

GENERAL NOTES

PRE-CONSTRUCTION MEETING AND CONSTRUCTION COMMENCEMENT:

- All construction methods and materials shall conform to the Construction Standards and Specifications of Roanoke County, the Western Virginia Water Authority, and the Virginia Department of Transportation.
- Stormwater Management Agreements with an attached 8 1/2" x 11" or 8 1/2" x 14" plat must be approved and recorded prior to the pre-construction meeting.
- Once all required items are submitted to the County of Roanoke, the developer must contact the Development Review Coordinator to indicate that a pre-construction meeting needs to be scheduled. The pre-construction meeting will be scheduled with the owner/developer two (2) working days later.
- All land disturbing projects that require approval of an erosion and sediment control plan, grading or clearing permit shall require that the applicant provide the name of an individual who will be responsible for land disturbing activities and that this individual hold a Responsible Land Disturber (RLD) Certificate from the Department of Environmental Quality. The Responsible Land Disturber can be anyone from the Project team that is certified by the Commonwealth of Virginia to be in charge of carrying out the land disturbing activity for the project.
- It is the responsibility of the owner/developer to notify the certified Responsible Land Disturber and the Utility Contractor to attend the pre-construction meeting.
- The Development Review Coordinator will schedule the pre-construction meeting with the County Review Engineer, the County Inspector, and the Western Virginia Water Authority and the Town of Vinton Public Works Department if applicable.
- An approved set of plans, Storm Water Pollution Prevention Plan (SWPPP), VSMP coverage letter, and all permits must be available and visibly posted at the construction site at all times.
- The developer and/or contractor shall supply all utility companies with copies of approved plans, advising them that all grading and installation shall conform to approved plans.
- The project engineer will inform the owner/developer verbally and in writing of the County's obligation to perform inspections on site. Everyone in the meeting will be required to sign a pre-construction checklist indicating their knowledge of Roanoke County's obligation to perform inspections on site.
- The Erosion Control Permit or Combined Erosion Control & VSMP Permit is given to the developer at this pre-construction meeting.
- Notify the County of Roanoke prior to beginning installation of ESC measures. The County will inspect initial installations to ensure compliance with approved plan prior to start of grading. The developer SHALL contact the project inspector 24 hours before beginning any grading or construction on the property.
- County inspectors must inspect storm drain / stormwater management / BMP installations during the process of installation. Please contact the site inspector 24 hours in advance.
- All work shall be subject to inspection by Roanoke County, the Western Virginia Water Authority and the Virginia Department of Transportation Inspectors.
- Contractors shall notify utilities of proposed construction at least two (2), but not more than ten (10) working days in advance. Area public utilities may be notified thru "Miss Utility": 1-800-552-7001 or VA 811.
- The 100 year Floodway shall be staked prior to any construction.
- Grade stakes shall be set for all curb and gutter, culvert, sanitary sewer and storm sewer at all times of construction.
- The Department of Community Development shall be notified when a spring is encountered during construction.
- Construction debris shall be containerized in accordance with the Virginia Litter Control Act. No less than one litter receptacle shall be provided on site.
- The contractor shall provide adequate means of cleaning mud from trucks and/or other equipment prior to entering public streets or rights of ways. It is the contractors responsibility to insure that the streets are in a clean, mud and dust free condition at all times.
- Plan approval in no way relieves the developer or contractors of the responsibilities contained within the erosion and sediment control or stormwater management policies.
- Field construction shall honor proposed drainage divides as shown on plans.
- Field corrections shall be approved by the Roanoke County Engineering Division and/or the Western Virginia Water Authority and the Professional of Record, prior to such construction.
- The developer or contractor shall supply the County and the Western Virginia Water Authority with correct As-Built plans before final acceptance.

VIRGINIA DEPARTMENT OF TRANSPORTATION:

- Plan approval by Roanoke County does not guarantee issuance of any permits by the Virginia Department of Transportation.
- A permit must be obtained from the Virginia Department of Transportation, Salem Residency Office prior to construction in the highway right-of-way.
- The preliminary pavement designs should be based on a predicted sub-grade CBR value of 7.0 and with a Resiliency Factor (RF) of 2.0 as shown in Appendix I of the 2000 Virginia Department of Transportation Pavement Design Guide for Subdivision and Secondary Roads. The sub-grade soil is to be tested by an independent laboratory and the results submitted to the Virginia Department of Transportation prior to base construction. Should the sub-grade CBR value and/or the RF value be less than the predicted values, additional base material will be required in accordance with Departmental specifications. Refer to the same manual as the number and locations of the required soil samples to be tested. All pavement designs shall be submitted to the Department for review and approval. The sub-grade shall be approved by the Virginia Department of Transportation prior to placement of the base. Base shall be approved by the Virginia Department of Transportation for depth, template, and compaction before the surface is applied.
- Standard guardrail with safety end sections may be required on fills or in areas where hazards exist as deemed necessary. After completion of rough grading operations, the County Engineer and Virginia Department of Transportation shall be contacted to schedule a field review. Where guard rail is warranted, the standard shoulder width shall be provided and the guard rail shall be installed in accordance with the 2001 VDOT Road and Bridge Standards as part of this development.
- Standard street and traffic control signs shall be erected at each intersection by the developer prior to final street acceptance.
- All traffic devices shall be in accordance with current edition of the "Manual on Uniform Traffic Control Devices" (MUTCD).
- All unsuitable material shall be removed from the construction limits of the roadway before placing embankment.

See Sheet N/A for Stormwater Site Statistics Table.
See Sheet N/A for New BMP Information Table.

The Project Engineer shall provide electronic copies of the approved plans to the Development Review Coordinator within 5 working days of the pre-construction meeting.
The notes on this sheet shall not be modified.



COUNTY OF ROANOKE, VA

NAME OF DEVELOPMENT	GARST MILL STREAM BANK STABILIZATION	I, _____, OWNER/DEVELOPER, AM AWARE OF THE SITE DESIGN REQUIREMENTS IMPOSED BY THIS SITE DEVELOPMENT PLAN AND OTHER APPLICABLE ROANOKE COUNTY CODES. I HEREBY CERTIFY THAT I AGREE TO COMPLY WITH THESE REQUIREMENTS AND THE THIRTY (30) POINTS SHOWN ON THIS COVER SHEET UNLESS MODIFIED IN ACCORDANCE WITH LOCAL LAW.
MAGISTERIAL DISTRICT(S)	WINDSOR HILLS	
OWNER (name, address, telephone)	ROANOKE COUNTY, VA, P.O. BOX 29800, ROANOKE, VA 24018-0798, 540.772.2083 ATTN: DAVID HENDERSON, COUNTY ENGINEER	
DEVELOPER (name, address, telephone)	ROANOKE COUNTY, VA, P.O. BOX 29800, ROANOKE, VA 24018-0798, 540.772.2083 ATTN: DAVID HENDERSON, COUNTY ENGINEER	
ENGINEER, ARCHITECT OR SURVEYOR (name, address, telephone)	BRYAN M. DICK, PE, FREESE AND NICHOLS, INC. 717 GREEN VALLEY ROAD SUITE 200, GREENSBORO, NC 27408 864.506.1465	
TAX MAP NO(S)	077.05-06-15.00-0000	

WATER NOTES

All water facilities shall be constructed according to the Western Virginia Regional Design and Construction Standards. (Latest Edition).

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering valve vaults after paving and adjustment to final grade if necessary.

All existing utilities may not be shown in their exact location. The contractor shall comply with the (State Water Works Regulations, Section 12VAC5-590-1150, where lines cross.

All trenches in existing or future highway right-of-ways shall be compacted according to Virginia Department of Transportation standards.

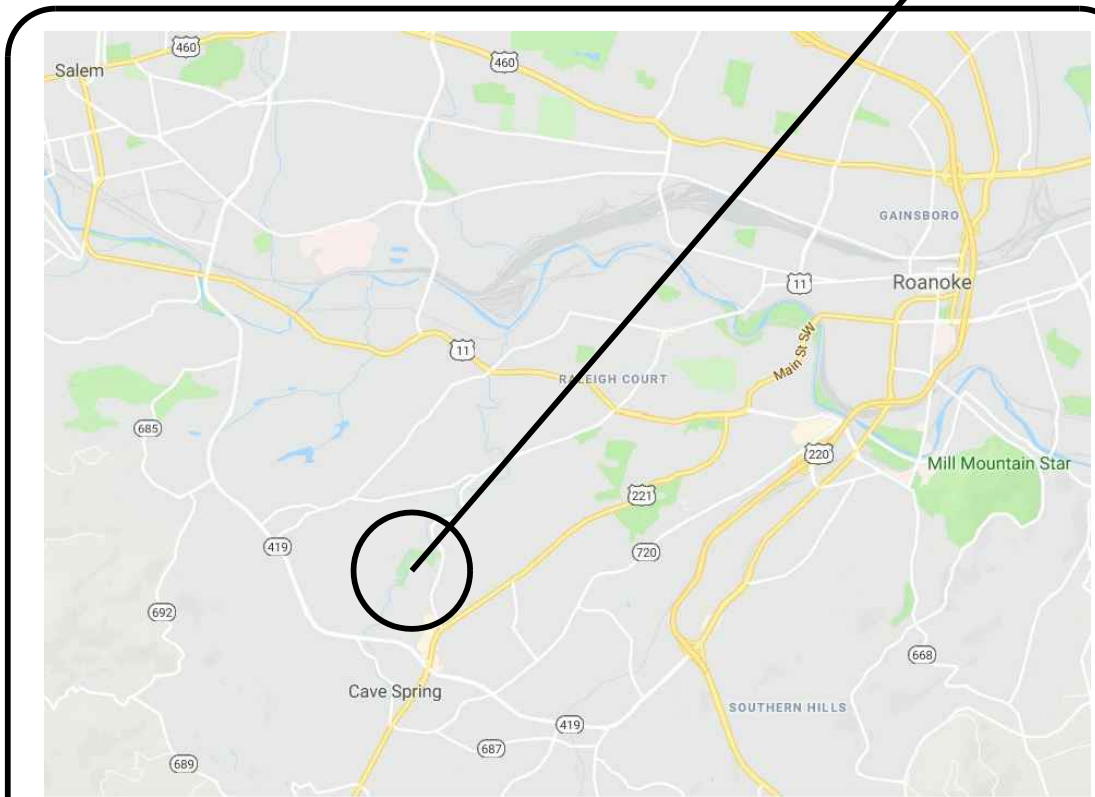
Lines shall be staked prior to construction.

Water main shall be minimum Class 350 Ductile Iron in accordance to AWWA C151 or DR-14 PVC in accordance with AWWA C-900.

Ductile Iron Pipe in accordance with the Western Virginia Regional Design and Construction Standards shall be required for all pipe with a working pressure equal to or greater than 100 p.s.i.

Western Virginia Water Authority
Availability letter number: N/A

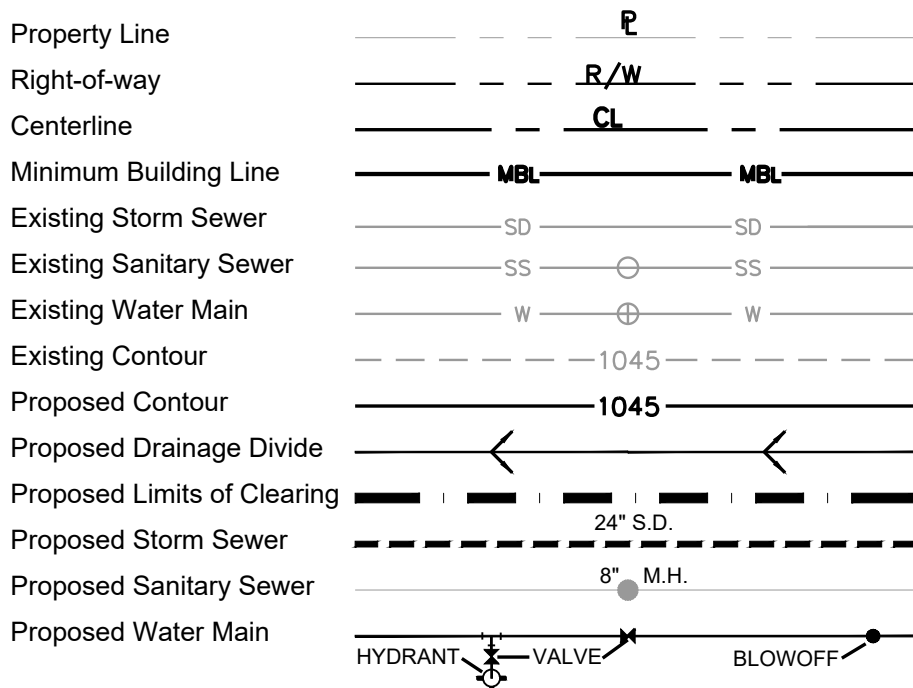
(SEE T-2 FOR DETAILED MAP)



Vicinity Map

4304 CORDELL DR, CAVE SPRING VA 24018

LEGEND



SEWER NOTES

All sanitary sewer facilities shall be installed according to the Western Virginia Regional Design and Construction Standards. (Latest Edition).

A minimum cover of three (3) feet is required over proposed lines.

Contractor shall be responsible for locating and uncovering all manholes after paving. Manhole tops shall be adjusted to grade if necessary.

All existing utilities may not be shown in their exact location. The contractor shall comply with (State Water Works Regulations, Section 12VAC5-590-1150, where lines cross.)

All trenches in existing or future rights-of-way shall be compacted according to Virginia Department of Transportation standards.

Lines shall be staked prior to construction.

PRIVATE UTILITIES

Underground utilities installed on private property or in private utility easements and building related storm drains shall be designed and installed per the current edition of the Virginia Uniform Statewide Building Code. Design and installation requirements issued by the Western Virginia Water Authority that meet or exceed the USBC requirements are acceptable for private utilities. All private utilities are to be permitted through and inspected by the Roanoke County Inspections Office. Vaults, valves and other devices installed by or under the control of the Western Virginia Water Authority may not substituted for the code required devices.

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DT-3.....PLANTING PLAN
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SURVEY INFORMATION

Horizontal and vertical control surveys were performed in year: 2018
By: FREESE AND NICHOLS, INC.

All vertical elevations must be referenced to the National Geodetic Vertical Datum of 1929 or 1988. All horizontal locations must be referenced to the North American Datum of 1927 or 1983.

