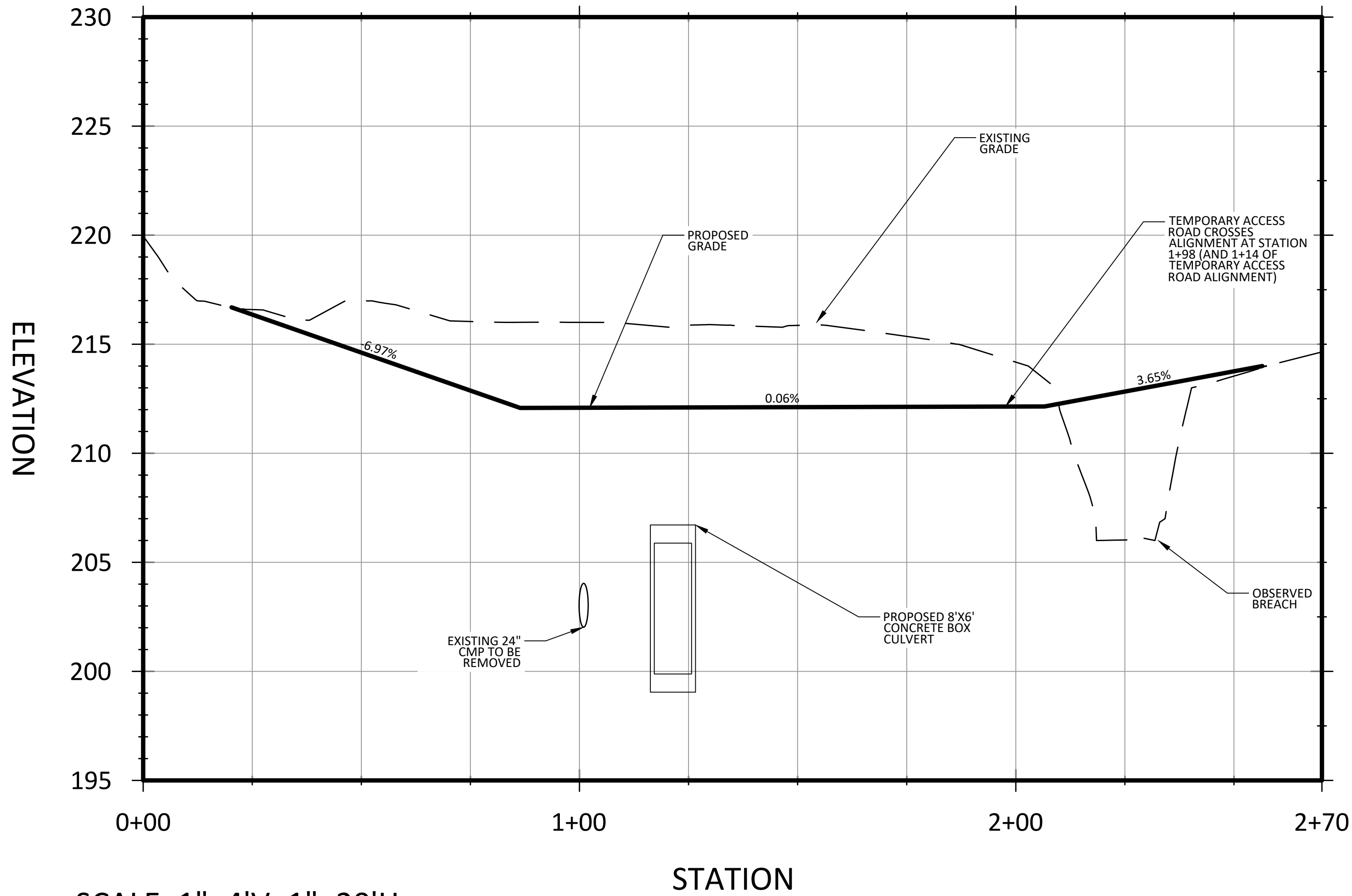
FINAL PLANS

DRAWN	JMD	CHECKED	EPF
SCALE	1"=40'		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	6 OF 17		
SHEET NAME	PRO-1		

TEMPORARY ACCESS ROAD PROFILE



ACCESS ROAD PROFILE

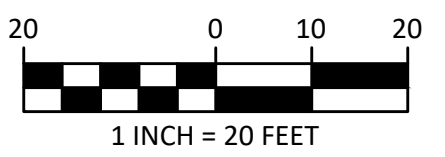


Fitzgerald
Environmental
Associates, LLC
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS &
LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebsandlansing.com



SIGNATURE		
REVISIONS		
#	DESCRIPTION	DATE

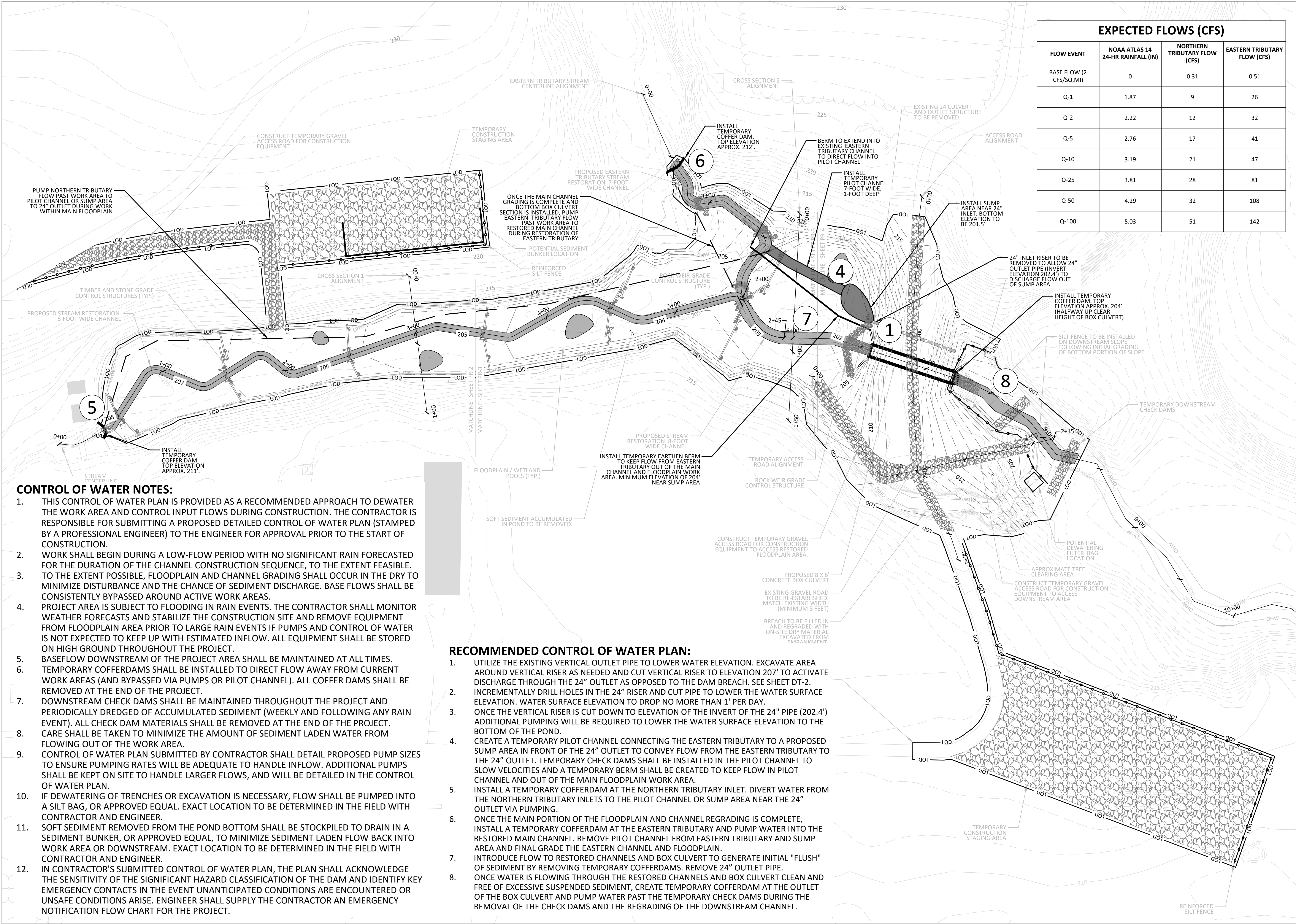


PROFILE - ACCESS ROAD
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION
GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN	JMD	CHECKED	EPF
SCALE 1"=20'			
DATE 2023-06-05			
PROJECT NO. 22024			
SHEET NO. 7 OF 17			

PRO-2
SHEET NAME



EXPECTED FLOWS (CFS)			
FLOW EVENT	NOAA ATLAS 14 24-HR RAINFALL (IN)	NORTHERN TRIBUTARY FLOW (CFS)	EASTERN TRIBUTARY FLOW (CFS)
BASE FLOW (2 CFS/SQ.MI)	0	0.31	0.51
Q-1	1.87	9	26
Q-2	2.22	12	32
Q-5	2.76	17	41
Q-10	3.19	21	47
Q-25	3.81	28	81
Q-50	4.29	32	108
Q-100	5.03	51	142



164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778

www.fitzgeraldenvironmental.com

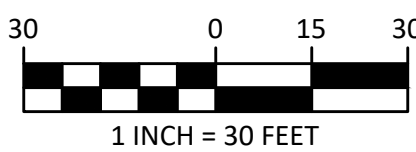


164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebandlansing.com



SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE



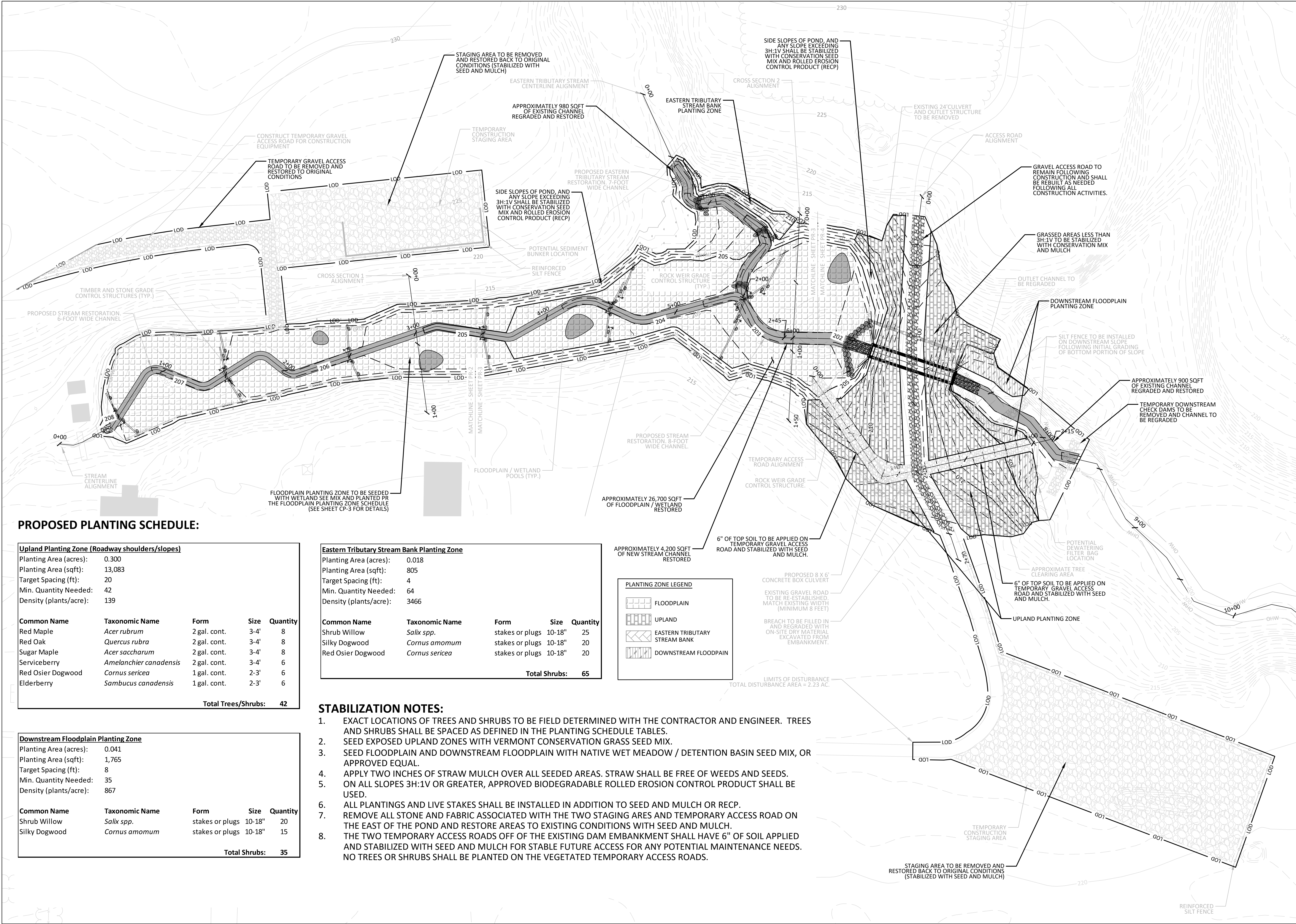
CONSTRUCTION PLAN - CONTROL OF WATER PLAN

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

JMD		EPF	
DRAWN		CHECKED	
1"=30'			
SCALE			
2023-06-05			
DATE			
22024			
PROJECT NO.			
8 OF 17			
SHEET NO.			
CP-1			
SHEET NAME			



PROPOSED PLANTING SCHEDULE:

Upland Planting Zone (Roadway shoulders/slopes)				
Planting Area (acres):	0.300			
Planting Area (sqft):	13,083			
Target Spacing (ft):	20			
Min. Quantity Needed:	42			
Density (plants/acre):	139			
Common Name	Taxonomic Name	Form	Size	Quantity
Red Maple	<i>Acer rubrum</i>	2 gal. cont.	3-4'	8
Red Oak	<i>Quercus rubra</i>	2 gal. cont.	3-4'	8
Sugar Maple	<i>Acer saccharum</i>	2 gal. cont.	3-4'	8
Serviceberry	<i>Amelanchier canadensis</i>	2 gal. cont.	3-4'	6
Red Osier Dogwood	<i>Cornus sericea</i>	1 gal. cont.	2-3'	6
Elderberry	<i>Sambucus canadensis</i>	1 gal. cont.	2-3'	6
Total Trees/Shrubs:				42

Downstream Floodplain Planting Zone				
Planting Area (acres):	0.041			
Planting Area (sqft):	1,765			
Target Spacing (ft):	8			
Min. Quantity Needed:	35			
Density (plants/acre):	867			
Common Name	Taxonomic Name	Form	Size	Quantity
Shrub Willow	<i>Salix spp.</i>	stakes or plugs	10-18"	20
Silky Dogwood	<i>Cornus amomum</i>	stakes or plugs	10-18"	15
Total Shrubs:				35

Eastern Tributary Stream Bank Planting Zone				
Planting Area (acres):	0.018			
Planting Area (sqft):	805			
Target Spacing (ft):	4			
Min. Quantity Needed:	64			
Density (plants/acre):	3466			
Common Name	Taxonomic Name	Form	Size	Quantity
Shrub Willow	<i>Salix spp.</i>	stakes or plugs	10-18"	25
Silky Dogwood	<i>Cornus amomum</i>	stakes or plugs	10-18"	20
Red Osier Dogwood	<i>Cornus sericea</i>	stakes or plugs	10-18"	20
Total Shrubs:				65

STABILIZATION NOTES:

1. EXACT LOCATIONS OF TREES AND SHRUBS TO BE FIELD DETERMINED WITH THE CONTRACTOR AND ENGINEER. TREES AND SHRUBS SHALL BE SPACED AS DEFINED IN THE PLANTING SCHEDULE TABLES.
2. SEED EXPOSED UPLAND ZONES WITH VERMONT CONSERVATION GRASS SEED MIX.
3. SEED FLOODPLAIN AND DOWNSTREAM FLOODPLAIN WITH NATIVE WET MEADOW / DETENTION BASIN SEED MIX, OR APPROVED EQUAL.
4. APPLY TWO INCHES OF STRAW MULCH OVER ALL SEEDED AREAS. STRAW SHALL BE FREE OF WEEDS AND SEEDS.
5. ON ALL SLOPES 3H:1V OR GREATER, APPROVED BIODEGRADABLE ROLLED EROSION CONTROL PRODUCT SHALL BE USED.
6. ALL PLANTINGS AND LIVE STAKES SHALL BE INSTALLED IN ADDITION TO SEED AND MULCH OR RECP.
7. REMOVE ALL STONE AND FABRIC ASSOCIATED WITH THE TWO STAGING AREAS AND TEMPORARY ACCESS ROAD ON THE EAST OF THE POND AND RESTORE AREAS TO EXISTING CONDITIONS WITH SEED AND MULCH.
8. THE TWO TEMPORARY ACCESS ROADS OFF OF THE EXISTING DAM EMBANKMENT SHALL HAVE 6" OF SOIL APPLIED AND STABILIZED WITH SEED AND MULCH FOR STABLE FUTURE ACCESS FOR ANY POTENTIAL MAINTENANCE NEEDS. NO TREES OR SHRUBS SHALL BE PLANTED ON THE VEGETATED TEMPORARY ACCESS ROADS.