Horizontal Datum: NAD 83 Vertical Datum: NAVD 88

Source of topographic mapping is dated 01/05/2018

Boundary was performed by N/A dated: N/A

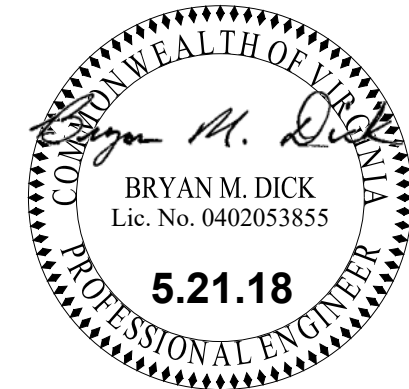
Benchmark Information: N/A

The professional seal and signature certifies the boundary survey and topographic mapping to be accurate and correct.

QUANTITY & COST ESTIMATE

ITEM	QUANTITY	UNIT	UNIT PRICE	COST	BONDABLE
CLEARING AND GRUBBING		AC			
EXCAVATION		C.Y.			
EMBANKMENT		C.Y.			
CURB INLET DI-		EA			
CURB INLET DI-		EA			
MANHOLE MH-		EA			
MANHOLE MH-		EA			
-IN. CONCRETE PIPE, CLASS III		LF			
-IN. CONCRETE PIPE, CLASS IV		LF			
-IN. C.M. CULVERT		LF			
-IN. C.M. CULVERT		LF			
BOX CULVERT		LS			
PAVED SWALE		LF			
RIPRAP - CLASS		SF			
PERMANENT GRASS SWALE		LF			
-IN. CONCRETE ENDWALL EW-		EA			
-IN. END SECTION ES-		EA			
HEADER CURB & GUTTER CG-		LF			
CURB & GUTTER CG-		LF			
VALLEY GUTTER		EA			
GRAVEL BASE		SY			
GRAVEL SHOULDER		SY			
SURFACE TREATMENT		SY			
-IN. BIT. CONC.: TYPE B-		SY			
-IN. BIT. CONC.: TYPE S-		SY			
-IN. BASE MATERIAL		C.Y.			
-IN. SUBBASE MATERIAL		C.Y.			
TRAFFIC BARRICADE		EA			
8" WATER LINE		LF			
6" WATER LINE		LF			
FIRE HYDRANT ASSEMBLIES		EA			
BLOW OFFS W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
-IN. GATE VALVES, W/ VAULT, FRAME & COVER		EA			
8" SANITARY SEWER		LF			
STANDARD MANHOLE W/FRAME & COVER		EA			
SAMPLING MANHOLE/PORT		EA			
LANDSCAPING		LS			
AMENITIES (INCLUDING BUT NOT LIMITED TO TRAILS, ETC...)		LS			
STORMWATER MANAGEMENT		LS			
AS-BUILT PLANS (STORM SEWER SYSTEMS)		LS			
AS-BUILT PLANS (STORMWATER MANAGEMENT)		LS			
10% CONTINGENCY					
ESTIMATED TOTAL					

FREESE & NICHOLS
717 GREEN VALLEY RD, SUITE 200
GREENSBORO, NC 27408
864.506.1465 TEL
VA LICENSE # 0407007129



COUNTY COVER SHEET

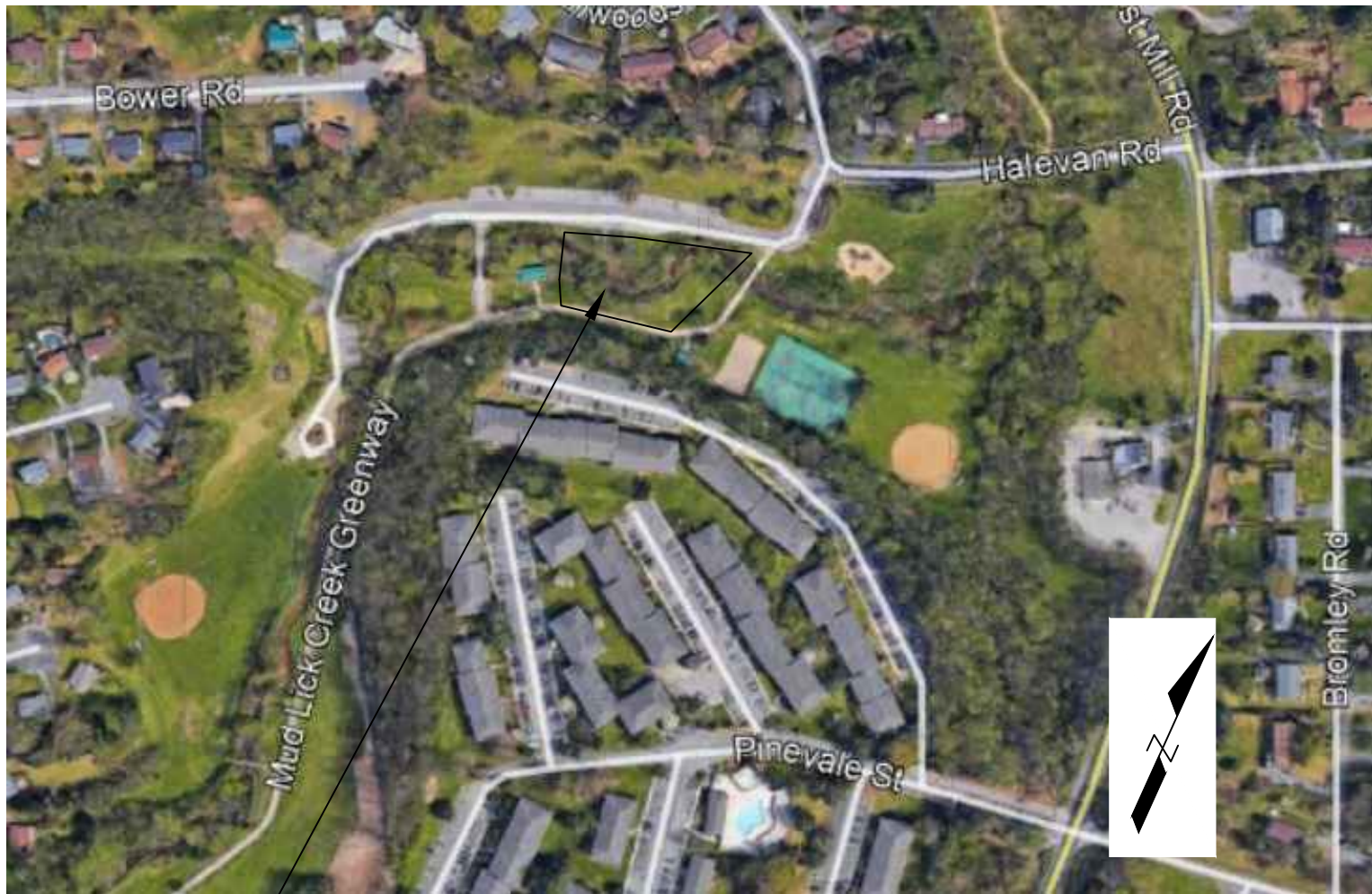
FINAL PLAN SET

MAY 2018

REPAIR OF MUD LICK CREEK AT

GARST MILL PARK

**SHEET
T-1**

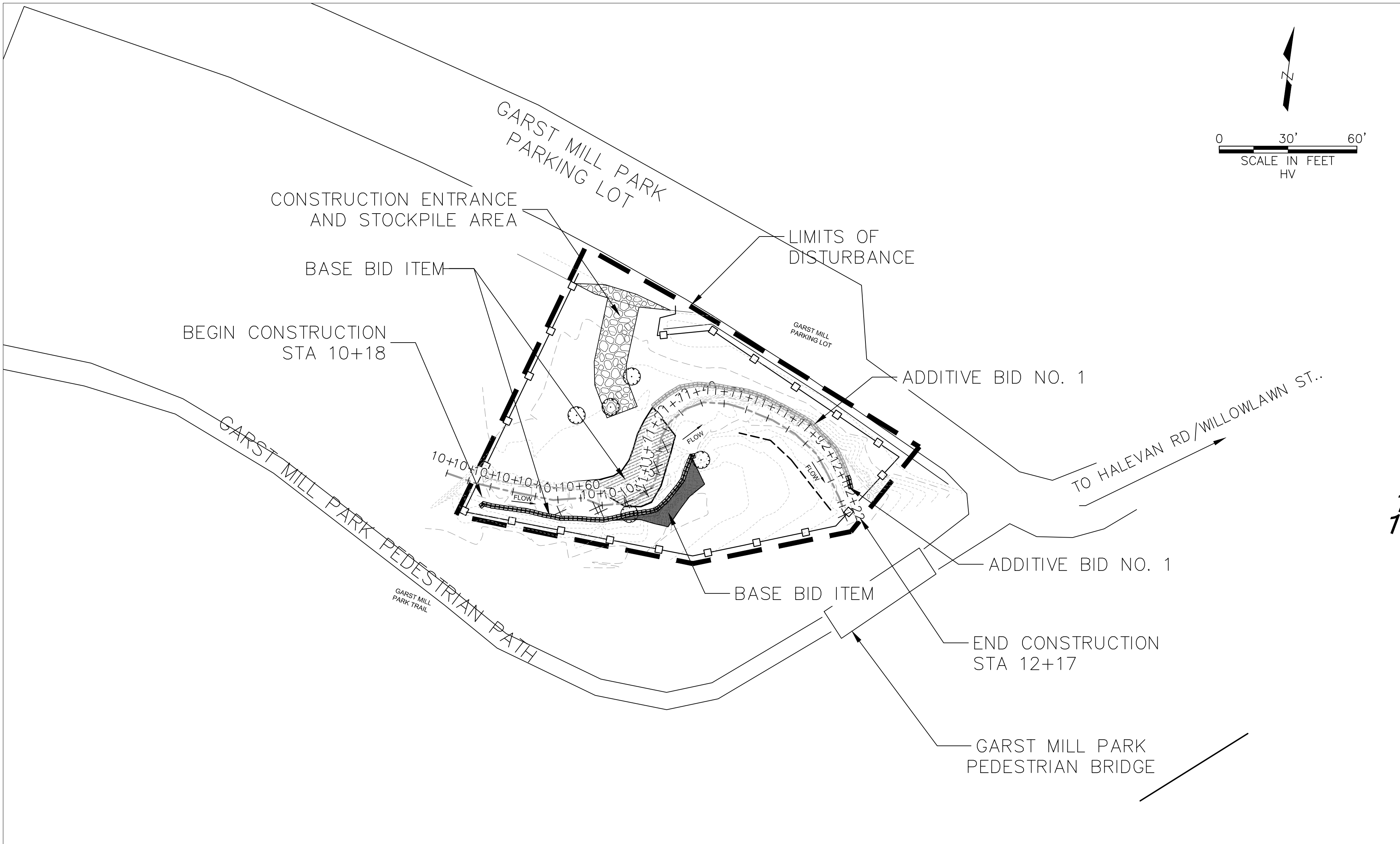


PROJECT
EXTENTS

VICINITY MAP

(Not to Scale)

NOTE 1:
ALL WORK IS TO TAKE PLACE FROM THE
NORTH BANK OF THE PROJECT OR
IN-CHANNEL (WHEN THE PUMP AROUND IS IN
PLACE). THE CONTRACTOR IS NOT TO WORK
FROM THE RIGHT (SOUTH) BANK AT ALL.



LATITUDE AND LONGITUDE:
LAT. N: 37°14'31.8"
LONG. W: 80°00'39.7"

DESIGN FIRM :

**FREESE
AND
NICHOLS**

717 GREEN VALLEY RD., SUITE 200
GREENSBORO NC, 27408
864-506-1465 (TEL)
VA LICENSE # 0407007129

ENGINEER CONTACT:

BRYAN DICK, PE (864-506-1465)

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- DT-1 THRU DT-2.....GENERAL DETAILS
- DT-3.....PLANTING PLAN
- EC-1.....EROSION CONTROL PLAN
- EC-2EROSION CONTROL
NOTES AND LEGEND
- EC-2 THRU EC-4.....EROSION CONTROL DETAILS



**FREESE
AND
NICHOLS**

717 Green Valley Road
Suite 200 North Carolina 27408
Phone - (336) 790-6744
Web - www.freese.com

ROANOKE COUNTY, VIRGINIA

REPAIR OF MUD LICK CREEK AT GARST MILL PARK

CIVIL

TITLE SHEET

NO.	ISSUE	DATE	BY	FILE NAME
1	ISSUE	05/21/18		T-1 COVER SHEET.dwg
2	DESIGNED			
3	DRAWN			
4	CHECKED			
5	REVIEWED			
6	APPROVED			
7	ISSUED			
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T-2

FINAL PLAN SET

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Last Saved: 5/21/2018 7:55 AM Saved By: 02298

NOTE 1:
START AT EXISTING ROCK FACE UPSTREAM,
BEGIN ROCK TOE & GEOBAG WALL ON
EXISTING RIGHT BANK, WITH ROOT PINNING TO
BLEND WITH VEGETATION

NOTE 2:
USE GEOBAG WALL SYSTEM PER DETAIL ON
DT-2 ON TOP OF A 2 TIER STACKED ROCK
TOE, BLEND TO EXISTING DOWNSTREAM ROCK
TOE.

NOTE 3:
FILL VOIDS IN ROCK WALL WITH SURGE STONE.
PLACE MIXTURE OF LARGE STONE 5"-8" WITH
NATIVE SOIL AND COMPACT INTO VOID SPACE
IN WALL THEN PLANT. USE LIVE STAKES "CUT
FROM ON-SITE" OR AT DIRECTION OF
ENGINEER. PLANT 75-100 LIVE STAKES 5'
APART AND EVERY TIER. [ADDITIVE BID NO. 1]

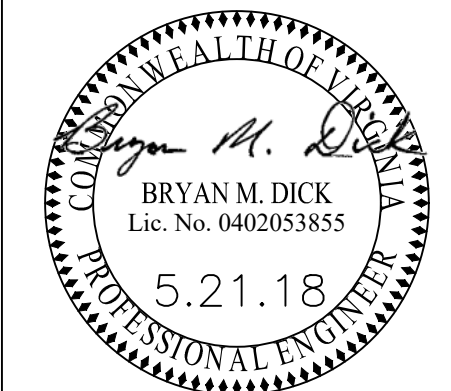
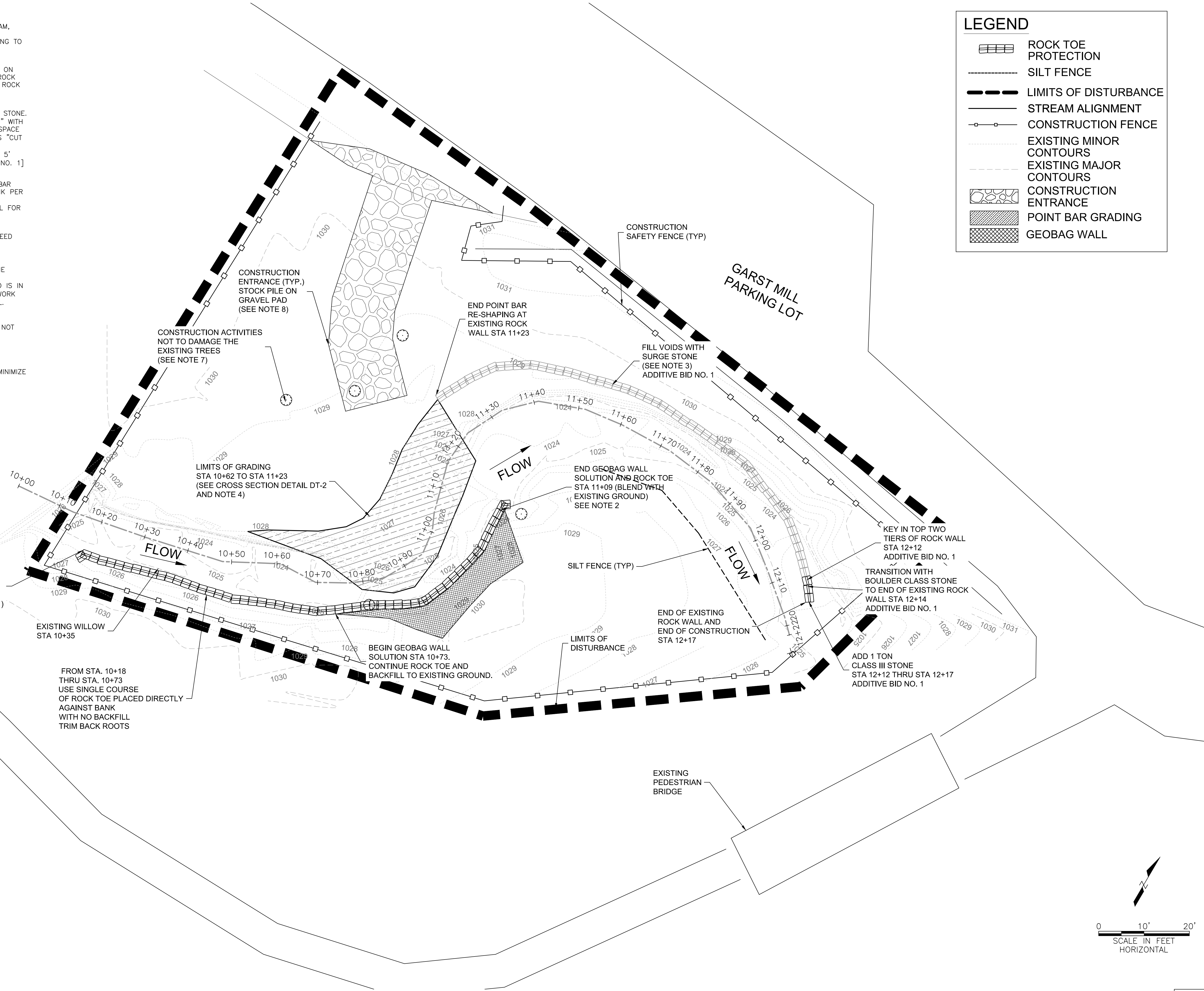
NOTE 4:
REDEFINE AND GRADE EXISTING POINT BAR
MATERIAL AND REGAIN RELICT LEFT BANK PER
THE TYPICAL CROSS SECTION (DT-2).
REDEFINE POOL. USE EXISTING MATERIAL FOR
FILL ON RIGHT BANK.

NOTE 5:
CONSTRUCTION ACTIVITY MUST NOT EXCEED
THE LIMITS OF DISTURBANCE.

NOTE 6:
ALL WORK IS TO TAKE PLACE FROM THE
NORTH BANK OF THE PROJECT OR
IN-CHANNEL (WHEN THE PUMP AROUND IS IN
PLACE). THE CONTRACTOR IS NOT TO WORK
FROM THE RIGHT (SOUTH) BANK AT ALL.

NOTE 7:
EQUIPMENT PATHWAY AND CLEARING IS NOT
TO IMPACT TREES LARGER THAN 6" IN
DIAMETER.

NOTE 8:
CONSTRUCTION ENTRANCE IS TO BE
COORDINATED WITH THE ENGINEER TO MINIMIZE
IMPACTS TO VEGETATION.



FREES & NICHOLS
717 Green Valley Road
Suite 200 North Carolina 27408
Phone - (336) 790-6744
Web - www.freese.com

ROANOKE COUNTY, VIRGINIA
REPAIR OF MUD LICK CREEK AT GARST MILL PARK
CIVIL
PLAN VIEW

NO.	ISSUE	BY	DATE	F&N JOB NO.	DATE	DESIGNED	DRAWN	CHECKED	FILE NAME
				RNC16664	05/21/18	BMD	KAD		C-1 PLAN PROFILE.dwg
SHEET									
C-1									
SEQ.									

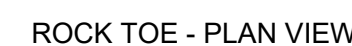
FINAL PLAN SET



- NOTES:**
1. ALL LATERAL BRANCHES SHALL BE TRIMMED TO AVOID DAMAGE TO THE BARK RIDGE AND BRANCH COLLAR.
 2. A MINIMUM OF TWO BUDS (ONE LATERAL PLUS ONE TERMINAL OR TWO TERMINAL) SHALL BE ABOVE THE PLANTING DEPTH.



- NOTES:
1. SOIL LAYER LIFTS ARE TO BE PLACED ABOVE STACKED ROCK WALL AS INDICATED IN THE PLANS OR AT DIRECTION OF ENGINEER.
 2. SOIL LAYER LIFTS TO BE 1' HEIGHT.



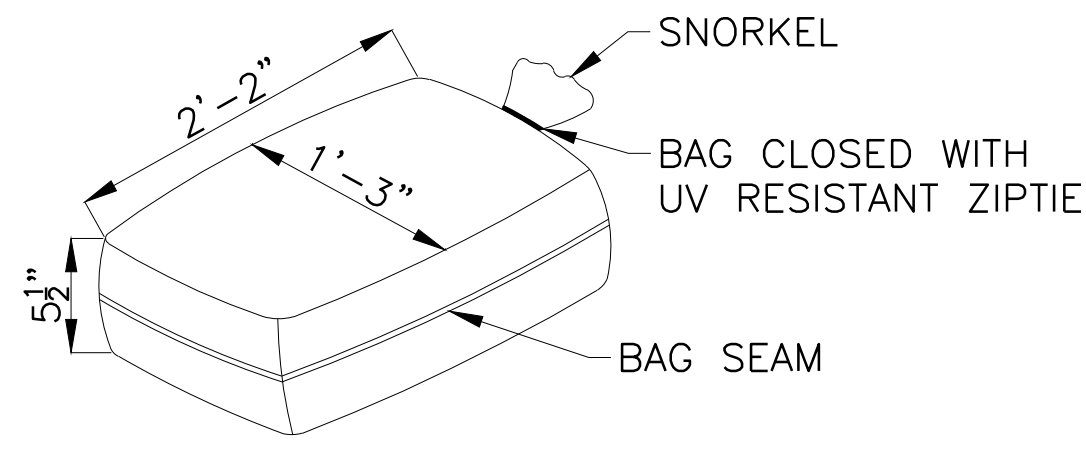
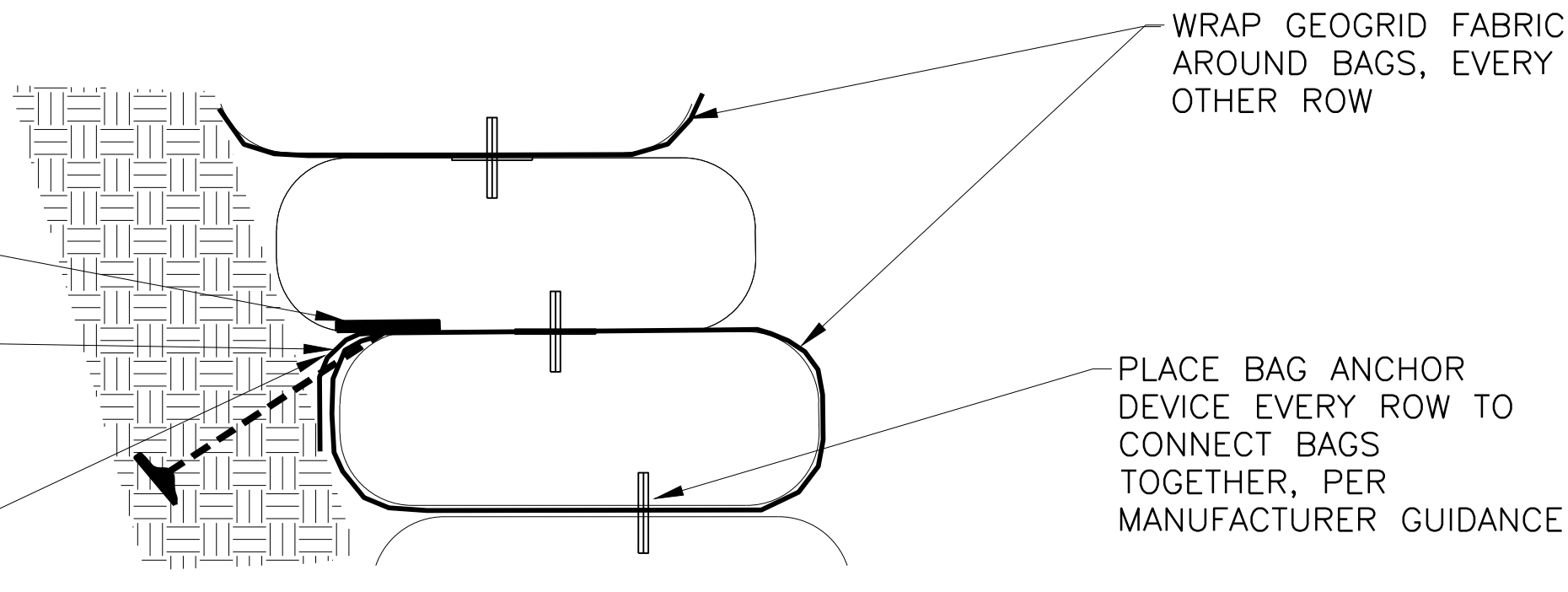
NOTES:

1. GRADE AREA OF INSTALLATION AS SHOWN ON PLANS. REMOVE ALL ROCKS AND OTHER OBSTRUCTIONS SO THE MATERIAL WILL HAVE DIRECT CONTACT WITH SOIL.
2. BAGS ARE TO BE FILLED ONSITE WITH MODERATE DRAINED MATERIAL TO BE APPROVED BY ENGINEER. FOLLOW BAG FILLING PROCEDURE FROM ENVIROLOK, FLEX MSE, DELTALOK OR APPROVED EQUIVALENT.
3. GEOBAG WALL LAYERS SHOULD BE SOLID AND UNIFORM. FLATTEN GEOBAGS WITH WALK BEHIND VIBRATORY TAMPER OR EQUIVALENT AFTER PLACEMENT AND BEFORE PROCEEDING WITH CINCHING, TWINING, AND STAKING.
4. INSTALL PLANTS AND SEED ACCORDING TO PLANTING PLAN (DT-3)
5. GEOBAGS WILL BE BUILT IN A MANNER THAT BLENDS WITH EXISTING BACKSLOPE. A MINIMUM OF 6 LIFTS (~3FT ABOVE ROCK WALL) AT ~1.5:1 (H:V) SLOPE UNLESS OTHERWISE SPECIFIED ON PLANS. MORE BAG LAYERS MAY BE USED AT DIRECTION OF ENGINEER.

3' PLATIPUS ANCHOR OR APPROVED EQUIVALENT (NOT USED ON FILL SECTIONS)