Fitzgerald Environmental Associates, LLC
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS & LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebsandlansing.com

STATE OF VERMONT
STEPHEN M. BURDICK
No. 14444
LICENSED PROFESSIONAL ENGINEER

SIGNATURE

#	REVISIONS	DESCRIPTION	DATE

30 0 15 30
1 INCH = 30 FEET

CONSTRUCTION PLAN - STABILIZATION PLAN
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION
GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN	JMD	CHECKED	EPF
SCALE	1"=30'		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	9 OF 17		
CP-2			
SHEET NAME			



Floodplain Planting Zone				
Planting Area (acres):	0.615			
Planting Area (sqft):	26,787			
Target Spacing (ft):	20			
Min. Quantity Needed:	85			
Density (plants/acre):	139			
Common Name	Taxonomic Name	Form	Size	Quantity
Red Maple	<i>Acer rubrum</i>	2 gal. cont.	3-4'	12
Eastern Cottonwood	<i>Populus deltoides</i>	2 gal. cont.	3-4'	12
Silver Maple	<i>Acer saccharinum</i>	2 gal. cont.	3-4'	11
Shrub Willow	<i>Salix spp.</i>	stakes or plugs	10-18"	225
Red Osier Dogwood	<i>Cornus sericea</i>	stakes or plugs	10-18"	23
Silky Dogwood	<i>Cornus amomum</i>	stakes or plugs	10-18"	22
Total Trees/Shrubs:				305

FLOODPLAIN PLANTING LEGEND	
	TREE
	SHRUB
	ROUGHNESS ELEMENT
	WILLOW STAKING

FLOODPLAIN STABILIZATION NOTES:

1. EXACT LOCATIONS OF TREES, SHRUBS, ROUGHNESS ELEMENTS, AND FLOODPLAIN/WETLAND POOLS TO BE FIELD DETERMINED WITH THE CONTRACTOR AND ENGINEER.
2. WILLOW STAKINGS SHALL BE INSTALLED ON THE OUTSIDE OF EACH MEANDER FOR A MINIMUM OF 25 LINEAR FEET. SPACING OF EACH STAKE SHALL BE TWO FEET LINEARLY ALONG THE TOP OF BANK, AND A SECOND ROW SHALL BE INSTALLED TWO FEET BEHIND THE TOP OF BANK.
3. TREES, SHRUBS, AND ROUGHNESS ELEMENTS SHALL BE SPACED APPROXIMATELY 20 FEET THROUGH THE FLOODPLAIN.
4. VARIOUS SPECIES OF TREES AND SHRUBS SHALL BE EVENLY DISTRIBUTED THROUGHOUT THE FLOODPLAIN (PER THE PLANTING SCHEDULE).
5. VARIOUS ROUGHNESS ELEMENTS SHALL BE INSTALLED THROUGH FLOODPLAIN (SEE SHEET D-3) INCLUDING:
 - 5.1. LOG ROUGHNESS ELEMENTS
 - 5.2. LIVE FASCINES
 - 5.3. SLASH/BRUSH ROUGHNESS ELEMENTS

Fitzgerald Environmental Associates, LLC
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: 802.876.0375
www.krebsandlansing.com

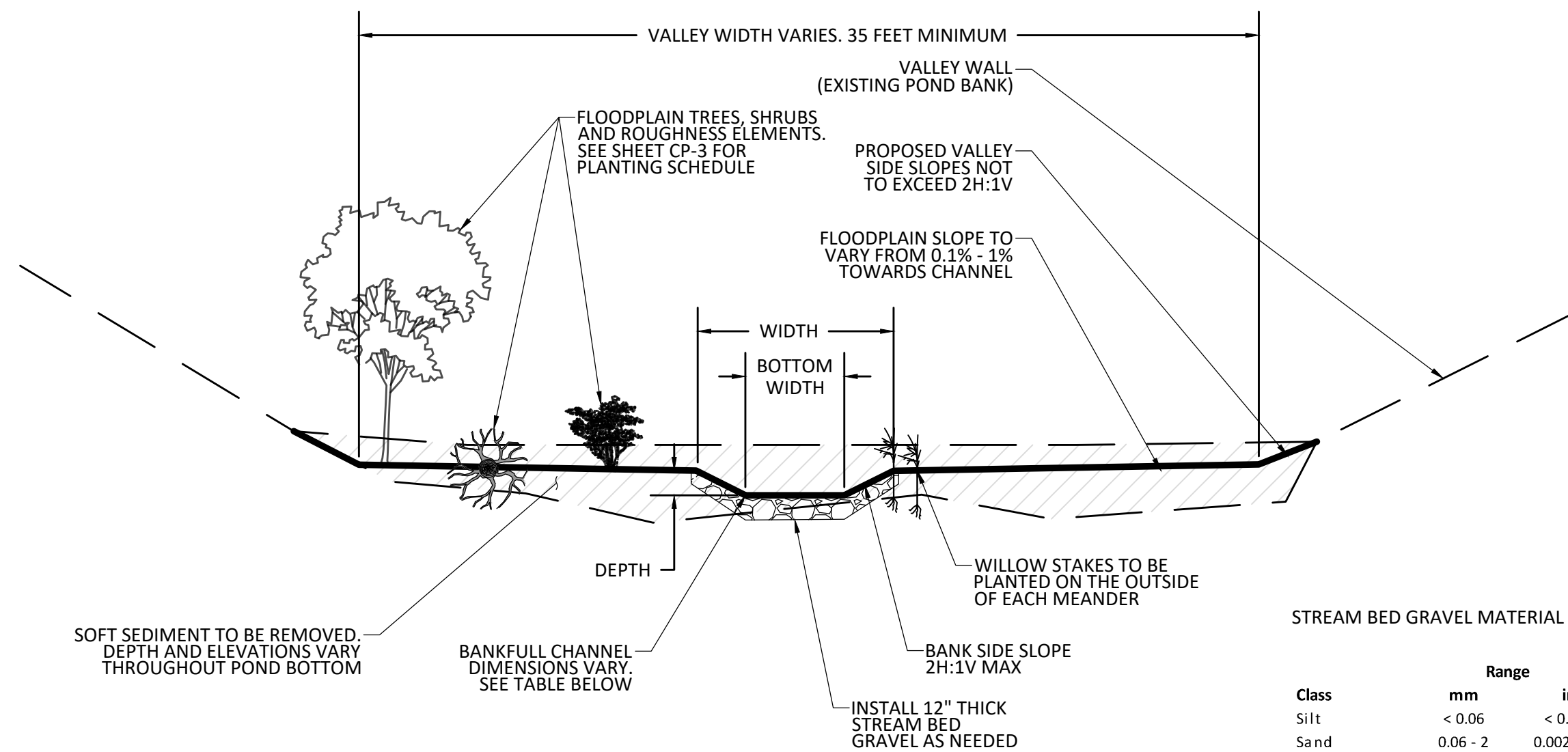
SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE

1 INCH = 20 FEET

CONSTRUCTION PLAN - STABILIZATION PLAN
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION
GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

DRAWN	JMD	CHECKED	EPF
SCALE	1"=20'		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	10 OF 17		
CP-3			
SHEET NAME			



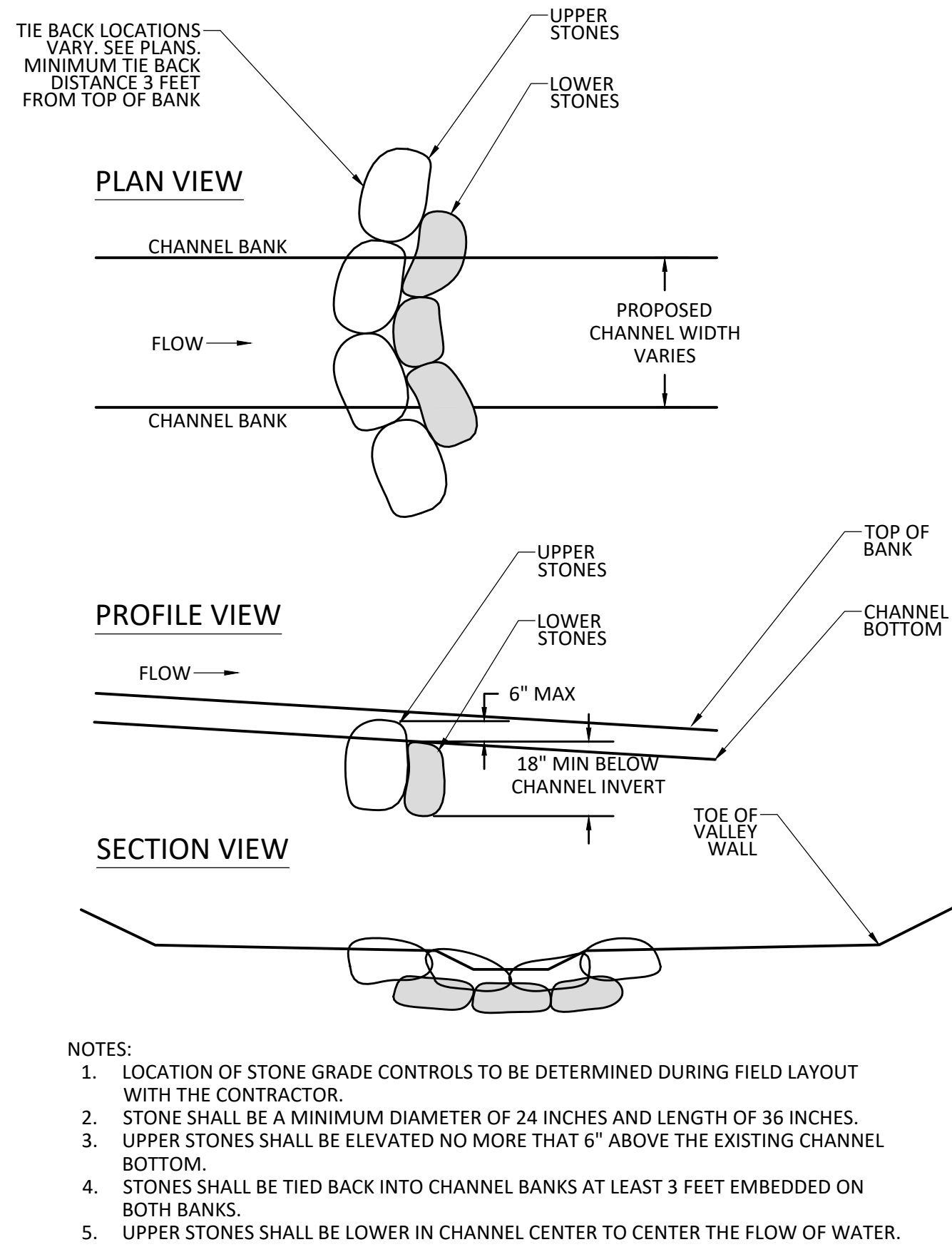
BANKFULL DIMENSIONS SUMMARY				
	STATION START/END	DEPTH (FT)	TOP WIDTH (FT)	BOTTOM WIDTH (FT)
6-FOOT CHANNEL	0+35 - 5+47	0.75	6	3
7-FOOT CHANNEL	0+54 - 2+00 (EASTERN TRIB. ALIGNMENT)	0.75	7	4
8-FOOT CHANNEL	5+47 - 6+57, 7+21 - 8+33	1	8	4

STREAM BED GRAVEL MATERIAL GRADATION SPECIFICATION			
Class	Range mm	in	Native Bed Specification (% of Total)
Silt	< 0.06	< 0.002	0
Sand	0.06 - 2	0.002 - 0.1	15 - 20
F. Gravel	2 - 16	0.1 - 0.6	35 - 40
C. Gravel	16 - 64	0.6 - 2.5	30 - 35
Cobble	64 - 256	2.5 - 10.1	10 - 15
Boulder	256 - 4096	10.1 - 60	0
Bedrock	> 4096	>160	0

NOTES:

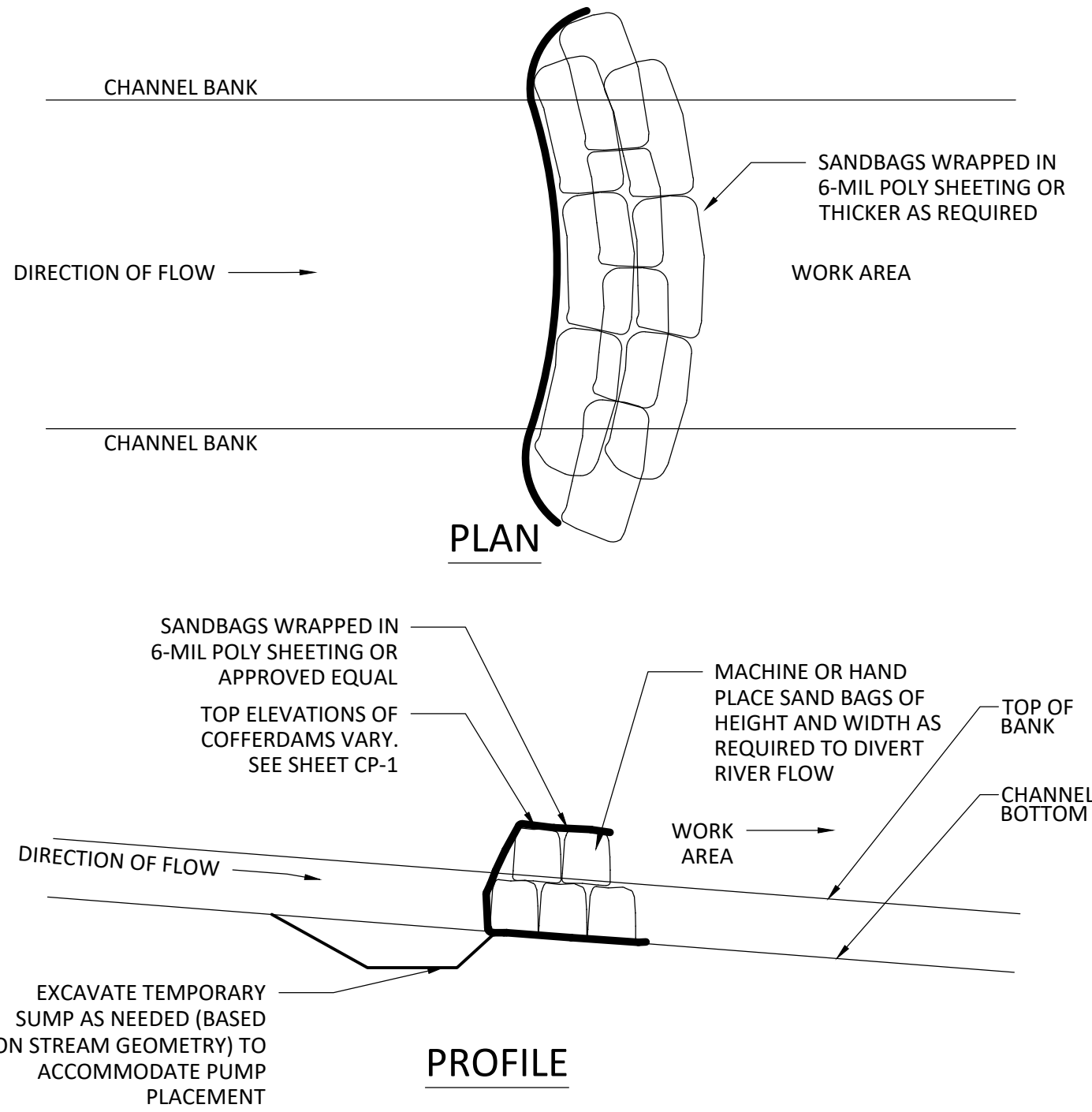
- PROPOSED STREAM CHANNEL PLAN FORM GEOMETRIES SHALL BE CONSTRUCTED AS SHOWN ON THE PLAN VIEW SHEETS. EXACT LOCATION OF CHANNEL SHALL BE LAID OUT IN THE FIELD WITH THE CONTRACTOR AND ENGINEER.
- ADDITIONAL STREAM BED GRAVEL (AS SHOWN ABOVE) SHALL BE INSTALLED AS NEEDED, IF THE MATERIAL OF THE UNDERLYING SUBSTRATE BELOW THE SOFT SEDIMENT DOES NOT MEET THE SPECIFIED GRADATION.
- FLOODPLAIN SHALL BE GENERALLY FLAT, WITH UNDULATING MICRO-TOPOGRAPHIES, FLOODPLAIN/ WETLAND POOLS, AND ROUGHNESS ELEMENTS WITH A MAXIMUM CROSS SLOPE BACK TO THE CHANNEL OF 1%.
- SIDE SLOPES OF CHANNEL AND REGRADED VALLEY WALLS SHALL NOT EXCEED 2H:1V

TYPICAL CHANNEL AND FLOODPLAIN CROSS SECTION



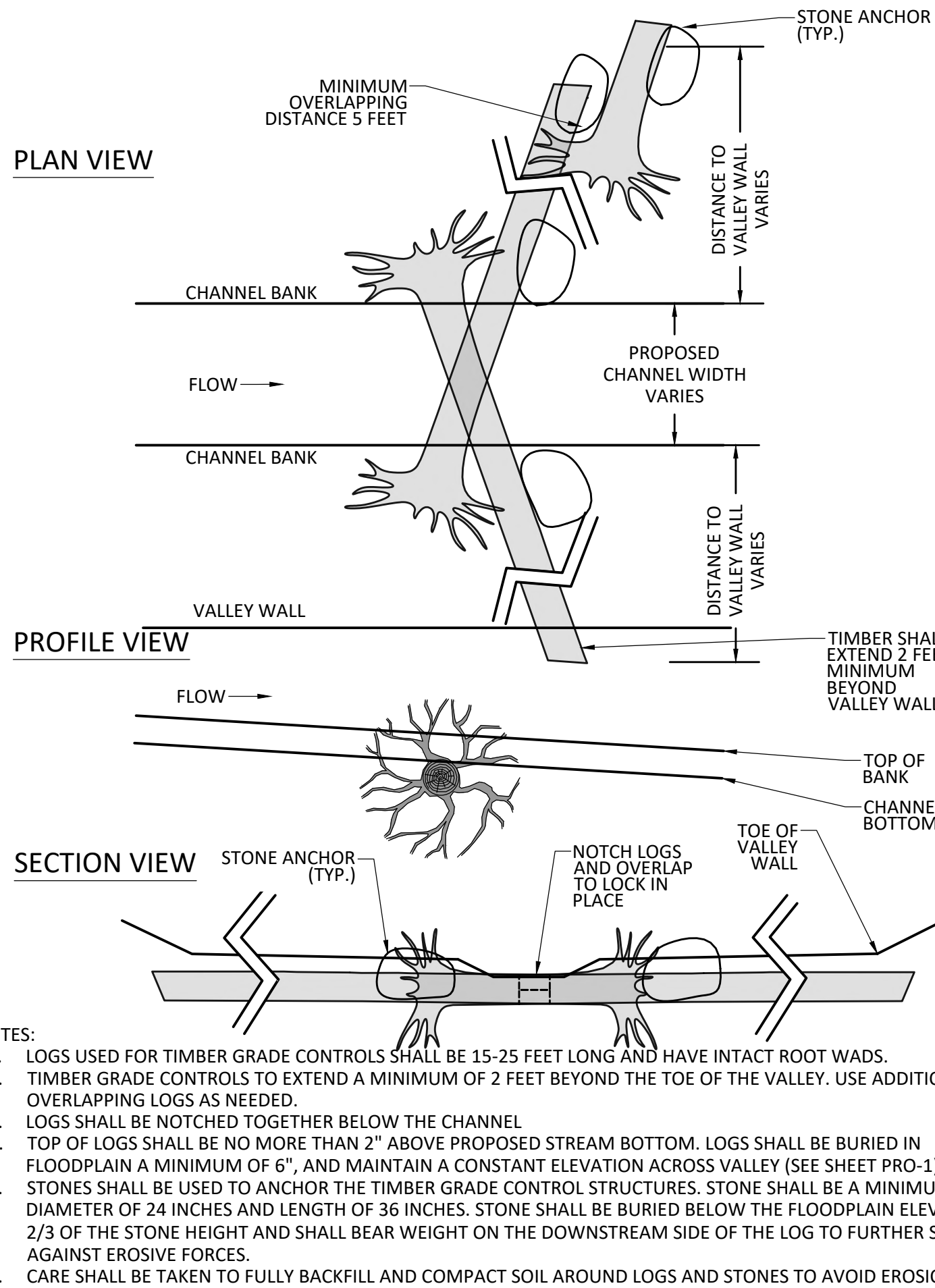
- NOTES:
- LOCATION OF STONE GRADE CONTROLS TO BE DETERMINED DURING FIELD LAYOUT WITH THE CONTRACTOR.
 - STONE SHALL BE A MINIMUM DIAMETER OF 24 INCHES AND LENGTH OF 36 INCHES.
 - UPPER STONES SHALL BE ELEVATED NO MORE THAT 6" ABOVE THE EXISTING CHANNEL BOTTOM.
 - STONES SHALL BE TIED BACK INTO CHANNEL BANKS AT LEAST 3 FEET EMBEDDED ON BOTH BANKS.
 - UPPER STONES SHALL BE LOWER IN CHANNEL CENTER TO CENTER THE FLOW OF WATER.

ROCK WEIR GRADE CONTROL



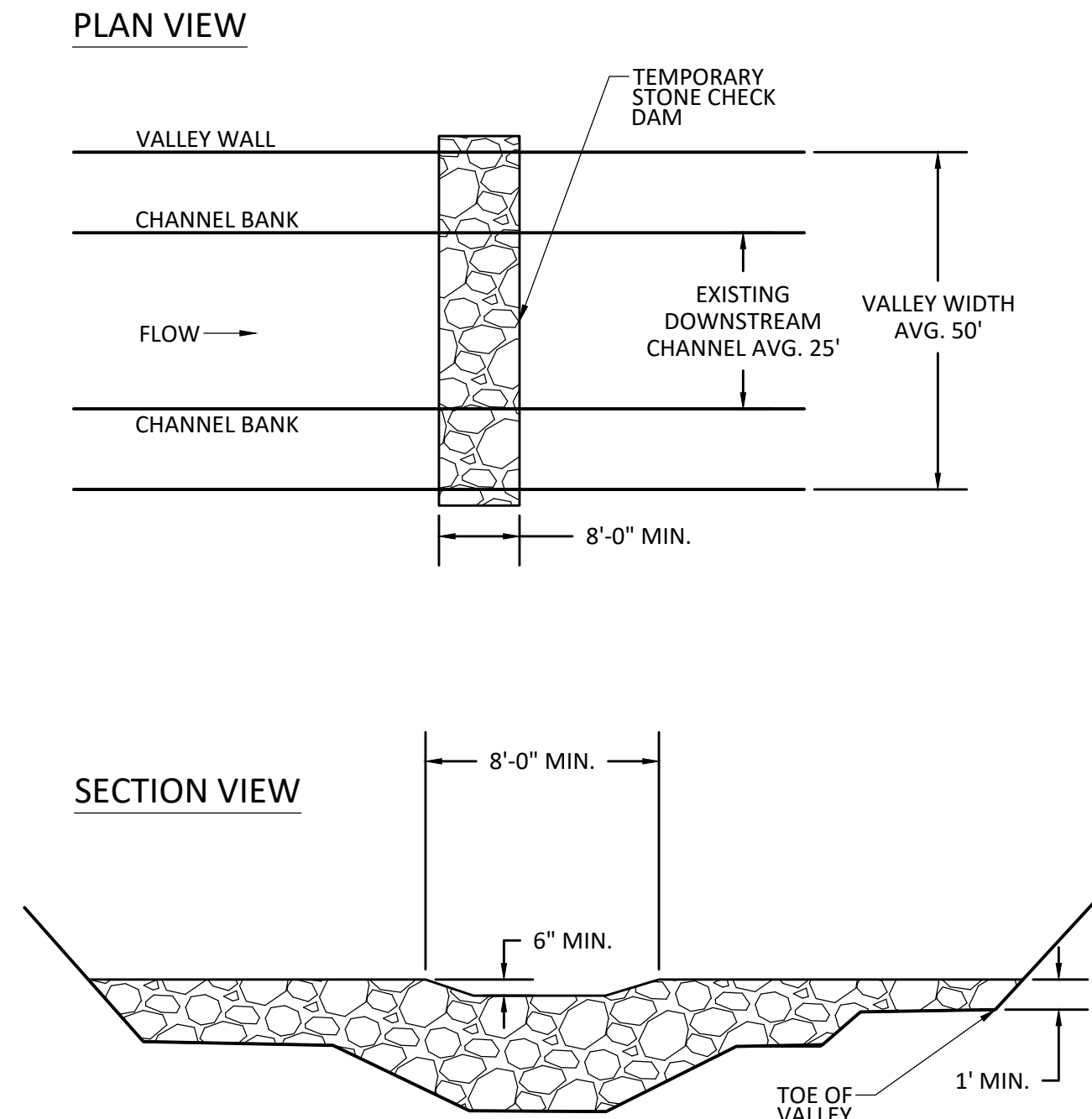
- NOTES:
- SANDBAGS OR APPROVED EQUIVALENT (I.E. PRECAST WASTE BLOCKS) SHALL BE USED AS TEMPORARY COFFER DAM.
 - IMPERVIOUS LINER (POLYETHYLENE PLASTIC LINER OR EQUIVALENT) SHALL BE PLACED BELOW SAND BAGS, AND WRAPPED AROUND TO PREVENT SEEPAGE OF WATER.
 - COFFER DAM HEIGHT SHALL EXTEND A MINIMUM OF 1-FOOT ABOVE THE TOP OF THE STREAM BANK AND TIE INTO BOTH BANKS OF THE CHANNEL. EXACT ELEVATIONS VARY, SEE SHEET CP-1. TOP HEIGHT SHALL EXTEND OVERBANK AS NEEDED TO TIE INTO EACH BANK.

TEMPORARY COFFER DAM



- NOTES:
- LOGS USED FOR TIMBER GRADE CONTROLS SHALL BE 15-25 FEET LONG AND HAVE INTACT ROOT WADS.
 - TIMBER GRADE CONTROLS TO EXTEND A MINIMUM OF 2 FEET BEYOND THE TOE OF THE VALLEY. USE ADDITIONAL OVERLAPPING LOGS AS NEEDED.
 - LOGS SHALL BE NOTCHED TOGETHER BELOW THE CHANNEL
 - TOP OF LOGS SHALL BE NO MORE THAN 2" ABOVE PROPOSED STREAM BOTTOM. LOGS SHALL BE BURIED IN FLOODPLAIN A MINIMUM OF 6", AND MAINTAIN A CONSTANT ELEVATION ACROSS VALLEY (SEE SHEET PRO-1)
 - STONES SHALL BE USED TO ANCHOR THE TIMBER GRADE CONTROL STRUCTURES. STONE SHALL BE A MINIMUM DIAMETER OF 24 INCHES AND LENGTH OF 36 INCHES. STONE SHALL BE BURIED BELOW THE FLOODPLAIN ELEVATION 2/3 OF THE STONE HEIGHT AND SHALL BEAR WEIGHT ON THE DOWNSTREAM SIDE OF THE LOG TO FURTHER SUPPORT AGAINST EROSION FORCES.
 - CARE SHALL BE TAKEN TO FULLY BACKFILL AND COMPACT SOIL AROUND LOGS AND STONES TO AVOID EROSION.

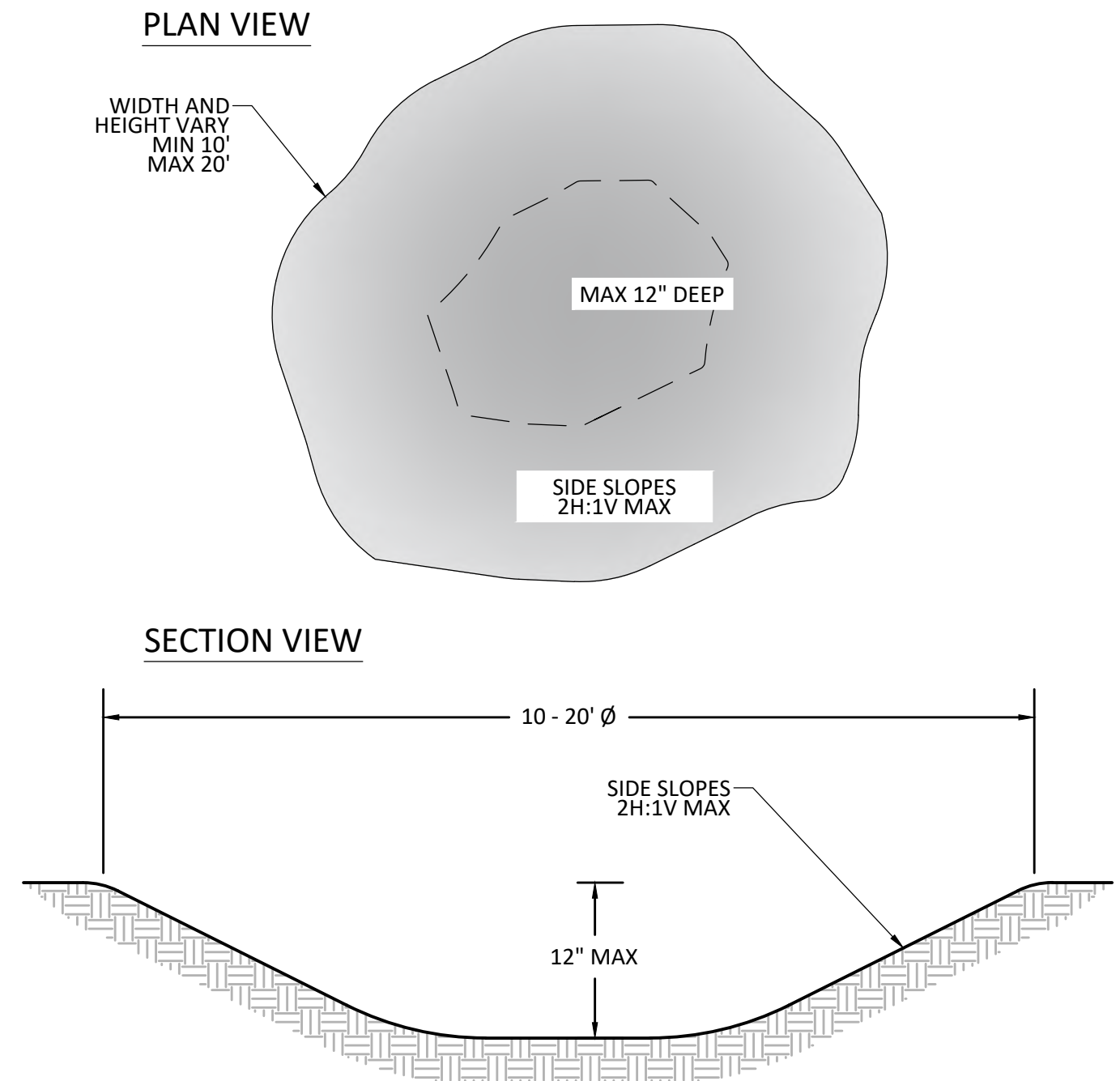
TIMBER GRADE CONTROL



- NOTES:
- LOCATION OF CHECK DAMS TO BE DETERMINED DURING FIELD LAYOUT WITH THE CONTRACTOR AND ENGINEER.
 - MATERIALS USED SHALL BE STONE FILL RIP-RAP TYPE I.
 - CHECK DAM SHALL EXTEND TO THE VALLEY WALL ON BOTH SIDES, WITH A MINIMUM DEPTH OF 1 FOOT AT THE TIE IN POINT.

CHANNEL SPANNING CHECK DAM

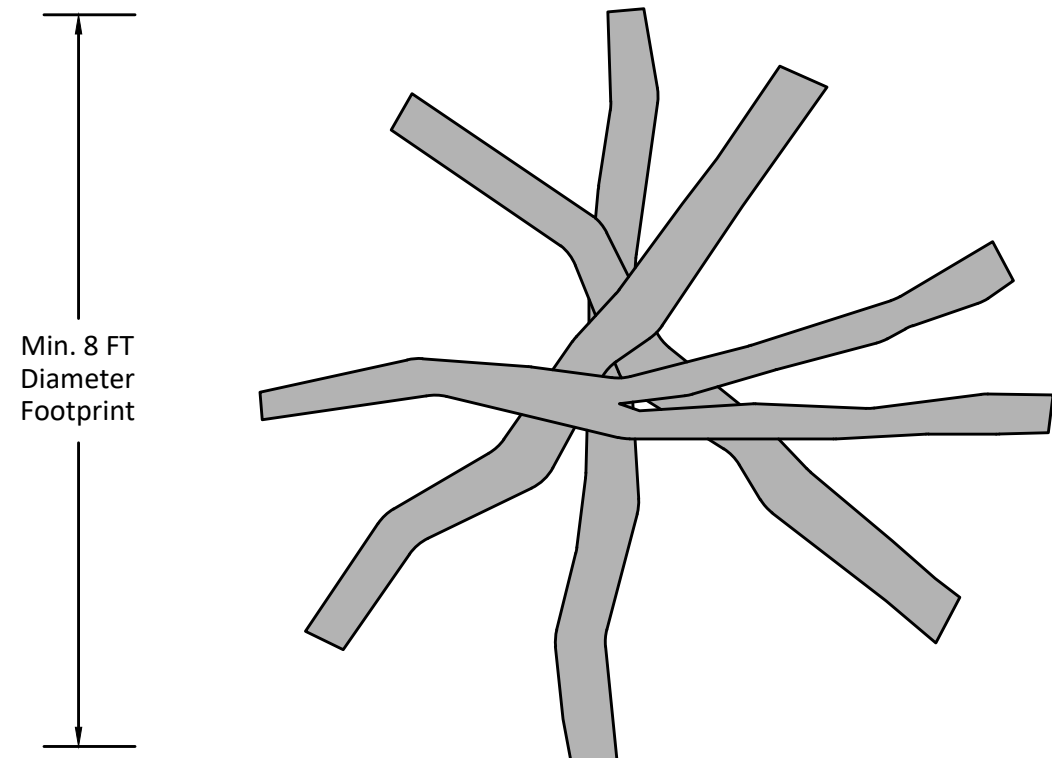
SIGNATURE		
REVISIONS		
#	DESCRIPTION	DATE



- NOTES:
1. LOCATION OF FLOODPLAIN/WETLAND PONDS TO BE DETERMINED DURING FIELD LAYOUT WITH THE CONTRACTOR.
 2. EXCAVATE MATERIAL TO CREATE A FLOODPLAIN/WETLAND POOL WITH A BOTTOM ELEVATION APPROXIMATELY EQUAL TO THAT OF THE PROPOSED ADJACENT STREAM BOTTOM.
 3. PROPOSED PLANTING IN AND AROUND FLOODPLAIN/WETLAND PONDS TO BE DOMINATED BY HERBACEOUS COVER.

FLOODPLAIN/WETLAND PONDS

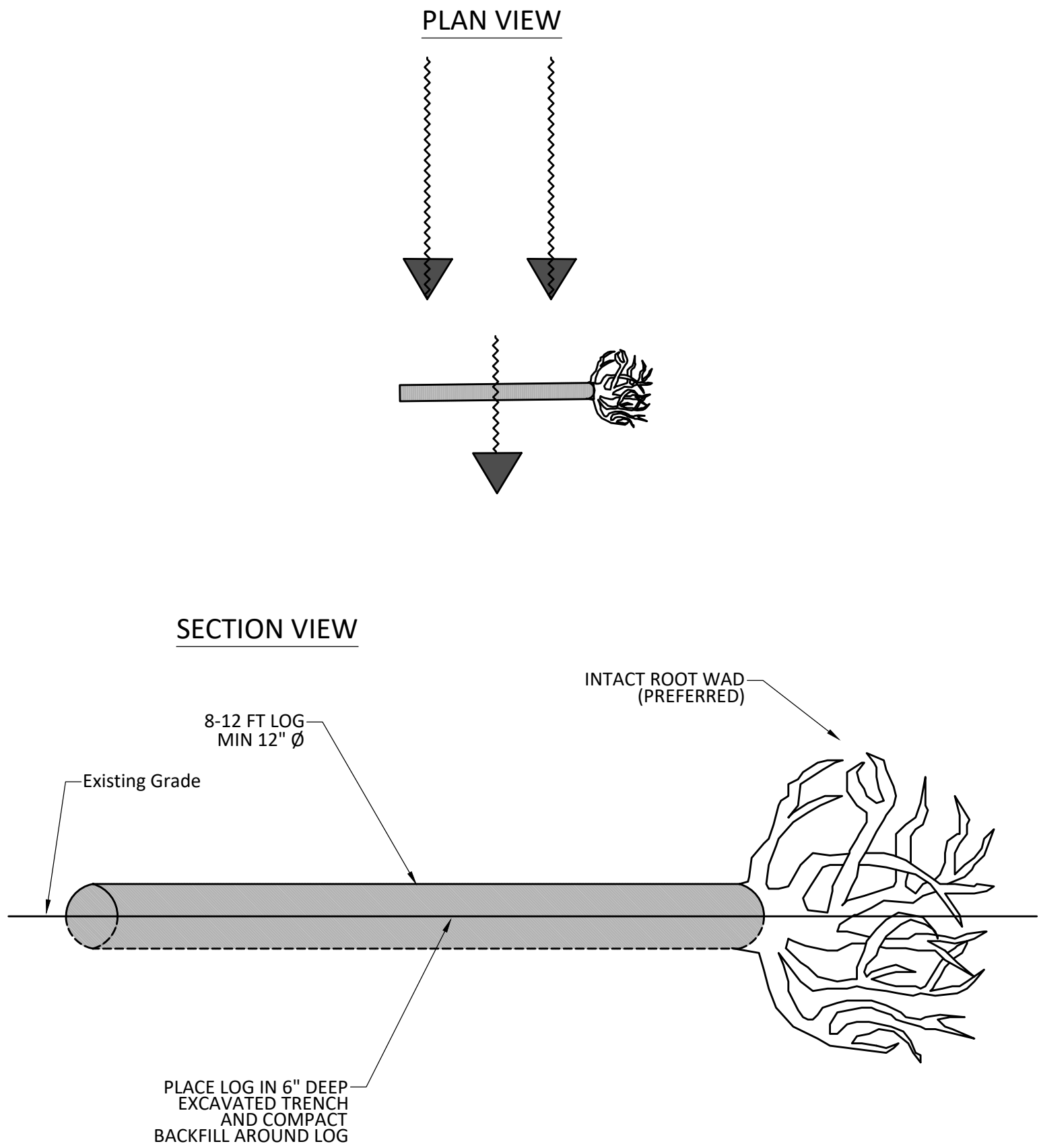
N.T.S



- NOTES:
1. MINIMUM 5 BRANCHES PER PILE
 2. PRIMARY BRANCH DIAMETER SHALL VARY FROM A MINIMUM 3" TO MAXIMUM 6"