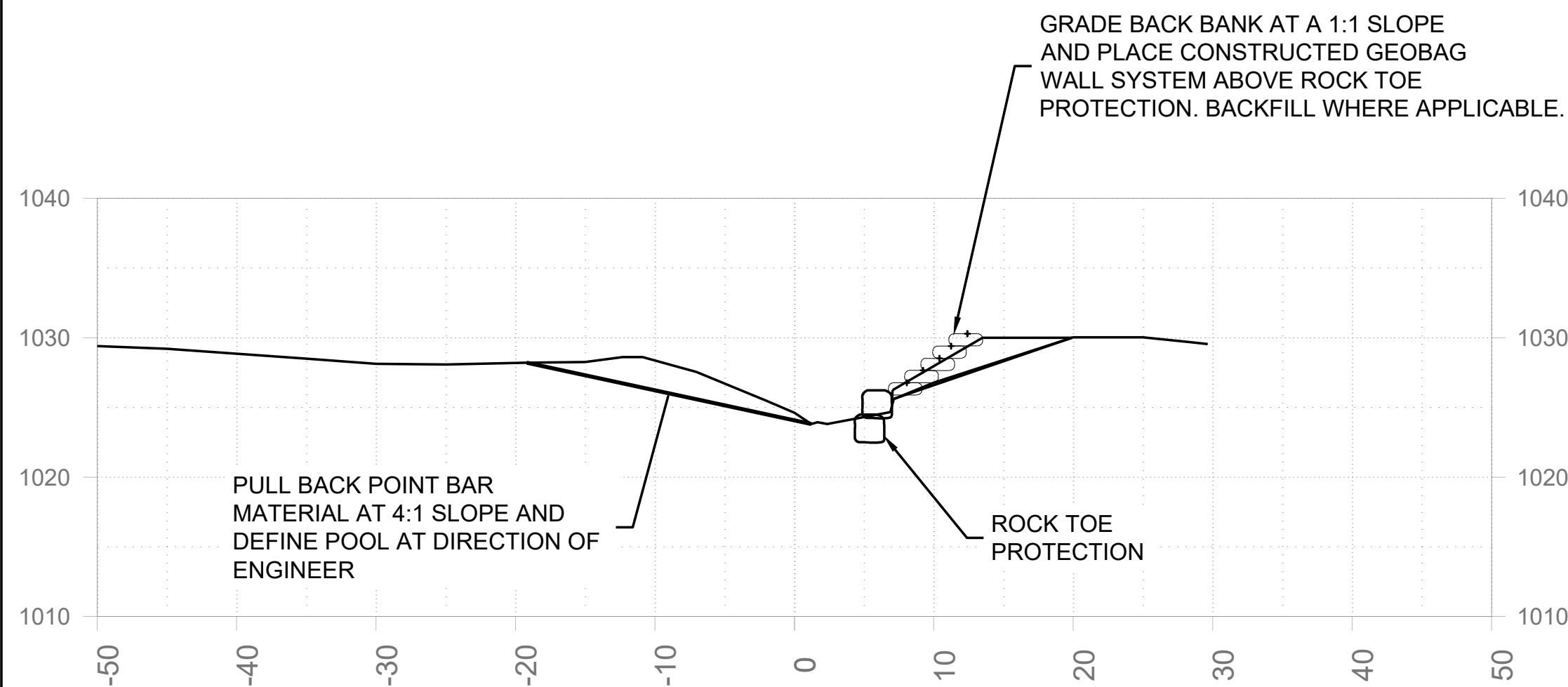
WRAP GEOGRID FABRIC AROUND BAG AND PROVIDE OVERLAP

PLATIPUS ANCHOR TO BE RUN THROUGH OVERLAP IN GEOGRID FABRIC, IN BETWEEN BAGS TO AVOID PUNCTURING THE BAG

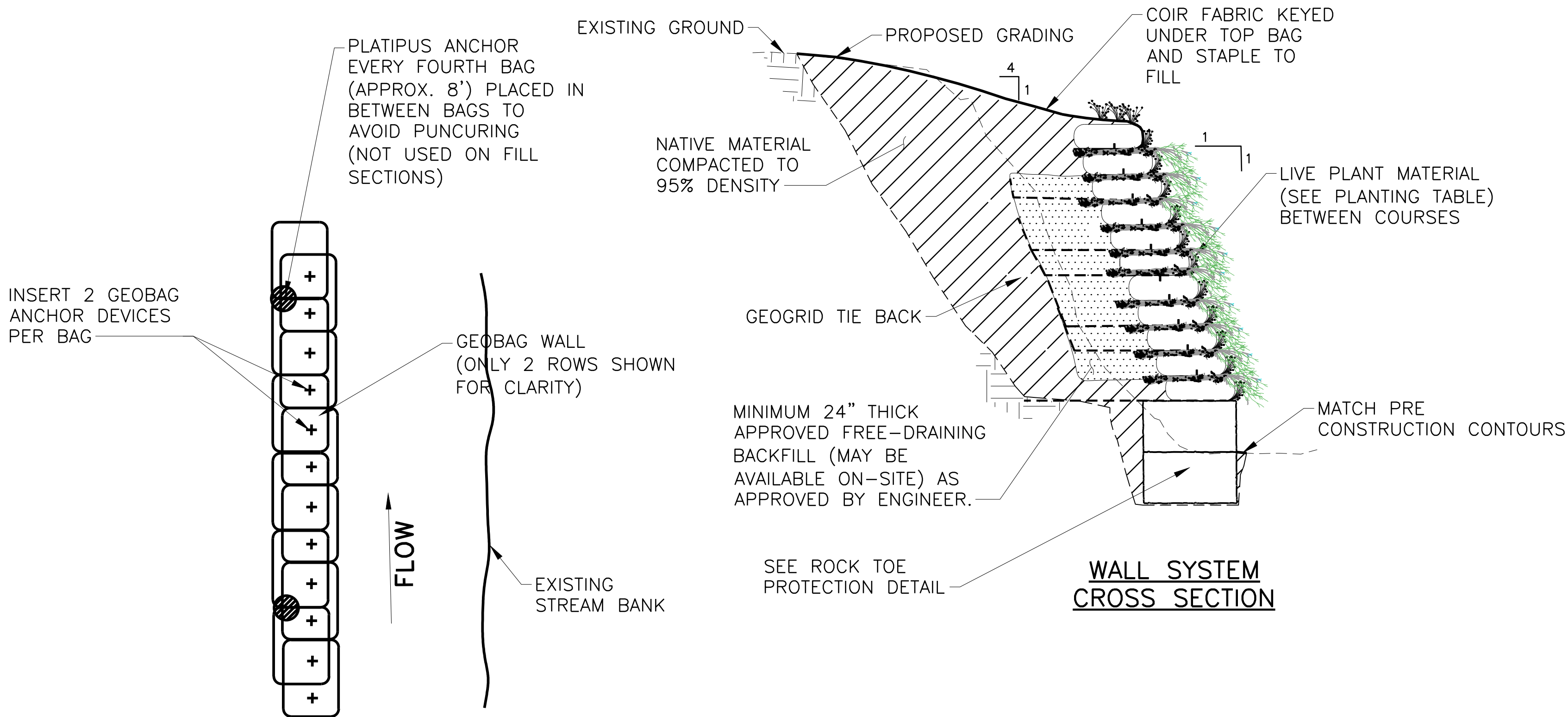


TYPICAL GEOBAG

GEOBAG ANCHORING AND WRAPPING DETAIL

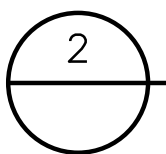


TYPICAL SECTION
POINT BAR GRADING AND TOE PROTECTION



WALL SYSTEM
PLAN VIEW

GEOBAG WALL SYSTEM – FILL SECTIONS
(ENVIROLOK, FLEX MSE, DELTALOK OR EQUIVALENT)



REPAIR OF MUD LICK CREEK AT GARST MILL PARK

CIVIL

GENERAL DETAILS

NO.	ISSUE	DATE	BY	DESIGNED	DRAWN	CHECKED	FILE NAME
1		05/21/18		BMD	KAD		DT-1 DETAILS.dwg
2							

SHEET	DT-2
SEQ.	

FINAL PLAN SET



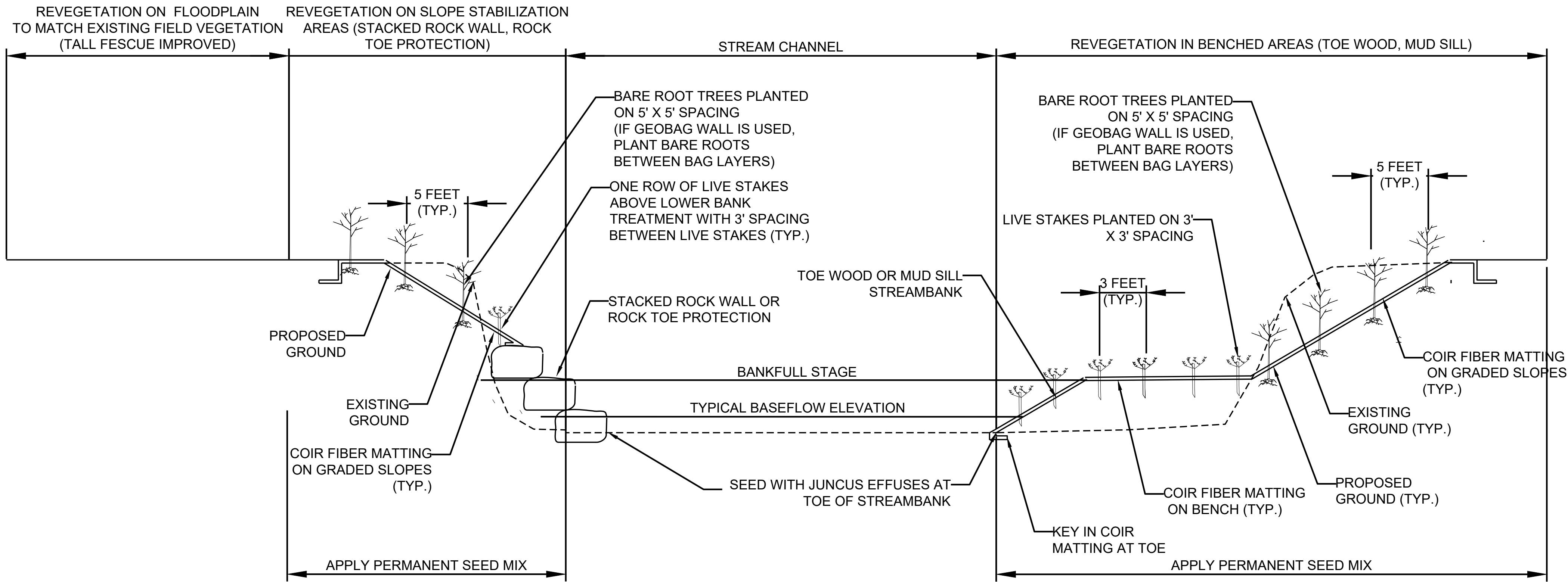
ROANOKE COUNTY, VIRGINIA

REPAIR OF MUD LICK CREEK AT GARST MILL PARK

CIVIL

PLANTING PLAN

NO.	ISSUE	BY	DATE	PER. JOB NO.	RNC16684
				DATE	05/21/18
				DESIGNED	BMD
				DRAWN	KAD
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				FILE NAME	DT-1 DETAILS.dwg
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.					



REVEGETATION SECTION

SCALE: NTS

PLANT LIST

	Scientific Name	Common Name	Quantity	Remarks
BARE ROOT TREES	<i>Acer rubrum</i>	Red maple	6	Bare root 1/0 seedlings placed on 5-ft centers, alternating plants between rows and species randomly distributed.
	<i>Carya glabra</i>	Pignut hickory	6	
	<i>Liriodendron tulipifera</i>	Tulip tree	6	
	<i>Fagus grandifolia</i>	American beech	6	
	<i>Ulmus americana</i>	American elm	6	
BARE ROOT SHRUBS	<i>Hamamelis virginiana</i>	Witch hazel	6	
	<i>Lindera benzoin</i>	Spice bush	6	
LIVE STAKES	<i>Alnus serrulata</i>	Tag alder	56	Stakes placed on 3' centers, alternating stakes between rows and with species randomly distributed. One row of live stakes planted above staked rock wall and rock toe protection, with stakes spaced 3' apart,
	<i>Cornus amomum</i>	Silky dogwood	56	
PERMANENT SEEDING ON SLOPE STABILIZATION AND BENCH AREAS	<i>Panicum virgatum</i>	Switchgrass	25%	Apply at 25 lbs/acre
	<i>Panicum clandestinum</i>	Deer Tongue	15%	
	<i>Elymus virginicus</i>	Virginia Wild Rye	10%	
	<i>Tridens flavus</i>	Purple Top	10%	
	<i>Verbisina alternifolia</i>	Wingstem	10%	
	<i>Juncus effuses</i>	Soft Rush	10%	
	<i>Chasmanthium</i>	Slender Spikegrass	5%	
	<i>Polygonum persicaria</i>	Lady's Thumb	5%	
	<i>Polygonum pensylvanicum</i>	Knotweed	5%	
TEMPORARY SEEDING	Summer: Brown-top millet			Apply at 50 lbs/acre to all disturbed areas
	Winter: Wrens-abruzzo winter rye or Winter Wheat			

NOTES:

1. FOR PERMANENT SEEDING IN OTHER DISTURBED AREAS, SEE SHEET EC-8

NOTES:

1. THE LEFT SIDE OF THIS SECTION SHOWS PLANTING APPROACH TO BE APPLIED FOR STREAMBANKS WHERE ROCK TOE PROTECTION OR STACKED ROCK WALL ARE TO BE USED ON THE LOWER BANK WITH GRADING OR GEOBAG WALL ON THE UPPER BANK.
2. THE RIGHT SIDE OF THIS SECTION SHOWS PLANTING APPROACH TO BE APPLIED WHERE TOE WOOD IS USED TO CREATE A BENCH WITH GRADING OR GEOBAG WALL ON THE UPPER BANK.
3. IF CROSS-SECTIONS SHOW NO GRADING OR OTHER TREATMENT ON PARTS OF THE EXISTING STREAMBANKS (UPPER BANK, LOWER BANK OR BOTH) THEN EXISTING VEGETATION IS TO REMAIN UNDISTURBED.
4. SEE PLANT LIST FOR SPECIES AND SIZE.

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EROSION AND SEDIMENT CONTROL LEGEND		
LINE	DESCRIPTION	SYMBOL
---	LIMITS OF DISTURBANCE	
----	SILT FENCE	(SF)
-----	CONSTRUCTION FENCE	
-----	TEMPORARY STONE CONSTRUCTION ENTRANCE	(CE)
← TO →	TOPSOILING	(TO)
← TS →	TEMPORARY SEEDING	(TS)
← PS →	PERMANENT SEEDING	(PS)
← MU →	MULCHING	(MU)
↪	PUMP-AROUND DIVERSION	
=====	IMPERVIOUS DIKE	

NOTES THIS SHEET:

- SEE SHEET EC-6 FOR EROSION AND SEDIMENT CONTROL NOTES AND LEGEND.
- DISTURB ONLY THE PATHWAY REQUIRED TO ACCESS THE STREAM AND DO NOT REMOVE TREES LARGER THAN 8" IN DIAMETER UNLESS INSTRUCTED BY THE ENGINEER OF RECORD.
- CONSTRUCTION ACTIVITY MUST NOT EXCEED THE LIMITS OF DISTURBANCE.
- ALL CONSTRUCTION IS TO TAKE PLACE FROM THE LEFT BANK SIDE OF THE PROJECT OR IN-CHANNEL (WHEN THE PUMP AROUND IS IN PLACE). THE CONTRACTOR IS NOT TO WORK FROM THE RIGHT BANK AT ALL.
- C-700 OR EQUIVALENT COIR MATTING IS REQUIRED ON ALL EXPOSED STREAMBANK SURFACES NOT PROTECTED BY OTHER MEASURES.
- WHERE GRADING IS REQUIRED, GRADE TO DRAIN AND TRANSITION TO EXISTING GRADE.