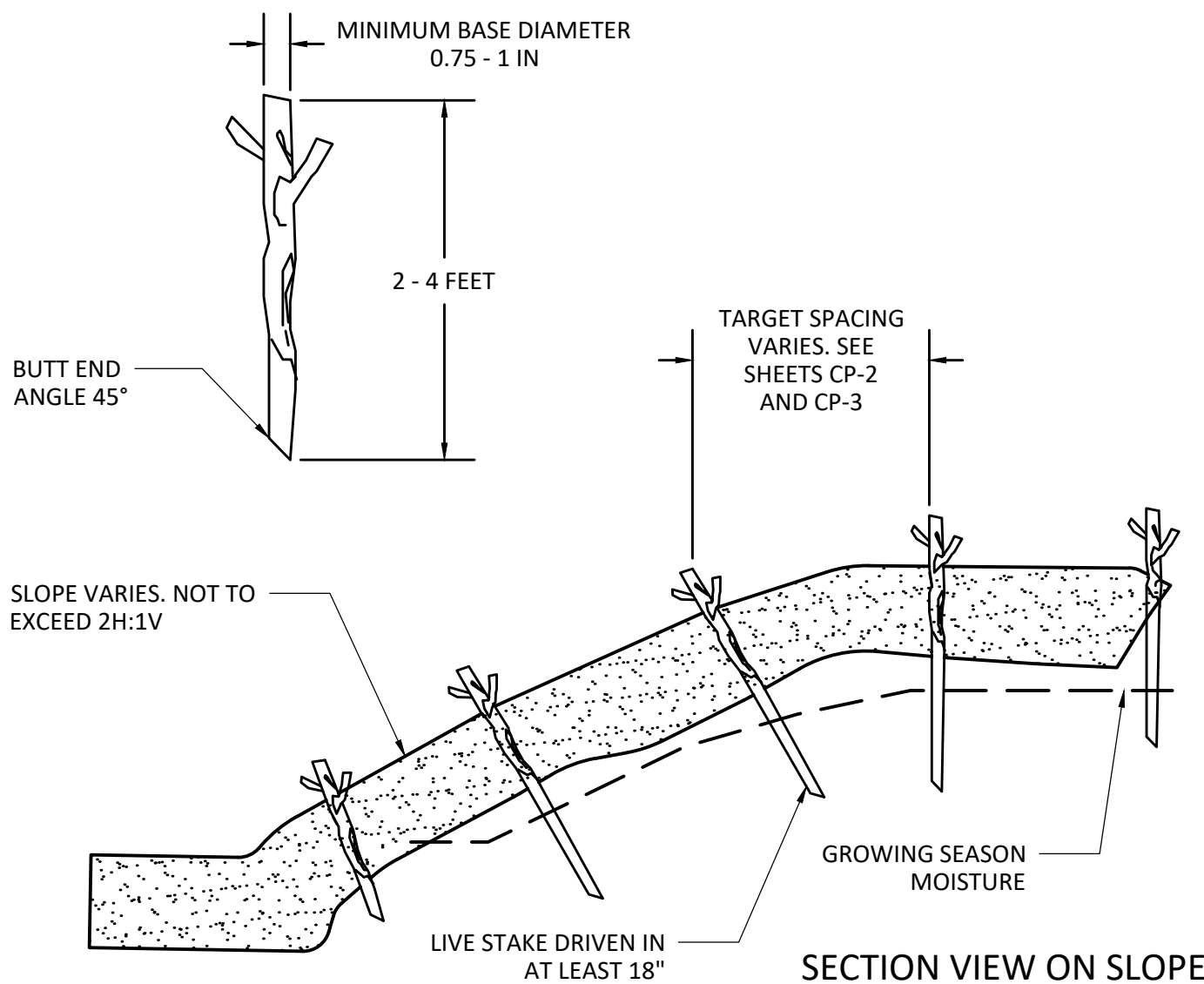
SLASH/BRUSH ROUGHNESS ELEMENT

N.T.S



LOG ROUGHNESS ELEMENT

N.T.S



WILLOW SPECIFICATIONS:

RECOMMENDED NATIVE WILLOW SPECIES:
SALIX DISCOLOR - PUSSY WILLOW
SALIX ERIOCEPHALA - MISSOURI RIVER WILLOW
SALIX LUCIDA - SHINING WILLOW

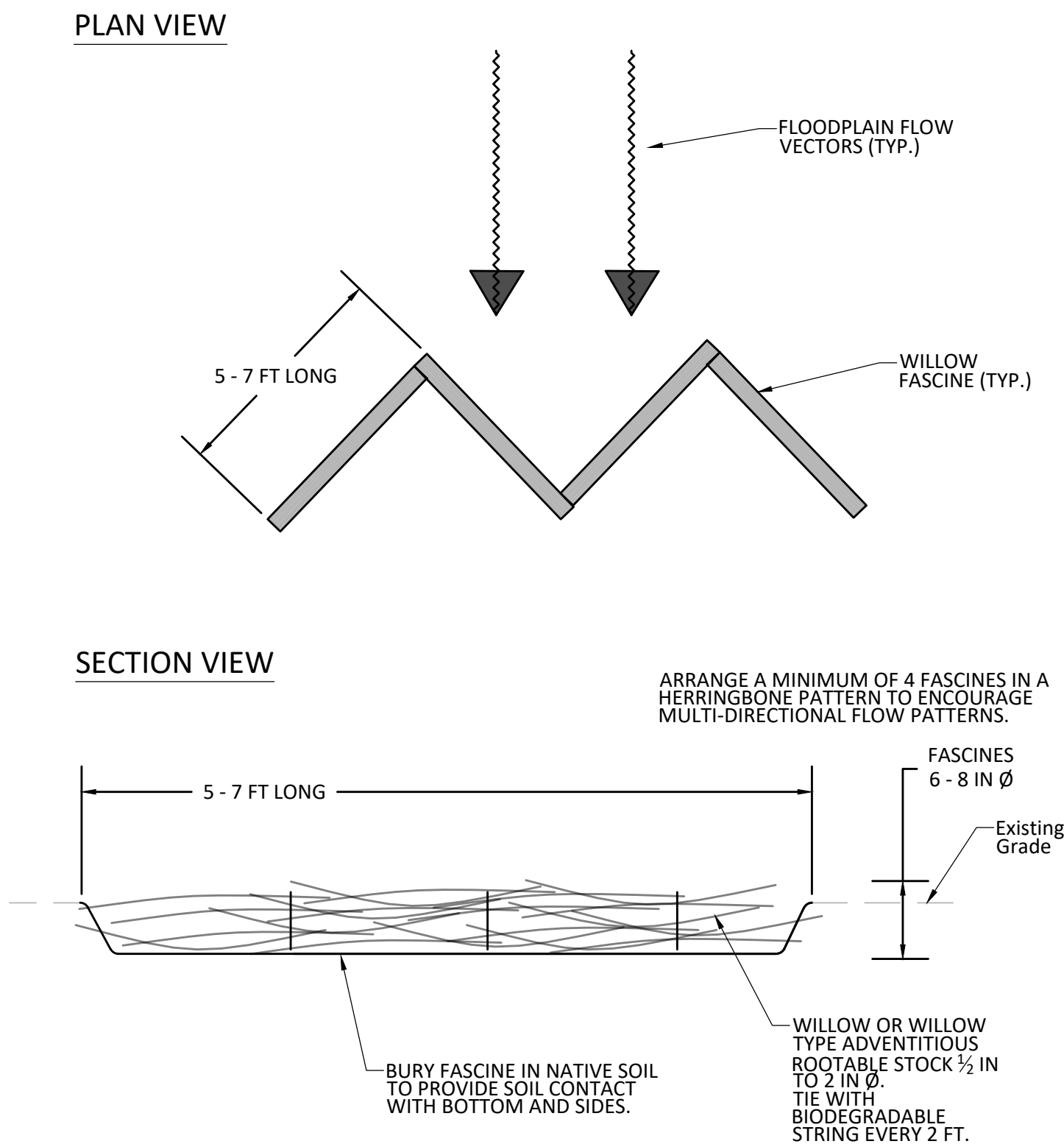
WILLOW STAKES SHALL BE HARVESTED DURING THE DORMANT PERIOD FOLLOWING FALL LEAF DROP AND BEFORE PLANT LEAF BUDDING IN SPRING. ALTERNATIVELY, WILLOW TUBELINGS WITH WELL-ESTABLISHED ROOT SYSTEMS (MINIMUM 1-YEAR GROWTH IN TUBE) MAY BE SUBSTITUTED TO PROVIDE FLEXIBILITY IN THE PLANTING SCHEDULE.

SEQUENCE:

1. ACHIEVE FINAL GRADING. SEED WITH APPROPRIATE SEED MIX AND INSTALL ROLLED EROSION CONTROL PRODUCT.
2. INSTALL WILLOW STAKES THROUGH RECP. IF NECESSARY, USE METAL BAR TO CREATE "PILOT HOLE" FOR STAKE.
3. FILL REMAINING VOIDS AROUND STAKES ON FACE OF SLOPE WITH TOPSOIL AND LIGHTLY TAMP AROUND EACH STAKE.

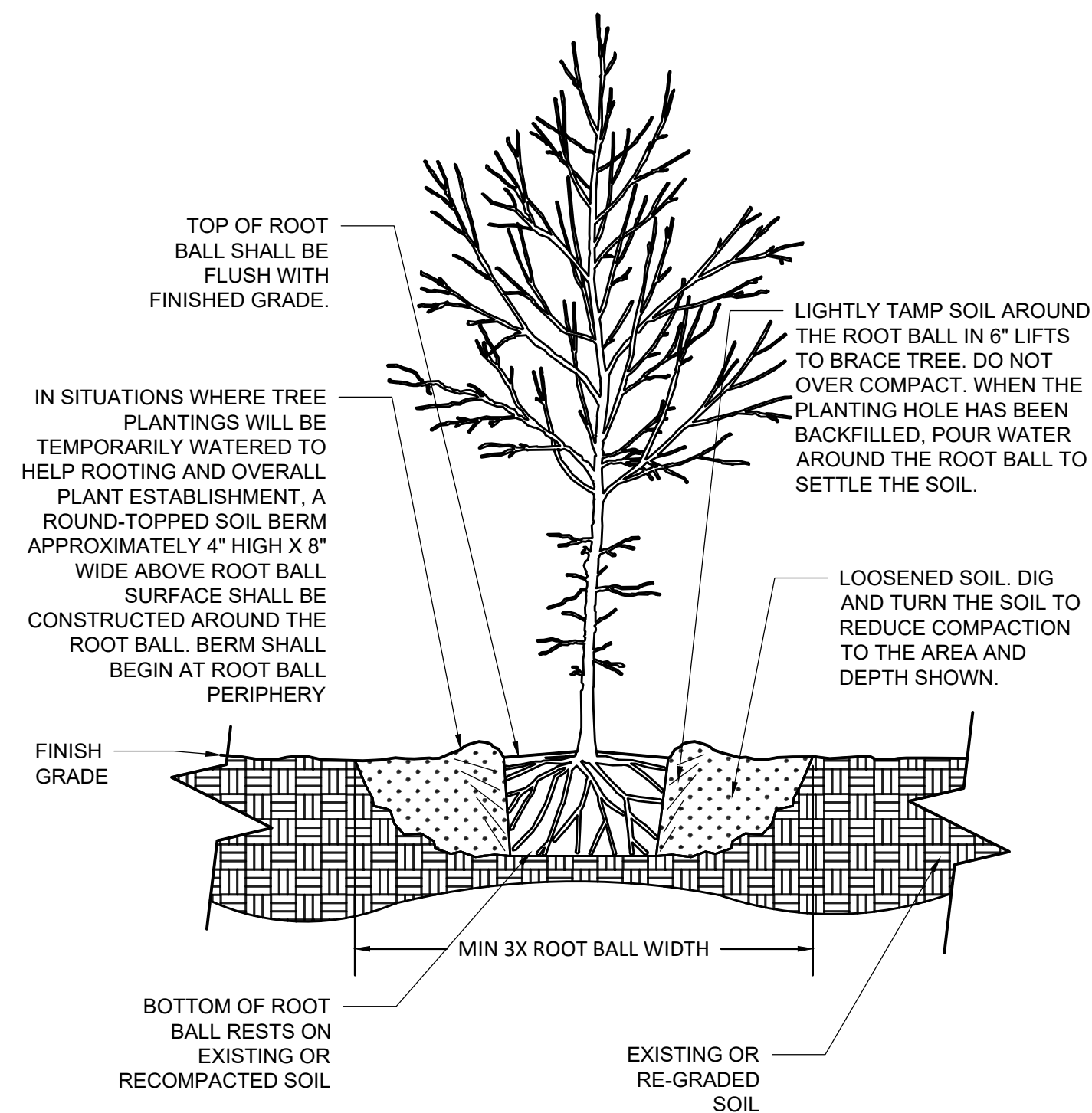
LIVE STAKE PLANTING

N.T.S



FASCINES

N.T.S



PLANTINGS

N.T.S

Fitzgerald
Environmental
Associates, LLC

164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS &
LANSING
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebsandlansing.com

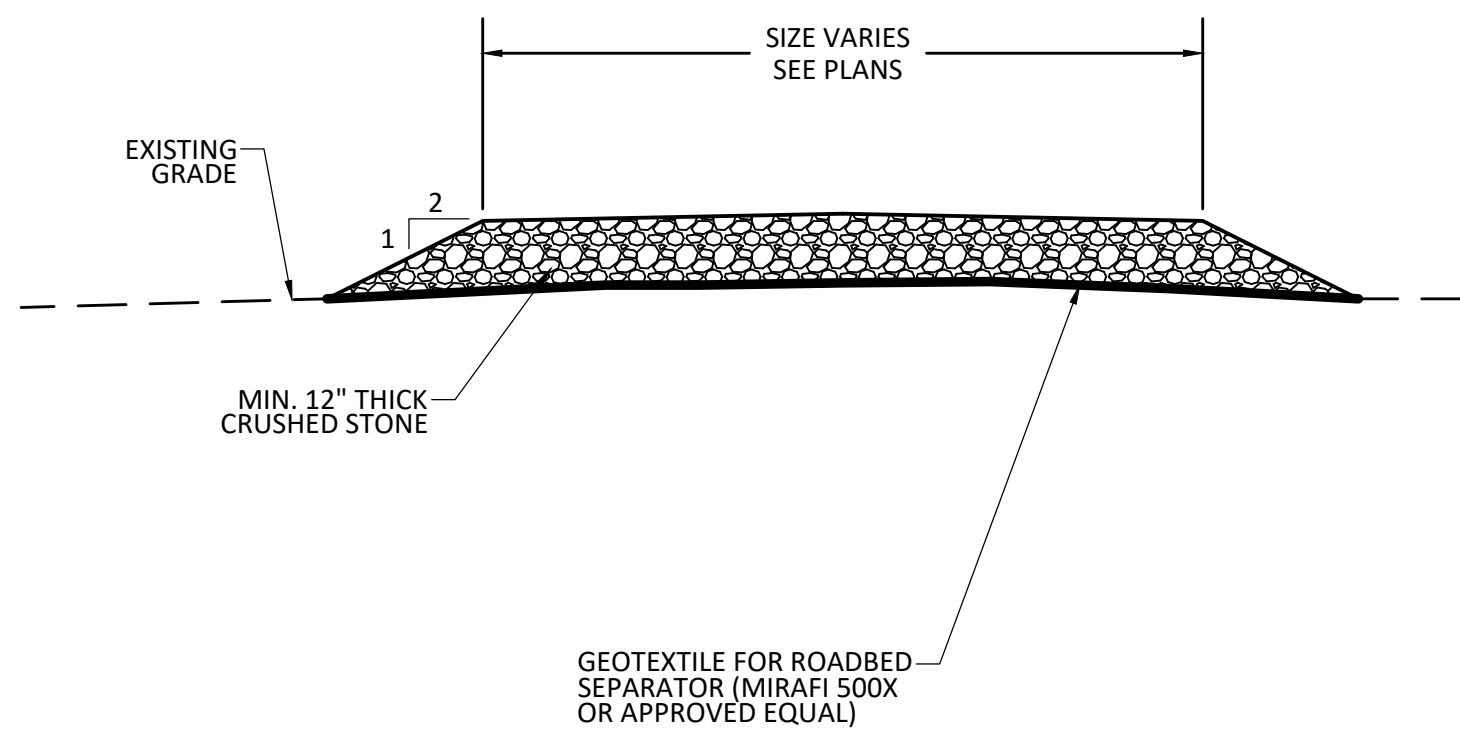
SIGNATURE		
REVISIONS		
#	DESCRIPTION	DATE

CONSTRUCTION DETAILS

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

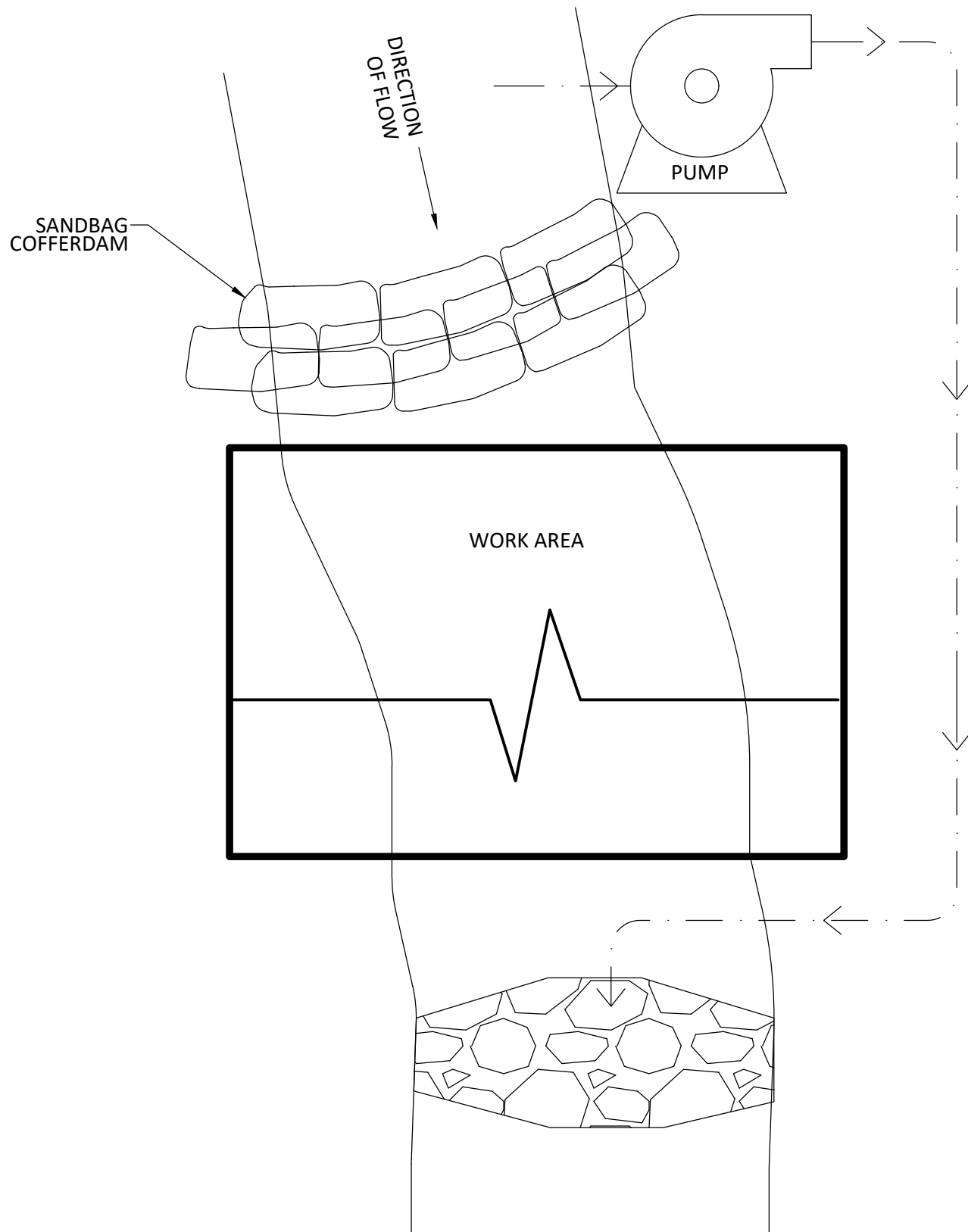
DRAWN	JMD	CHECKED	EPF
SCALE AS SHOWN			
DATE 2023-06-05			
PROJECT NO. 22024			
SHEET NO. 12 OF 17			
DT-2			
SHEET NAME			



- NOTES:
1. TEMPORARY STAGING AREA SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.
 2. 5 INCH MINUS STONE WITH MINIMAL FINES SHALL BE USED (OR APPROVED EQUAL)
 3. SILT FENCE OR APPROVED EQUAL EROSION PERIMETER CONTROL SHALL BE INSTALLED ON THE DOWN GRADIENT SIDE OF STAGING AREA (AND AS SHOWN ON PLANS) PRIOR TO INSTALLATION.
 4. IF STAGING AREA GETS EXCESSIVELY MUDDY AND STONE IS FILLED WITH SEDIMENT THAT COULD CAUSE UNSAFE OR UNWORKABLE CONDITIONS, ADDITIONAL STONE SHALL BE ADDED.
 5. UPON COMPLETION OF THE PROJECT, STONE AND UNDERLYING FABRIC SHALL BE REMOVED AND AREA SHALL BE RESTORED (SEEDED AND MULCHED) AS NECESSARY TO ACHIEVE EXISTING CONDITIONS.

STAGING AREA

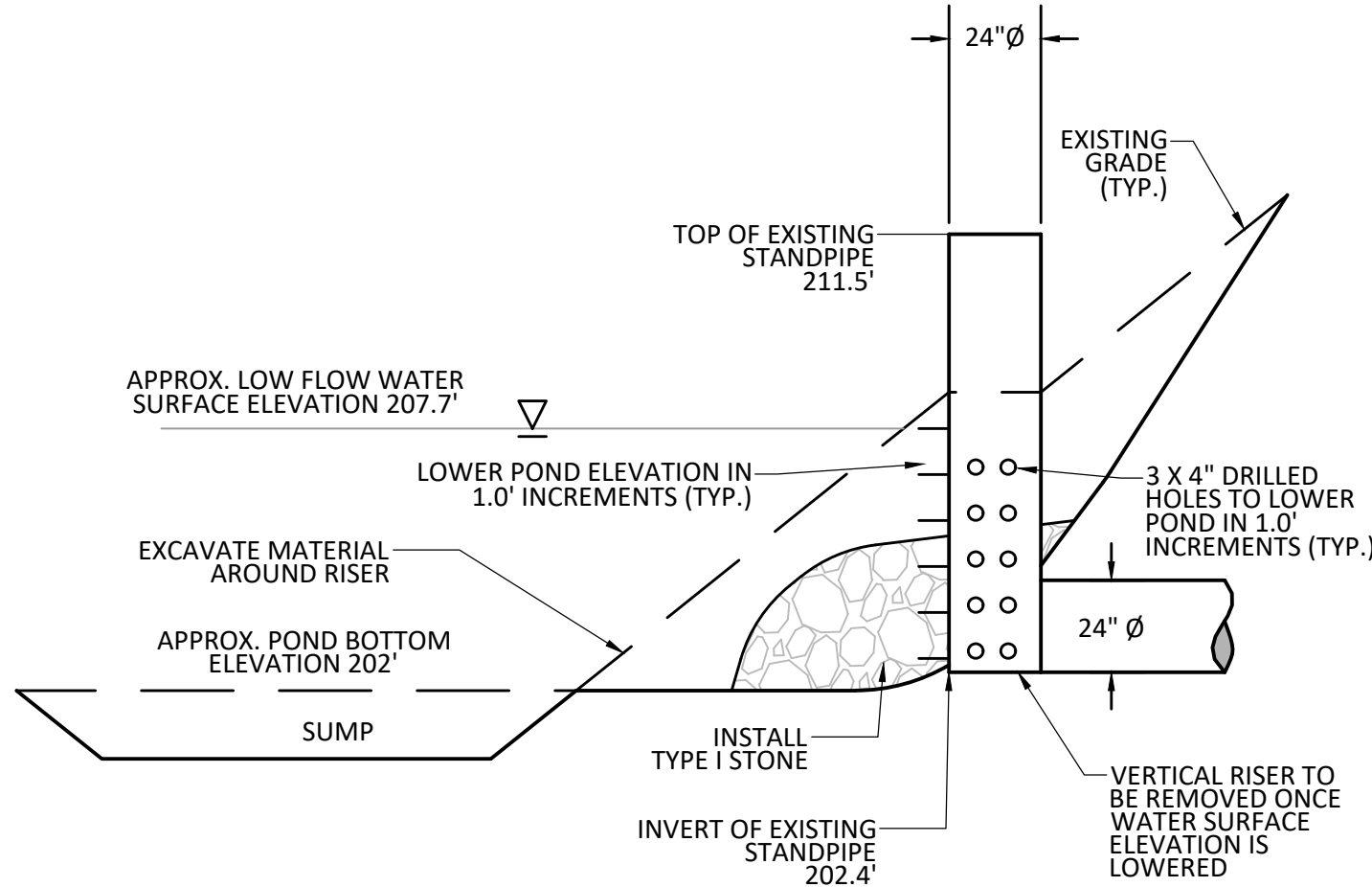
N.T.S



- NOTES:
1. THE CONTRACTOR MAY PROPOSE AN ALTERNATE METHOD FOR BYPASSING STREAM FLOWS FOR ENGINEER APPROVAL.
 2. PUMP OUTLET LOCATION SHALL BE STABILIZED WITH TYPE 1 STONE OR APPROVED EQUAL TO PROTECT AGAINST EROSION FORCES.

STREAMFLOW DIVERSION

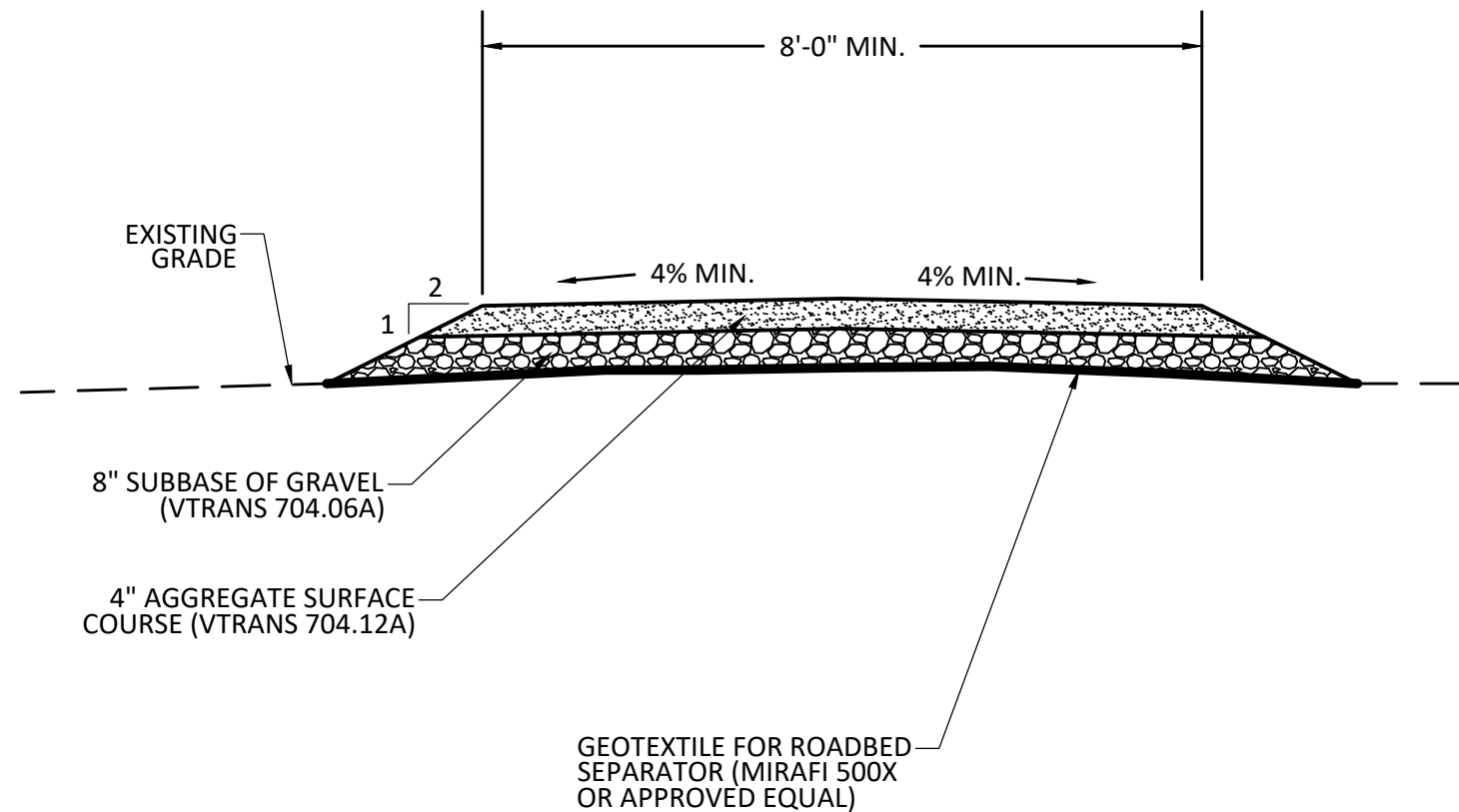
N.T.S



- NOTES:
1. THIS METHOD IS A RECOMMENDED APPROACH TO DRAWING DOWN THE POND. THE CONTRACTOR SHALL PREPARE AND SUBMIT A DETAILED CONTROL OF WATER PLAN, TO BE APPROVED BY THE ENGINEER.
 2. UTILIZE THE EXISTING VERTICAL OUTLET PIPE TO INITIALLY LOWER WATER ELEVATION TO PREVENT FLOW FROM DISCHARGING THROUGH BREACH. EXCAVATE AREA AROUND VERTICAL RISER AS NEEDED, AND DRILL PERFORATIONS IN RISER TO DROP WATER SURFACE ELEVATION UNTIL WATER NO LONGER FLOWS THROUGH THE BREACH.
 3. CONTINUE TO UTILIZE THE EXISTING VERTICAL OUTLET PIPE TO LOWER WATER ELEVATION. EXCAVATE AREA AROUND VERTICAL RISER AS NEEDED, AND UTILIZE DRILLED PERFORATIONS AND CUT VERTICAL RISER TO DESIRED INTERIM WATER SURFACE ELEVATIONS. WATER SURFACE ELEVATION TO DROP NO MORE THAN 1.0' PER DAY.
 4. INSTALL TYPE I STONE AROUND THE VERTICAL RISER FOLLOWING EXCAVATION OF MATERIAL TO STABILIZE THE BARE SOIL AND AVOID DISCHARGE OF SEDIMENT LADEN WATERS.
 5. ONCE VERTICAL RISER IS CUT DOWN TO ELEVATION OF THE INVERT OF THE 24" PIPE (202.4') ADDITIONAL PUMPING WILL BE REQUIRED TO LOWER THE WATER SURFACE ELEVATION TO THE BOTTOM OF THE POND.

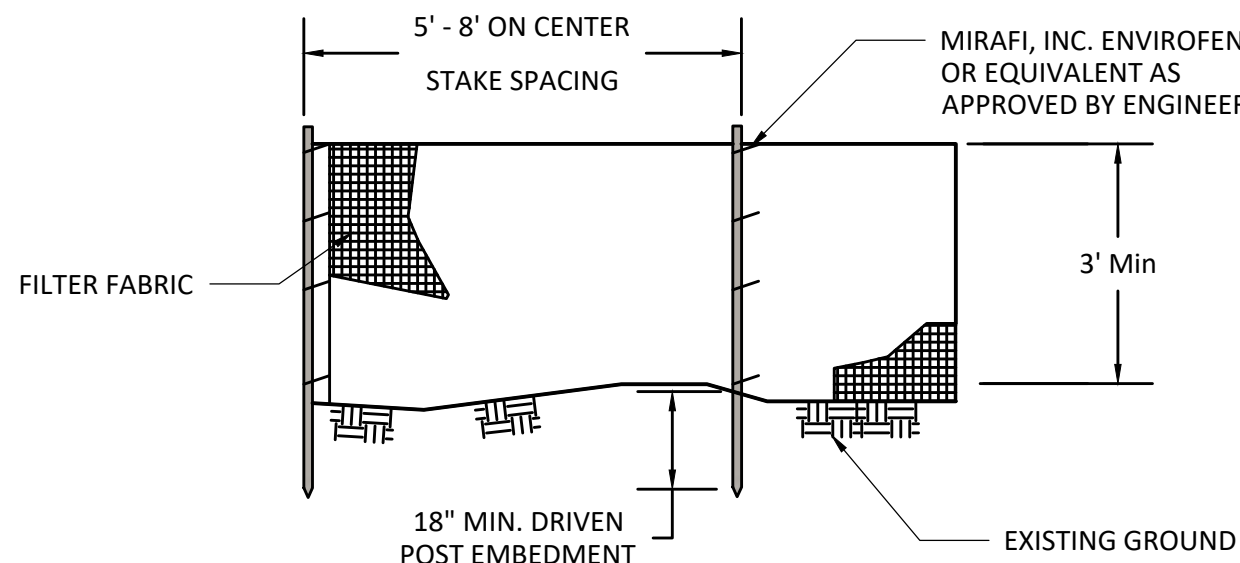
POND LOWERING

N.T.S

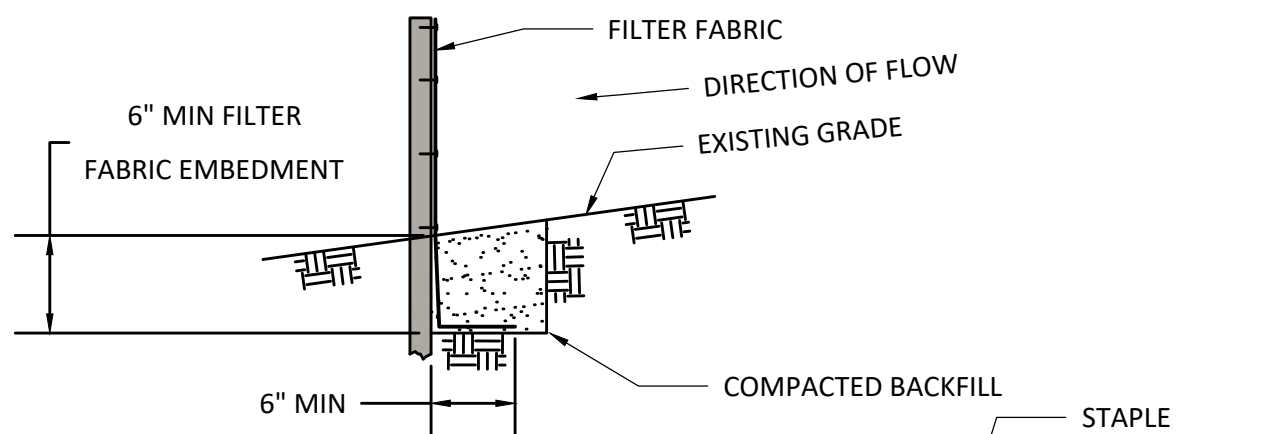


- NOTES:
1. TEMPORARY GRAVEL ACCESS ROADS TO BE EITHER COMPLETELY REMOVED (FABRIC AND STONE) AND STABILIZED WITH SEED AND MULCH TO BE RESTORED TO ORIGINAL CONDITIONS, OR LEFT IN PLACE AND TOPPED WITH 6 INCHES OF TOP SOIL AND STABILIZED WITH SEE AND MULCH. SEE SHEET CP-2 FOR LOCATIONS OF EACH.
 2. PERMANENT ACCESS ROAD (IN LOCATION OF EXISTING DAM CREST) SHALL BE LEFT IN PLACE FOLLOWING CONSTRUCTION. ROADWAY SHALL BE REBUILT OR REPAIRED FOLLOWING ALL CONSTRUCTION ACTIVITIES, AS NEEDED.