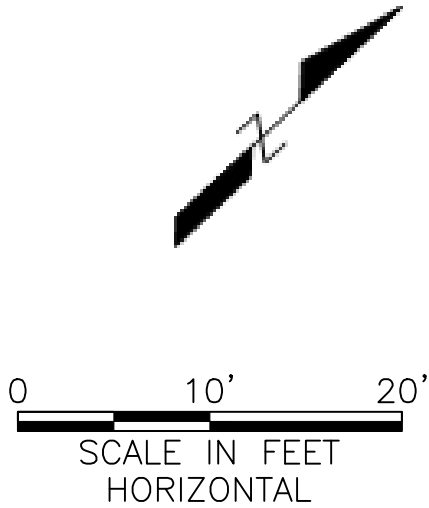
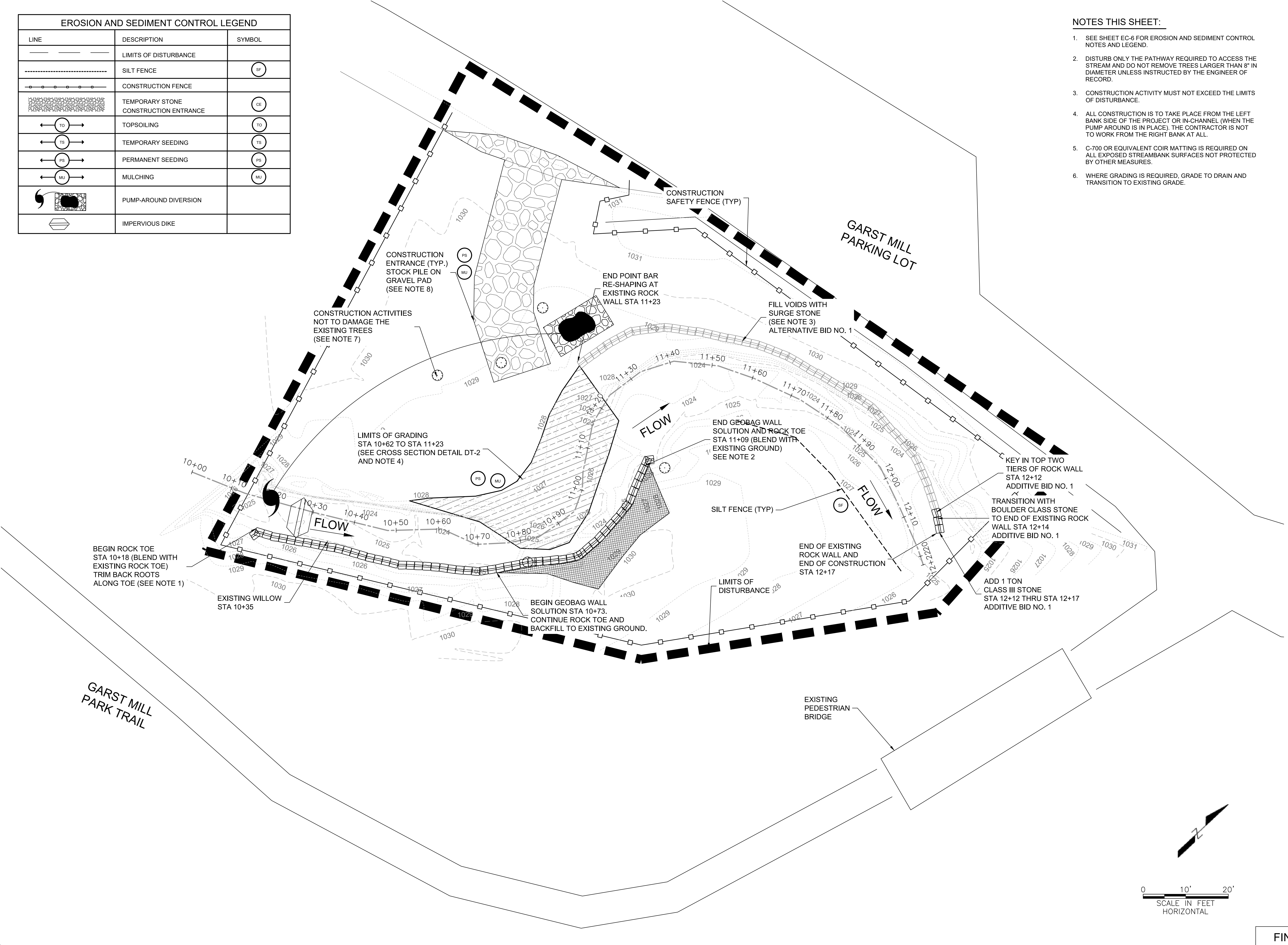


717 Green Valley Road
Suite 200, North Carolina 27408
Phone - (336) 790-6744
Web - www.freese.com

ROANOKE COUNTY, VIRGINIA
REPAIR OF MUD LICK CREEK AT GARST MILL PARK

CIVIL
EROSION CONTROL PLAN

NO.	ISSUE	BY	DATE	FOR JOB NO.	DATE	DESIGNED	DRAWN	CHECKED	FILE NAME
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EROSION AND SEDIMENT CONTROL NOTES:

- THE PURPOSE OF THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE TO PRECLUDE THE TRANSPORT OF ALL WATERBORNE SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES FROM ENTERING ONTO ADJACENT PROPERTIES OR STATE WATERS. IF FIELD INSPECTION REVEALS THE INADEQUACY OF THE PLAN TO CONFINE SEDIMENT TO THE PROJECT SITE, APPROPRIATE MODIFICATIONS WILL BE MADE TO CORRECT ANY PLAN DEFICIENCIES.
1. PLAN APPROVAL IN NO WAY RELIEVES THE CONTRACTOR OF THE RESPONSIBILITIES CONTAINED WITHIN THE EROSION AND SEDIMENT CONTROL POLICIES.
2. ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
3. FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL APPLICABLE MEASURES CONTAINED THEREIN WHICH MAY BE PERTINENT TO THIS PROJECT.
4. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED BY A TEMPORARY CONSTRUCTION ENTRANCE TO PREVENT TRACKING OF MUD ONTO PUBLIC RIGHT-OF-WAYS. AN ENTRANCE PERMIT FROM VDOT IS REQUIRED PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN STATE RIGHT-OF-WAYS.
5. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLAN, NOT LOCATED IN PROPOSED FILL OR EXCAVATION AREAS, SHALL BE CONSTRUCTED PRIOR TO ALL OTHER LAND DISTURBANCE. THE CONTRACTOR SHALL ARRANGE AN ONSITE PRECONSTRUCTION CONFERENCE WITH THE ROANOKE COUNTY DEVELOPMENT INSPECTOR.
6. MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH PROCEDURES APPROVED BY THE STATE OF VIRGINIA. MAINTENANCE WILL INCLUDE THE REPAIR OF MEASURES DAMAGED BY ANY SUBCONTRACTOR, INCLUDING THOSE OF THE PUBLIC UTILITY COMPANIES. AT THE PRECONSTRUCTION MEETING, THE CONTRACTOR WILL SUPPLY THE COUNTY OF ROANOKE WITH THE NAME OF THE INDIVIDUAL WHO WILL BE RESPONSIBLE FOR ENSURING MAINTENANCE OF INSTALLED MEASURES ON A DAILY BASIS. THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
7. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRANSVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY LOWER WATER DOWNSLOPE WITHOUT CAUSING EROSION. IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
8. THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, CHANGE, OR OTHERWISE MODIFY CERTAIN EROSION AND SEDIMENT CONTROL MEASURES WHERE FIELD CONDITIONS ARE ENCOUNTERED THAT WARRANT SUCH MODIFICATIONS.
9. SEDIMENT CONTROL MEASURES MAY REQUIRE MINOR FIELD ADJUSTMENTS AT THE TIME OF CONSTRUCTION TO ENSURE THEIR INTENDED PURPOSE ARE ACCOMPLISHED. APPROVAL FROM CONSULTING ENGINEER AND ROANOKE COUNTY WILL BE REQUIRED FOR ALL DEVIATIONS FROM THE APPROVED PLANS.
10. ALL STOCKPILE AND BORROW AREAS SHALL BE STABILIZED USING TEMPORARY OR PERMANENT SEEDING. SILT FENCE SHALL BE INSTALLED ALONG DOWNHILL TOE OF SLOPE.
11. TEMPORARY VEGETATIVE COVER SHALL BE PROVIDED IN ALL AREAS WHICH ARE NOT DESIGNATED FOR PAVING, UNDERGROUND UTILITIES OR STRUCTURAL USES. SUCH AREAS SHALL NOT BE EXPOSED FOR PERIODS EXCEEDING 30 DAYS. TEMPORARY VEGETAL COVER MAY BE ELIMINATED IN FAVOR OF FINAL VEGETAL COVER IF CONSTRUCTION AND SEASONAL CONDITIONS PERMIT.
12. ALL AREAS DESIGNATED FOR PAVING SHALL BE STABILIZED WITH A 6-INCH COURSE OF VDOT #1 COARSE AGGREGATE IMMEDIATELY AFTER GRADING OR THE COMPLETION OF UTILITY INSTALLATION.
13. THE TERM SEEDING, FINAL VEGETATIVE COVER OR STABILIZATION, ON THIS PLAN SHALL MEAN THE SUCCESSFUL GERMINATION AND ESTABLISHMENT OF A STABLE GRASS COVER FROM A PROPERLY PREPARED SEEDBED CONTAINING THE SPECIFIED AMOUNTS OF SEED, LIME, AND FERTILIZER. IRRIGATION SHALL BE REQUIRED AS NECESSARY TO INSURE ESTABLISHMENT OF GRASS COVER.
14. ALL SLOPES 3:1 OR STEEPER THAN 3:1 SHALL REQUIRE MATTING TO AID IN THE ESTABLISHMENT OF A VEGETATIVE COVER. INSTALLATION SHALL BE IN ACCORDANCE WITH MULCHING AND MANUFACTURER'S INSTRUCTIONS AND THE VA E&S HANDBOOK.
15. OUTLET PROTECTION AND ANY TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED FOR PIPES AND CHANNELS BEFORE THEY ARE OPERATIONAL.
16. BASE COURSE MATERIAL SHALL BE PLACED IN ALL STREET AREAS WITHIN 30 DAYS OF FINAL GRADING.
17. TEMPORARY EROSION CONTROL MEASURES ARE NOT TO BE REMOVED UNTIL ALL DISTURBED AREAS ARE STABILIZED. AFTER STABILIZATION IS COMPLETE, ALL MEASURES SHALL BE REMOVED WITHIN 30 DAYS. TRAPPED SEDIMENT SHALL BE SPREAD AND SEEDED.
18. THE LOCATION OF ALL OFF-SITE FILL OR BORROW AREAS ASSOCIATED WITH THE CONSTRUCTION PROJECT WILL BE PROVIDED TO THE ROANOKE COUNTY DEPARTMENT OF COMMUNITY DEVELOPMENT. AN EROSION CONTROL PLAN OR MEASURES MAY BE REQUIRED FOR THIS AREA.
19. ALL EARTHEN CONTROLS AND STRUCTURES SHALL BE STABILIZED IMMEDIATELY UPON INSTALLATION.

EROSION AND SEDIMENT CONTROL LEGEND			
SECT	KEY	LINE	DESCRIPTION
3.02	CE		TEMPORARY STONE CONSTRUCTION ENTRANCE
3.05	SF		SILT FENCE
3.30	TO		TOPSOILING
3.31	TS		TEMPORARY SEEDING
3.32	PS		PERMANENT SEEDING
3.35	MU		MULCHING

PROJECT DESCRIPTION - THE PURPOSE OF THIS PROJECT IS FOR THE CONSTRUCTION OF THE BANK STABILIZATION OF MUD LICK CREEK AT GARST MILL PARK. MUD LICK CREEK WILL BE IMPROVED TO DECREASE THE AMOUNT OF STREAM BANK EROSION AND NUTRIENT LOADINGS OCCURRING IN THE CREEK AND PROTECT THE ADJACENT PARK. THE LIMIT OF DISTURBANCE IS 0.36 ACRES.

EXISTING SITE CONDITIONS - THE EXISTING SITE IS A STREAM THAT RUNS ALONG GARST MILL PARK. THE CREEK SHOWS SIGNS OF EXTREME EROSION IN THE MEANDER OF THE CREEK BORDERING THE PARK. THE CREEK FLOWS NORTHEAST WHERE IT FLOWS INTO THE ROANOKE RIVER DOWNSTREAM. THE ADJACENT PARK DRAINAGE FLOWS INTO THE CREEK AT SEVERAL LOCATIONS ALONG THE PROJECT.

ADJACENT PROPERTY - THE CREEK IS BORDERED BY GARST MILL PARK. THE CREEK FLOWS TO THE NORTHEAST THROUGH THE END OF GARST MILL PARK.

OFF-SITE AREAS - THE G.C SHALL NOTIFY ROANOKE COUNTY OF ANY FILL OR BORROW AREAS ASSOCIATED WITH THE PROJECT PRIOR TO TRANSPORT OF ANY MATERIAL. AN ESC PLAN OR MEASURES MAY BE REQUIRED FOR THESE AREAS.

SOILS - THE "SOIL SURVEY OF ROANOKE COUNTY AND THE CITIES OF ROANOKE AND SALEM, VIRGINIA" AS PREPARED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE IDENTIFIES THE ON-SITE SOILS AS COMBS LOAM, SOIL GROUP B.

CRITICAL EROSION AREAS - CRITICAL AREAS FOR THIS PROJECT INCLUDE GARST MILL PARK. THE G.C. SHALL ENSURE THAT SEDIMENT IS NOT TRANSPORTED OFF-SITE.

EROSION AND SEDIMENT CONTROL MEASURES - UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE "VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION" (VESCH). THE MINIMUM STANDARDS OF THE VESCH SHALL BE ADHERED TO UNLESS OTHERWISE DIRECTED BY THE LOCAL PROGRAM ADMINISTRATOR.

STRUCTURAL CONSTRUCTION ENTRANCE-STD. 3.02... A STONE PAD, LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS TO THE CONSTRUCTION SITE, TO REDUCE THE SOIL TRANSPORTED ONTO PUBLIC ROADS AND OTHER PAVED AREAS.

SILT FENCE-STD. 3.05... A TEMPORARY BARRIER CONSTRUCTED ALONG THE PERIMETER OF THE DISTURBED AREA AS REQUIRED TO INTERCEPT AND DETAIN SEDIMENT.

SPECIAL SEDIMENT BAG... A TEMPORARY SETTLING AND FILTERING DEVICE FOR WATER WHICH IS DISCHARGED FOR DEWATERING ACTIVITIES TO FILTER SEDIMENT-LADEN WATER PRIOR TO THE WATER BEING DISCHARGED OFF-SITE.

PUMP-AROUND/DIVERSION... A TEMPORARY PUMPING SETUP TO DIVERT WATER AROUND IN-CHANNEL WORK TO PREVENT WATER FROM BECOMING SEDIMENT-LADEN.

EROSION AND SEDIMENT CONTROL LEGEND	
LINE	DESCRIPTION
	LIMITS OF DISTURBANCE
	SILT FENCE
	CONSTRUCTION FENCE
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	PUMP-AROUND DIVERSION
	IMPERVIOUS DIKE

EROSION AND SEDIMENT CONTROL NARRATIVE

VEGETATIVE TEMPORARY SEEDING-STD. 3.31... ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER BY PLANTING SEED ON DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR PERIODS OF 30 DAYS TO 1-YEAR BY SEEDING WITH AN APPROPRIATE RAPIDLY GROWING SEED MIXTURE.

PERMANENT SEEDING-STD. 3.32... ESTABLISHMENT OF A VEGETATIVE COVER BY PLANTING A SEED ON ALL FINAL GRADED AREAS THAT WILL NOT RECEIVE AN IMPERVIOUS COVER OR RECEIVE TOPSOIL MATERIAL TO PROVIDE A STABILIZED SITE AFTER THE PROJECT IS COMPLETE.

MULCHING-STD. 3.35... MULCH SHALL BE APPLIED TO ALL TEMPORARY AND PERMANENT SEEDING OPERATIONS TO PROMOTE THE GROWTH OF VEGETATION AND TO PROTECT THE SOIL SURFACE FROM RAINDROP IMPACTS.

SOIL STABILIZATION BLANKETS AND MATTING-STD. 3.36... THE INSTALLATION OF A PROTECTIVE COVERING (BLANKET) OR A SOIL STABILIZATION MAT ON A PREPARED PLANTING AREA OF A STEEP SLOPE.