GRAVEL ACCESS ROAD



ELEVATION

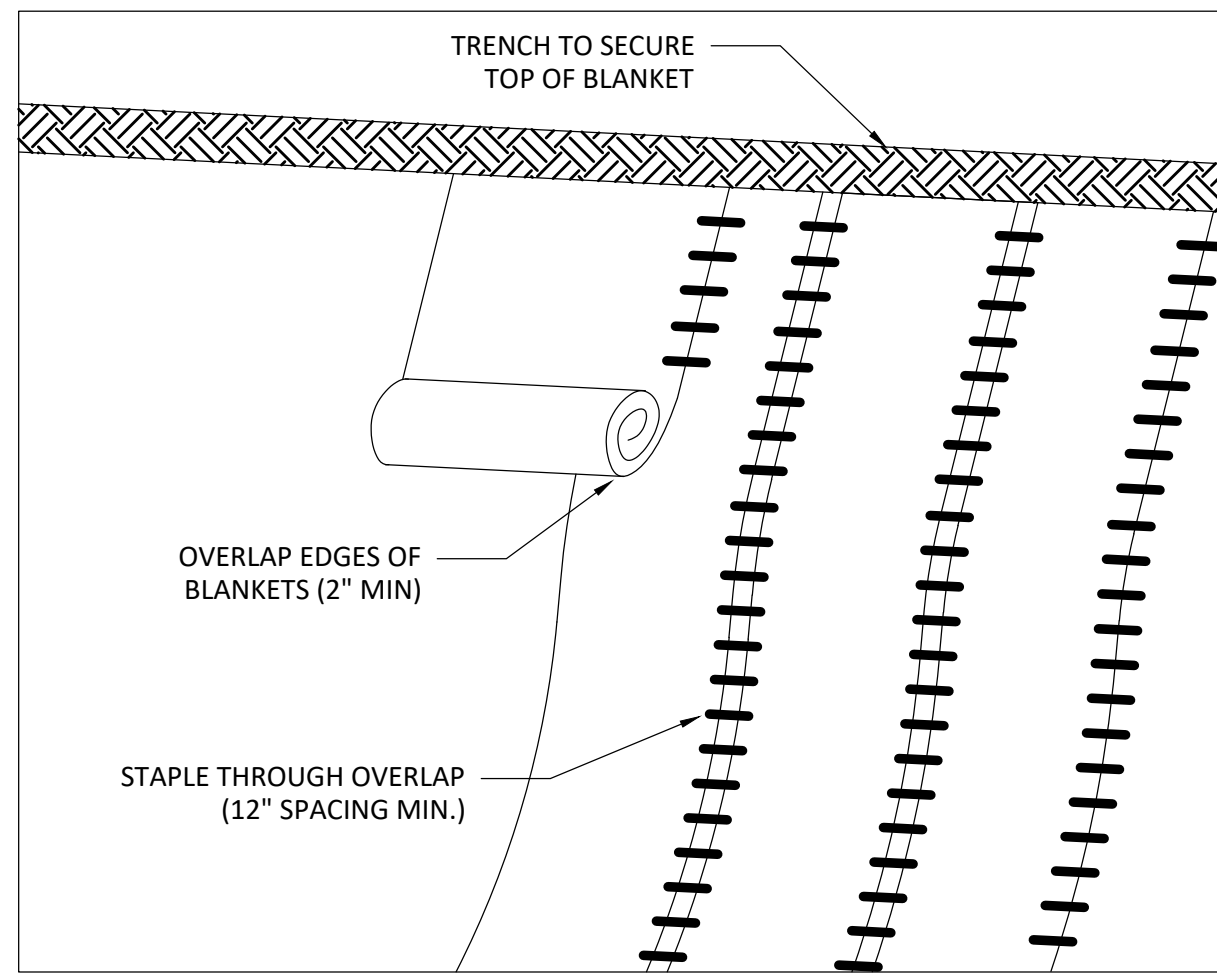


PROFILE

- NOTES:
1. TEMPORARY SILT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. FENCE SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL SITE STABILIZATION.
 2. FILTER FABRIC SHALL BE MIRAFI GEOTEXTILE OR APPROVED EQUIVALENT.
 3. FENCE POSTS SHALL BE WOODEN STAKES WITH MINIMUM DIMENSIONS OF 1.5" X 1.5".
 4. WHEN SPLICES ARE NECESSARY, PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS TOGETHER AT LEAST 180 DEGREES TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
 5. SILT MATERIAL SHALL BE REMOVED WHEN ACCUMULATION REACHES HALF OF THE FABRIC HEIGHT
 6. SILT FENCE SHALL BE REINFORCED WITH WIRE MESH WHEN WITHIN 100 FEET OF A NATURAL RESOURCE.

SILT FENCE

N.T.S



- NOTES:
1. ROLLED EROSION CONTROL PRODUCT (RECP) SHALL BE BIODEGRADABLE.
 2. PREPARE SOIL BEFORE INSTALLING RECP, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
 3. BEGIN AT TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
 4. ROLL BLANKETS DOWN THE SLOPE.
 5. OVERLAP THE EDGES OF PARALLEL BLANKETS WITH MIN. 2" OVERLAP AND STAPLE.
 6. WHEN MULTIPLE BLANKETS MUST BE SPICED DOWN THE SLOPE, PLACE BLANKETS END OVER END WITH MIN. 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.
 7. STAPLES SHALL BE 11 GAUGE WIRE AND AT LEAST 6" TALL

ROLLED EROSION CONTROL BLANKET ON SLOPES

N.T.S



Fitzgerald
Environmental
Associates, LLC

164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778

www.fitzgeraldenvironmental.com



KREBS &
LANSING
CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebandlansing.com



SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE

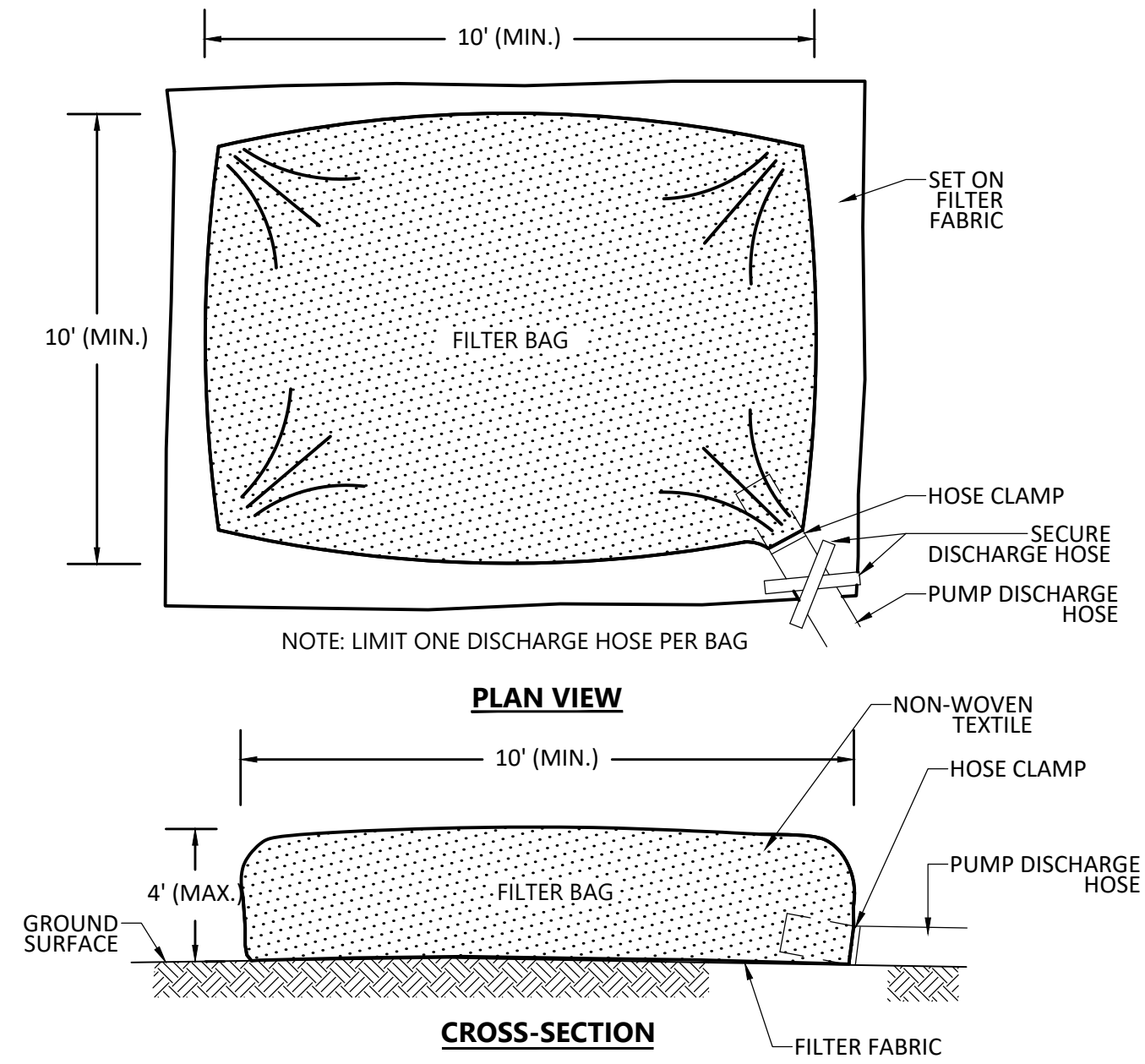
CONSTRUCTION DETAILS

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

JMD	EPF
DRAWN	CHECKED
SCALE AS SHOWN	
DATE 2023-06-05	
PROJECT NO. 22024	
SHEET NO. 13 OF 17	
DT-3	
SHEET NAME	

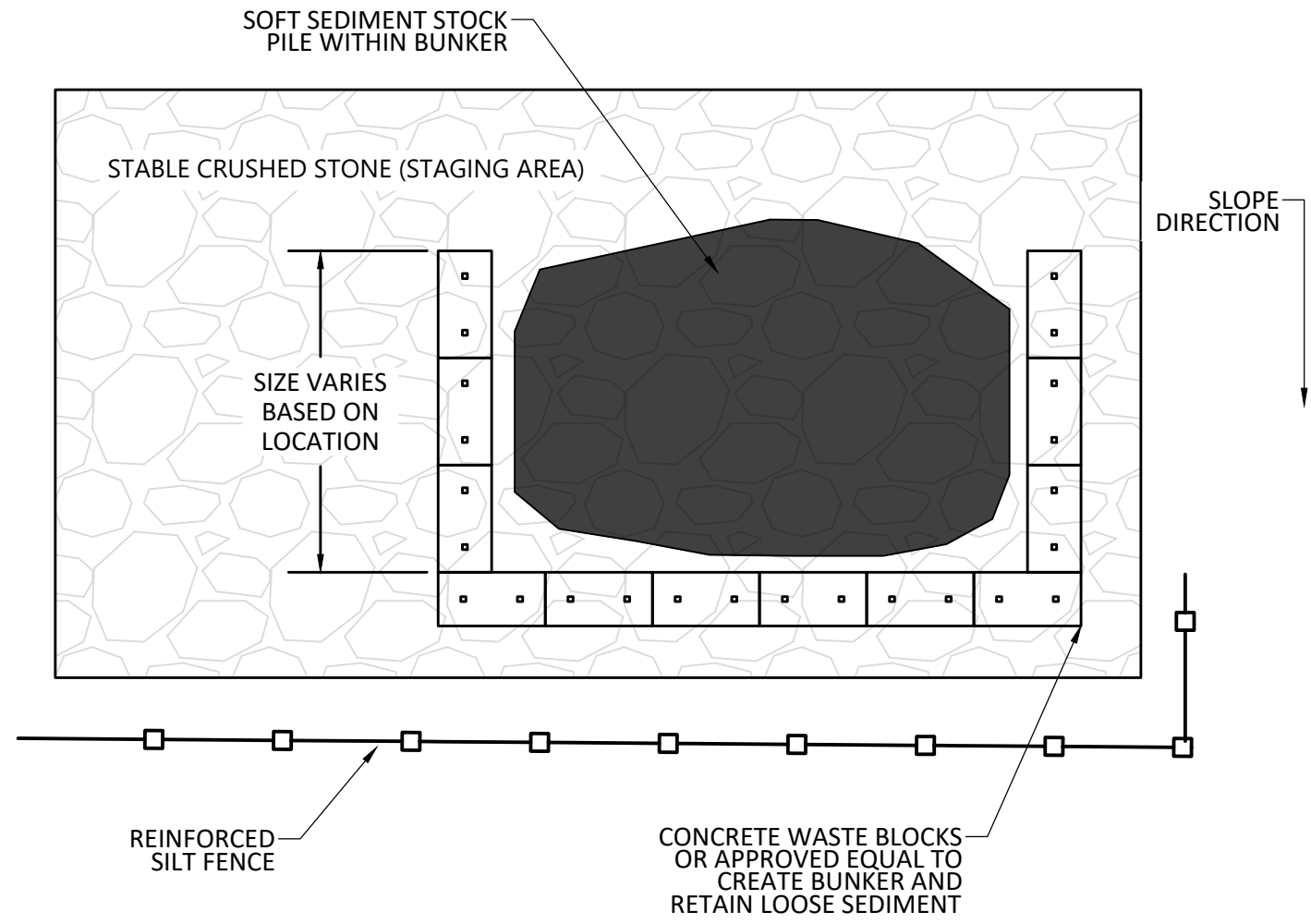


NOTES:

1. BAG TO BE USED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. FILTER BAG TO BE PLACED ON FILTER FABRIC. IF UNDERLYING SOIL IS NOT STABLE, OR SUSCEPTIBLE TO EROSION, PLACE FILTER BAG ON A BED OF CRUSHED STONE, CONSTRUCTION MATTING, OR OTHER STABILIZED SURFACE IF CONTINUOUS DEWATERING IS ANTICIPATED.
3. TO THE EXTENT POSSIBLE, THE FILTER BAG LOCATION SHALL BE PLACED GREATER THAN 50 FEET FROM A WETLAND OR STREAM.
4. IF NEEDED, DEWATERING WITHIN A WETLAND SHALL OCCUR WITH THE FILTER BAG PLACED DIRECTLY ON THE CONSTRUCTION MATTING
5. MONITOR DISCHARGE FOR TURBIDITY. REDUCE FLOW RATE AND/OR REPLACE FILTER BAG AS NEEDED TO PREVENT RELEASE OF VISIBLY TURBID WATER.
6. ADDITIONAL BEST MANAGEMENT PRACTICES MAY BE NECESSARY TO PROTECT ADJACENT NATURAL RESOURCE AREAS (I.E. DOWN GRADIENT SILT FENCE OR STAKED FIBER ROLL).

DEWATERING FILTER BAG

N.T.S



NOTES:

1. SEDIMENT BUNKER AREA SHALL BE BUILT TO RETAIN SOFT SEDIMENT REMOVED FROM POND BOTTOM TO ALLOW SEDIMENT TO DRAIN AND SHALL BE BUILT IN STAGING AREA OR OTHER STABLE SURFACE
2. CONCRETE WASTE BLOCKS (OR OTHER APPROVED METHOD) SHALL BE USED TO BUILD THE WALLS OF THE BUNKER. WASTE BLOCKS WILL BE STACK AS NEEDED TO ACHIEVE THE DESIRED VOLUME OF TEMPORARY STORAGE.
3. REINFORCED SILT FENCE SHALL BE INSTALLED DOWN GRADIENT OF THE SEDIMENT BUNKER
4. CONTRACTOR CAN PROPOSE OTHER MEANS OF DRAINING SOFT SEDIMENT, AS APPROVED BY ENGINEER.

SEDIMENT BUNKER

N.T.S

CONSTRUCTION DETAILS

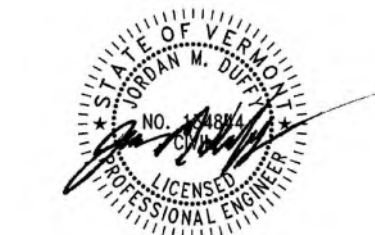
UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

DRAWN	JMD	CHECKED	EPF
SCALE	AS SHOWN		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	14 OF 17		