MANAGEMENT STRATEGIES:

A.) CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

B.) SEDIMENT TRAPPING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING.

C.) THE LOCAL PROGRAM ADMINISTRATOR RESERVES THE RIGHT TO ADD TO, DELETE OR OTHERWISE CHANGE THE EROSION CONTROL MEASURES AS DEEMED NECESSARY DUE TO ACTUAL FIELD CONDITIONS BY WRITTEN NOTIFICATION TO THE CONTRACTOR.

D.) ALL FILL AND CUT SLOPES SHALL BE SEEDDED WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE.

E.) ONLY AFTER INSPECTION AND APPROVAL FROM THE LOCAL PROGRAM ADMINISTRATOR MAY ITEMS BE REMOVED FOLLOWING THE STABILIZATION OF THE CONTRIBUTING AREAS.

INSPECTIONS:

THE GENERAL CONTRACTOR SHALL INSPECT DISTURBED AREAS OF THE SITE THAT HAVE NOT BE FINALLY STABILIZED, AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND THE AREA OF CONSTRUCTION VEHICLE ACCESS AT LEAST EVERY FOURTEEN (14) CALENDAR DAYS, AND WITHIN 48 HOURS OF THE END OF A STORM EVENT PRODUCING 3" OR GREATER OF PRECIPITATION. WHERE AREAS ARE NOT FINALLY OR TEMPORARILY STABILIZED OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS (SITE IS COVERED WITH SNOW, ICE, OR FROZEN GROUND EXISTS) SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH.

A.) INSPECT DISTURBED AREAS AND AREAS OF MATERIAL STORAGE THAT ARE EXPOSED TO PRECIPITATION FOR EVIDENCE OF, OR THE POTENTIAL FOR SEDIMENT ENTERING THE STORM DRAIN SYSTEM. INSPECT E&S CONTROLS IN ACCORDANCE WITH REQUIREMENTS STATED HEREIN, AND INSPECT POINTS OF STORM DRAIN DISCHARGE FOR EXCESSIVE SEDIMENTATION. CORRECT SITE CONTROLS AS REQUIRED TO REDUCE SEDIMENTATION OF STORM DRAINS, CULVERTS, AND RECEIVING CHANNELS.

B.) IF CONTROLS OR SEDIMENT PREVENTION AREAS ARE FOUND TO BE IN NEED OF REPAIR OR MODIFICATION, THE G.C. SHALL PROVIDE ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES AS REQUIRED. ANY ADDITIONAL MEASURES OR MODIFICATIONS TO EXISTING MEASURES SHALL BE RECORDED AS FIELD REVISIONS TO THESE PLANS. IN THE EVENT THAT ADDITIONAL CONTROLS ARE FOUND TO BE REQUIRED, THE G.C. SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE CONTROLS BEFORE THE NEXT ANTICIPATED STORM EVENT. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICAL, THEY SHALL BE IMPLEMENTED AS SOON AS PRACTICAL.

C.) A REPORT SUMMARIZING THE SCOPE OF INSPECTIONS, NAME OF INSPECTOR, INSPECTOR'S QUALIFICATIONS, DATES OF INSPECTIONS, MAJOR OBSERVATIONS PERTAINING TO THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS, AND ACTIONS TAKEN SHALL BE MADE AND RETAINED AS PART OF THESE PLANS. MAJOR OBSERVATIONS OF THESE REPORTS SHALL INCLUDE: THE LOCATIONS OF EXCESSIVE SEDIMENTATION FROM THE SITE; LOCATIONS OF CONTROLS IN NEED OF REPAIR; LOCATIONS OF RAILED OR INADEQUATE CONTROLS; AND LOCATIONS WHERE ADDITIONAL CONTROLS ARE NEEDED.

EROSION AND SEDIMENT CONTROL MAINTENANCE SCHEDULE:

IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:

- THE CONSTRUCTION ENTRANCE WILL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIAL SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS WILL BE REMOVED IMMEDIATELY.
- THE SILT FENCE BARRIER WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER.
- ALL SOIL STABILIZATION BLANKETS AND MATTING SHALL BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH. CONTINUE TO MONITOR THESE AREAS UNTIL WHICH TIME THEY BECOME PERMANENTLY STABILIZED; AT THAT TIME AN ANNUAL INSPECTION SHALL BE ADEQUATE.
- TEMPORARY AND PERMANENT SEEDING AREAS SHALL BE INSPECTED TO DETERMINE IF AREAS ARE PRESENT WHERE PLANTS HAVE NOT GERMINATED OR HAVE DIED. THESE AREAS MUST BE RESEEDDED IMMEDIATELY TO PREVENT EROSION DAMAGE.
- ALL MULCHES AND SOIL COVERINGS SHALL BE INSPECTED PERIODICALLY (PARTICULARLY AFTER RAINSTORMS) TO CHECK FOR EROSION. WHERE EROSION IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED. INSPECTIONS SHALL TAKE PLACE UP UNTIL GRASSES ARE FIRMLY ESTABLISHED.

Virginia Erosion and Sediment Control Plan Minimum Standards (MS) Checklist

Yes	N/A	4VAC50-30-40 Minimum Standards	Describe how MS is addressed on plan
		MS16: 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. c. 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 adversely affect flowing streams or off-site property. d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization. e. Restabilization shall be accomplished in accordance with this chapter. f. Applicable safety chapters shall be complied with.	
	x		
x		MS17: Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.	SHOWN ON SHEETS EC-1
x		MS18: All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.	ADDRESSED IN THE EROSION AND SEDIMENT CONTROL NARRATIVE AND NOTES THIS SHEET
x		MS19: Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not man-made channels and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels: a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed. b. Adequacy of all channels and pipes shall be verified in the following manner: 1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or 2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks. (b) All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and (c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system. c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall: 1) Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or 2) Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances; 3) Develop a site design that will not cause the pre-development peak runoff rate from a twoyear storm to increase when runoff outfalls into a natural channel or will not cause the predevelopment peak runoff rate from a ten-year storm to increase when runoff outfalls into a manmade channel; or 4) Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the VESCP authority to prevent downstream erosion. d. The applicant shall provide evidence of permission to make the improvements. e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project. f. If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance. g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel. h. All on-site channels must be verified to be adequate. i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility. j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations. k. All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state. l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made channels if the practices are designed to: i. detain the water quality volume and to release it over 48 hours; ii. detain and release over a 24-hour period the expected rainfall resulting from the one year, 24- hour storm; and iii. reduce the allowable peak flow rate resulting from the 1.5, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 10.1-562 or 10.1-570 of the Act. m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 10.1-561 A of the Act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 10.1-603.2 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 4VAC50-60-48 of the Virginia Stormwater Management Program (VSMP) Permit Regulations. n. Compliance with the water quantity minimum standards set out in 4VAC50-60-66 of the Virginia Stormwater Management Program (VSMP) Permit Regulations shall be deemed to satisfy the requirements of Minimum Standard 19.	SEE BASIS OF DESIGN REPORT FOR STREAM CALCULATIONS

Virginia Erosion and Sediment Control Plan Minimum Standards (MS) Checklist			
Yes	N/A	4VAC50-30-40 Minimum Standards	Describe how MS is addressed on plan
x		MS1: Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.	SHOWN ON SHEETS EC-1
x		MS2: During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.	SEE PROJECT SPECIFICATIONS
x		MS3: A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.	SHOWN ON SHEETS EC-1
x		MS4: Sediment basins and traps, perimeter dikes, sediment barriers and other 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.	SHOWN ON SHEETS EC-1
x		MS5: Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.	
x		MS6: Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin. a. The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres. b. Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.	
x		MS7: Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.	
x		MS8: Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.	
x		MS9: Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.	
x		MS10: All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.	
x		MS11: Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.	
x		MS12: When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.	SHOWN ON SHEETS C-1 AND EC-7
x		MS13: When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.	
x		MS14: All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met.	SHOWN ON SHEET EC-2
x		MS15: The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.	SHOWN ON SHEET EC-2