DT-4

SHEET NAME



SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE

FINAL PLANS

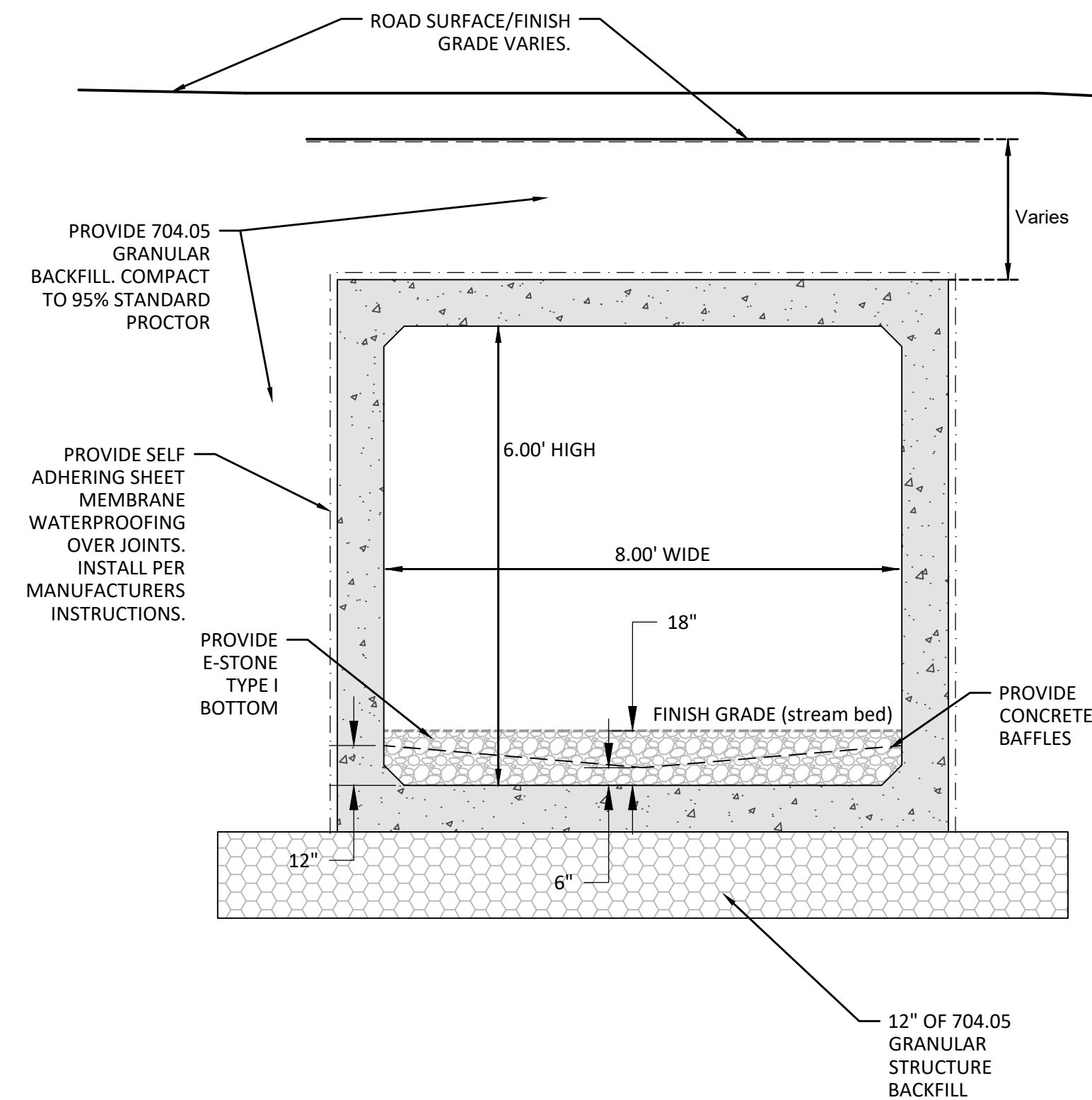


164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778

www.fitzgeraldenvironmental.com

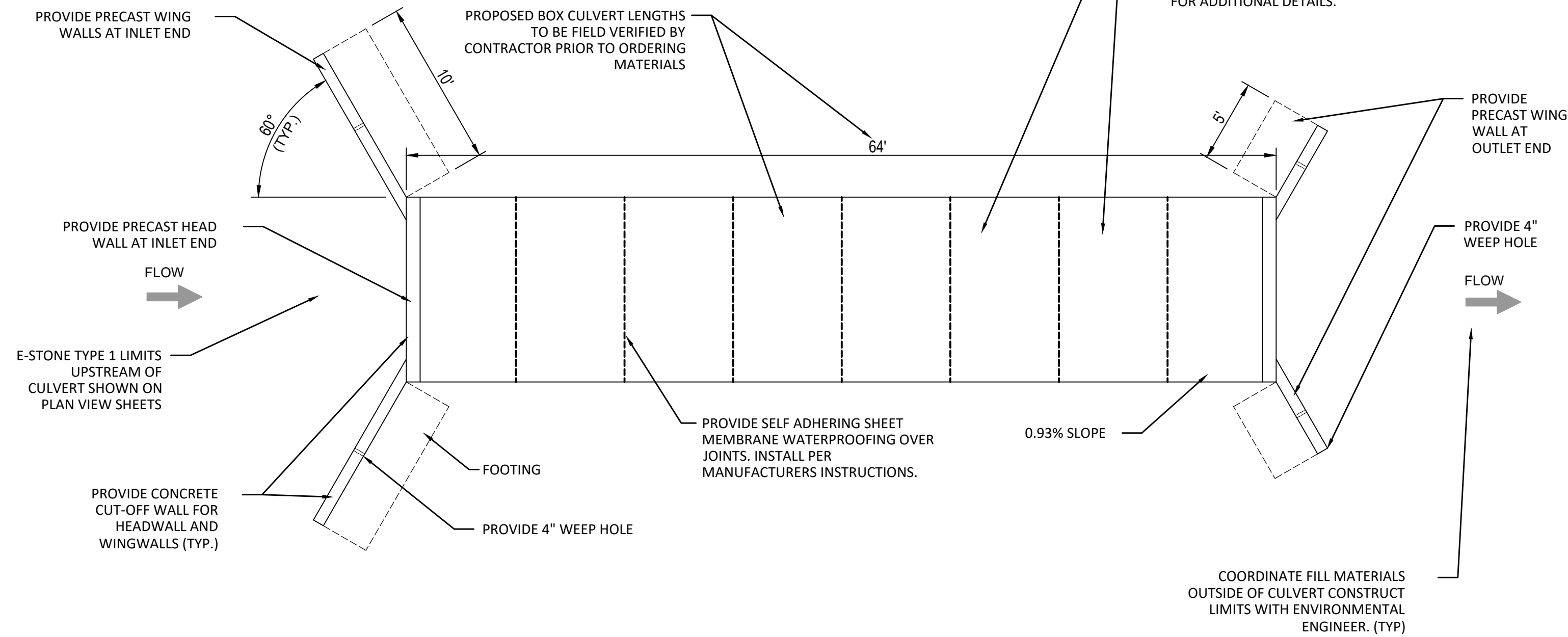


164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebandlansing.com



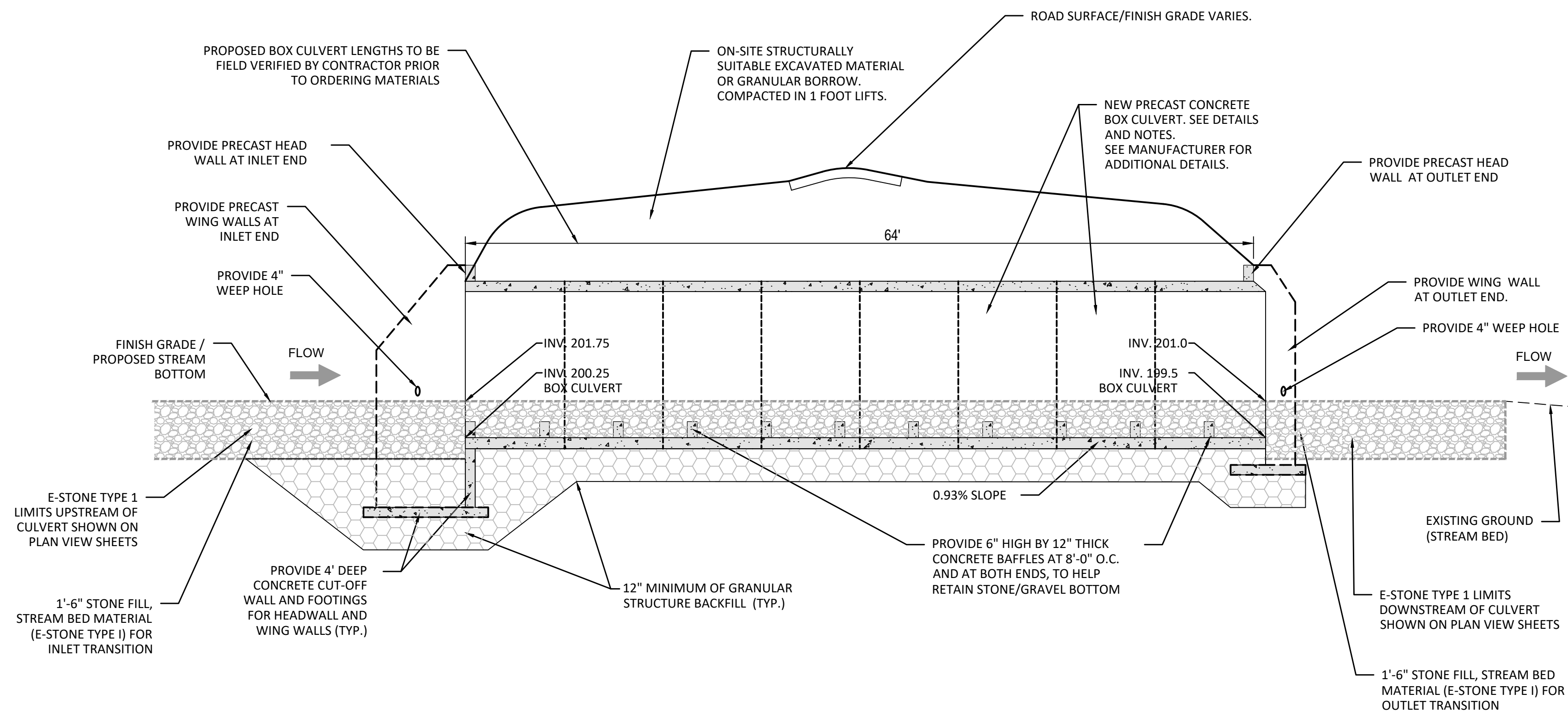
TYPICAL BOX CULVERT SECTION

N.T.S.



BOX CULVERT PLAN VIEW

N.T.S.



BOX CULVERT CROSS SECTION

N.T.S.

NOTES

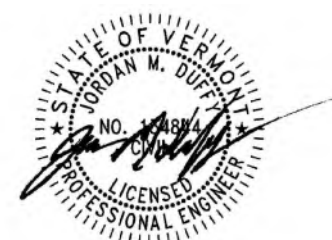
1. AGRICULTURAL ACCESS ROAD CROSSING SHALL USE A BOX CULVERT, OPENING SHALL BE MINIMUM 8' WIDE, 6' HIGH, OR APPROVED EQUAL.
2. BOX CULVERT BY CAMP, S.D. IRELAND OR EQUAL.
 - ASTM SPEC. C478 - 5,000 PSI CONCRETE
 - STEEL REINFORCED TO ASTM SPECS.
 - AASHTO H-20 WHEEL LOAD

Fitzgerald
Environmental
Associates, LLC

164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvironmental.com

KREBS &
KRANSING
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebandkransing.com



SIGNATURE

REVISIONS

#	DESCRIPTION	DATE

CONSTRUCTION DETAILS

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN	JMD	CHECKED	EPF
SCALE	AS SHOWN		
DATE	2023-06-05		
PROJECT NO.	22024		
SHEET NO.	15 OF 17		

DT-5

SHEET NAME

GENERAL CONSTRUCTION NOTES

1. THESE PLANS DO NOT CONSTITUTE A SURVEY AND SHALL NOT BE USED FOR THE TRANSFER OF LOTS.
2. 1-FOOT CONTOUR BASE MAP PROVIDED BY KREBS & LANSING CONSULTING ENGINEERS. EXISTING GRADE TOPOGRAPHIC INFORMATION PROVIDED BY KREBS AND LANSING SURVEY, UNIVERSITY OF VERMONT AND LIDAR DATA FROM VCGI. A TOPOGRAPHIC / BATHYMETRIC SURVEY WAS COMPLETED BY FITZGERALD ENVIRONMENTAL ASSOCIATES ON JULY 7, 2022 AND INTEGRATED INTO THE TOPOGRAPHIC DATA. ACTUAL ELEVATIONS MAY VARY.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE TECHNICAL SPECIFICATIONS FOR PROJECT.
4. IF A CONDITION OF THE TECHNICAL SPECIFICATIONS CANNOT BE MET, THE CONTRACTOR SHALL PROVIDE NOTIFICATION AND COORDINATE A MEETING WITH THE CLIENT/PROJECT CONSULTANT PRIOR TO CONSTRUCTION.
5. PRIOR TO ORDERING MATERIALS OR BREAKING GROUND, THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL CONTRACT DOCUMENTS INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, DESIGN PLANS, TECHNICAL SPECIFICATIONS AND OTHER RELATED DOCUMENTS TO VERIFY AND COORDINATE DIMENSIONS, LAYOUTS, PLACEMENT, AND APPLICABILITY. THE CONTRACTOR SHALL CONDUCT FIELD CHECKS TO VERIFY THE ACCURACY OF DIMENSIONS, TOPOGRAPHY, AND EXISTING CONDITIONS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CLIENT/PROJECT CONSULTANT OF ANY DISCREPANCIES BETWEEN THE INFORMATION SHOWN ON THESE PLANS AND THE CONDITIONS EXISTING IN THE FIELD. IF THE CONTRACTOR FAILS TO REPORT ANY DISCREPANCIES DISCOVERED TO THE ENGINEER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ERRORS WHICH MIGHT HAVE BEEN AVOIDED THEREBY. THE CONTRACTOR SHALL SUBMIT THE LIST AND QUANTITY OF MATERIALS TO ORDER FOR REVIEW PRIOR TO ORDERING.
6. THE LOCATION OF UTILITIES SHOWN ON THESE PLANS ARE NOT BASED ON "DIG SAFE" MARKINGS AND DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATED UPON OR ADJACENT TO THE SURVEYED PREMISES. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONFLICTS. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL CALL "DIG SAFE".
7. THE CONTRACTOR SHALL REPAIR/RESTORE ALL DISTURBED AREAS (ON OR OFF THE SITE) AS A DIRECT OR INDIRECT RESULT OF THE CONSTRUCTION TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF CONSTRUCTION.
8. IN ADDITION TO THE REQUIREMENTS SET IN THESE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL COMPLETE THE WORK IN ACCORDANCE WITH ALL PERMIT CONDITIONS AND ANY LOCAL PUBLIC WORKS STANDARDS, AS NECESSARY.
9. ANY DEWATERING NECESSARY FOR THE COMPLETION OF THE SITEWORK SHALL BE CONSIDERED AS PART OF THE CONTRACT AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.


CONSTRUCTION SPECIFICATIONS

1. SILT FENCE, STAKED FIBER ROLL, OR OTHER APPROVED SEDIMENT CONTROL MEASURE SHALL BE INSTALLED AT THE EDGE OF THE PROPOSED GRADING AND STAGING AREAS (AS SHOWN IN THE PLANS) PRIOR TO DISTURBANCE.
2. LIMITS OF DISTURBANCE SHALL BE CLEARLY DEFINED.
3. ADDITIONAL EROSION CONTROL MEASURES TO BE IMPLEMENTED AS NEEDED UNDER THE DIRECTION OF THE ENGINEER.
4. NO TREES WITH A DIAMETER GREATER THAN 3" SHALL BE CUT WITHOUT PRIOR APPROVAL.
5. ALL AREAS EXPOSED DURING CONSTRUCTION SHALL BE PROTECTED IN ACCORDANCE WITH THE STANDARDS PUBLISHED IN THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S *LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL*
6. NO STREAM IMPACTS SHALL OCCUR UP OR DOWNSTREAM OF THE WORK SHOWN IN THE PLANS.
7. THE RECOMMENDED CONSTRUCTION SEQUENCE DEFINED ON SHEET CP-1 SHALL BE FOLLOWED BY THE CONTRACTOR, UNLESS ANOTHER SEQUENCE AND WATER CONTROL PLAN IS DETAILED, SUBMITTED, AND APPROVED BY THE ENGINEER.
8. EXACT LOCATIONS OF GRADE CONTROL STRUCTURES, STREAM GEOMETRIES, FLOODPLAIN ROUGHNESS ELEMENTS, AND PLANTINGS SHALL BE COORDINATED BETWEEN THE CONTRACTOR AND THE ENGINEER DURING THE SITE LAYOUT.
9. CONTRACTOR SHALL SUBMIT SHOP DRAWING FOR ALL CONSTRUCTION ITEMS PRIOR TO PURCHASING. ENGINEER SHALL REVIEW SHOP DRAWINGS IN A TIMELY MANNER AND RESPOND AS APPROVED, APPROVED AS NOTED, OR REVIEW AND RESUBMIT.
10. EXCAVATION
 - 10.1. THE CONTRACTOR SHALL BYPASS ANY STREAM FLOW PAST THE AREA TO BE REGRADED PRIOR TO ANY EARTH DISTURBANCE.
 - 10.2. EXCAVATION AND CONSTRUCTION SHALL OCCUR UNDER DRY OR NEARLY DRY CONDITIONS, AS FEASIBLE. WORK SHALL CEASE DURING STORM EVENTS THAT CREATE ELEVATED RUN OFF CONDITIONS TO PREVENT SEDIMENT DISCHARGE OFF OF THE PROJECT SITE.
 - 10.3. THE CONTRACTOR SHALL PROTECT EXISTING STRUCTURES AND UTILITIES FROM DAMAGE AND EXCESSIVE SETTLEMENT DURING EXCAVATION, BACKFILLING, COMPACTION, AND DEWATERING ACTIVITIES. THE CONTRACTOR SHALL REPAIR ANY SUCH DAMAGE AT THEIR OWN EXPENSE.
 - 10.4. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES SHALL BE INSTALLED PRIOR TO EARTH DISTURBANCE.
 - 10.5. SOFT SEDIMENT REMOVAL FROM THE POND BOTTOM HAS AN ESTIMATED VOLUME OF 1570 CY OF FILL TO BE REMOVED. THIS MATERIAL SHALL BE TEMPORARILY STOCKPILED AND ALLOWED TO DRAIN PRIOR TO REUSING IT ALONG WITH ONSITE GRANULAR MATERIAL TO ACHIEVE THE FINAL FLOODPLAIN ELEVATIONS.
 - 10.6. THE OVERALL PROJECT HAS AN EXCESS OF 1255 CY OF CUT. EXCESS MATERIAL SHALL BE HAULED OFF SITE AND PROPERLY DISPOSED, OR COORDINATED WITH THE OWNER TO DISPOSE OF ONSITE AT DESIRED LOCATIONS AND STABILIZED UPON DISPOSAL.