717 Green Valley Road
Suite 200
North Carolina 27408
Phone -- (336) 790-6744
Web -- www.freese.com

ROANOKE COUNTY, VIRGINIA
REPAIR OF MUD LICK CREEK AT GARST MILL PARK
CIVIL

EROSION CONTROL

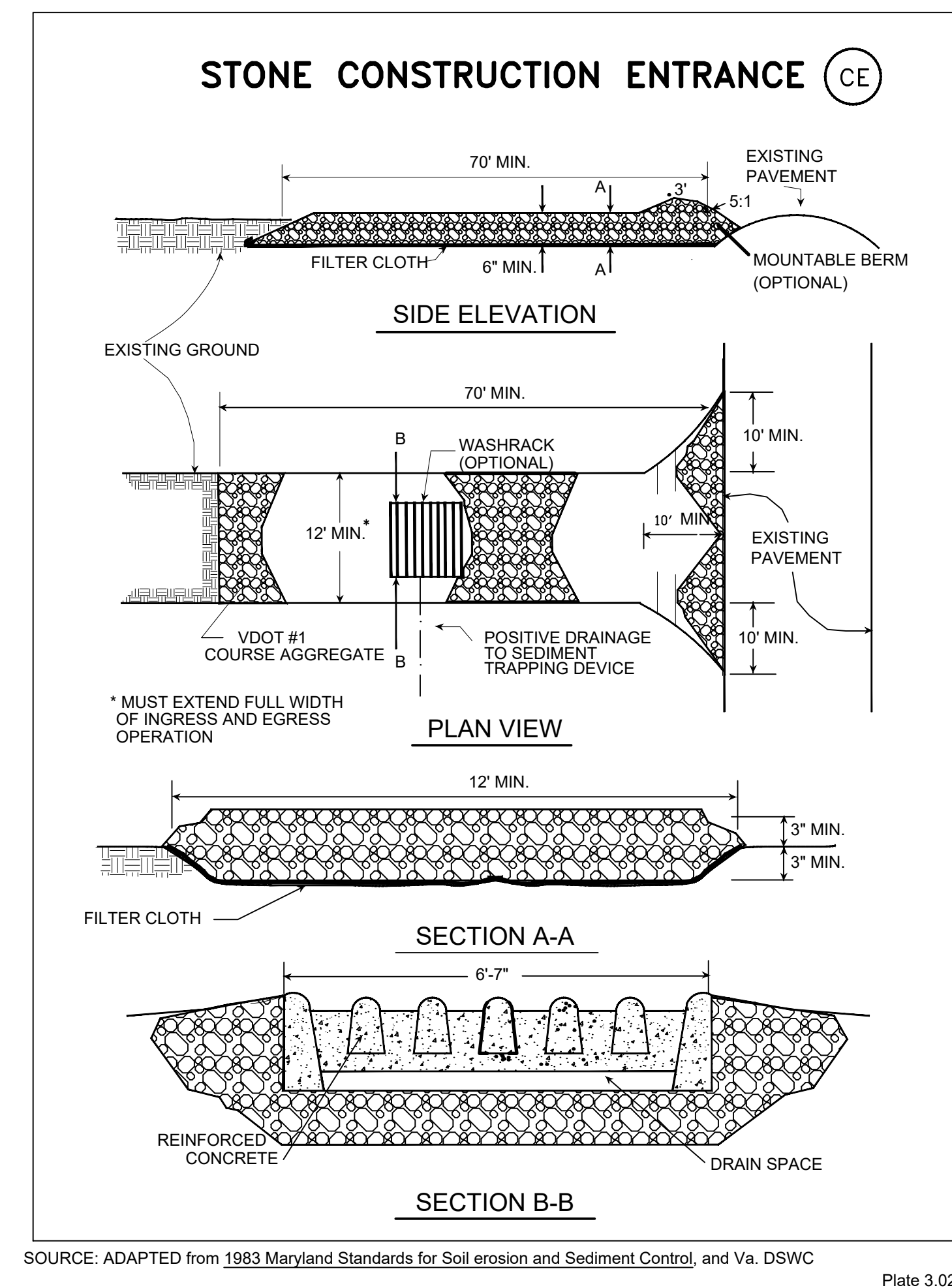
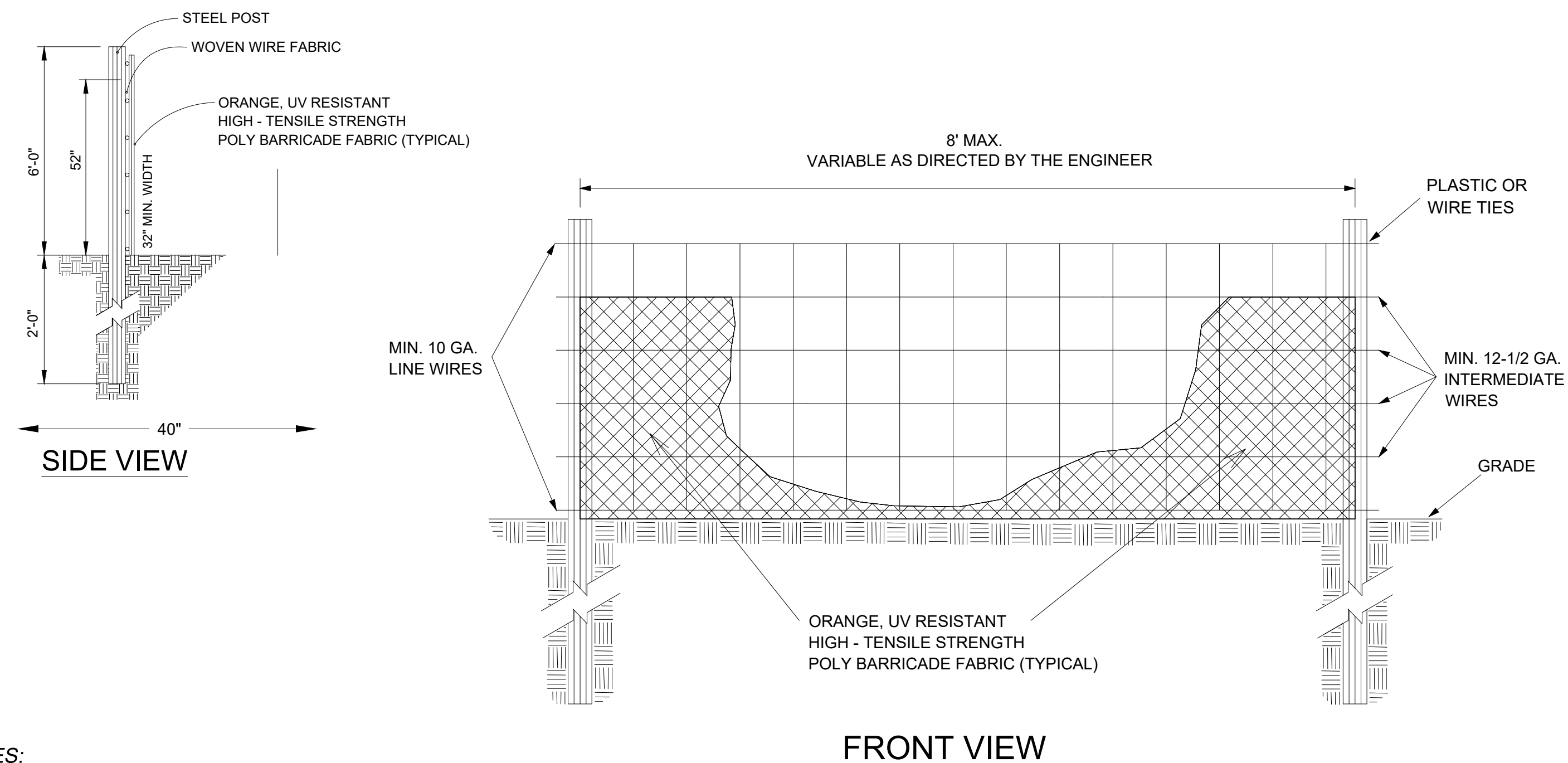
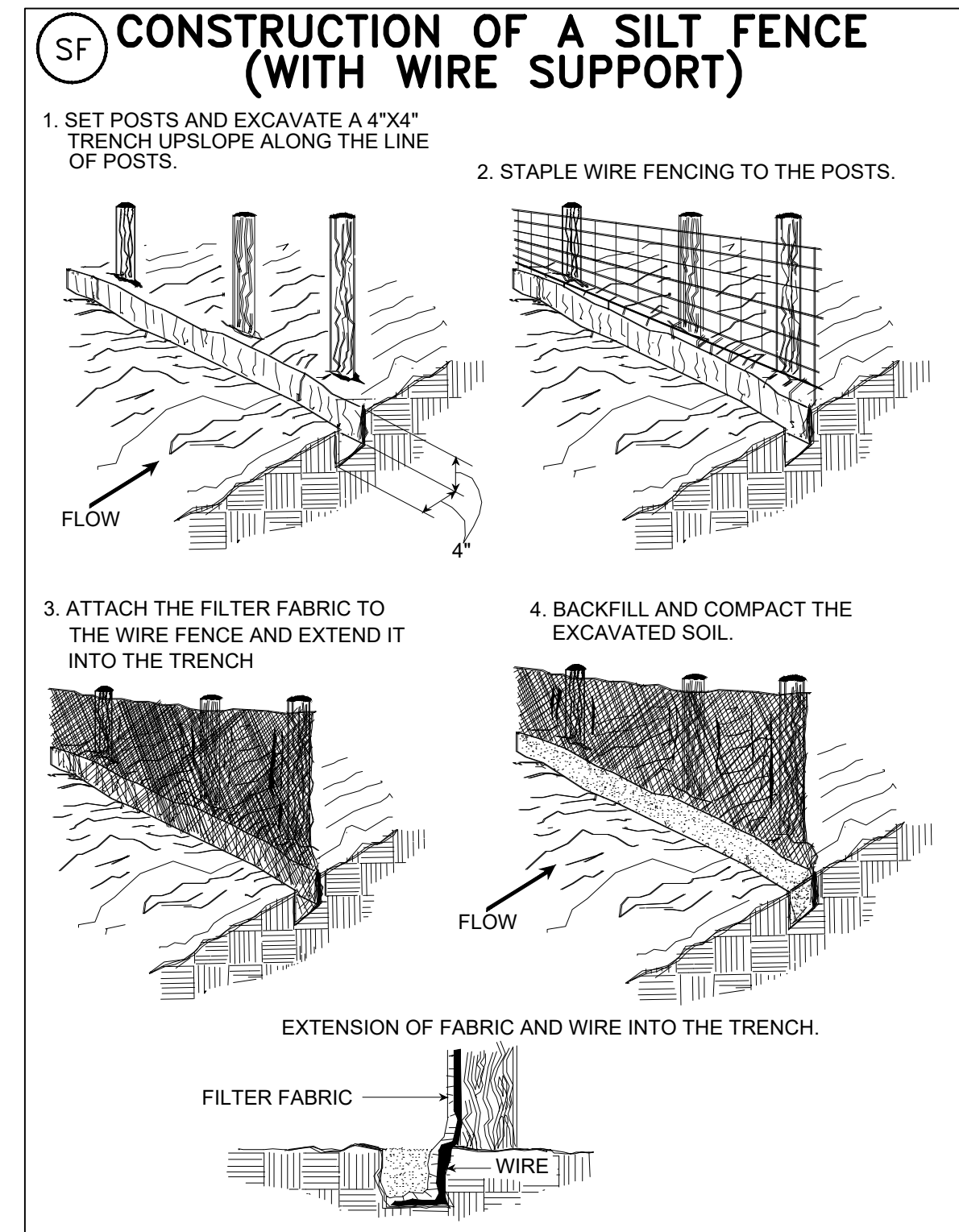
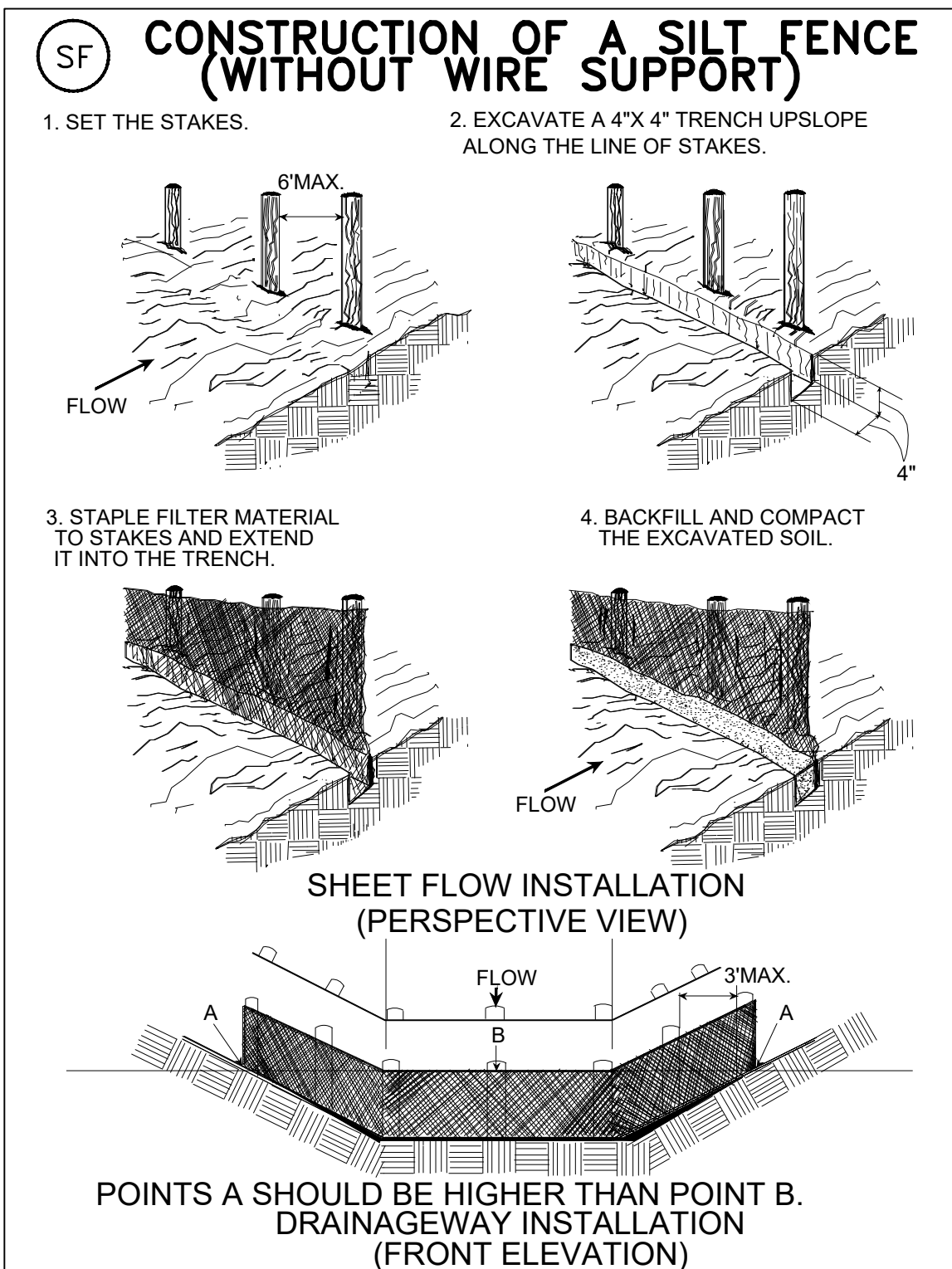
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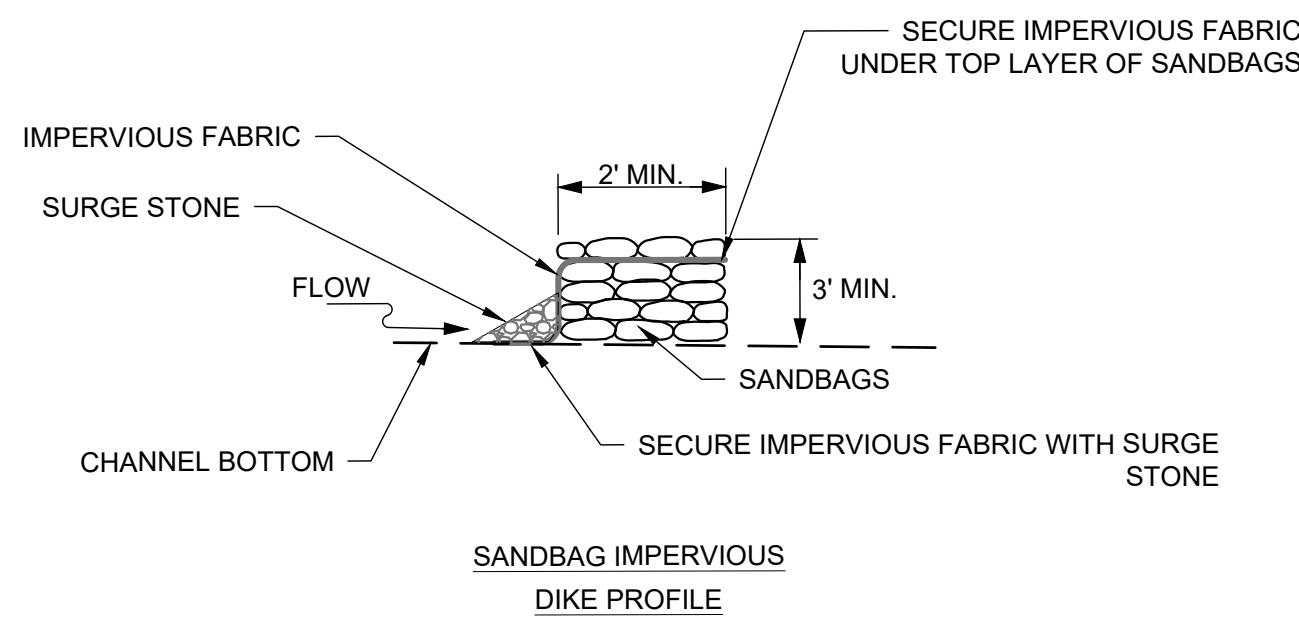
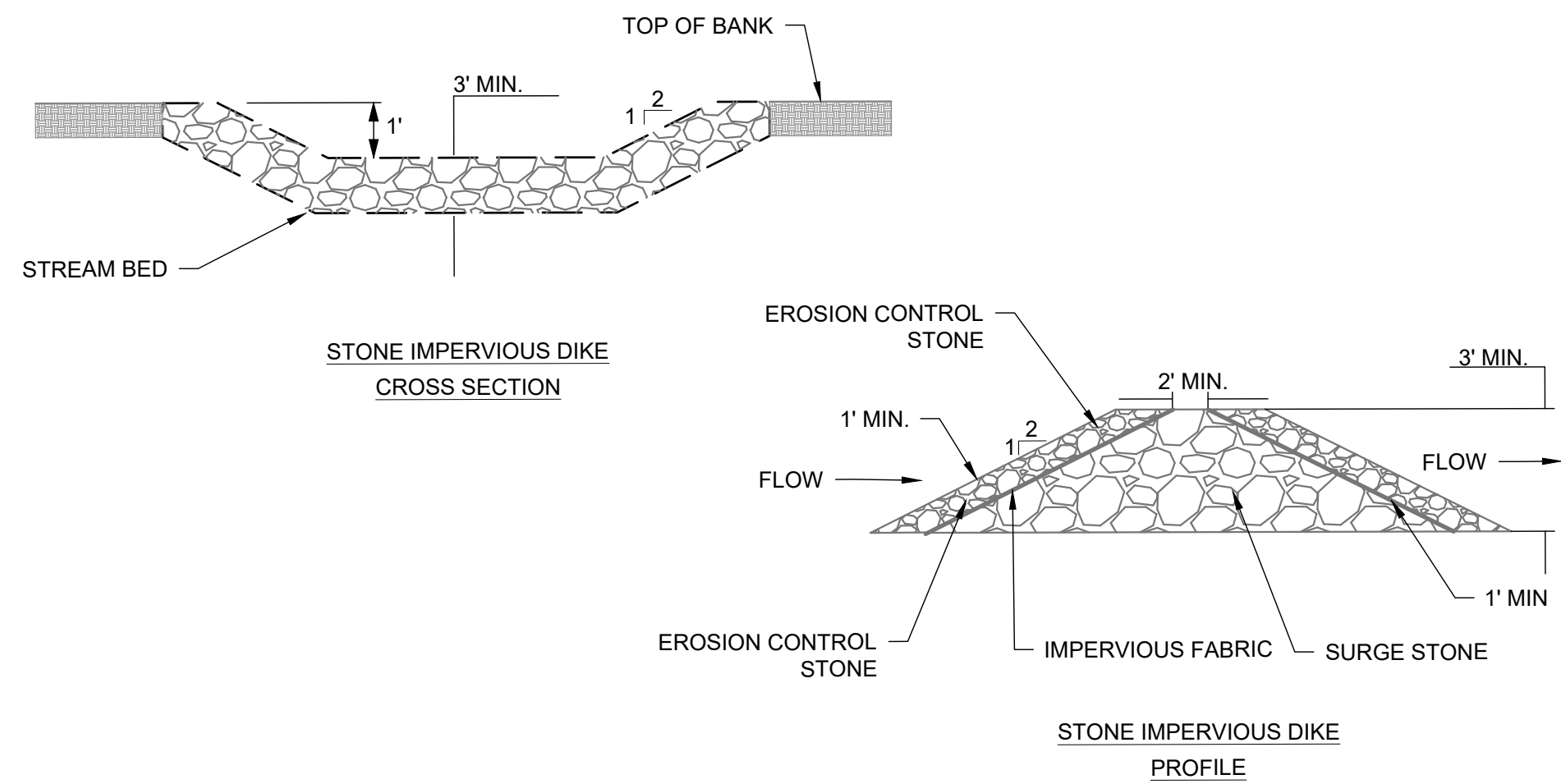
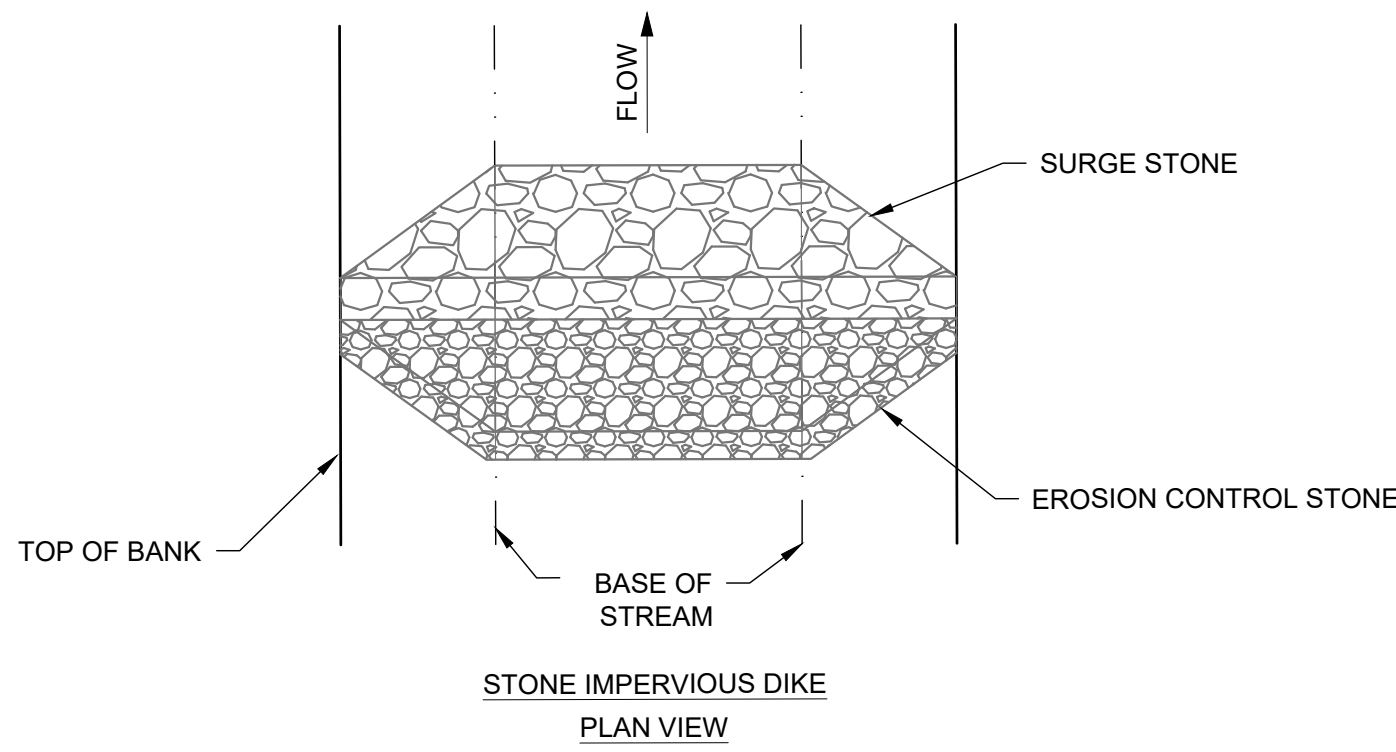
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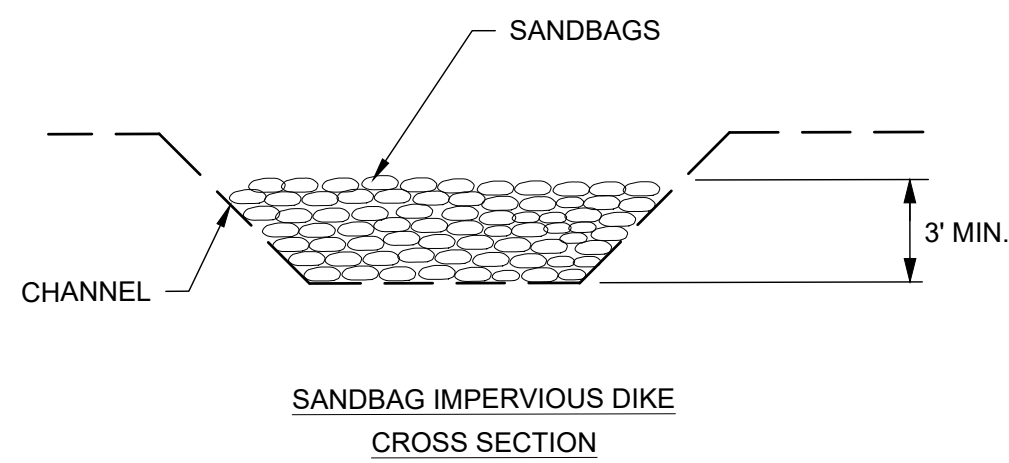
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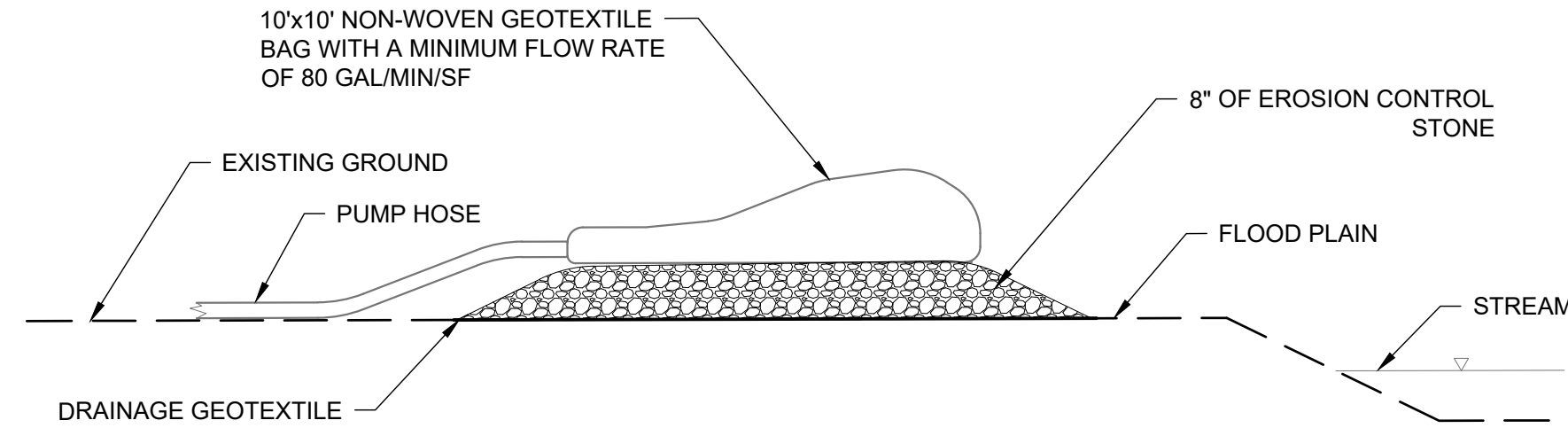
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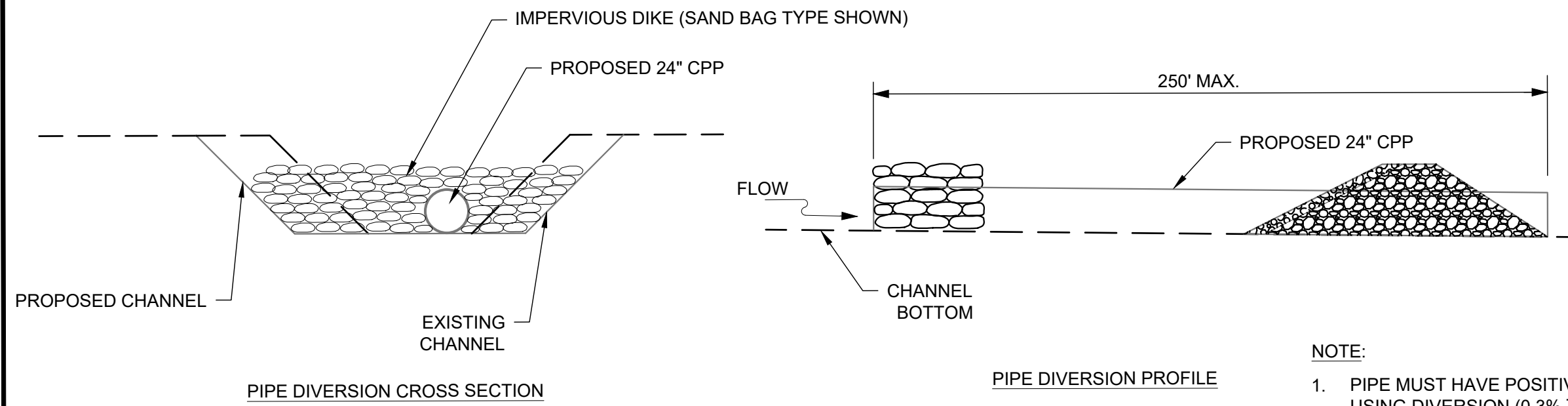
- NOTE:
1. THE STRUCTURE SHALL BE USED FOR DIVERTING AND PUMPING ONLY. THE STRUCTURE SHALL BE RELOCATED OR REMOVED ONCE PUMPING/DIVERTING IS COMPLETE.
 2. EITHER TYPE OF IMPERVIOUS DIKE (SANDBAG OR STONE) MAY BE USED.



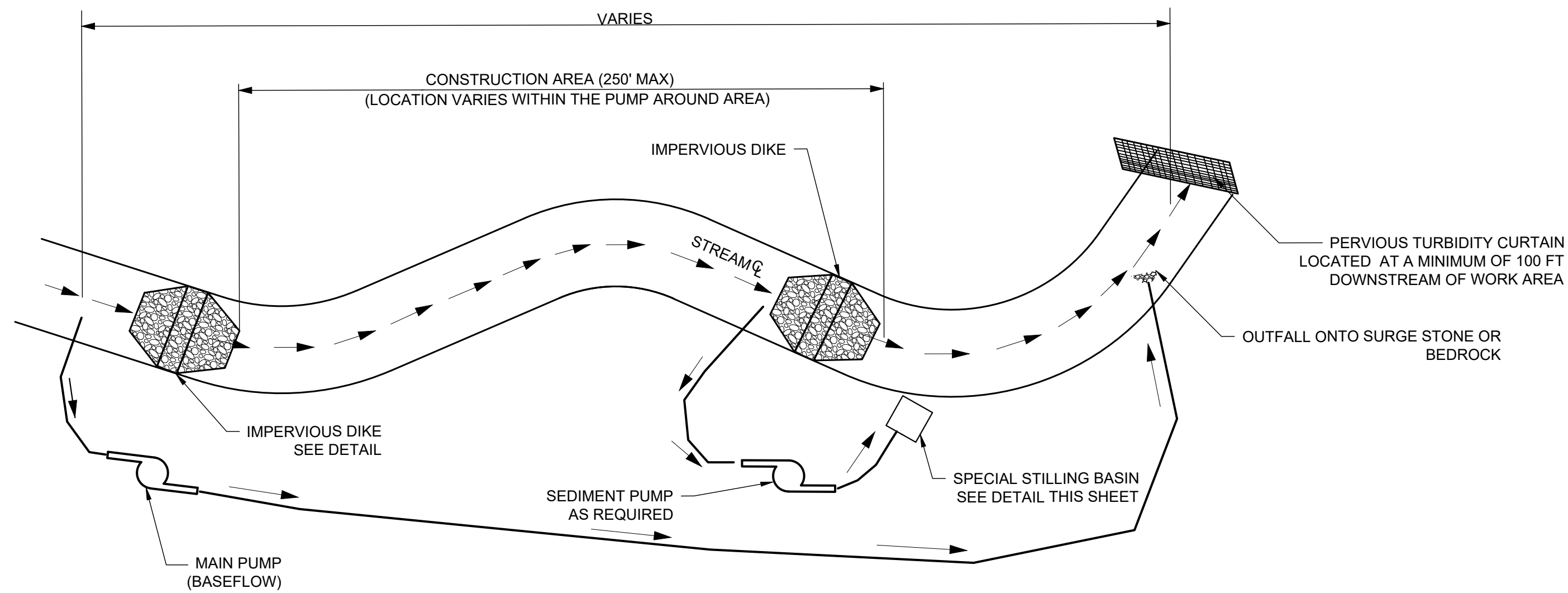
IMPERVIOUS DIKE SCALE: NTS



SPECIAL STILLING BASIN SCALE: NTS



- NOTE:
1. PIPE MUST HAVE POSITIVE DRAINAGE WHEN USING DIVERSION (0.3% TO 2.0% PIPE SLOPE IS RECOMMENDED)



- NOTE:
1. CHANNEL SHALL BE MATTED WITH COIR FIBER MATTING PRIOR TO THE CLOSE OF EACH WORK DAY.
 2. IF FINAL CHANNEL GRADING HAS NOT BEEN PERFORMED, TEMPORARILY SECURE COIR MATTING WITH STAKES OR ROCK
 3. THE MAIN PUMP SHALL BE ADEQUATE TO REDIRECT STREAM BASE FLOW AROUND CONSTRUCTION ACTIVITIES.
 4. SEDIMENT PUMPS SHALL BE ADEQUATE TO PUMP WATER THAT HAS INFILTRATED INTO THE CONSTRUCTION AREA WHILE CONSTRUCTION ACTIVITIES ARE ON GOING.
 5. DURING ANTICIPATED LARGER STORM EVENTS, CHANNEL CONSTRUCTION SHALL BE STABILIZED TO REDUCE EROSION.
 6. FOR FLOWS EXCEEDING 5 CFS, PERVIOUS TURBIDITY CURTAINS SHOULD BE USED TO PROVIDE IN-CHANNEL EROSION CONTROL.

PUMP-AROUND/PIPE DIVERSION SCALE: NTS



FREESSE & NICHOLS
717 Green Valley Road
Suite 200 North Carolina 27408
Phone - (336) 790-6744
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EROSION CONTROL

NO.	ISSUE	DATE	BY	FILE NAME	EC-5 NOTES AND LEGEND
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FINAL PLAN SET