MATERIAL SPECIFICATIONS

1. STONE AND SOIL
 - 1.1. TYPE I STONE - THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1-12 INCHES, AND THE MEDIAN PARTICLE DIAMETER (D50) OF THE STONE SHALL BE 4 INCHES.
 - 1.2. E-STONE TYPE I
 - 1.2.1. MATERIAL SHALL MEET SPECIFICATIONS OUTLINED IN THE CURRENT VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 706.04(D).
 - 1.2.2. STONE FOR STONE FILL SHALL BE APPROVED, HARD, BLASTED, ANGULAR ROCK OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS). ONLY LIMESTONE, DOLOMITE, OR QUARTZITE SHALL BE ALLOWED.
 - 1.2.3. THE LEAST DIMENSION OF STONE SHALL BE GREATER THAN 33% OF THE LONGEST DIMENSION. STONE FILL SHALL BE REASONABLY WELL GRADED FROM SMALLEST TO THE MAXIMUM SIZE STONE SPECIFIED SO AS TO FORM A COMPACT MASS WHEN IN PLACE.
 - 1.2.4. THE LONGEST DIMENSION OF THE STONE SHALL BE AT LEAST 18 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE AT LEAST A DIMENSION OF 12 INCHES, AND AT LEAST 25 PERCENT OF THE PARTICLES SHALL HAVE A MAXIMUM DIMENSION OF 2 INCHES AND BE WELL GRADED
 - 1.2.5. THE STREAMBED STONE SHALL BE HARD, BLASTED, ANGULAR ROCK. SIMILAR SIZED RIVER SEDIMENT IS AN ACCEPTABLE ALTERNATIVE AS IS A MIXTURE OF ANGULAR ROCK AND RIVER ROCK.
 - 1.2.6. ADD SAND BORROW AS NEEDED TO SEAL THE BED AND PREVENT SUBSURFACE FLOW
 - 1.2.7. THERE SHALL BE NO SUBSURFACE FLOW UPON FINAL INSPECTION

- 1.3. TYPE II STONE FILL (VTA02 706.04B)
 - 1.3.1. TYPE II STONE FILL SHALL BE ANGULAR BLAST ROCK WITH THE LONG DIMENSIONS OF THE ROCK RANGING IN LENGTH FROM 2" TO 36". AT LEAST 50% OF THE VOLUME SHALL HAVE A LEAST DIMENSION (THICKNESS) OF 12".
- 1.4. GRANULAR BACKFILL
 - 1.4.1. MATERIAL SHALL MEET SPECIFICATIONS OUTLINED IN THE CURRENT VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 704.05, CRUSHED GRAVEL FOR SUBBASE.
 - 1.4.2. THE CRUSHED GRAVEL SHALL MEET THE GRADATION SPECIFICATIONS IN TABLE 704.05B FOR FINE GRADED (2" MINUS).
- 1.5. GRANULAR BORROW
 - 1.5.1. MATERIAL SHALL MEET SPECIFICATIONS OUTLINED IN THE CURRENT VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 704.05, CRUSHED GRAVEL FOR SUBBASE.
 - 1.5.2. THE CRUSHED GRAVEL SHALL MEET THE GRADATION SPECIFICATIONS IN TABLE 704.05A FOR COARSE GRADED (4" MINUS).
- 1.6. STREAM BED GRAVEL
 - 1.6.1. ADDITIONAL STREAM BED GRAVEL SHALL BE INSTALLED, AS NEEDED, BASED ON THE MATERIAL OF THE UNDERLYING SUBSTRATE BELOW THE SOFT SEDIMENT IN THE POND BOTTOM. IF GRANULAR MATERIAL IS ENCOUNTERED, THAT MATERIAL CAN BE USED TO SHAPE THE CHANNEL. IF NOT, 12 INCHES OF STREAM BED GRAVEL SHALL BE ADDED TO THE CHANNEL SHAPING. STREAM BED GRAVEL GRADATION CAN BE FOUND ON SHEET D-1
- 1.7. FLOODPLAIN FILL
 - 1.7.1. SOFT SEDIMENT REMOVED FROM THE POND BOTTOM SHALL BE STOCKPILED AND ALLOWED TO DRAIN. TO ACHIEVE THE FINAL FLOODPLAIN ELEVATIONS AND GRADING, A COMBINATION OF ONSITE GRANULAR FILL FROM THE DAM EMBANKMENT AND FINE SOFT SEDIMENT (AFTER DRYING) SHALL BE USED.
2. TIMBER AND ROCK WEIR GRADE CONTROLS
 - 2.1. TIMBER LOGS SHALL BE 12-16" DBH, APPROXIMATELY 15- 25 FEET LONG AND INCLUDE AN INTACT ROOT WAD.
 - 2.2. STONES USED IN THE TIMBER GRADE CONTROL AND THE ROCK WEIR GRADE CONTROL STRUCTURES SHALL HAVE A MINIMUM DIAMETER OF 24" AND A MINIMUM LENGTH OF 36" STONES SHALL BE APPROVED, ROUGH, UNHEWN STONE. THE STONES SHALL BE HARD, SOUND, AND RESISTANT TO THE ACTION OF WATER AND WEATHERING. THEY SHALL BE OF A ROCK TYPE OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS).
3. ROUGHNESS ELEMENTS
 - 3.1. LOGS SHALL BE FROM TRESS WITH MINIMUM 12" DBH AND PREFERABLY INCLUDE AN INTACT ROOT WAD. LENGTHS SHALL VARY BETWEEN 8-12 FEET.
 - 3.2. FASCINES SHALL BE ASSEMBLED FROM WILLOW OR WILLOW TYPE ADVENTITIOUS ROOTABLE STOCK $\frac{1}{2}$ TO 2 INCH DIAMETER, 2 TO 7 FEET LONG. MATERIALS SHOULD BE FROM AN AREA WITH SIMILAR SOIL AND LANDSCAPE POSITION AS THE PROJECT AREA AND BE FREE OF DISEASE, ROT, OR INSECT INFESTATION. STOCK BRANCHES SHALL BE ASSEMBLED IN BUNDLES APPROXIMATELY 6-12 INCHES IN DIAMETER AND 5-7 FEET LONG, TIED TOGETHER WITH BIODEGRADABLE STRING EVERY 2 FEET.
 - 3.3. SLASH/BRUSH AS ROUGHNESS ELEMENTS SHALL CONSIST OF SHORT LOGS (<12 FET), TREE TOPS, AND BRANCHES. DIAMETER OF LOGS / BRANCHES SHALL VARY FROM 3-6 INCHES.
4. TRESS AND SHRUBS
 - 4.1. TREES AND SHRUBS SHALL BE HEALTHY, AVAILABLE LOCALLY, AND REASONABLY FREE OF DIE-BACK, ROT, AND DISEASE. AT THE TIME OF PLANTING ALL PLANTS, WITH THE EXCEPTION OF LIVE STAKES, SHALL HAVE A ROOT SYSTEM, STEM AND BRANCH FORM THAT WILL NOT RESTRICT NORMAL GROWTH, STABILITY AND HEALTH FOR THE EXPECTED LIFE OF THE PLANT.
 - 4.2. SPECIES SHALL BE NATIVE AND BE COMPATIBLE WITH PLANT COMMUNITIES KNOW TO GROW IN AREAS WITH SIMILAR CLIMATE, SOILS, HYDROLOGY, AND LANDSCAPE POSITIONS. UPLAND AREAS SHALL BE DOMINATED BY PLANTS WITH HYDROLOGY INDICATOR STATUS OF FAC-UPL AND WETLAND AREAS BY PLANT WITH INDICATOR STATUS OF OBL-FAC.
5. GRASS SEED
 - 5.1. SEED SHALL BE FURNISHED IN NEW, CLEAN, SEALED, AND PROPERLY LABELED CONTAINERS. SEED WHICH HAS BECOME WET, MOLDY OR OTHERWISE DAMAGED SHALL NOT BE ACCEPTABLE.
 - 5.2. DISTURBED AREAS SHALL BE SEEDED WITH A CONSERVATION MIX OR WETLAND SEED MIX (AS SHOW ON PLANS) APPROVED BY THE ENGINEER PRIOR TO USE.
 - 5.3. IF SEEDING IS TO OCCUR AFTER OCTOBER 15TH, ADDITIONAL WINTER RYE SHALL BE USED TO HELP ESTABLISH VEGETATION AND STABILIZATION. ADDITIONAL SPRING SEEDING MAY BE REQUIRED.
6. MULCH AND EROSION CONTROL
 - 6.1. STRAW MULCH SHALL CONSIST OF MOWED, PROPERLY CURED GRASS AND LEGUMES REASONABLY FREE OF WEEDS, TWIGS, DEBRIS, OR OTHER OBJECTIONABLE MATERIAL. MULCH AT A RATE OF 2 TONS PER ACRE.
 - 6.2. AN APPROPRIATE BIODEGRADABLE EROSION CONTROL MATTING SHALL BE USED (E.G., NORTH AMERICAN GREEN S150BN OR EQUIVALENT WITH LOOSE-WEAVE NETTING) ON SLOPES EXCEEDING 3H:1V.
 - 6.3. SILT FENCE - FENCE INSTALLED FOR SILT CONTROL SHALL BE A PREASSEMBLED WOOD POST AND FILTER FABRIC SYSTEM. FENCE SHALL BE MIRAFI, INC. ENVIROFENCE OR EQUIVALENT AS APPROVED BY DESIGNER/ENGINEER. WIDTH OF FABRIC SHALL BE 3' MINIMUM. POSTS ARE TO BE HARDWOOD OR METAL, 4.5' LONG AND SPACED 5' TO 8' ON CENTER. SILT FENCE SHALL BE KEYED INTO GROUND. SILT FENCE (OR APPROVED EQUAL) SHALL BE INSTALLED AS SHOWN ON THE PLANS PRIOR TO EARTH DISTURBANCE
7. STABILIZATION OF DISTURBED SOILS
 - 7.1. TEMPORARY STABILIZATION OF DISTURBED SOILS DURING THE PERIOD OF APRIL 15 TO OCTOBER 15 SHALL BE COMPLETED WITHIN 14 DAYS OF INITIAL DISTURBANCE. AFTER THE INITIAL DISTURBANCE PERIOD, TEMPORARY STABILIZATION SHALL BE PERFORMED ON A DAILY BASIS, EXCEPT IF WORK IS TO CONTINUE IN THE DISTURBED AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO FORECAST OF PRECIPITATION FOR THE NEXT 24 HOURS, OR IF THE WORK IS OCCURRING IN A SELF-CONTAINED EXCAVATION WITH A DEPTH OF 2 FEET OR GREATER.
 - 7.2. SEED AND STRAW MULCH DISTURBED AREAS IMMEDIATELY AFTER THE COMPLETION OF RE-GRADING AND WORK ACTIVITIES. PREPARE SEEDBED AND UTILIZE SOIL AMENDMENT AS NEEDED. TRACK MULCH IN AS NEEDED TO PREVENT REMOVAL BY WIND.




**Fitzgerald
Environmental
Associates, LLC**



**KREBS &
LANSING**
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 879-6375
www.krebsandlansing.com

164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778
www.fitzgeraldenvrionmental.com



SIGNATURE

REVISONS

#	DESCRIPTION	DATE

CONSTRUCTION NOTES

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN JMD SCALE	EPF CHECKED
---------------------------	----------------

N/A

DATE	2023-06-05
PROJECT NO.	22024
SHEET NO.	16 OF 17

N-1

SHEET NAME

RECOMMENDED SEQUENCE:

1. INSTALL PROJECT DEMARCATION FENCING AND EPSC MEASURES.
2. REMOVE TREES FROM AREAS OF REGRADING AT DAM EMBANKMENT AND POND EDGES.
3. UTILIZE THE EXISTING VERTICAL OUTLET PIPE TO LOWER THE WATER ELEVATION. EXCAVATE AREA AROUND VERTICAL RISER AND CUT VERTICAL RISER TO ELEVATION 207' TO INITIALLY ACTIVATE DISCHARGE THROUGH THE 24” OUTLET OPPOSED TO THE DAM BREACH.
4. INCREMENTALLY DRILL HOLES IN THE 24” RISER AND CUT PIPE TO LOWER THE WATER SURFACE ELEVATION. WATER SURFACE ELEVATION TO DROP NO MORE THAN 1' PER DAY.
5. ONCE THE WATER SURFACE ELEVATION IS LOW ENOUGH THAT THE BREACH IS NO LONGER ACTIVE, AND ALL FLOW IS LEAVING THROUGH THE EXISTING 24” OUTLET (THROUGH CUTTING OF THE VERTICAL PIPE OR PUMPING INTO THE VERTICAL PIPE) WORK MAY BEGIN TO FILL THE EXISTING BREACH.
6. BEGIN EARTH WORK ON DAM BY LOWERING THE ELEVATION ABOVE THE CROSSING STRUCTURE AND FILLING THE BREACH. ACCESS TO THE DAM EMBANKMENT THROUGH THE EAST SIDE OF THE PROPERTY MAY BE NEEDED TO BEGIN THE EMBANKMENT REGRADING.
7. ONCE EQUIPMENT CAN ACCESS THE EMBANKMENT (VIA THE BREACH OR FROM THE EAST) INSTALL THE TEMPORARY ACCESS ROAD TO THE DOWNSTREAM WORK AREA.
8. INSTALL DOWNSTREAM CHECK DAMS TO CATCH POTENTIAL SUSPENDED SEDIMENT DURING THE DRAW DOWN PROCESS.
9. ONCE THE VERTICAL RISER IS CUT DOWN TO ELEVATION OF THE INVERT OF THE 24" PIPE (202.4') ADDITIONAL PUMPING WILL BE REQUIRED TO LOWER THE WATER SURFACE ELEVATION TO THE BOTTOM OF THE POND.
10. CREATE A TEMPORARY PILOT CHANNEL CONNECTING THE EASTERN TRIBUTARY TO A PROPOSED SUMP AREA IN FRONT OF THE 24” OUTLET TO CONVEY FLOW FROM THE EASTERN TRIBUTARY TO THE 24” OUTLET. TEMPORARY CHECK DAMS SHALL BE INSTALLED IN THE PILOT CHANNEL TO SLOW VELOCITIES AND A TEMPORARY BERM SHALL BE CREATED TO KEEP FLOW IN PILOT CHANNEL AND OUT OF THE MAIL FLOODPLAIN WORK AREA.
11. INSTALL A TEMPORARY COFFERDAM AT THE NORTHERN TRIBUTARY INLET. DIVERT WATER FROM THE NORTHERN TRIBUTARY INLETS TO THE PILOT CHANNEL OR SUMP AREA NEAR THE 24” OUTLET VIA PUMPING.
12. EXCAVATE AND REMOVE SOFT SEDIMENT FROM POND BOTTOM. SOFT SEDIMENT SHALL BE STOCKPILED TO DRY AND LATER REAPPLIED TO FINAL GRADE THE FLOODPLAIN.
13. GRADE THE PROPOSED STREAM CHANNEL RESTORATION IN THE MAIN STEM AND TRIBUTARY. INSTALL TIMBER AND STONE GRADE CONTROLS, AND GRADE FLOODPLAIN, INCLUDING WETLAND POOLS.
14. ONCE FLOODPLAIN ELEVATIONS HAVE BEEN FINALIZED, APPLY WETLAND SEED MIX AND STRAW TO FLOODPLAIN AREA AND INSTALL ALL PROPOSED PLANTINGS AND ROUGHNESS ELEMENTS WITHIN THE FLOODPLAIN.
15. EXCAVATE DAM EMBANKMENT FOR PROPOSED BOX CULVERT. RETAIN EXISTING 24" PIPE FOR AS LONG AS POSSIBLE TO MAINTAIN STREAM FLOW THROUGH EMBANKMENT. IF 24” PIPE NEEDS TO BE REMOVED TO INSTALL BOX CULVERT SECTION, DIRECT PUMPED BYPASS FLOW OVER THE DAM EMBANKMENT TO THE DOWNSTREAM CHECK DAMS. INSTALL BOTTOM BOX CULVERT SECTIONS. BACK FILL WITH STEAM BED MATERIAL.
16. REMOVE ANY SEDIMENT ACCUMULATION FROM DOWNSTREAM CHECK DAMS.
17. ONCE THE MAIN PORTION OF THE FLOODPLAIN AND CHANNEL REGRADING IS COMPLETE, INSTALL A TEMPORARY COFFERDAM AT THE EASTERN TRIBUTARY AND PUMP WATER INTO THE RESTORED MAIN CHANNEL. REMOVE PILOT CHANNEL FROM EASTERN TRIBUTARY AND SUMP AREA AND FINAL GRADE THE EASTERN CHANNEL AND FLOODPLAIN.
18. INTRODUCE FLOW TO RESTORED CHANNELS AND BOX CULVERT TO GENERATE INITIAL "FLUSH" OF SEDIMENT BY REMOVING TEMPORARY COFFERDAMS. REMOVE 24” OUTLET PIPE.
19. INSTALL TOP BOX CULVERT SECTIONS AND FINALIZE INSTALLATION OF STRUCTURE. THEN BACK FILL EMBANKMENT ABOVE STRUCTURE TO FINAL GRADE.
20. ONCE WATER IS FLOWING THROUGH THE RESTORED CHANNELS AND BOX CULVERT CLEAN AND FREE OF EXCESSIVE SUSPENDED SEDIMENT, CREATE TEMPORARY COFFERDAM AT THE OUTLET OF THE BOX CULVERT AND PUMP WATER PAST THE TEMPORARY CHECK DAMS DURING THE REMOVAL OF THE CHECK DAMS AND THE REGRADING OF THE DOWNSTREAM CHANNEL.
21. FINALIZE THE GRAVEL ACCESS ROAD INSTALLATION ALONG THE DAM EMBANKMENT.
22. REMOVE TEMPORARY STAGING AREAS AND ACCESS ROADS AND STABILIZE WITH SEED AND MULCH.
23. INSTALL SEED MULCH AND ROLL EROSION CONTROL MATTING ON POND EDGES AND UPLAND AREAS. INSTALL REMAINING PLANTINGS.



Fitzgerald
Environmental
Associates, LLC

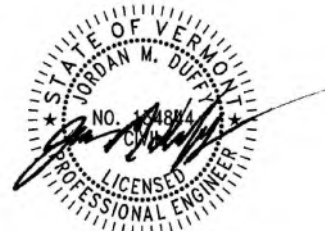
164 Main Street, Suite 2
Colchester, VT 05446
Telephone: 802.876.7778

www.fitzgeraldenvironmental.com



KREBS &
LANSING
CONSULTING ENGINEERS

164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 876-0375
www.krebsandlansing.com



SIGNATURE

REVISIONS		
#	DESCRIPTION	DATE

CONSTRUCTION NOTES

UVM HORTICULTURAL FARM DAM REMOVAL AND
STREAM/WETLAND RESTORATION

GREEN MOUNTAIN DR. SOUTH BURLINGTON, VT

FINAL PLANS

DRAWN	JMD	CHECKED	EPF
SCALE N/A			
DATE 2023-06-05			
PROJECT NO. 22024			
SHEET NO. 17 OF 17			

N-2

SHEET NAME

+

ermont

school

PROJECT SCREENING

CALCULATION INPUTS

WATER QUALITY BENEFIT

FLOODPLAIN RESILIENCY BENEFIT

HABITAT BENEFIT

BENEFIT SUMMARY

Estimated Phosphorus Credit for Stream Stability and Storage

SubUnit(s) IDs: 41_M05B_PLG_C00, 41_M05B

Town: SOUTH BURLINGTON

Projects Included: Restore Channel Slope, Plant Floodplain, Restore Wetland, Plant 50-Foot Riparian Area, Lower Floodplain, Restore Channel Roughness and Wood, Remove Medium Run of River Dam

Stream Names: -

Project Area (acres): 0.74

Stream Stability and Storage Credit Summary.

	Year 1 Credit (kg)	Year 2+ Credit (kg/yr)	Estimated 15 Yr Lifespan Credit (kg)
Floodplain Connectivity (Lateral - Vertical)			
Stream Stability	0.0	0.0	0.0
Storage	6.7	3.4	53.7
Stream Connectivity (Longitudinal - Temporal)			
Stream Stability	0.0	0.0	0.0
TOTAL	6.7	3.4	53.7